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**The University of Edinburgh**  
**School of Health in Social Science**  
**Nursing Studies**



**Nursing Students' Attitudes towards  
Rural Nursing Practice**

**YUEXIAN TAO**



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## **Declaration of Own Work**

The work contained within this thesis is my own and has not been done in collaboration, except where otherwise stated.

No part of this thesis has been submitted to any other university in application for any other degree.

I confirm that the thesis is composed on my own. I have read and understood the Plagiarism Rules and Regulations in the Programme Handbook and have given the source of all pictures and data that are not my own.

Name of the student: Yuexian Tao

Signature:

Date:

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---

## Abstract

**Background:** Nursing shortage is a worldwide phenomenon; in rural areas, this shortage is exacerbated by geographical imbalances. Reducing the inequality of health outcomes between rural and urban areas requires improvement in the rural nursing workforce. Thus far, little research has been conducted on the recruitment of nursing students to rural nursing in China.

**Aim:** This study aimed to explore nursing students' perspectives of rural nursing practice and their intentions to work rurally after graduation, and to identify factors contributing to those intentions.

**Methods:** Exploratory interviews were conducted with eleven nursing students to obtain their perspectives of rural nursing practice. This was followed by a hand distributed and collected self-completion questionnaire survey that involved 445 final year nursing students in six nursing schools in one province in China. The questionnaire measured students' rural career intentions and their perceptions of rural nursing practice. The survey data were collected between December 2011 and March 2012. The response rate for the questionnaire survey was 89%.

**Results:** The results indicated that the majority of final year nursing students did not intend to work rurally. The most frequently cited barriers deterring them from considering a rural job were the perceived fewer opportunities for skills development and learning, potentially lower financial rewards, and family members' disapproval of rural working. Regression analysis showed that the length of time living rurally and educational level were the most important predictors of nursing students' intentions to take a rural job immediately following graduation. The logistic regression illustrated that rural identification, degree, and rural placement experiences were significant predictors for nursing students' intentions to work rurally in their future nursing career.

**Conclusion:** Nursing students with high intentions to work rurally were rare in China. Rural background had a positive impact on students' intentions to work rurally. Students with a degree were less likely to work rurally.

**Keywords:** Rural Nursing, Health Human Resource, Nursing Student



# Chapter 1

## Introduction

*According to national statistics of the People's Republic of China (PRC), in 2008 only 12.8% of the total number of nurses and 25.2% of doctors were working in township health centres and village health stations in China, even though 54.3% of the total population lived in rural areas (Ministry of Health of PRC 2009).*

The national statistics above reflect the distribution of the nursing workforce in China, revealing a severe imbalance between the urban and rural areas. The present research was carried out in order to understand this phenomenon and thus contribute to improving the rural nursing workforce. In this introductory chapter, the research background, research focus, research design and the structure of this thesis are briefly presented.

### **1.1 Background of the Research**

Mal-distribution of health workers is a major global challenge with a high concentration of health workers in urban areas while rural areas are understaffed (Willis-Shattuck et al. 2008). This is a situation which poses a threat to the equitable delivery of health services to people living in rural areas. In China, this mal-distribution is especially severe due to an institutional rural-urban dualism system, a

system which divides citizenship through household registration, thus leading to a strong imbalance between rural and urban areas and presenting a sizeable disadvantage in status for rural residents in the last half century (Wu 2011, Li and Wu 2010). According to the latest national statistics, although more than half of the total population were living in rural areas, only one quarter of the total number of doctors and one-eighth of the total number of nurses were working in township health centres and village health stations in 2008 (Ministry of Health of PRC 2009).

These disparities in health service provision undoubtedly lead to some serious gaps in health outcomes. National health statistics have shown that some key indicators of health outcomes in rural areas were much worse than in urban areas of China. For example, in rural areas, the infant mortality was 2.7 times higher and the child mortality was 2.8 times higher than urban areas. The maternal mortality was 3.2 times higher in rural areas; a significant increase since 1996 when it was 2.7 times higher (Ministry of Health of PRC 2010). These serious gaps reflect the phenomenon that although health outcomes have improved gradually since the 1980s in line with economic development, the health gaps between urban and rural areas are widening (Liu et al. 1999, Gao et al. 2002, Tang et al. 2008, World Health Organization Country Health Information Profiles 2010). There may be many factors contributing to these outcome inequalities, such as poor sanitation, lack of a pure water source and economic barriers in the access into health services. However, the imbalance in the health workforce is a vital element related to these gaps, as health care is “*a labour-intensive service industry*” (*the World Health Report 2006: XVI*) and health interventions are knowledge-based (Dussault and Dubois 2003).

China’s implementation of a market force ideology during recent decades has driven its economic growth, but has not solved the need for equity. Along with economic development, the need for equalisation in the provision of basic health and education services has become a wider public requirement for social equality and justice. Under this trend, these severe health care inequalities have become increasingly discordant with the national slogan of equality in essential public services. In order to reduce these gaps, the Chinese government has begun to put some strategies in place with

the aim of improving health services in rural areas. For example, 2005 saw the establishment of a new rural medical insurance system (Liu and Rao 2006). In 2009, ten basic health services were established in the health service system across the nation (The Committee of Development and Reformation 2009).

However, the main concerns of the Chinese government have been the insurance system and the provision of health services; relatively little attention has been paid to workforce distribution, and particularly the quality of the workforce. Sudhir et al. (2008) pointed out that among the three major resources of the national health system, namely financial, physical and human, perhaps the least mapped and analysed in China is human resource. Equalisation relates not only to the number of health workers, but also to the quality of service provided by those health workers; that is, equalisation of the number does not necessarily ensure equalisation of quality (Xiao 2008). With respect to health services, it is important to ensure the equalisation of the quality of the service, as the workforce is one of the most important inputs of any health system (Dussault and Dubois 2003, Fritzen 2007). Remedying the geographical imbalance of the health workforce is an effective way of improving the health outcomes in rural areas and thus of the whole population. Without doubt, the success of health reform will depend on developing and sustaining an adequate and appropriate health workforce (Sudhir et al. 2008). Indeed, the present research was conducted with the aim of providing useful information for the development of effective strategies and policies pertaining to the recruitment of nursing workforce in rural areas.

## **1.2 Research Focuses**

On a world scale, since the 1980s, a number of studies have been conducted on the topic of recruitment of the nursing workforce in rural areas. These have been conducted in countries such as Australia (Orpin and Gabriel 2005, Schofield et al. 2009, Playford 2010), the United States of America (Bushy and Leipert 2005), the United Kingdom (Powell et al. 2012), Canada (MacLeod et al. 2004), Malawi

(Mangham and Hanson 2008), South Africa, Kenya and Thailand (Blaauw et al. 2010). However, few have been conducted in China. Due to substantial cultural and policy differences, there is a strong necessity for a study of this nature to be carried out in China. These worldwide studies can provide useful guidance in methodologies and design for this study.

When dealing with the rural health workforce, there are three main stages. The first stage is the preparation of the workforce, which includes planning, education and recruitment, providing more qualified health professionals to work in rural areas; the second stage is enhancing worker performance, which involves improving their ability to work when they remain in the position; finally, the third stage is managing attrition, which reduces migration and leaving (World Health Organization 2006). As a doctoral program, this research focussed on the entry stage, and as such was concerned with nursing students' perspectives regarding working in rural areas and the factors which influence them in choosing a rural position. These decisions were based on two main considerations. Firstly, the recruitment of new graduates is currently the main source of entrants into China's rural nursing workforce, where the healthcare provider markets have not developed and opened up as much as those of other countries. Secondly, focusing on final year nursing students instead of those nurses who have entered the rural health institutions gives us the advantage of discovering those potential recruitment possibilities.

### ***1.3 The Research Aim and Research Questions***

The overall aim of the study was to explore final year nursing students' perceptions of rural nursing practice and to identify the potential factors influencing students' intentions to working rurally. To achieve this aim, the following research questions were formulated:

- What are final year nursing students' perspectives on rural nursing practice?

- What are the final year nursing students' intentions with regard to working rurally, both immediately after their graduation and in their future career?
- Are there any relationships between students' characteristics and students' intentions to work rurally?

## **1.4 Research Design**

To answer the above mentioned research questions, a quantitative survey with an exploratory qualitative interview was designed. Whilst there was evidence relating to the rural nursing workforce abroad, it was thought that results may differ within the Chinese context and the exploratory interviews could contextualise the main study.

During the exploratory stage, the researcher adopted face-to-face interviews to explore nursing students' perspectives on a set of issues related to rural nursing practice. Eleven final year nursing students were involved as interviewees. NVivo 9 was used to aid the analysis of interview data. Based on the results of these interviews, a questionnaire was formulated to investigate the extent of agreement of final year nursing students on those perspectives, as well as their intentions to work in rural areas following graduation. Considering the resources available, one eastern province in China was selected as the research setting of this study. In total, 445 final year nursing students were recruited and completed the self-completion questionnaires. SPSS 19 was used to aid the statistical analysis of the survey data.

## **1.5 Values of This Research**

This research is valuable in several aspects. Academically speaking, rural nursing is a new research area and few studies have been conducted in China. Thus, this research has the potential to contribute to the nursing knowledge system by providing information related to nursing students and rural nursing workforces. In

practice, describing nursing students' perspectives on rural nursing practice will help people to have a better understanding of nursing students' behaviour related to the choices of a rural job. This will in turn, help policy makers develop certain priority policies through which to improve the rural nursing workforce and help rural health institutions develop some efficient recruitment strategies with which to attract new graduates. This research will also provide information for the development of certain rural nursing education curricula, thus reducing the nursing shortages in rural areas.

## **1.6 Definitions of Terms**

### **Rural Areas**

Fundamentally, rural areas refer to any area other than urban. Strict definitions of rural or urban are often used for many policy decisions and there are a variety of definitions of rural areas in terms of countries and the purposes of the policy. The population size of an area, geographical location, and distance from an urban centre are often used as defining criteria.

Population size of an area is the most popular way in which to define a rural area. For instance, in the USA, rural areas refer to any area other than a city or town which has a population of more than 25,000 inhabitants (Bushy 1991); however, this definition was revised in the 2008 Farm Bill to include any area other than a city, town, or unincorporated area which has a population greater than 20,000 inhabitants (Federal Register USA 2009). In Canada, rural areas denote any area with a population of less than 10,000 (Canadian Institute for Health Information 2006: 51). In England and Wales, a settlement-based approach to the rural/urban definition was introduced in 2004; by this definition, four settlement types were assigned, three of which are rural: urban (population over 10,000), town and fringe, village and hamlet and isolated dwellings (Rural Evidence Research Centre 2009). The Scottish Executive classifies settlements above 10,000 as urban, settlements of between 3,000

and 10,000 people as towns, and settlements of less than 3,000 people as rural (Environment and Rural Affairs Department 2004).

Measuring the distance to an urban centre by driving times is also used to define a rural area. For instance, in the USA, the driving times for defining urban, rural and remote areas are less than 30 minutes, 30-60 minutes, and more than 60 minutes respectively (Bushy 1991). In Scotland, over 30 minutes of driving time to a settlement with a population of over 10,000 is used to define remote areas (Environment and Rural Affairs Department 2004). Geographical location is another criterion to define rural areas; for instance, remote islands and mountain areas are usually described as rural areas.

There is no international consensus or universal agreement regarding the definition of 'rural' (World Health Organization 2009). Deciding which definition to use depends on the purpose at hand, and "*there is no perfect rural definition that meets all purposes*" (Hart *et al.* 2005:1154). The definition applied for one purpose may be inappropriate or inadequate for another.

While a variety of definitions of the term 'rural area' have been found in the literature, this study will use the definition suggested by the Chinese government (Ministry of Civil Affairs 2006), which defines rural areas as those areas other than urban areas, with the term 'urban areas' being used to denote metropolitan areas or cities which are at or above county level. As far as health providers' work locations are concerned, in this study, township health centres, village health stations and rural community centres were considered as facilities in rural areas.

Generally speaking, literature reviews usually adopt a pragmatic approach, which accepts any definition used by the authors in the publications, as was the case with the present thesis literature review. In the literature review, the authors' specific interpretations of 'rural' were deliberately not differentiated, and were rather considered as a general interpretation of rural areas.

## Rural Nursing

In general, rural nursing refers to nursing in the context of rural environments (Bushy and Baird-Crooks 2000). In the USA and Canada, the term rural and remote nursing is also often used (Bushy and Baird-Crooks 2000, Pitblado 2005).

In the literature retrieved, there were also some researchers who attempted to give a specific and comprehensive definition of rural nursing. In the early 1980s, in an article named ‘toward a definition of rural nursing’, Biegel (1983) defined rural nursing as:

*“the diagnosis and treatment of a diversified population of people of all ages and a variety of human responses to actual occupational hazards or potential health care problems existent in maternity, paediatric, medical surgical and emergency nursing in a given rural community” (Biegel 1983:46).*

This definition reflects the notion that the distinguishable feature of rural nursing rests on a broad scope of practice, which involves patients crossing all age groups and nursing fields.

In the book *“Rural Nursing: Concept, Theory, and Practice”*, Rural nursing is defined as:

*“the provision of health care by professional nurses to persons living in sparsely populated areas” (Long and Weinert 2009:3).*

This definition places specific emphasis on the professional behaviour. Although this definition is simple and clear, defining rural nursing by whether or not the work is provided by professional nurses, seems to have the order reversed.

In this thesis, the author adopted a concise definition, which defines rural nursing as the provision of nursing health care in sparsely populated areas.

## **Nursing Students**

In the present study the term ‘nursing students’ refers to students who are attending nursing educational programs and nursing training courses. In terms of training levels, it includes students in diploma, associate, bachelor and master programs. In terms of learning styles, it includes part-time and full-time students.

## **Attitudes**

Attitudes are personal views towards a certain event or thing. A considerable number of dictionary definitions are available, such as:

(1) Attitude is:

*“the way a person views something or tends to behave towards it, often in an evaluative way” (Collins English Dictionary 2010, webpage).*

(2) Attitude is:

*“a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation...Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards” (Business Dictionary 2010, webpage).*

In social sciences, attitude is often a subject of research. Alreck and Settle (1995) suggested in their book that three components must be considered when attitudes are measured: (1) what the individual knows or believes about the subject under investigation; (2) how the individual feels about the subject and how the person values it; and (3) the likelihood that the individual action will take based on his/her beliefs and values. In terms of nursing students’ attitudes towards rural nursing practice, the present study included and investigated all three of these components.

## **1.7 Structure of the Thesis**

The remainder of the thesis is structured as follows:

- ✚ Chapter 2 introduces the background of this study, briefly presenting to the readers the nursing education system and rural health care in China.
- ✚ Chapter 3 is dedicated to the literature review, including a review of previous studies, conceptual models and theories related to rural nursing recruitment.
- ✚ Chapter 4 presents the research design, including an explanation of the research methodologies and their philosophical foundations.
- ✚ Chapter 5 reports the exploratory interviews, including the sampling criteria and the sample, data collection processes, ethical considerations and the processes of data analysis.
- ✚ Chapter 6 presents the findings of the exploratory interviews, which are illustrated through certain excerpts of the interview transcriptions.
- ✚ Chapter 7 explains the design of the questionnaire and provides a report regarding the validity and reliability of the questionnaire.
- ✚ Chapter 8 reports the pilot study and the main survey, including sampling, access to participants, distribution and collection of the questionnaire as well as the ethical considerations of the survey.
- ✚ Chapter 9 reports on how the survey data were processed, following which the data analysis strategies are then put forth.
- ✚ Chapter 10 presents the results of the survey, including the results of descriptive statistics and association analysis.
- ✚ Chapter 11 discusses the findings of the study. A model is then introduced and leads the discussion.

- ✚ Chapter 12 suggests some implications of the research findings.
- ✚ Finally, chapter 13 lays out certain recommendations for future research.

(The references and some appendices are attached at the end of this thesis)

## **1.8 Chapter Summary**

The nursing workforce has a crucial influence on the quality of healthcare delivery. Indeed, there currently exist serious disparities between rural and urban areas in terms of the nursing workforce and health outcomes in China. Since nursing students are a main constituent of the potential rural nursing workforce, investigating their attitudes towards rural nursing practice has significant value when it comes to understanding this phenomenon and thus contributing to future nursing education reform and rural nursing recruitment policy making.

# Chapter 2

## Background of the Study Setting

This chapter is devoted to introducing the sociological context of the study setting and is organised into three parts. The first part introduces China's nursing education system; the second part presents China's rural health delivery system; whilst the final part demonstrates the disparities of health workforce and health outcomes in rural and urban areas.

The search terms used in relation to the nursing education system were combinations of keywords such as 'China' or 'Chinese', 'nurs\*', 'education', 'curricula' or 'curriculum'. The search terms used for rural health system and rural nursing involved keywords such as 'rural', 'health', 'workforce', 'nurs\*', 'China' or 'Chinese'. Source languages were limited to English and Chinese whilst material dated back to 1950. The titles and abstracts were initially screened to identify relevant articles, following which full texts of those relevant articles were retrieved if available. Those relevant papers in bibliographies were also traced.

Apart from the above strategy, some official data were continuously searched and whilst certain figures in the report were constantly updated. For example, the government websites of the Ministry of Health and Ministry of Education were frequently visited and some diagrams and figures were generated based on data from

these websites and updated over time. For instance, China's Health Statistics Yearbook of 2009, 2010 and 2011 were traced and used over the years.

## **2.1 The Nursing Education System in China**

The rural nursing workforce inevitably links to the changes taking place across the entire nursing education system; with this in mind, the present section will firstly introduce China's nursing education system in terms of its historical development and its current constituent parts: different types of nursing education programs.

### **2.1.1 History of Nursing Education**

Modern nursing education in China was founded and influenced by western medical missionaries after China lost the Opium War in 1842 (Xu et al. 2000). The first nursing training school, the Florence Nightingale Nurse Training School in Fuzhou was founded in 1888 under the influence of two missionaries, Elizabeth McKechnie and Ella Johnson (Chen 1996). In 1923, missionary nurses constituted one third of China's entire nurse population (Chen 1996). It is undeniable that missionary nurses contributed to the early birth of modern nursing in China. Indeed:

*“although their interest in ‘healing the sick’ aimed to serve their primary goal of ‘saving the soul’, their contribution to nursing development in China, especially their efforts in training native nurses at numerous missionary hospitals and nursing schools, can hardly be overestimated” (Chen 1996:129).*

In the early 20<sup>th</sup> century, the influence of American individual nursing educators and the American-based foundation on Chinese nursing education was profound and far-reaching. For example, in 1910, the Hunan–Yale School of Nursing was established as a part of the Yale mission of the Yale-China Association, a private and non-profit organisation based on the campus of Yale University (Xu et al. 2000). In 1920, the Rockefeller Foundation in the USA funded the establishment of the school of nursing

in Peking Union Medical College and contributed to the development of modern nursing education in China. The first baccalaureate nursing education was established in Peking Union Medical College in 1921 (Nolan et al. 2011), which was advanced for its time in light of the fact that this occurred only one year later than the establishment of the first baccalaureate nursing program in the USA and Canada at the University of Minnesota and the University of British Columbia respectively (Xu et al. 2000). By the late 1930s, nursing in China had developed into a profession with a membership of 6,000 in the Nurses' Association of China and nearly 200 nursing schools all over the country (Grypma 2004).

However, nursing education did not flourish during the Second World War and China's civil war, which spanned the years 1945-1949. During the period of 1949-1978, it declined due to the poor economic foundations and nursing's lack of high status on the policy agenda. When the new government was established in 1949, nursing education was limited to diploma level in its first national health conference (Kalisch and Liu 2009). During the Cultural Revolution (1966-1976), almost all nursing schools were closed. In this period, *"women were hired by hospitals to care for patients and received on-the-job training"* (Kalisch and Liu 2009:325).

Starting in 1978, China implemented more pragmatic reforms and opening up policies. Strong emphasis was placed on higher education under the awareness of the power of knowledge. Under this trend, nursing education was resumed and grew rapidly during the 1980s. Diploma level nursing education was firstly resumed. Following this, the associate nursing program began in Nanjing Medical College in 1980 and the baccalaureate nursing program was re-established in the Tianjin University in 1983 (Kalisch and Liu 2009). Since then, nursing education has seen even more growth due to the higher education expanding policy in the late 1990s. In China's first nursing master's program was established in 1992 at the Beijing Medical University and since 2004 doctoral nursing education programs have started in several universities (Jiang 2006, Nolan et al. 2011).

## **2.1.2 Graduates Employment Policy Reform and Higher Education Expansion**

This rapid post-90s development of nursing education was derived from graduate employment reform in the late 1980s and accelerated by the higher education reform in the middle of the 1990s.

### **2.1.2.1 Graduates Employment Policy Reforms**

China's post-1949 graduate employment policies can be described in three stages: assignment by government, bilateral selection and free job-settlement by graduates themselves.

During the period spanning 1949-1985, under the planned economy, the graduates from tertiary education and secondary technology schools were mandatorily distributed by government. Graduates were assigned to their different posts whilst individuals had no choices and did not need to find jobs by themselves.

Employment policy reforms for university graduates emerged from the middle of the 1980s. Since government economic strategy shifted from a planned to a market orientated, markets played an increasingly important role in resource allocation. In 1985, the government increased the autonomy of higher educational institutions in the recruitment of students and job allocation in the document *The Central Committee of the Communist Party of China's Decision on Educational Reform (The Central Committee of CPC 1985)*. Under the guide of this document, higher education institutes were allowed to recruit some students by charging tuition fees and requiring these students to find their own employment. In 1989, the state council approved the Education Ministry's Report *Regarding Reforms to the University Graduate Distribution System (The Central People's Government of the People's Republic of China 1989)*, which stated that national employment policy would be a bilateral selection policy whereby both the employers and employees have a choice. At this stage, employers and individual students had some opportunities to select

each other, although these opportunities were limited as they had to rely on the recommendations of the universities.

The free job-settlement policy started in the early 1990s. In 1993, the document *Guidelines for China Education Reform and Development* was issued. In this document, the central government clearly declared that higher education is not compulsory education and therefore students should pay part of the tuition fee themselves and find their own employment (The Central People's Government of the People's Republic of China 1993). Under these guidelines, the graduate employment policy was further reformed to a free job settlement stage and the practice of the state regulating intake and assigning jobs finally came to a complete end in 1997 (Ren et al. 2011). The government is now mainly responsible for macroeconomic regulation and control, strengthening the job market, and providing employment consultancy services to students. At this stage, almost all the graduates are required to find jobs by themselves and no longer rely on the recommendations of their universities.

#### **2.1.2.2 Higher Education Reform**

Although many higher education programs were resumed after 1978, the scale of China's higher education in the 1980s remained small whilst the gross higher education entrance rate was less than 3% of the total population aged 18-22 years old (World Bank 2012). The Chinese government realised that the number of higher education graduates was too low to meet the human resources needs in a higher technology economy (Lixu 2004); thus, in the late 1990s, a major higher education reform was implemented. With the dawn of this reform, many higher education institutions were merged and adjusted. Meanwhile, local government leadership over higher education institutions was increased. Most importantly, student recruitment increased on a large scale (Lixu 2004). Due to this reform, the gross higher education entrance rate increased from less than 3% in the 1980s to 24% in 2009 (World Bank 2012, Ministry of Education of PRC 2010).

### 2.1.3 Current Nursing Education Programs

As previously mentioned, nursing education in China was heavily influenced by American nurses, nurse educators and foundations; this results in that China's nursing education system is now very similar to the model of the United States. The major Chinese nursing education programs are Zhongzhuan, Zhuanke and Benke, which are equivalent to diploma, associate and baccalaureate degree programs in the United States (Chenjuan et al. 2012). In recent years, postgraduate nursing programs at masters and doctoral level have also been rapidly developed. Table 2-1 summarise the minimum enrolment requirement, length of curriculum and practice time of each nursing educational programme.

Table 2-1: Characteristics of Current Regular Nursing Education Programs in China

<b>Education Programs</b>	<b>Education Level</b>	<b>Minimum Enrolment Requirement</b>	<b>Length of Curriculum</b>	<b>Practice Time</b>
<b>Diploma (Zhongzhuan)</b>	Secondary vocational education	Junior high school	3 years	Lab training and clinical viewing, and 32-35 weeks clinical practice in the last year of study
<b>Associate's (Zhuanke)</b>	Tertiary education	Senior high school, or nursing diploma	2-3years	Lab training and clinical viewing, and 32-35 weeks clinical practice in the last year of study
<b>Baccalaureate (Benke)</b>	Tertiary education	Senior high school	4-5 years	Lab training and clinical viewing, and 35-45 weeks practice in the last year of study
<b>Master's (Shuoshi)</b>	Tertiary education	Bachelor degree	3 years	No compulsory practice time
<b>Doctoral (Boshi)</b>	Tertiary education	Master's degree	3 years	No compulsory practice time

Data source: Ministry of Education of CPR 2007

### **2.1.3.1 Diploma Nursing Programs**

Diploma nursing education programs are categorised as secondary vocational education in China. Currently, these programs admit graduates from junior high schools and have a three-year curriculum (Ministry of Education of CPR 2007).

At the end of the last century, since the secondary education training was considered inadequate when it came to preparing competent nurses, an initiative to upgrade the secondary level program to postsecondary level was launched in China. One measure was to add two years to the curriculum based on previous diploma education programs whilst a second option was to raise the admission requirement of basic nursing education from junior high schools to senior high schools (Xu et al. 2000). Following this trend, the majority of previous secondary nursing schools were upgraded to associate programs or bachelor nursing programs one decade ago. This echoed the recommendation of the World Health Organization Global Advisor Group, namely to move basic nursing education to the college level (Modley et al. 1995).

However, the nursing diploma level program was not phased out. Some vocational high schools began to enrol and train those junior school graduates as it was relatively easy to find a job in nursing. This program has developed rapidly in recent years. Viewed against this historical background, students on the current nursing diploma level are very different from those of the early 1980s, when the entire education level was low and the secondary technological schools usually enrolled high achievement students from junior high schools or senior high schools.

### **2.1.3.2 Associate Nursing Programs**

The associate nursing programs, known as Zhuanke in Chinese, are postsecondary nursing education. There are two types of associate nursing education program in China: the first enrolls high school graduates through national university admission examinations and has a three-year curriculum; the other is designed for those

students who graduated from diploma nursing programs and who have the aspiration to pursue a tertiary level education. Students in this type of program usually undertake a two-year curriculum.

### **2.1.3.3 Baccalaureate Nursing Programs**

Baccalaureate nursing programs have a four or five year curriculum. This program admits high school graduates via the national university's admission examination. By 2006, China had 179 nursing schools offering baccalaureate nursing education (Jiang 2006); this is remarkable progress in light of the fact that it was only started in the 1980s.

All nursing programs lead to eligibility to be licensed as a registered nurse, although graduates from the diploma and associate programs are required to take a national nursing licensure examination to be licensed, while students graduating from baccalaureate and above programs are granted nurse registration (Xu et al. 2000).

In terms of curriculum design, compared to the American version, China has more theoretical teaching hours, with an average of 881.5 hours in China compared to 558.8 hours in America in baccalaureate nursing programs. The practice section in China can be described in two parts: lab training and clinical viewing in parallel with theoretical teaching and an 8-10 month full-time clinical practice in the last year of study (Chen 2004, Zhang et al. 2005).

### **2.1.3.4 Postgraduate Nursing Programs**

Master nursing programs in China are three years in length. They enrol baccalaureate graduates and working nurses who have a bachelor degree. Although these students are enrolled through the national postgraduate's entrance examinations, there are significant variations in the admission requirements. Indeed, the examination of subjects is provided by the university to which the candidate is applying, and as such

the standard of the examination depends on the university's level (Xu et al. 2000). Up until 2006, there were thirty nursing schools in China offering master nursing education (Jiang 2006).

Doctoral nursing programs in China are still in their infancy. There are currently only five universities offering doctoral nursing education. As they only started in 2004, the number of graduates is currently not large. For example, Peking Union Medical College reported that in 2008, its first five doctoral nurses graduated with the cooperation of the Johns Hopkins University in the United States. Indeed, in contrast with the educational model which sends faculty members abroad for their doctoral degree, the establishment of doctoral nursing education in China is critical when it comes to ensuring Chinese universities have their own nursing doctoral program (Nolan et al. 2011).

#### **2.1.3.5 Non-regular Postsecondary Nursing Programs**

In addition to the regular nursing education programs described above, there are various forms of non-regular nursing education programs in China. These are known as adult education or continuing education, and are designed as a mobility track for working nurses who have the aspiration to pursue a higher degree through further education (Xu et al. 2000). Indeed, the majority of nurses acquire their primary nursing education in a regular way and then obtain their higher degree in a non-regular way.

There are three major types of continuing nursing education. The night school is currently the most popular form for nurses to obtain a further degree. Local nursing schools deliver courses at night or on the weekend and usually have a three to four year curriculum for an associate program and one or two additional years for a bachelor degree. The television or distance education program is the earliest form of continuing nursing education. As it is based on self-study, the emergence of night schools led to a decline in the numbers of students in this kind of program. This is due to the fact that it is easier for students to complete the night school classes, with

teachers instructing them and the same group of teachers setting the examinations for them. The third form of continuing nursing education is obtaining a master's degree and even a doctoral degree through part time study. As nursing postgraduate education is in its early stages, this form of education is also in its infancy and the corresponding regulation, indeed the quality of education, varies depending on the running universities.

#### **2.1.4 Issues in Current Nursing Education**

Although nursing education in China has developed rapidly during recent years, there remain certain issues with the curriculum and administration.

Firstly, there are many different nursing programs in terms of educational level. However, they are all similar in terms of their curricula. All programs train nursing students to be generalists rather than specialists, whilst as yet no specialist nursing education exists, meaning there is a lack of training for preparing clinical nursing specialists or nurse practitioners (Chenjuan et al. 2012, Yun et al. 2010, Kalisch and Liu 2009).

Secondly, the curriculum follows the medical model. Historically, the medical education model has predominated nursing education in China, and the curriculum lacks the presence of humanities and social sciences. Although the past few years have seen a considerable change with the addition of a number of courses on humanities and social sciences, China's nursing curriculum remain physiologically based and disease-oriented (Chan and Wong 1999, Xu et al. 2000).

Thirdly, clinical teaching is concentrated in the final year practicum. The format of clinical experience in the Chinese nursing education system is 8-10 months full time practicum in the final year with little clinical experience prior to the final year (Xu et al. 2000). As clinical teaching and learning are an integral part of nursing education and obtaining clinical experience throughout the entire program is considered as more conducive to learning, the concentrated arrangement for clinical instructions in

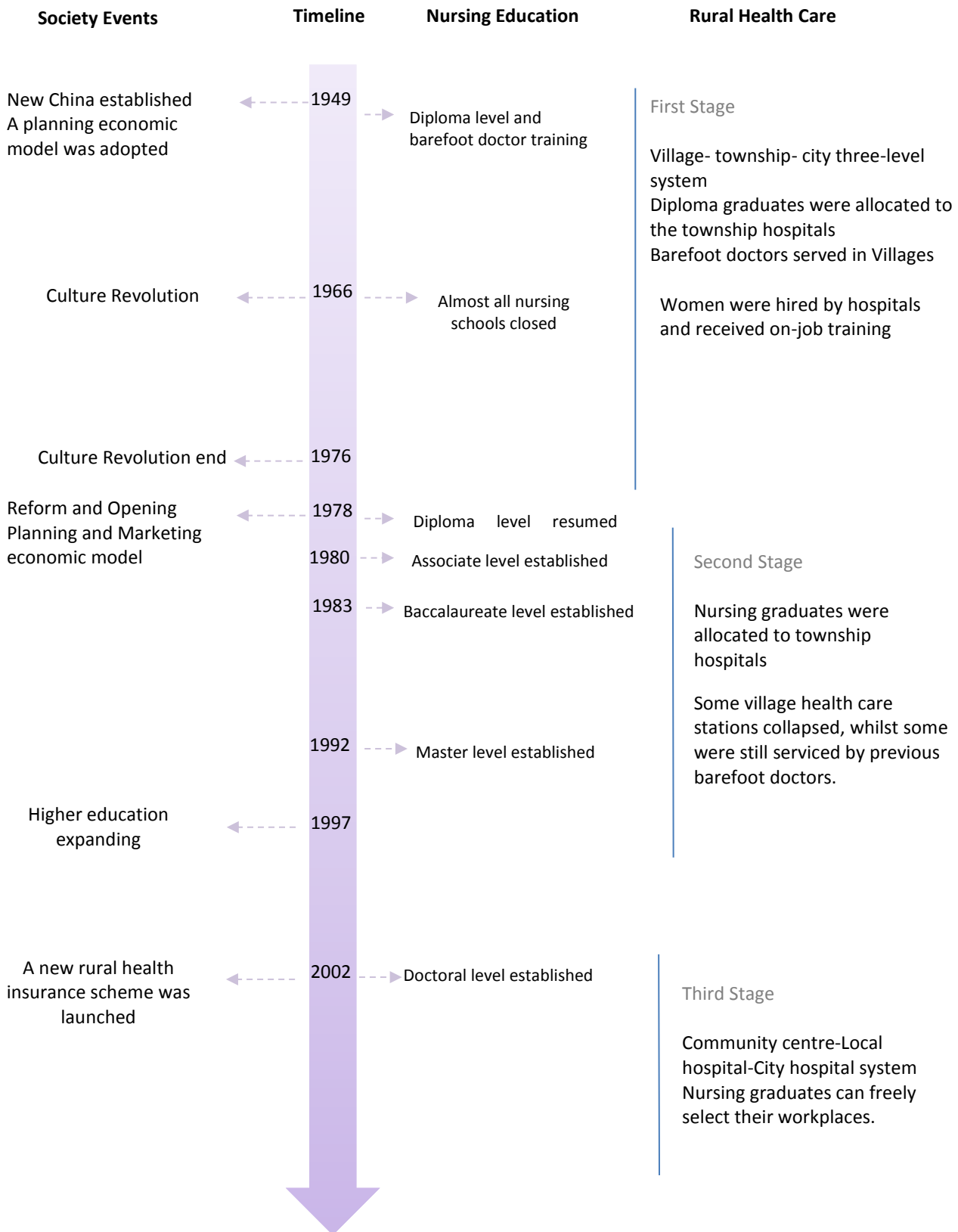
China is in place for administrative convenience rather than for facilitation of study (Xu et al. 2000).

### **2.1.5 Section Summary**

This section has briefly described the history of China's nursing education system whilst also introducing the current nursing education programs were.

It is apparent that western missionaries influenced early nursing development, and that nursing education in China did not fall behind the rest of the world in the very early years of the 20<sup>th</sup> century. During the period spanning 1950-1980, there was a decline of nursing education. During the last thirty years, Chinese nursing education has experienced rapid changes and nursing education has developed very rapidly. Currently, nursing education programs in China include diploma, associate, bachelor, master and doctoral programs. A timeline of these historical events was given in Figure 2-1.

Although multi-level nursing education programs have been developed, the curriculums are very similar, and are very much medical based with a lack of influences from humanities and social sciences.



**Figure 2-1: A Timeline of Social Events, Nursing Education Development and Rural Health Care in China (1949-2010)**

## **2.2 The Rural Health Care in China**

China is the largest country in the world with a total population of 1.37 billion in 2010, and 50.3% of its population situated in rural areas (Ministry of Health of PRC 2011). In urban areas, the health delivery system consists of hospitals, community health centres, community health stations and sub-district health centres. In rural areas, healthcare is mainly provided by township health centres and village clinics in most provinces.

In this section, the researcher reviews the features of rural health care for different historical stages in China since 1949 in terms of disease pattern, rural health workforce and social economic context. Based on socioeconomic context, the researcher identified three historical stages of rural health care development: the first stage spans the years 1949–1979, whilst the second stage spans 1980-2002 and the third stage from 2002 to present.

### **2.2.1 Rural Health Care 1949-1979**

During this period, economic policies were mainly central plan based. The gross domestic product was very low, and a large proportion of people lived in poverty. During the year spanning 1959-1961, this poverty, combined with consecutive bad weather, led to the death of millions of people in rural areas due to famine and malnutrition (Daniel et al. 2009). During this period, the major health problems were infectious diseases, such as the plague, cholera, smallpox, and tuberculosis, vector borne diseases, such as malaria, and physical environmental diseases, such as iodine deficiency and fluorosis (Fang and Bloom 2010).

During this time of poverty, rural health providers mainly consisted of barefoot doctors and a set of small township hospitals, with the barefoot doctors providing the first-level care and township hospitals second-level care (Wagstaff et al. 2009). Government health policy gave high priority to a number of preventive measures. For example, a number of mass campaigns were launched in order to reduce

mosquitoes and in turn control malaria. Efforts were also made to reduce the number of rats so as to control the risks of plague. Whilst water and faeces were also managed in order to control water-borne disease such as diarrhoea and typhoid, and vaccinations were used to control infectious diseases (Fang and Bloom 2010). Despite its poor economy, during this period, preventive programs were considered as relatively effective and successful in curbing epidemics and communicable diseases whilst major progress was made in terms of people's life expectancy (Meessen and Bloom 2007).

### **2.2.2 Rural Health Care in 1980-2002**

From 1978 onwards, China transitioned to a socialist market economy system. The agricultural commune was replaced by a household production model, and health facilities were given a great deal of autonomy in service provision and fee charging. This had dramatic and unintended consequences for the rural health system. Firstly, the breakup of the agricultural commune led to the collapse of the cooperative medical scheme (Liu 2004). The former bare-footed doctors lost economic support and became private health care providers who earned a living by shifting to self-support. Some of them survived, but most clinics in the villages closed (Liu et al. 1995, Meessen and Bloom 2007, Wagstaff et al. 2009). Secondly, health facilities became increasingly reliant on the consumption of drugs and provision of diagnosis tests as a source of revenue. Former commune hospitals, which were supposed to provide preventative measures, shifted their focus in favour of the provision of medical care, which was increasingly expensive (Liu et al. 1995, 2003). Thirdly, public health institutions shifted their balance of activities in favour of those for which they could charge. Anti-epidemic stations, including schistosomiasis control stations, only maintained a minimum level of required health work and allocated their time to medical examinations for everyone handling food as a business (Bian et al. 2004). Preventative programs were weaker than at previous stages (Feng et al. 1995). At the same time, with the market orientated economy, some small private clinics started their business in rural areas and small townships. This market system

made it more difficult for poor people to access basic health care. Most poor people actually left diseases untreated as they had no insurance and had to pay for any treatment received out of their own pocket. During this period, the old system collapsed and the new system was yet to be established. The poor only went to hospitals when they became severely ill, or even remained untreated when they could not afford payment (Liu 2004).

During this period, the major health problems in rural areas were infectious diseases like hepatitis and TB, digestive system diseases like diarrhoea, and respiratory diseases caused by smoking and air pollution. Road accidents increased and some sexually transmitted diseases emerged. Once-controlled malaria reoccurred in poor mountain villages (Fang and Bloom 2010).

During this period, the nursing workforces in rural township hospitals were dominated by diploma graduates who were allocated to the jobs by the government in the 1980s and early 1990s. Most of these graduates were of rural origin.

### **2.2.3 Rural Health Care after 2002**

In 2002, a new development stage of rural health care was launched in China with the central government announcing the establishment of new rural health insurance schemes. A new cooperative medical insurance scheme started to become available to rural residents from 2005 (Liu and Rao 2006). Under this scheme, the central government, as well as the local government and household, jointly contributed to the insurance premium. To begin with, each of them contributed ten Yuan; by 2008 however, the total government contribution increased to eighty Yuan per capita whilst twenty Yuan was contributed by households (Fang and Bloom 2010). In addition to the establishment of the insurance scheme, a set of rural health community centres were established in 2007 and the rural health delivery system was designed to consist of health community centres in townships and a set of health delivery stations in villages (Chen et al. 2011).

To this day the disease pattern has not changed a great deal. The major diseases are infectious diseases like hepatitis and TB (in lower prevalence), respiratory diseases like obstructive pulmonary diseases, hypertension, cerebrovascular diseases, heart diseases and cancers. Sexually transmitted diseases remain and road accidents continue to increase. The government has now started to regulate and strengthen the prevention and control of HIV (Fang and Bloom 2010).

During this period, major improvement has been made in terms of establishing county level health insurance, although this progress has been less intense in the rural health workforce. The nursing workforce in rural areas remains unchanged although the entire education scale has expanded rapidly. The government is no longer able to allocate graduates and nursing graduates find workplaces by themselves. Healthcare needs in rural areas are intensively increasing due to the fact that the proportion of aging people is increasing whilst younger people are immigrating to the city.

From the development of the current situation in rural areas, it can be seen that not only a substantial number of nurses are needed in rural areas, but also a certain number of higher educated nurses who are capable of detecting problems and organising disease prevention and treatment in rural areas.

#### **2.2.4 Section Summary**

During the period spanning 1949–1979, the rural healthcare system was dominated by barefoot doctors and a set of small township hospitals which were funded by governments. Major campaigns during this period effectively controlled some infectious diseases. After the 1980s, the previous health care system gradually collapsed in the market economy system and rural health care remained problematic. Whilst since 2003, some improvement has been made in terms of the establishment of county level health insurance; less progress has been made regarding the rural health workforce.

## **2.3 Disparities in Healthcare between Rural and Urban Areas**

In China, the health workforce distribution among rural and urban areas is imbalanced. This, compounded by an urban-oriented health insurance system, has contributed to substantial disparities in health outcomes between rural and urban areas. In what follows, some figures and facts regarding health workforce, health insurance and health outcome indications will be presented.

### **2.3.1 Health Workforce Disparities**

The imbalanced distribution of the nursing workforce between rural and urban areas appears to be quantitative as well as qualitative. The former can be illustrated by the relative lower number of nurses in rural areas; the latter might be explained by the relative lower educational preparation and lower professional grades of rural nurses.

#### **2.3.1.1 The Quantitative Imbalance**

According to Chinese national health statistics, the total number of nurses in China has increased steadily since the 1980s, and at a fast pace since 2002. A diagram (see Figure 2-2) was generated by the researcher using data from China Health Statistics from 2009 to 2011 to depict this trend (China Health statistics 2009, 2010 and 2011).

From the diagram, it can be seen that by 2010 the total number of nurses in China had reached two million, which is four times that of the 1980 figure. There was a very slight decrease in the year of 2002. This may be largely attributed to the methodological changes since the number was calculated by the registration system for the first time that year.

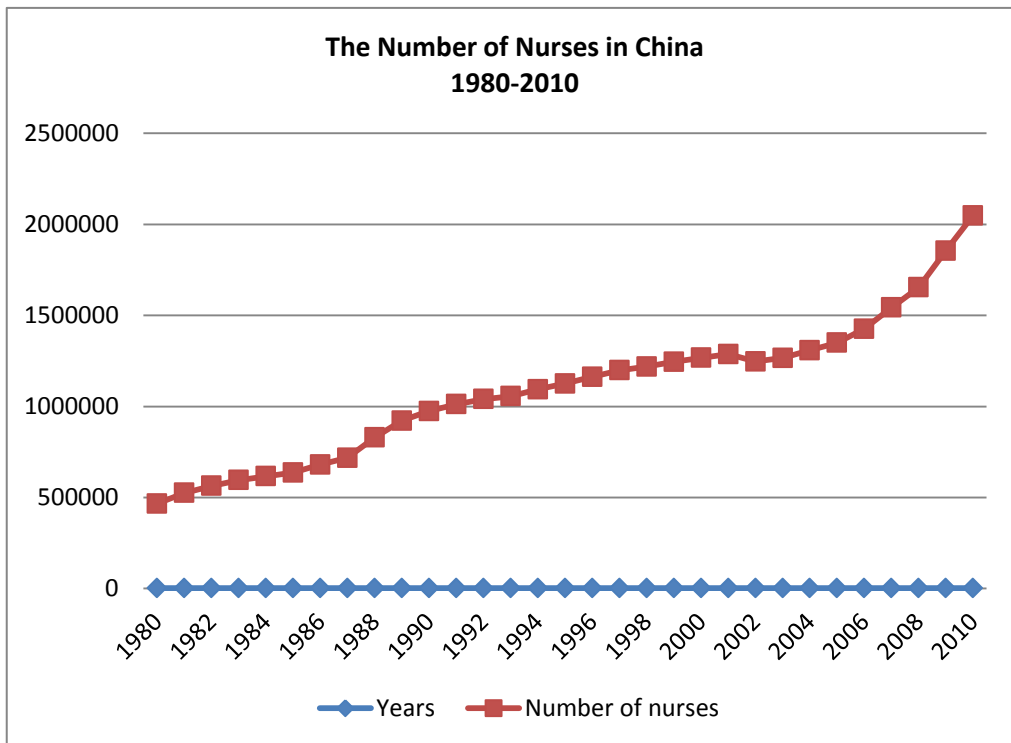
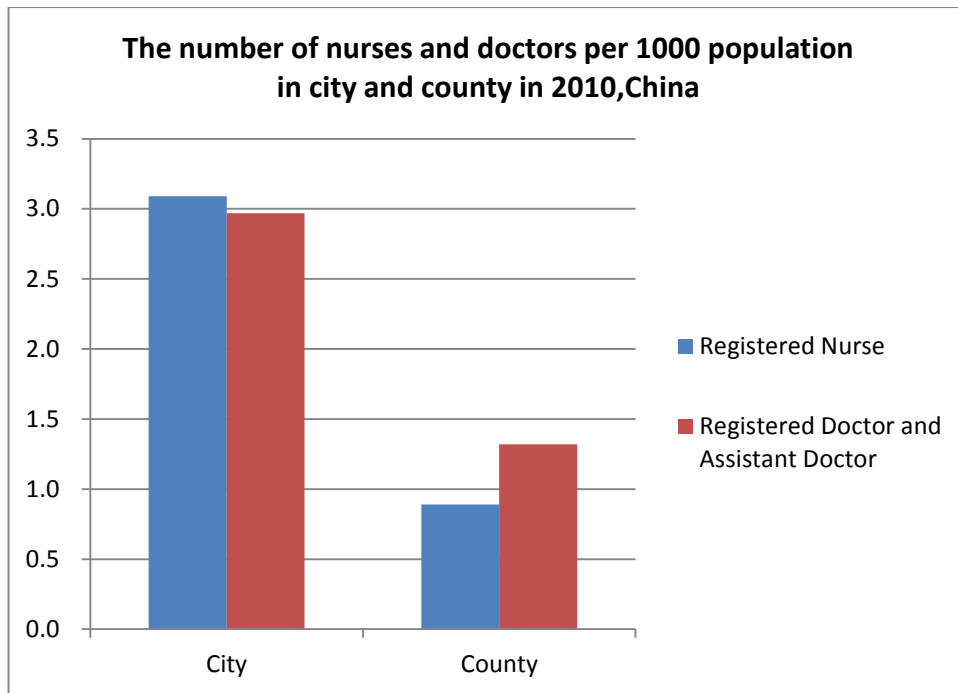


Figure 2-2: The Number of Nurses in China (1980-2010)

However, the distribution of the health workforce is not even. In 2010, the number of registered nurses per 1,000 of the population was 3.09 in cities, whereas in counties (which include nurses in rural areas and county-level cities) the figure was only 0.89. Compared to the USA, where it was reported that the urban/rural distribution of register nurses by residence was approximately consistent with the distribution of the share of the population according to the national sample survey (Skillman et al. 2006), this imbalance is substantial.

Along with the lower number of rural nurses, the number of registered doctors and assistant doctors was also lower across all the counties, with a figure of 1.32 per 1,000 of the population in the counties compared to 2.97 in the cities (see Figure 2-3) (China Health statistics 2010).



**Figure 2-3: Nurse and Doctor to Population Rates in China**

Internationally, the number of nurses is often greater than the number of doctors. For example, in Australia, nurses make up the largest and most widely distributed health workforce, outnumbering doctors 8:1 in rural and remote areas in 2004 (Australian Institute of Health and Welfare 2008, Hanson and Jack 2010). China is an exception, with the number of doctors higher than the number of nurses.

In total, only 12.3% of total registered nurses and 25.1% of registered doctors and assistant doctors are working in township health centres and village health stations which are located in rural areas (Ministry of Health 2011). Although in other countries there is also an imbalance in the rural nursing workforce, by comparison, the imbalance in China is severe. For example, the ratio of nurses in rural areas relative to urban employment is reported to be stable at 0.8:1.0 in Australia (Joyce and Wolfe 2005).

### 2.3.1.2 *The Qualitative Imbalance*

The education level of China's registered nurses has changed dramatically over the past three decades. During the years spanning 1950-1980, the secondary technical schools were the only source of nursing education. In the 1980s, China resumed its nursing college education and started the nursing bachelor program. In the 1990s, it started the master program followed by the doctoral nursing program in the early 2000s (Jiang 2006, Kalisch and Liu 2009, Nolan et al. 2011). In the 1980s, the majority of nursing students graduated from three year secondary technical schools, earning a diploma in nursing. With the higher education expansion in the late 1990s, an increasing number of nursing students graduated from colleges or universities.

However, the educational preparation of nurses in rural and urban areas is very different; indeed, rural nurses usually hold a lower education level on the whole. According to statistics (Ministry of Health 2010), in 2009, the majority of rural nurses held a diploma qualification in nursing; only 1.6% of rural nurses earned a baccalaureate degree and 29.7% of them graduated from junior college, compared to the national averages of 8.1% graduating from universities and 41.7% from junior colleges (see Table 2-2). These figures clearly show that the education level of rural nurses has not caught up with the national average level.

**Table 2-2: The Educational Level of Rural Nurses Compared to the National Average**

<i>Level of Education</i>	<i>Rural Areas (%)</i>	<i>National Average (%)</i>
Postgraduate	0.0	0.1
University	1.6	8.1
Junior College	29.7	41.7
Secondary Technical School	64.0	47.1
High School & Below	4.7	3.0

Although the disparities in educational level between rural and urban nurses also existed in some developed countries, like the USA and Canada, they were not so

severe there. For example, Skillman et al. (2006) reported that the percentage of nurses with a baccalaureate degree or higher was 32.3 in rural areas compared to 46.6 in urban areas in the USA according to the national sample survey of registered nurses.

Differences also exist in nurses' professional grades. Rural nurses in general have lower professional grades, compared to those in city hospitals and city community centres. For example, in 2010, only 0.2% of rural nurses held a senior technical position, compared to 1.9% of nurse in senior positions as national average (Ministry of Health of PRC 2011).

### **2.3.2 Health Insurance Disparities**

The low rate of rural population being insured has been noted as a major challenge faced by rural practice (Bushy and Leipert 2005). China has had a rural-urban dual system since 1949. Urban residents are entitled to employment, housing, pension and food subsidies, although none of these privileges are available to rural residents (Li and Wu 2010). In terms of public resource allocation, this system has a strong urban bias and has produced different health insurance systems for urban and rural residents.

There are two major health insurance schemes in China: the government insurance scheme and the labour insurance scheme. The former covers government officials and employees whilst the latter covers the workers of state-owned enterprises. These populations have a relatively high income in China and these schemes provided a 50%-90% financial subsidy for the medical expenses of those covered (Gao et al. 2002). In the late 1990s, a basic medical insurance scheme was set up for the uncovered urban population. However, the majority of rural residents remained uninsured prior to 2005. Tang et al. reported that "*less than 10% of the rural population was covered by insurance schemes from the 1980s to 2000*" (Tang et al. 2008:1497). Those uncovered were required to pay all the medical fees themselves (Liu and Rao 2006). Of the entire population, 22.1% had insurance paid for by the

government and employers through the two above mentioned schemes; 7.6% purchased commercial insurance and the remaining 70.3% of the population paid for all of their health care out of their own pockets. The majority of them were rural residents (Kalisch and Liu 2009).

Although conditions have improved in recent years due to the government's renewed effort to increase health insurance coverage in rural areas, the insurance schemes still differ greatly for rural residents and urban residents. People with a rural identification, even if they have worked in urban areas their whole life, are not allowed to join the insurance scheme for urban residents. The gap of benefit between rural and urban residents still remains very large.

Since the 1980s, the cost of healthcare has increased in the market-orientated economy system, gradually exceeding the level affordable for most rural residents. As statistics show, the average total health expenditure per capita increased nearly eight times during the period from 1979 to 2004 (Liu 2004). This created a situation whereby poor rural people went into debt or went without treatment if they had a severe disease. Healthcare access, in fact, was dictated by the ability to pay (Liu and Rao 2006). The World Health Report 2010 also stated that "*people in need cannot access the required services or continue treatment if financial barriers remain high*" (WHO 2010:20). With such high medical expenditure, some rural residents' access to healthcare was financially blocked. A survey showed that approximately half of respondents did not see a physician when they were ill (Liu et al. 2007). It was not surprising that in the *World Health Report 2000*, China was listed near the bottom of all the member states in terms of fairness of health financing (World Health Organization 2000). Gao et al. (2002:29) expressed concern that:

*"the drop in insurance coverage may provide the most serious threat to equity between the different population groups and eventually to the stability of the society"*.

In October 2002, the China National Rural Health Conference was held in Beijing. At this conference, nine major national policies were announced to support and strengthen rural health care financing and delivery systems. These new policies

represent a historic breakthrough and a fundamental shift toward a more equitable social policy (Liu and Rao 2006). Based on the nine major national policies, since 2005 the Chinese government has started to implement the new rural cooperative medical care system, which was designed to relieve the excessive financial burden of healthcare on rural residents, providing part of the funding for catastrophic illness and in-patient medical services. With this said however, the scheme is limited to catastrophic illness and excludes basic health services. It also requires full up-front payment of medical bills, and offers reimbursement rates as low as 20-30% for medical bills. Thus, although it is a breakthrough in China's history as a response to healthcare disparities, there remain issues in terms of lack of funding and low levels of reimbursement (Liu and Rao 2006, Lu et al. 2012).

In addition to the disparities in the health insurance system, the payment system of health workers makes worsens the financial barriers of rural people. Doctors and nurses in China are paid a basic salary supplemented by performance-related bonuses. This payment system results in a situation whereby cheap healthcare becomes increasingly difficult to obtain. As Liu et al. (1996) pointed out, this system, which keeps basic wages low but allows doctors to make money from prescriptions, leads to perverse incentives and inefficiency at all levels. This system also results in a situation whereby health providers prefer to work in urban areas with people who are wealthier and have health insurance. In some popular hospitals, bonuses may be up to several times the basic salary, whereas in some rural hospitals, doctors and nurses may receive only the basic salary (Gao et al. 2002).

### **2.3.3 Health Outcome Disparities**

With above mentioned disparities in the health workforce and health insurance system, the health outcomes of rural and urban residents are correspondingly different. Since 1980, China has experienced rapid economic growth and a fundamental transformation of its society. However, studies have suggested that

despite overall improvements in the health status of the whole population, inequalities in health care are increasing (Gao et al. 2002, Liu and Rao 2006).

Studies have also suggested that the rural-urban disparities in health outcomes, such as maternal, under-five and infant mortality rates, are persistent and in some instances are increasing (Gao et al. 2002). According to a report from the Development Research Centre in Social Development Department of China State Council, in the year of 2000 the maternal mortality rate in urban areas was 25.0 per 100,000 live births and in rural areas 53.8 per 100,000 live births. In 2004, the rates for maternal mortality in rural areas were three times greater than those in urban areas (Development Research Centre 2005). In 2010, the new-born mortality rate was 10.0 per 1,000 live births in rural areas compared to 4.1 per 1,000 live births in urban areas; the infant mortality rate was 16.1 in rural areas and 5.8 in urban areas, whilst the mortality rate of children under 5 was 20.1 in rural areas and 7.3 in urban areas (Ministry of Health 2011). Apart from those maternal and children's indications, life expectancy is also generally lower in provinces with a higher share of China's rural population (Development Research Centre 2005).

From the above figures, it can be seen that the severe disparities in health outcomes between rural and urban areas are an undeniable reality. The Country Health Information Profiles of World Health Organization documented that, since the 1980s, the gaps in health outcomes between urban and rural areas in China are widening (World Health Organization Country Health Information Profiles 2010). Observing these disparities and worrying about their consequence, early in 1999, some researchers pointed out that China had moved toward the 21<sup>st</sup> century with increasing inequality plaguing in its health care system (Liu et al. 1999).

Health is a fundamental human right, and thus the severe health outcome gaps between rural and urban areas in China are unacceptable, as reiterated by certain declaration:

*“The existing gross inequality in the health status of the people particularly between developed and developing countries as well as within countries is*

*politically, socially and economically unacceptable” (the Declaration of Alma-Ata, 1978, Article 2, page 1).*

In China, the government plays an important role in determining the number and quality of public sector health workers. Since the beginning of this century, the government has increased its investment in public healthcare and urban community healthcare. However, healthcare undertakings are developing unevenly between urban and rural areas. The rural community healthcare and public healthcare is comparatively weak (CPC Central Committee and the State Council 2009).

Through awareness and economic improvement, the government has set a number of goals in order to reduce the gaps. For example, the document *Opinions of the CPC central committee and the State Council on deepening the health care system reform* (CPC Central Committee and the State Council 2009) declared a goal that everyone should be entitled to basic healthcare services. In addition, the document entitled *The Guidelines on promoting the equalization of basic health services* (The Committee of Development and Reformation 2009) set a series of guidelines designed to improve rural residence’s health. However, to achieve all of these goals, specific policies must be developed. In terms of the weakness of the rural workforce, improving the health workforce in rural areas, including the nursing workforce, is an efficient way to reduce these gaps and corresponding policies need to be developed.

#### **2.3.4 Section Summary**

In this section, the existing data has demonstrated that there is a substantial disparity in the health workforce between rural and urban areas. In rural areas there are by far fewer nurses and doctors than urban areas and their educational level and technical grades are also lower compared to the national average. Besides the workforce, the health insurance system for rural residents is also a disadvantage. Corresponding with the smaller workforce and lower insurance coverage, the health outcome indications have shown that rural areas have much poorer health outcomes compared to urban areas. Although the Chinese government has realised this gap and has set

some goals to reduce it, questions remain to be answered in terms of the specific policies which must to be developed to promote the more equal distribution of health workforce.

## **2.4 Chapter Summary**

Analysis of the literature showed that health outcomes in China are much worse in rural areas than in urban areas and that there is a severe imbalance in the distribution of the nursing workforce between rural and urban areas. In the pursuit of equality and efficiency, balancing the nursing workforce is indeed necessary and the nursing workforce in rural areas must be enhanced to improve health outcomes in rural areas, which could, in turn, efficiently improve health outcomes at a national level.

Nursing education in China developed quickly over the last three decades in line with higher education expansion on a national scale. This expansion of higher education has undoubtedly improved the nursing workforce in China as a whole. However, the nursing workforce in rural areas has not simultaneously improved. Therefore, the question of how the nursing workforce gap between rural and urban areas can be reduced remains to be answered.

Developing efficient rural nursing recruitment policies is important to ensure a constant and stable workforce supply in rural areas. The high priority given to rural health system reform by the Chinese government provides opportunities to develop new approaches so as to reduce this gap. Currently, nursing graduates remain the main source of rural nursing workforce. In light of this, conducting research on nursing students' attitudes towards rural nursing practice is meaningful and indeed necessary for the creation of rural nursing recruitment policies and corresponding nursing educational reform.



# Chapter 3

## Review of the Literature

The previous chapter introduced the nursing education system and the rural health care situation in China. This chapter presents a review of literature specific to rural nursing recruitment.

It consists of four sections. Section one introduces the search strategies used in the literature review. Section two presents the review of the literature related to the various influences affecting rural health worker recruitment. Section three discusses some conceptual models related to the recruitment of rural health workers. In the last section, several theories on career and vocational development are reviewed.

### ***3.1 Introduction – Search Strategies Used***

This section introduces the search strategies used, presenting databases and search terms, the processes of search, and the criteria of selection of literature.

#### ***3.1.1 Areas to Be Reviewed***

In this thesis, literature related to the following areas was sought and reviewed:

1. Perspectives and factors which influence rural health workers' recruitment

2. Conceptual models which explain rural health workers' recruitment
3. Career development theories related to workplace choice

Original research articles and literature review papers relating to the factors that influence rural health workers' recruitment were reviewed to become familiar with the existing research findings on the subject. Conceptual models that explain the recruitment of rural health workers were reviewed to understand the potential influencing mechanisms and inform the design of the research. Career development theories related to workplace choice were reviewed to aid further explanation and to integrate the research findings into a wider theoretical context.

### **3.1.2 Databases and Search Terms**

The search of literature was conducted mainly using the electronic search tool *Searcher* in the library of the University of Edinburgh. This tool includes the library catalogue, full text e-journal, theses, and e-books to which the university has subscribed. The databases of ERIC (Education resource Information Centre), CINAHL (Cumulative Index to Nursing and Allied Health Literature), and MEDLINE, which are most relevant to the above areas, are included in the subscribed databases. The database of China Academic Journals was searched via the library of Hangzhou Normal University, China.

Search terms used for the first and second part of the review included keywords: rural or remote, nurs\*(nurse or nurses or nursing), and recruitment or workforce and student\* or graduate\*. The search was limited to the English and Chinese languages. The past 20 years, which is from 1990 onwards, was selected as the time limit for the search. The rationale for the time limit is that publication from 20 years ago would be likely to have limited applicability to the present time in terms of attitudes and perspectives. Relevant literature was found mainly in the databases CINAHL, MEDLINE, and PubMed. The same keywords were also used to search for relevant

online literature on a variety of websites, such as the Wiley online library and Pubmed.gov.

Processes of review were as the followings: (1) using search terms to search relevant databases. (2) In the generated results list, the titles and abstracts were screened. Those identified relevant articles were saved into a search file. (3) The full texts of those relevant articles were retrieved and save in a document file for close reading and making marks. (4) Relevant papers found in bibliographies were also traced.

Search terms related to the third part of the review were combinations of the keywords ‘vocation\*’ ‘career’, and ‘theor\*’. The time limit for the search dated back to 1950 as some theories may be useful for a long time. The most relevant articles came from the database of ERIC (Education Resource Information Centre). Relevant books in the University of Edinburgh library were traced and closely read, such as Super’s (1963) *Career development: self-concept theory*, Bronfenbrenner’s (1979) *The ecology of human development: experiments by nature and design*, and Vondracek et al.’s (1986) *Career development: A life-span developmental approach*. Reviews on some of these theories are grouped in the last part of this chapter.

### **3.1.3 Selection of Literature for Review**

In the literature review, only the written sources of literature, such as books, journals, theses, and reports, were examined. Other types of literature, such as radio, television, slides, and photographs, have not been included.

The initial study inclusion criteria were studies of nursing students that explored factors influencing their perceptions towards rural and remote practices. However, due to the limited number of identified articles, and because the recruitment practices of different professionals in rural areas share some similarities and the findings of studies across different health professions are transferable to some extent, the

inclusion criteria were extended to include studies of allied health students and graduates and health professionals working in rural and remote areas.

As the purpose of the current review was to cover the broadest range of articles relevant to the rural nursing recruitment, research methods were not limited and qualitative and quantitative studies were all included. Review papers and reports about perceptions or attitudes towards rural and remote practices, or factors influencing their perceptions, were also included.

Those papers and reports not written in English or Chinese were excluded, due to a lack of translation resources. Those articles without abstracts and full texts were also excluded. A tabulated summary of the papers reviewed (including research articles and literature review articles) is given in Appendix 1. It includes the names of the authors, settings, participants, the research design and methods, and the main findings of these articles. The books and theses reviewed are mentioned in the relevant references.

## **3.2 Review of the Literature Related to Influence of Rural Health Workers Recruitment**

During the analysis of the selected publications, several themes pertaining to rural nurse recruitment were frequently mentioned. The researcher has organized and categorized them thusly: (1) rural background; (2) exposure to rural practice; (3) financial rewards; (4) working environment; (5) community environment; (6) professional development; (7) curriculum of nursing schools; (8) compulsory service policy; (9) other issues: age, gender, and family issues.

### **3.2.1 Rural Background**

Having a rural background was reported to have a positive influence on rural health worker recruitment. The positive correlation was reported in the studies conducted on nursing students (Lea and Cruickshank 2005, Bushy and Leipert 2005, Schofield et al. 2009, and Blaauw et al. 2010), and some studies on allied professionals (Easterbrook et al. 1999, Manahan et al. 2009, and Stagg et al. 2009).

Easterbrook et al. (1999) conducted a cross sectional survey of 157 physicians who graduated from Queen's University in Canada between 1977 and 1991. The results showed that physicians who were raised in rural communities were 2.3 times more likely than those from urban communities to choose to work rurally immediately after graduation; and 2.5 times more likely to stay in a rural community afterwards. This study not only examined the effect of having a rural background upon taking a rural job immediately after graduation, but also traced its effect on the retention rates in rural practices. A recent study on Indian medical students also showed that students with a rural background were more willing to practice in a rural area (Saini 2012).

Blaauw et al. (2010) employed a discrete choice experimental study to evaluate the relative effectiveness of different factors in attracting nurses to rural areas. They collected data from 1064 nursing graduates in colleges in Kenya, South Africa, and Thailand and compared the impact of different individual characteristics on the odds of choosing a rural job. Their results showed that having been born in a rural area was significantly associated with the choice of a rural job in all three countries, and seemed to be the strongest influencing factor out of all the individual characteristics they investigated. Their analysis also showed that the effect of having a rural background was comparable to that of a 10% salary increase. This study not only confirmed the positive relationship between rural origin and preference of rural practice, but also provided its relative effectiveness compared to other factors. The relative size of the effect of having a rural background may differ in other socioeconomic contexts. Thus, more studies need to be carried out to determine the strength of the effect of having a rural background.

This positive relationship was reported to link with the lower wages required by rural origin health workers. Serneels et al. (2010) used regression analysis on a cohort of 288 nursing students and 124 medical students in Rwanda and Ethiopia and concluded that the students' rural backgrounds were significantly related to the salary they asked for when taking a rural job; students who grew up in more remote areas required a lower salaries (Serneels et al. 2010).

Some studies have also found that having a spouse or partner with a rural background is also a positive influence on graduates choosing a rural job (Davine 2006, Stagg et al. 2009). Stagg et al. (2009) conducted a quantitative survey in Australia to understand the career choices and practice location decisions of medical graduates. It found that having a spouse or partner with a rural background was also a key influence on graduates choosing a rural career pathway.

Proximity to one's home town and the concept of a comfort zone were used to explain why rural origin graduates were more likely to enter rural practices. Dunkin et al. (1996) conducted a national study, which contained 3,514 rural registered

nurses in the USA. They found that the top three positive factors contributing to the choice of rural nursing were proximity to one's hometown, spouse's employment, and enjoyment of the rural lifestyle. Heaney et al. (2004) conducted some group interviews with twenty-three health science students and new graduates. After analysing data, they proposed a concept of comfort zones to explain the reason for the students' preferences for their practice locations. The researchers defined the comfort zone as "*the geographic area in which the participants felt comfortable living and working*" (Heaney et al. 2004:194). This concept was supported by Schofield et al.'s (2009) study. Schofield et al. (2009) conducted a study to examine health professional students' preference of practice location, which included 46 nursing students, 43 medical students, and 32 allied health students. The results showed that the participants preferred working in a town size they were familiar with. One quarter of the rural students stated that they never wanted to work in a capital city, while 57% of students with an urban background wanted to work in a city.

One related issue is that having a rural background was defined differently and various variables were used in different reports. Some studies used the variable of where individuals were born to define a rural or urban background, such as Blaauw et al.'s (2010) study. Some studies used previous living experiences in rural areas or the number of years living rurally to represent the rural background (Playford et al. 2006, Smith et al. 2001, Daniel et al. 2007). The third kind of variable used was the location of the participant's primary and secondary school (Dalton et al. 2008, Serneels et al. 2010). For example, in Serneels et al.'s (2010) study, a rural background was represented by the approximate time it took to walk from home to school at age six. There was also a study that asked students about the size of the population of their residency community to determine their rural background status (Bushy and Leipert 2005).

To assess which definition was most capable of predicting whether health professional graduates would practice rurally, Owen et al. (2007) conducted a cohort study on 599 physicians who graduated between 1994 and 1999 from the University

of Virginia to examine the relationship between the four definitions of rural background and the likelihood of rural practice. These four definitions used were (1) where the participant was born, (2) where the participant attended elementary school and high school, (3) where the participant was living when applying to medical school, and (4) asking participants directly about whether they grew up in a rural area. The results showed that all these definitions were predictive of rural practice in univariate analysis, but in multivariate analysis, only the self-identification of having grown up rurally was predictive of rural practice location. Thus, the author concluded that self-identification of having grown up in a rural area was the best predictor of rural practice.

To summarise, the positive impact of having a rural background upon taking a rural job was reported by studies on nursing professionals as well as on medical and other allied professionals. However, studies investigated on the effect size of having a rural background were rare, and the ways of defining a rural background varied across the reports. Therefore, the relative effect size of having a rural background and the issue of how to precisely define a rural background still need to be further explored.

### **3.2.2 Rural Placement**

Another factor that has been frequently mentioned in studies is the exposure of undergraduates to rural practice via rural placements.

In Australia, Courtney et al. (2002) conducted a comparison study between rural and metropolitan clinical placement on 212 third year nursing bachelor's degree students. A pre-post placement survey was designed, and the results indicated that the number of students intending to seek employment in a rural setting increased by 12% compared to 5% in students who undertook a metropolitan placement. Thus, the authors concluded that undergraduate rural clinical experience had a positive influence on the recruitment of nursing graduates to rural areas.

Apart from the increasing number of nursing students seeking rural employment, Dalton et al. (2008)'s survey provided evidence that students' average intention to work rurally increased after rural placement. Dalton et al. (2008) conducted a survey of 239 students in Tasmania, which included 167 nursing students who had undertaken rural placement. The mean intentions of these students to work rurally were significantly increased after rural placement, and this increase was experienced by both rural background and urban background students. Thus, the authors concluded that rural placements had a predominantly positive influence on nursing students' intentions to work in a rural community after their graduation and the value of rural placements as a method of increasing health science students' intentions to take up rural practice was considerable.

In addition to these quantitative conclusions, some qualitative research also indicated that rural exposure had a positive effect on graduates taking up a rural job. In Australia, Lea and Cruickshank (2005) explored the experiences of newly graduated nurses and found that previous positive experiences in a rural health care facility during undergraduate preparation influenced the graduate nurses' decisions to pursue a rural position. Similar reports can be found in a number of studies (Murphy et al. 1995, Neill and Taylor 2002, Laurence & Wilkinson 2002, Bushy and Leipert 2005, and Manahan et al. 2009).

However, while there were many positive reports about the effect of rural placements upon future rural recruitment, there were also some opposing reports. One example is Orpin and Gabriel's (2005) study. They reported that while there were three students that thought rural placement had influenced them towards a rural career; there were thirty-five more students who felt that this exposure had actually influenced them away from such a career. Another example is Lea et al.'s (2008) study. The authors used a convenience sample of final year bachelor nursing students at a rural university campus to investigate whether rural placement prompted students to seek employment in rural settings. They combined survey questions and an in-depth interview. In the results of the in-depth interview, the authors reported that many respondents felt that their final clinical placement in a rural health service provided

them with insight into rural practice, but some participants felt that the rural clinical placement experience discouraged them from pursuing rural practice. However, this conclusion was left without the support of quantitative evidence (although the study had a pre-clinical and post clinical survey design).

These opposing conclusions indicate two research issues. One is that most of the studies did not clearly articulate whether they had considered or controlled other predictors that might impact the uptake of a rural job, such as career preference or rural background. One study in Canada found that physicians who took a rural placement during their undergraduate training were 1.7 times more likely to practice in a rural locale than those who did not have such exposure, but after controlling for sex, age, and rural background, this association was no longer present (Easterbrook et al. 1999). The phenomenon of self-selection that students who select rural placement may have already decided to work rurally is not a negligible issue in establishing this relationship. Stagg et al.'s (2009) quantitative study in Australia found that a significant relationship existed between being on a rural career pathway and making the decision prior to medical school. Manahan et al.'s (2009) study in Canada also found that almost all participants had already decided to practice in rural facilities before they chose rural and northern education.

Another issue is related to the specific aspects of the rural placement, including the nature, timing, frequency, and duration. Playford et al. (2006) conducted a longitudinal survey in Australia to determine how often health science graduates joined the rural health workforce following a rural placement. They enrolled 429 participants from allied health and nursing graduates who had taken a rural placement in their final year of study. The data showed that the value and duration of the placement were significantly associated with rural employment after controlling for rural background. Thus, the authors pointed out that the quality of the placement was an important factor associated with future workplace choice. A well organized and well supported rural work environment might attract students returning to rural practice, while an unpleasant experience might discourage students from seeking rural employment. Similarly, Ranmuthugala et al. (2007) found, after exploring

relationship between rural exposure and an uptake of rural practice, that the uncertainty of the nature of rural placement could result in some inconsistencies of conclusions.

In summary, most of the studies reported that rural placement had positive effects on graduates taking a rural job, but there were also a few studies reporting that the effect was not significant. Some researchers proposed that the duration and quality of the rural placement may influence the effect.

### **3.2.3 Financial Rewards**

In the USA, early in the 1990s, Moses (1991) mentioned that staff nurses in non-metropolitan areas had lower average salaries than their counterparts in metropolitan areas. By analysing data from a national sample survey in 2000 of registered nurses in the United States, Skillman et al. (2006) reported that the more rural a registered nurse's residence, the lower salary he/she received. Registered nurses working full time earned \$49,627 on average in urban areas and \$40,516-\$42,689 in rural areas. This trend was also evidenced within the same educational level. For example, full-time registered nurses with associate degrees or diplomas earned on average \$46,592 in urban areas compared to \$40,998, \$37,792, and \$39,690 in large rural, small rural, and isolated small rural areas, respectively (Skillman et al. 2006). Stratton et al. (1998) conducted a survey about the barriers to recruitment of rural nurses. Among those barriers classified as being directly related to nursing, lower salary was perceived as being the most crucial barrier to rural nurse recruitment by directors of nursing in rural community hospitals (Stratton et al. 1998).

One discrete choice study, which collected data from 861 health workers (including 642 nurses) in Ethiopia, reported that the strongest preference for nurses was salary increases; doubling wages would increase rural labour supply from 4% to 27% (Hanson and Jack 2008).

However, studies suggest that nursing students value the financial incentives differently across countries. For example, Blaauw et al.'s (2010) study found that a 30% salary incentive would increase the proportion of nurses choosing a rural job from 36.0% to 75.0% in South Africa and from 43.4% to 79.8% in Kenya. For Thai respondents, on the other hand, the incentive would only result in an increase of 5.8%. For both Kenya and South Africa, the most effective policy interventions to attract nurses to a rural job were financial incentives and better educational opportunities, while for Thai respondents, housing and an expanded health benefit package were more important than a 30% salary increase.

In addition to salary, other financial incentives that have been employed include educational financial support in Australia and Japan, housing allowances in Kenya and Mozambique, and low car loan rates and children's scholarships in Zambia (Frehywot et al. 2010).

In summary, the salary of rural nurses was reported to be lower than their metropolitan counterparts in the USA, and the lower salary was perceived as one of the most crucial barriers for rural nursing recruitment. Accordingly, financial incentives were reported to be an effective strategy for encouraging graduates or health professionals to take a rural job.

### **3.2.4 Working Environment**

#### **3.2.4.1 Diversity of Skills Used**

Health professionals in rural and remote practice are required to master a variety of knowledge and skills to meet the diverse needs of rural residents (Bigbee 1993, Francis et al. 2010, Hegney 1997). Some studies have reported that this diverse skill requirement has attracted some health professionals to rural practice and encouraged

undergraduate students to consider rural and remote practice (McAuliffe and Barnett 2009, Manahan et al. 2009). However, it was also reported that for students who desire to work as specialists, this requirement would be a negative influence. For example, a qualitative study has shown that the mixed skill characteristic of rural health services discourages graduates from seeking rural employment, although it might be a reason for them to select rural health settings as a clinical placement place to obtain a wide variety of clinical experience (Lea et al. 2008). Thus, this characteristic of diverse skills seems to be a bidirectional factor, and its effect could be positive or negative depending on an individual's preference.

#### **3.2.4.2 Lack of Professional Support and Resources**

Lack of professional support, poor equipment and inadequate supplies were identified as major challenges in rural nursing practice (Francis et al. 2001, Bushy and Leipert's 2005, Lea et al. 2008, Mullei 2010, Hanson and Jack 2010).

In Bushy and Leipert's (2005) study, professional isolation was identified as a salient feature of working in rural areas. It was even suggested that individuals who were uncomfortable working alone or were lacking the confidence needed to make independent nursing decisions would not be suitable for rural work. In Lea et al.'s (2008) qualitative study, respondents identified the relaxed and friendly working environment of rural health settings as a positive influence on their future rural employment intentions and identified limited resources and equipment, the demanding workloads and staff shortages as factors deterring them from taking a rural job.

To find out what would best motivate more nurses to work in rural areas, Hanson and Jack's discrete choice experiments in Ethiopia presented nurses with a series of hypothetical job combinations of wages, working conditions, housing benefits, and training opportunities. It was found that improvements in the availability of medical equipment and supplies had the biggest impact on nurses' willingness to practice in

towns of rural areas (Hanson and Jack 2010). This result suggests that medical equipment and supplies are also an important consideration for nurses to work rurally.

### **3.2.4.3 *Personal Autonomy and Anonymity***

More personal autonomy at work is thought to be one of the unique characteristics of rural practice (Bourke et al. 2004). This is supported by some qualitative research. For example, Mullei et al. (2010) conducted focus group discussions with some college nursing trainees in Kenya, and the participants raised more autonomy at work as a positive influence on them to taking a rural job.

Rural residents living in a community usually have kin relationships, and they often have face-to-face interaction with each other (Bushy and Baird-Crooks 2000). This feature implicates that there is less anonymity and sometimes a faster flow of information in rural communities (Bourke 2004). Thus, confidentiality issues can impact both health consumers and health providers. Keeping confidentiality for their consumers is a demanding challenge for nursing practice. At the same time, however, lack of anonymity makes it difficult to separate rural nurses' own lives from their work, so nursing practice becomes an integral part of a rural nurse's life (Scharff 2009, Winters 2013).

In summary, diversity of skills used, more autonomy at work, lack of anonymity, lack of professional support, and limited resources were identified as unique characteristics of rural health practice. Reports have shown that the diverse skills in rural health settings could alternately help or hinder rural health worker recruitment. Personal autonomy seemed to have a wholly positive impact on rural health workers' recruitment, while lack of professional support and lack of anonymity were perceived as a major challenge of rural practice.

### **3.2.5 Community Environment**

Studies about the recruitment of rural health workers also reported some rural community environment factors were involved in students' decision to work rurally. The environment involved includes the rural community social environment and the rural community natural environment.

#### **3.2.5.1 Community Social Environment**

To assess whether rural attachment can stimulate students' future rural practice interests, McAllister et al. (1998) investigated the positive and negative influence of rural practice after students' placement. The results showed that most students identified the friendly and welcoming community, the relaxed rural lifestyle and community respect for professionals as positive aspects of their experience of rural practice. Manahan et al.'s (2009) study of long-term allied health professionals in rural and northern British Columbia also identified people's friendliness and the relatively slow pace of life of a rural community as factors that had positive impacts on health professionals' decisions to take a rural job.

#### **3.2.5.2 Communities' Natural Environment**

Geographical isolation and a lack of public transport were recognized as major challenges for rural practice in the USA and Australia (Bushy and Leipert 2005, Schofield et al. 2009). In the UK, some medical students explained that rural practice was unattractive to them because of the greater distance they would be from their friends (Deaville et al. 2009). In Kenya, some poor infrastructures in rural communities, like bad roads, no electricity, poor mobile phone networks and limited water supplies, were reported to negatively affect rural health worker recruitment (Mullei 2010).

Some attractive characteristics of rural communities were also reported to be appreciated by health workers. A good natural environment to raise children was reported to be a positive factor prompting potential candidates to take a rural job in the USA (Bushy and Leipert 2005). Having opportunities to own a farm or explore the bush was reported to be attractions of rural practice in Australia (Schofield et al. 2009). In Canada, adventure, wilderness, and outdoor recreation were also identified as factors contributing to the personal preference of a rural nature environment by allied health professionals who had stayed in rural practice for a long period (Manahan et al. 2009).

### **3.2.6 Professional Development**

In the literature, opportunities of promotion and of continued education were also reported to be concerns for potential employees.

#### **3.2.6.1 Opportunity for Promotion**

McAuliffe and Barnett (2009) reviewed articles on occupational therapy students' perceptions of rural and remote practice and concluded that the lack of professional development opportunities in rural settings was a negative factor for graduates against seeking a rural position. This conclusion hinted that participants felt that the professional development opportunities in rural areas might not be as good as those of urban areas. However, Schofield et al.'s (2009) survey on rural placement students found that career opportunities and challenges was the second most important factor encouraging students to practice rurally (the type of work available was the most important factor). These inconsistent reports reflect that there are different perceptions in terms of promotion opportunities in rural nursing.

### **3.2.6.2 Continuing Education Opportunities**

In the United States, it was reported that fewer rural registered nurses had advanced degrees than urban registered nurses. Moreover, the more remotely the nurse worked, the less likely they were to have advanced degrees (Skillman et al. 2006). A survey in Scotland, including 67 rural nurses, reported that lack of suitable training was the most important barrier for rural nurses and general practitioners to implement eHealth, such as tele-consulting and videoconferencing (Richards et al. 2005). Less access to continuing education in rural areas was reported to be a major challenge for new graduates in taking up a rural job (Mullei et al. 2010).

Distance to travel, time constraints, and an inflexible work schedule were reported to be barriers for some nurses working in rural areas to participate in continuing professional education in Pennsylvania (Beatty 2000). In Australia, rural nurses identified lack of time due to work, costs of courses, distance to education, and lack of time due to family commitments as barriers for continuing education (Pascoe et al. 2007). Focus group discussions revealed that graduates were worrying that a lack of information about training opportunities and staff shortages in rural areas might impact their continuing education opportunities (Mullei et al. 2010).

### **3.2.7 The Curriculum of Nursing Schools**

To examine whether the focus of the education curriculum had an effect on the practice location choice of graduate nurses, Wood (1998) reviewed nursing curriculum content in ten states with large rural areas in the USA and separated them into rural nursing programs and urban nursing programs. Those programs, whose curricula focused on rural health needs and prepared the nursing students for their role in rural nursing, were allocated to the rural nursing program group, and the urban nursing program had a traditional educational nursing program with only one

community nursing course. The researcher conducted a retrospective survey, mailing questionnaires to nurses who graduated from these two different programs. The results from data in 136 completed questionnaires showed that students who attended a nursing program focused on rural nursing were twice as likely to practice in rural areas as nurses who completed an urban-focused nursing program. It seemed, in other words, that the rural curriculum significantly impacted the students' choice of rural practice. However, these results did not control for students' rural background and for their career preference before they entered into these programs. It seems possible that the students who enrolled in a rural focus curriculum program may already have had an intention to work rurally.

The positive effect of curriculum focus upon the rural workforce was also reported by Playford et al.'s (2010) study in Western Australia. Playford et al. (2010) compared the relative workforce impacts of a rural campus versus short term rural placements out of an urban campus. They suggested that rural nursing schools, which teach rural nursing through all the years of nursing program, had a clear positive workforce impact versus short term rural placements out of an urban campus, with 43% of graduates from the rural cohort (compared to 25% of graduates from the urban cohort) entering rural nursing practice.

Apart from studies on the curriculum focus and the location of nursing schools, university rural health clubs (Turner & Scott 2007) and rural clinical mentoring (Stagg et al. 2009) were also reported to be some curricula that could encourage graduates' future recruitment to rural areas.

### **3.2.8 Compulsory Service Policies**

To obtain worldwide information about compulsory service policies for the recruitment of health workers in rural areas, Frehywot et al. (2010) searched for relevant literature in all member states of the World Health Organization and then conducted interviews with key officers in nine countries. According to their report,

by 2010 more than seventy countries had used compulsory service programs to deal with the rural workforce shortage. Mandatory deployment policies existed in the Soviet Union in 1920, in Mexico in 1936, and in Norway in 1954. Compulsory service, obligatory service, and mandatory service were the terms used to describe these policies. Frehywot et al. (2010) pointed out that the impact of compulsory service policies upon rural workforce recruitment stretched past the period of compulsory service to the period after the completion of these services, although the exact number of health professionals who stayed in rural areas after their compulsory service was unclear in most countries. In Norway, it was estimated that 20% of health workers continued to stay in rural areas after they finished compulsory services.

However, Playford et al.'s (2006) longitudinal survey on 429 allied health and nursing graduates in Western Australia reported that there was no significant correlation between mandatory placements and the consequent taking of a rural practice, although graduates who undertook voluntary rural placements were more likely to enter rural practice. In other words, mandatory rural service might not help increase the long term rural workforce.

There were some concerns related to compulsory service policies. For example, it was considered that forcing health workers to go to rural areas may cause a high level of resentment (Australian Government Department of Health and Ageing 2008). Another concern is the human rights of the professionals. It is argued that freedom of movement is a human right of health workers. However, it is also believed that the compulsory service program is a kind of obligation that derives from the financial support received during their education for some of the professionals (Playford et al. 2006).

### **3.2.9 Other Issues**

#### **3.2.9.1 Age**

There are controversial reports about the impact of age on the recruitment of rural health workers. Mullei et al. (2010) used a self-administered questionnaire and focus group discussion to collect data from 345 trainees from four purposively selected Medical Training Colleges in Kenya. The quantitative analysis showed that being older had a significantly positive effect on preference for working in rural areas. Conversely, in Blaauw et al.'s (2010) study, age, along with gender, marital status, and motherhood, was not a consistent predictor of the choice of a rural job. This result was congruent with a study in the USA (Wood 1998) and an early study in Canada with physicians (Easterbrook et al. 1999), which showed that age was not significantly associated with the decision to practice in a rural community.

#### **3.2.9.2 Gender**

It was reported that rural general practitioners were more likely to be male than urban general practitioners in a study on Australian-trained rural and urban general practitioners (Wilkinson et al. 2003). However, one quantitative study on 159 physicians in Canada showed that the variable of gender was not significantly associated with practice location in a logistic regression analysis (Easterbrook et al. 1999). One cross-sectional study in India also showed that there was no significant association between the participants' gender and their willingness to practice in rural areas (Saini 2012). The above results all came from studies on medical or allied health professionals; in terms of nursing professionals, few studies pertained to the impact of gender. This may be related to the fact that majority of nurses are female, which makes the comparison between genders difficult.

### **3.2.9.3 Family Issues**

A national survey in Australia reported that family living in the area or marriage commitment was one of the four top essential factors in taking up a rural job (Stephenson et al. 1999). A study in the USA showed that the work location of spouse was listed in the first place in personal issues that influence nursing students' workplace choices (Bushy and Leipert 2005). However, Stratton et al.'s (1998) analysis showed that spousal employment was the most severe obstacle to registered nurse recruitment only in the smallest rural facilities ( $\leq 25$  beds), and after using multiple regression analyses, only those factors related to nursing delivery and professional interaction were found to be statistically significant predictors of existing staff vacancy rates.

### **3.2.10 Section Summary**

In this section, the researcher reviewed some influences that contribute to rural health worker recruitment. In summary, the often reported factors in the literature are graduates' rural background, rural placement, financial rewards, rural community environment, rural health setting working environment, nursing schools curriculum, and family issues.

Rural background is the most frequently mentioned factor, and a positive relationship between rural background and rural practice has been well documented in the literature. Financial rewards are another strong influence on the rural workforce. Exposure by rural placement is also believed to benefit rural recruitment, but its effect was reported controversially. Rural working environment and rural community environment have unique characteristics, and these characteristics have a different impact on different individuals in terms of taking a rural job. The compulsory service program is a controversial strategy in addressing the shortage of rural workforce. Besides the above factors, family issues were reported to be a major impact on the consideration of a rural job. The effect of age and gender are not clear in the existing

literature. Few studies have explored how students' educational qualifications influence their uptake of a rural nursing position.

### ***3.3 Review of Literature on Conceptual Models of Recruitment of Rural Health Workers***

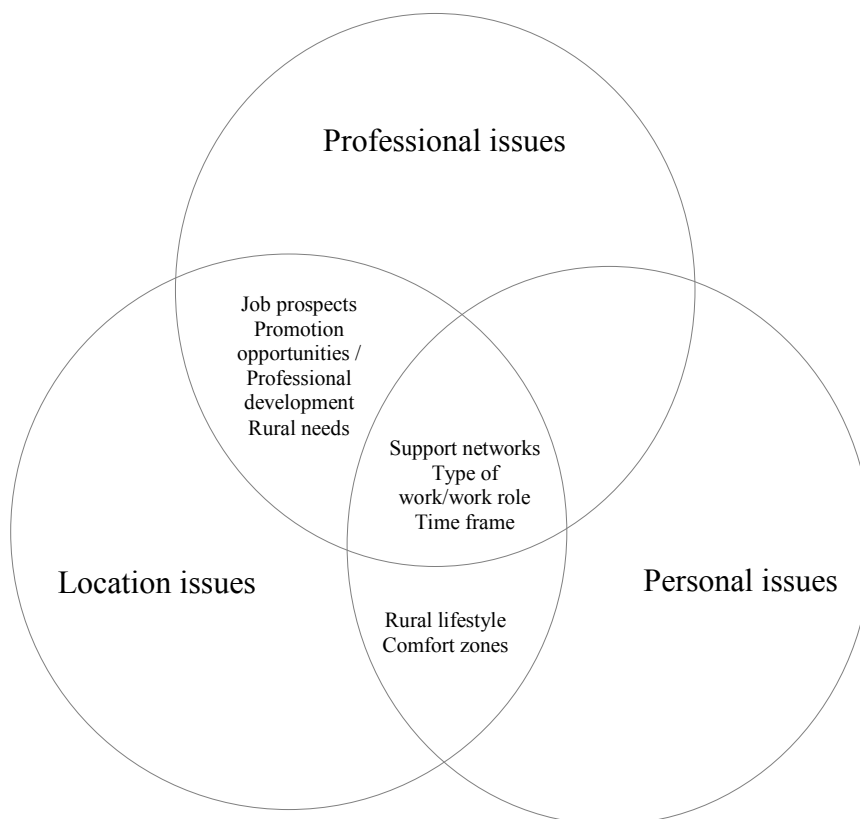
To understand what aspects have been found to contribute to rural health workers taking up rural practice and how these aspects have been organised, the researcher examined some frameworks and conceptual models that pertain to rural workforce recruitment.

There are a number of articles written about rural nursing recruitment; however, many of the authors of these articles did not formally conclude with a conceptual model. Thus, finding an exact model or theory about rural nursing recruitment to guide this research is difficult. Therefore, in this study, theoretical or conceptual models related to the recruitment of all rural health workers (either clinic nurses, physicians, or other allied health workers) were searched for.

In this section, Heaney et al. 's Venn diagram, Manahan et al.'s (2009) personal values model, Betkus and MacLeod's (2004) community satisfaction and filter model, and Hay et al.'s (1997) dynamic balance model are discussed. These models use different frames to explain relationships between the various factors and influences of the recruitment of rural health workers. They shed light on the research design and model construction of this research.

### 3.3.1 Heaney et al.'s Venn Diagram

To identify those factors that influence the decision of a dietitian to consider working in a rural area, Heaney et al. (2004) conducted three focus group interviews, consisting of twenty-three students and new bachelor graduates in health science (Nutrition and Dietetics) at the University of Newcastle, and produced a Venn diagram to discuss their findings (see Figure 3-1)



**Figure 3-1: Graphic Representation of the Intersecting Factors Affecting a Decision to Undertake a Career in Rural Dietetics**

Source: Heaney, S. E., Tolhurst, H. and Baines, S. K. (2004, p195).

This Venn diagram clearly shows three thematic areas: professional issues, location issues, and personal issues. In the article, the authors state that professional issues refer to job prospects, promotion opportunities/professional development, and rural needs; location issues include support networks, type of work/work role, and time frame; personal issues include rural lifestyle and comfort zones. However, these relationships in the diagram are not clear, as ‘support networks, type of work/work role, and time frame’ are set at the center of the three thematic areas.

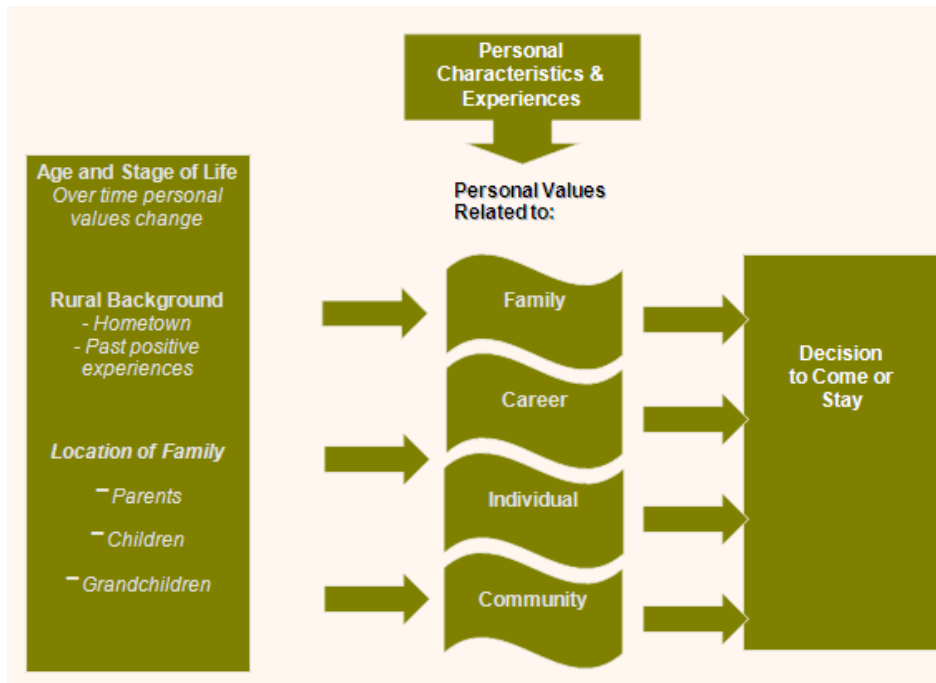
In terms of this three-theme categorization approach, there are some similar reports in the literature. For example, based on a questionnaire survey on 314 final year medical students, Silagy and Piterman (1991) used three factors, namely professional factors, family factors and community factors, to interpret their findings about medical students’ attitudes towards the choice of their ultimate practice location. In nursing, by analyzing responses in open-ended questions, Bushy and Leipert (2005) identified three themes as factors that influence nursing students’ attitudes towards rural nursing practice: personal, professional and financial. Although they all employed three categories, the names of these three categories and the subthemes under those three categories were different.

The popularity of this approach indicated that developing categorization would be useful in terms of clarifying the relationships between influencing factors. However, the differences between them also indicated that there was not an obvious categorization approach that can be followed in the design of this study. It was extremely important to keep an open mind in researching this issue and an exploratory study was deemed necessary to facilitate questionnaire design.

### **3.3.2 *Manahan et al.’s Personal Values Model***

Manahan et al. (2009) conducted telephone interviews in Canada on 26 allied health workers who had practiced in rural Northern British Columbia long term and identified some factors contributing to participants’ decisions to begin or to continue

working in rural communities. In their discussion, they used a flowchart model to discuss these influential factors and illustrate their conceptual model (see Figure 3-2).



**Figure 3-2: Conceptual Model: Understanding Rural Suitability**

Source: Manahan, C. M., Hardy, C. L. and MacLeod, M. L. P. (2009, p1238)

This model depicts how age and stage of life, rural background, location of family members, and personal characteristics and experiences shape personal values, which in turn affect the decision to both come and to stay in a rural community. It conveys the following specific ideas: (1) Personal values are important elements that influence the decision to come and to stay in rural areas and that these values are mainly related to individual views on family, career, individual and community. (2) Personal characteristics and experiences help shape these personal values and, thus, indirectly impact the duration of practice in rural areas. However, personal characteristics and experiences alone do not directly determine the decision. (3) Personal values change during the various stages of life and according to the amount of time spent in rural areas. Thus, the factors influencing recruitment and retention are not static. (4) Rural background influences personal values. Therefore, rural

background and experience indirectly influence both rural workforce recruitment and retention. (5) The place where family members live also influences recruitment or retention. These family members include not only spouses but also parents and children.

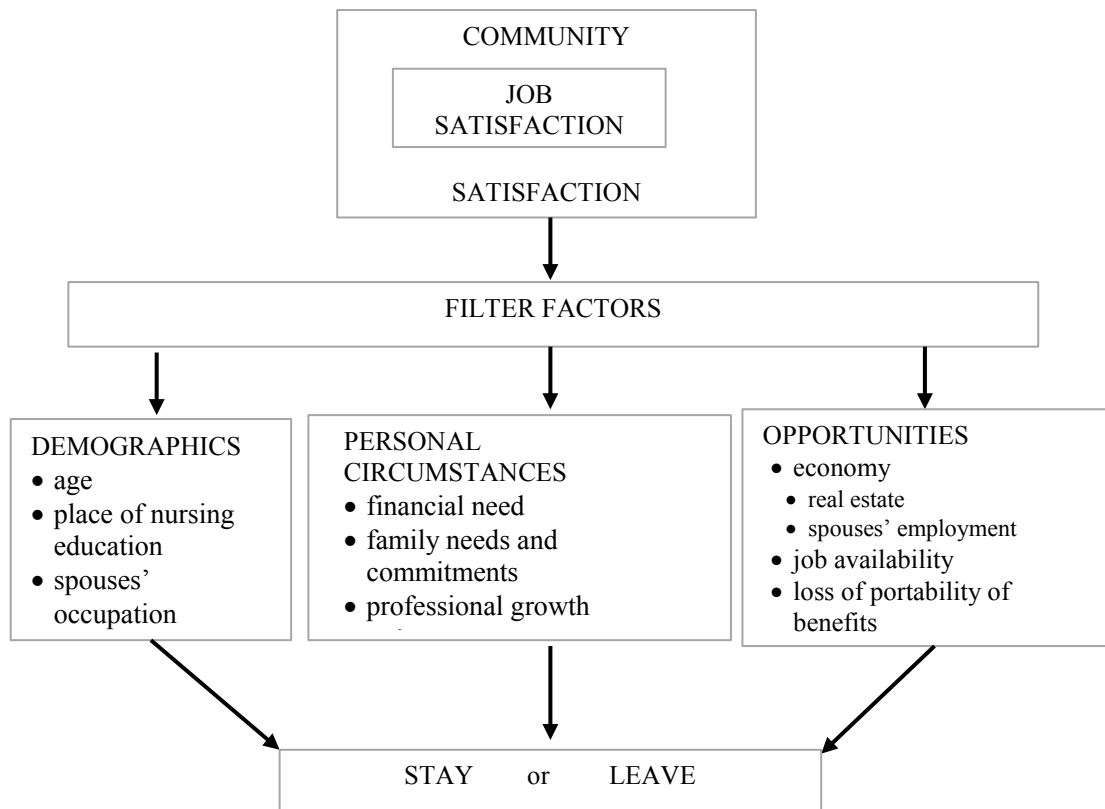
This model has raised two important notions: firstly, personal value is an important element in influencing decision making; secondly, influencing factors and their importance on decision making change over time. However, there are also some vague or overlapping concepts in this model. For example, age, stage of life and personal experiences overlapped, and the terms personal characteristics and personal experience were not defined clearly.

Although Manahan et al.'s (2009) study focused on allied professionals who had stayed in rural areas for a long period of time and the proposed study aims to investigate nursing students, Manahan et al.'s (2009) study has provided some inspiration for this research design. This model has implied that except some demographical information, such as rural background, age and location of family, student's perspectives are also important as influencing factors exert their effects through students' personal values. In light of this notion, this study has supposed that students' intentions to work rurally would be more influenced by their perspectives about rural nursing practice than by reality. Under this kind of assumption, the study was designed to investigate nursing students' perspectives on rural nursing practice rather than to seek the real situation of rural nursing practice.

### ***3.3.3 Betkus and MacLeod's Filter Model***

Job satisfaction was reported to be the most influential predictor of nurses remaining in rural practice (Hegney et al. 2002, Penz et al. 2008, Juhl et al. 1993, Dunkin et al. 1992, Kekana et al. 2007, Mueller and McCloskey 1990, Betkus and MacLeod 2004). However, based on a nationwide questionnaire survey which contained questions about job satisfaction and community satisfaction, Betkus and MacLeod (2004)

stated that job satisfaction only occurred within the context of community satisfaction; that is, rural nurses would only be satisfied with their job when they were satisfied with their community environment. They created the following flowchart to indicate this relationship (see Figure 3-3).



**Figure 3-3: The Effect of Filter Factors**

Source: Henderson Betkus, M. and MacLeod, M. L. P. (2004, p54).

Except for pointing out the context effect of community satisfaction, this model also emphasized that decisions to stay in a rural area are affected by a number of filter factors. That is, even if the nurses are satisfied with their job and community, their decisions to remain in rural practice are still dictated by a set of filter factors. These

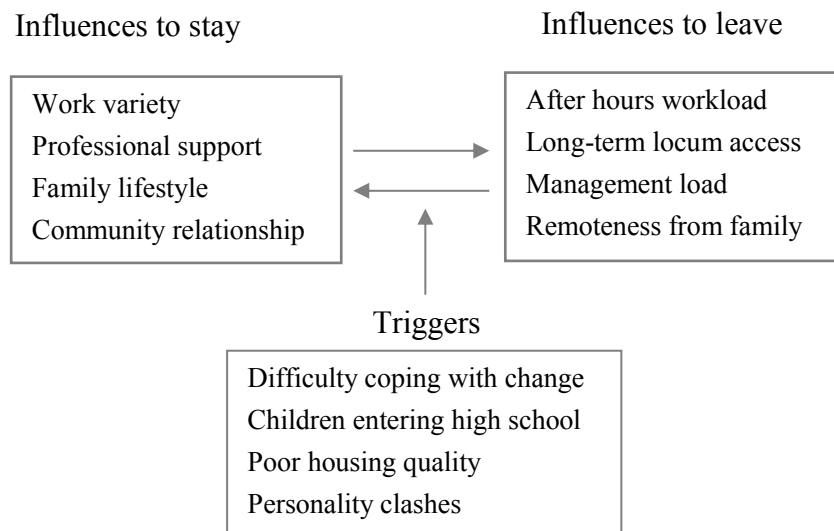
filter factors mainly include age, spouse's occupation, financial needs, family commitment, and job availability. For instance, nurses who are near retirement are more likely to stay at their current position for security. Financial needs can result in nurses staying in rural practice, yet they can also lead them to leave if the payment is too low. Family needs can influence a nurse to come to rural practice, but they can also prompt them to leave if their spouse loses their job.

This model illustrates the importance of the community and also introduces the concept of 'filter factors' in the retention of rural nurses. However, by depicting all the demographic, personal, and opportunity factors as filter factors, this model may somehow overstate the effect of the filter factors and underestimate the effect of the impacts of job satisfaction and community satisfaction. In addition, there was recognition that some issues with job satisfaction can also act as filter factors. For example, clashing with a powerful manager can sometimes result in a health worker leaving a job (Hay et al. 1997).

This model describes the influencing factors pertaining to the retention of current incumbent rural nurses. The factors contributing to retention may be different from those of recruitment. Thus, this model is not suitable for direct employment in this project. However, what impacts the incumbent rural nurses' retention may also impact the new graduates' decisions of whether to take a job in rural facilities. As such, some concepts conveyed in this model have provided some implications for designing questionnaires. For example, questions about rural community, age, finances, family issues, and job availability were designed. In the discussion, the pivotal effects of some personal circumstances on the retention of rural nurses that this model has emphasized are used to support their influence on students' intentions to work rurally. The notion that rural nurses' decisions to leave or to come are dependent on not only their satisfaction with their job but also on their satisfaction with their community environment was used to support the importance of rural community on students' intentions to work rurally.

### 3.3.4 Hay et al.'s Dynamic Balance Model

Early in 1997, based on a piece of qualitative research that involved thirty-seven general practitioners who had left rural practices in Queensland from 1995 to 1996, Hay et al. (1997) constructed a dynamic balance conceptual model (Figure 3-4) to explain the reasons why Queensland rural doctors leave rural practices.



**Figure 3-4: A Conceptual Model: A Delicate Balance**

Source: Hays, R. B., Veitch, C., Cheers, B. and Crossland, L. (1997, p201)

This conceptual model consists of three components: influences to stay, influences to leave and leaving triggers. The positive aspects that prompt workers to stay include work variety, professional support, family lifestyle, and community relationships. Factors that prompt workers to leave are workload, poor locums, and distance from family. Leaving triggers refer to those events that result in a quick decision to leave, which were described as having a ‘last straw’ effect by the author. For example, clashes with a powerful individual or children entering high school.

The dynamic balance model was constructed in a study in which the participants were leaving rural practice rather than entering rural practice. However, this dynamic process reflects the essence of the decision making process. No matter whether it is

to come or to leave, the decision is subject to a dynamic balancing process between attractions and barriers, and it is susceptible to some triggers.

The problem for this dynamic balance model (when used to explain influencing factors on a group level) is that the positive and negative aspects are related to each individual. Factors that prompt some students to choose a career in a rural area may also prompt other students not to choose a career in a rural area. It may be possible to differentiate positive and negative influences for each individual; however, at a group level, there is no clear boundary. The list of influences to stay and the list of influences to leave may be different for each person. Thus, the model may be suitably explains the decision process, but it may not be suitable to explain group level phenomenon. However, the dynamic balance nature provides insight into the essence of the decision making process.

### **3.3.5 Section Summary**

Several conceptual models related to the recruitment and retention of rural health professionals were reviewed in this section. These models have established some basic ideas about factors contributing to the recruitment and retention of rural health workers, but they have several limitations. Firstly, they only focus on a few factors; therefore, there is a lack of systematic approach. Secondly, these models ignore the social cultural impact. Thirdly, most of these models dwell on health workers' retention, and focus less on their recruitment, thus, they may lack the ability to explain the impacting factors for recruiting new graduates.

### **3.4 Review of Literature Related to Workplace Choice Theories**

In some sense, the topic of nursing students' attitudes towards rural nursing practice is part of a broader topic related to workplace choice and vocational development. Accordingly, to further explain the research findings, some vocational or career development theories were reviewed.

To understand the nature of people's career aspirations and choices, vocational theorists have sought to identify determinants of career decisions and have developed a number of vocational theories to explain the nature of career choices. The researchers found some theories aided in the understanding of nursing students' workplace choices. In the following section, the researcher will review Super's (1957) career development theory, Gottfredson's (1981) circumscription and compromise theory, and Bronfenbrenner's (1979,1992) ecological theory. These theories have been used in the discussion and the construction of the conceptual model.

#### **3.4.1 Super's Career Development Theory**

Developmental theories focus on the development processes of individual career aspirations, investigating the influences of early childhood experiences and family interactions on career aspiration and development. Super's (1957) career development theory conceptualised the notion of self-concept and depicted how an individual's self-concept impacts vocational choices.

Super (1957) asserted that vocational development is a matter of developing and implementing a self-concept. He defined a self-concept as "*the individual's picture of himself, the perceived self with accrued meanings*" (Super 1963:18), and explained that self-concept is an individual's view of oneself. It encompasses who he

or she is and is not, and it reflects a person's sense of social self. It may not coincide with an outsider's objective assessment of that person's personality.

Super (1963) further defined the vocational self-concept as:

*“the constellation of self attributes considered by the individual to be vocational relevant, whether or not they have been translated into a vocational preference” (Super 1963:20).*

Super (1963) argued that in entering an occupation, a person will seek *“to implement a concept of himself” (Super 1963:1)*. He viewed vocational choice as a way of implementing self-concept.

*“One can, then, view vocational choice as an expression of self-concepts formulated and reformulated throughout the life stages” (Reuben Starishevsky and Norman Matlin in Super 1963:33).*

The implementation of the self-concept takes place when the education is completed and the young person moves from school into the world of work (Super 1963).

Based on this concept of self-concept, a set of other vocational theories has been developed. For example, Gottfredson (1981) stated that the major vocational elements are gender, social class background, intelligence, interests, and values. These elements are incorporated into one's self-concept at different stages of cognitive development.

The developmental perspective is particularly relevant in nursing, as it impacts not only career choice but also recruitment, attrition, transition, and retention (Sheri 2009). In a nursing study early in the 1960s, Kibrick and Tiedeman (1961) investigated the validity of the vocational self-concept theory in nursing students. They defined withdrawal from nursing school as the dependent variable and ideal-self-concept as an independent variable in their study. The results showed that only one of the seven schools had a correlation between students' self-vocational concepts and their withdrawal from nursing school. However, as Super (1963) pointed out

later, that six-month period might not be long enough for detecting whether a nursing student would withdraw from a nursing career. There were also a number of other studies related to the self-concept of nurses or nursing students. Davis (1969) studied self-concept, occupational role expectations, and occupational choice in nursing and found that there was a correlation between students' self-concept and their expectation of their respective chosen occupations. Leanne and Cecily's (2006) study found that a nurse's general self-concept was a strong predictor of her or his retention. In a cohort of Hong Kong nursing students, Holroyd et al. (2002) found that there was a relationship between nursing students' self-concepts and the requisite personality characteristics of an ideal nurse (Holroyd et al. 2002).

A further understanding of early life influences and self-concept of career may provide a logical step towards understanding a nurse's career choice and development. In this study, the influence of early life has been used to explain the impact of rural background and rural exposure on students' intentions to work rurally (see Section 11.2.3). Self-concept theory has been used to explain the effect of nursing students' characteristics and attributes, such as education levels, upon their career intentions (see Section 11.2.6). The theory was also used to support the idea that nursing students' intentions to work rurally is shaped by the dynamic process between individual nursing students and the rural nursing posts (see Section 11.3).

### **3.4.2 *Gottfredson's Circumscription and Compromise Theory***

Although the above theory expressed that people will seek careers that are suitable for their personality or self-concept, the social reality is that it is not always possible to fulfil one's aspiration. Gottfredson's (1981) circumscription and compromise theory describes how people make compromises when they are faced with conflict between self-concept and social reality.

Occupational images, self-concept, circumscription, and compromise are four key concepts of this theory. Gottfredson (1981:547) defined an occupational image as “*a generalization a person makes about a particular occupation*”. An occupation consists of a set of occupational images. Occupational prestige, sex-type, traits of incumbents, and knowledge of occupation are the main dimensions of these images. By illustrating evidence in some previous studies, Gottfredson (1981) argued that people have remarkably similar perceptions about a given occupation, no matter what their sex, social class, or education level is. For example, physicians are perceived as having high prestige, nurses are perceived as feminine, and high school teachers are perceived as unselfish, underpaid, and friendly (Gottfredson 1981).

This theory suggests that when people are looking a job, they apply self-judgement about the compatibility of their self-concept to the occupation images. Prestige level and sex-type of a job are important elements in the process of judgement. The tolerable boundary in prestige, effort, and sex-type form the zone of acceptable alternatives, which is the range of circumscription. People will only consider occupations within the range of circumscription, and jobs out of the circumscription range are perceived as inappropriate and will be rejected. Once being rejected, these rejected options will not be reconsidered except in unusual circumstances (Gottfredson 1981).

Preference is ideal rather than realistic. An occupation may be compatible with one’s self-concept and yet be inaccessible in a certain social or economic environment. When conflicts occur between preference and reality, compromises have to be made. According to the theory, there were some principles in the process of compromises: the sex-type concept is the most protected, followed by maintenance of social class. Interests in the field of work are more readily sacrificed to assure the compatibility of the sex-type and maintenance of social class (Gottfredson 1981).

Although few studies have been found using Gottfredson's theory in nursing career choice and rural nursing recruitment, the researcher believes that compromise is fundamental to understand workplace decision making. The social environment

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perspective that this theory has embraced is particularly useful in explaining the findings of this study. In the later discussion, the notion that the prestige level of a career is an important element of the range of circumscription is used to explain why the lower social status associated with the rural workplace may impact nursing students' intention to work rurally (see Section 11.2.1). More importantly, this theory was also used to support the conclusion that students' intentions to work rurally are not merely based on personal interests: socioeconomic forces, such as the labour market, are also of importance in shaping their intentions (see Section 11.2.5).

### **3.4.3 Bronfenbrenner's Ecological Theory of Human Development**

In the late 1970s, Urie Bronfenbrenner (1979, 1992) developed an ecological theory to explain human development. This theory emphasises that human development is a product of interactions between the growing organism and its environment. He defined the ecology of human development as:

*“the ecology of human development is the scientific study of the progressive, mutual accommodation, throughout the life course, between an active, growing human being, and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings, and by the larger contexts in which the settings are embedded”.* (Bronfenbrenner 1992:188)

In this theory, the ecological environment is conceived of as a set of nested structures, each inside the next. He describes the set of ecological environment systems as microsystem, mesosystem, exosystem and macrosystem. He defines the microsystem as:

*“a pattern of activities, roles and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics”* (Bronfenbrenner 1979:22).

The mesosystem refers to the interrelations among two or more settings in which the developing person actively participates, such as the relations between home, school and neighbourhood. The exosystem includes one or more settings that do not involve the developing person as an active participant but in which events occur that affect the person, such as the work place or the network of parents. The term macrosystem refers to the consistencies that exist in the culture as a whole, such as belief system and ideology. A person's development is viewed as a process of reciprocal interactions between the person and these systems, which is "*development-in-context*" (Bronfenbrenner 1979:28). In the 1990s, Bronfenbrenner added another parameter, time, which makes up the fifth system of his theory, called the chronosystem. The chronosystem emphasizes that human development occurs over an extended period of time.

This theory has been used widely in studies about human development, particularly in studies regarding school children (Darling 2007, Guhn and Goelman 2011). In nursing research, there are also a number of papers related to this theory. Reifsnider et al. (2005) believed that the ecological model of human interaction can be used to study complex community problems that affect health disparities. Bryans et al. (2009) suggested that Bronfenbrenner's framework offers a promising means of building a social inclusion and person-in-context framework to promote public health.

Specifically, in recent years, Hickey et al. (2012) developed a nursing career development framework based on this theory. They believed that

*"the outcomes of professional preparation (e.g. career choice) are dependent on the development process which is always contextualized within specific environments"* (Hickey et al. 2012:4).

They specified the four types of nested environmental systems in terms of a nursing context. In the centre of their model are the students and graduates. The microsystem denotes family, romantic partners, neighbourhood, work, and university, including

the persons, objects, and resources that students encounter in each of these settings.

The mesosystem is:

*“the interrelationship between two or more microsystems in which the developing person participates ...it comprises the linkages and processes taking place between the setting that are important to and affect the developing student” (Hickey et al. 2012:5).*

The exosystem consists of policies and events in the wider university, including faculty curriculum requirements, industry requirements for clinical practicum, staff shortages, and job vacancies in the nursing and marketing force. The macrosystem refers to the overriding beliefs, values, ideology, and policies existent within a culture group, including urban and rural culture, socioeconomic climate, global nursing shortages, and government healthcare policies. The chronosystem is the overarching timeframe for students’ and new graduates’ career choices, which are specified as the four years of undergraduate study and the two years following graduation.

Workplace choice marks a very critical transition in the lifelong process of human development. In the later stages of this study, considering that Bronfenbrenner’s sociological developmental theory takes into account the wider context and is well suited to explain the multiple factors that influence a nursing student’s workplace choice, it has been used as a basic foundation for developing the model to understand nursing students’ intentions to work rurally. Thus it is reviewed here and will be further mentioned in the discussion chapter.

#### **3.4.4 Section Summary**

In the above sections, some theories about career development and vocational choice were reviewed. These theories explain the various aspects of people’s vocational behaviors. Super’s career development theory describes the developmental stages of vocational interests and emphasizes the important role of a person’s self-concept in

career development. Gottfredson's circumscription and compromise theory from social environmental perspectives explains people's vocational compromise behaviors. Bronfenbrenner's ecological theory emphasizes environmental impact upon a person's development. These theories have been used in some previous nursing studies and some elements of these theories were also absorbed in this study to help explaining the findings of this study.

### **3.5 Chapter Summary**

In this chapter, the researcher reviewed the factors that contribute to rural health worker recruitment and conceptual models pertaining to workplace choices of the health workers. Some general vocational theories were also reviewed, with the purpose of embracing broader vocational development views.

It was argued in the literature that nursing positions in rural areas have distinctive characteristics; they often face a variety of environmental, professional, and financial challenges. In the context of the global nursing workforce shortage, the nursing workforce shortage in rural areas is often exacerbated by geographical imbalance. As a rural nursing workforce shortage may impact access to essential health care and basic health outcomes, developing efficient rural nursing recruitment policies is important to ensure a constant and stable workforce supply in rural areas.

The literature demonstrated that there were many factors contributing to rural nursing recruitment. The most frequently mentioned factors were: graduates' rural background, financial rewards, rural community environment, rural health setting working environment, rural placement, school curriculum, compulsory rural service policy, and family issues. Among these, the effects of some factors were well studied and the direction of their effects was clear (such as in the case of rural background and compulsory service). Some factors were studied often, but their direction was still unclear (such as age and gender), as there were controversial reports.

From the abovementioned literature, it also was noted that most of the reports on the recruitment of the rural nursing workforce were reported by researchers from Australia, Canada, and the USA, and some from the UK, Thailand, and South Africa. This may be partly because this literature review was limited to English and Chinese resources. However, it may also reflect that research on rural nursing is not popular on a global scale. Although more than half of the Chinese population is rural residents, as a research subject, rural health is not popular yet, and rural nursing remains largely unexplored.

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Although studies on this topic in other countries can provide substantial information and knowledge, this is not the case in China. Exploration is still necessary in the light of the substantial cultural and political differences between China and other countries. In the context of a large rural population and the deeply unfair policy differences in existence between rural and urban areas in China, this kind of study is necessary to address rural workforce issues.

Regarding conceptual models, although no one model reviewed above encapsulates all the research issues for nursing recruitment within the Chinese context of rural areas, different elements of these models shed light on the issues to be considered in the research design.

This review has also revealed that a systematic, specific theory related to the recruitment of nursing students to rural areas was lacking. Conducting a piece of research and developing a specific model about nursing students' intentions to work rurally were considered to be valuable in terms of integrating the research findings, explaining the contributing factors of rural nursing recruitment and providing a guide for later studies.



# Chapter 4

## Research Design

Previous chapters raised the issue of the imbalanced workforce between rural and urban areas in China and reviewed the literature about the challenges in rural nursing practice and the influences of rural nurse recruitment. It has been shown that although a number of studies on the recruitment of rural nurses have been conducted in some countries, little is known about it in China. This study is designed to explore Chinese nursing students' attitudes towards rural nursing practice and this chapter presents the research questions, research design and philosophical foundations of this design.

### ***4.1 The Aim and Research Questions***

The aim of this study is to investigate final year nursing students' perspectives of rural nursing practices and their intentions to work rurally after graduation, and to identify potential influencing factors that affect nursing students' intentions to work rurally.

**The central research questions are:**

1. What are final year nursing students' perspectives on rural nursing practice?

2. What are the final year nursing students' intentions with regard to working rurally, both immediately after their graduation and in their career?
3. Are there any relationships between students' characteristics and students' intentions to work rurally?

**The specific objectives are:**

- To examine final year nursing students' perspectives on rural nursing practice;
- To examine final year nursing students' intentions to work in rural areas both in their career and immediately after their graduation;
- To study the relationship between students' perspectives, demographic characteristics and their intentions of working rurally and identify the key influencing factors that affect nursing students' rural working intentions.

The first question aims to elicit nursing students' individual views, to explore what they are thinking in terms of rural nursing practice. The second question intends to examine the probability of them working rurally immediately after their graduation and the potential length of them staying at rural nursing practice in their career. This information is essential in making a prediction about the future nursing workforce in rural areas. Answering the third question can provide information about which factors are relatively important in determining nursing students' intentions to work rurally. This information is useful for making future recruitment policy and nursing recruitment strategies and also can shed light for future nursing education reform. The final year of a nursing program is the key point at which nursing students make their job decisions, so data were planned to be collected at this point in time.

## **4.2 Philosophical Foundations**

Related to the philosophical foundations of this research, firstly I would like to examine my own ontological and epistemological considerations about social science, and then to argue the philosophical basis of the research design which combines quantitative research with a piece of qualitative research.

### **4.2.1 Ontological and Epistemological Positions**

Ontological and epistemological presumptions are the base of research inquiry; they inevitably affect how a piece of research is designed, how it is carried out, and most importantly, how the findings are interpreted. Thus examining my own philosophical positions and acknowledging them in the beginning may be necessary in terms of making the readers understand why the research was designed in this way and how, in the later stage of the research, these positions may have influenced the conduction of the study and the interpretation of its results.

The ontological question is about “*what is the form and nature of the reality*” (Guba and Lincoln 1994:108). Specifically, in social science, ontological issue is concerned with the nature of social entities, the central point of the concern is whether there are realities external to those individuals who inhabit them (Bryman 2008).

In general, the ontological positions are divided in two groups: objectivism and constructivism. The former is used to group those who believe that social phenomena are external facts which exist independently, whereas the latter is used to depict those who assert that social phenomena and their meanings are continually being constructed by members in the social entity, thus social phenomena are “*not only produced through social interaction but that they are in a constant state of revision*” (Bryman 2008:19). For example, the social order in a hospital is the product of negotiations between the different parties involved in the hospital.

Examining my own position on these issues, it tends to orientate in the direction of objectivism and mostly close to the views of post-positivism which views:

*“the reality is assumed to exist but to be only imperfectly apprehendable because of basically flawed human intellectual mechanisms and the fundamentally intractable nature of phenomena” (Denzin and Lincoln 1994:110).*

In my view, although the social entity is produced by the social members, it is formed over a long period; thus at a given point of time and for each individual, the social entity has the characteristics of an object, which means it can constrain its members. Although it is constantly revised, in a short period of time there are some basic rules that are constant. These constant rules are what research meanings are based on. These views are influenced by my working and living experience and formed during my constant search for the meanings of social research.

Epistemology is about how we can know reality. In the social sciences, It is about *“what is regarded as acceptable knowledge in a discipline” (Bryman 2008:13)* and a particular issue is whether the social world should be studied according to the principles and procedures of the natural sciences (Smith 1983).

On this issue, there are two contrary positions: positivism and interpretivism. The former is a term that is used to describe the epistemological position which entails the principle that science must be conducted in an objective way, and there is a clear distinction between a scientific statement and a normative statement, with only scientific statements being the true domain of the science. Theoretical terms that are not directly amenable to observation are not considered genuinely scientific. In direct contrast, interpretivists believe that there is a fundamental difference between the subject matter of natural science and social science, and to grasp the subjective meaning of social action, social scientists need to access how people think and interpret the social world from their point of view (Bryman 2008).

Apart from these two extremes, there are also some mixture views, which attempt to incorporate features from both sides (Bohman 1991). For example, German sociologist, philosopher Max Weber essentially accepted the subjective nature of the social science, but he insisted that to prove the causal relationship in the humanities and social science field, generalized theoretical categories are as also essential as they are in natural science. He insists that all empirical knowledge is by nature relative; in his words “*it never includes ‘all the facts’*” (Weber and Parsons 1947:9).

Considering this issue, I tend to think that epistemological consideration should be viewed as a spectrum. In terms of an individual’s position, it can be at any point of the spectrum and doesn’t have to be either positivism or interpretivism. Examining my own position, my views tend to be similar to those claimed by post-empiricists, who state that

*“The social phenomena are shot through with indeterminacy and open-endedness..... And knowledge is on-going social and historic accomplishment.”*  
(Bohman 1991: vii)

My understanding of social science is that it is historically and culturally based, and there is no social scientific knowledge that everyone can agree to be scientific. With this position and these views, my research and the interpretation of findings are penetrated by historic and social context view, and I also believe that the conclusions reached in this study should be constrained in a historic and social background.

#### **4.2.2 Philosophical Base of the Research Strategy**

Qualitative interviews usually emphasize that knowledge is situational, and tend to agree with the principles of being constructive and interpretive; while the ontological foundation of quantitative research tends to be objectivist and its epistemological orientation tends to be positivist. Thus the theoretical foundations behind qualitative and quantitative research seem to be differential (Creswell 2009).

For the above reason, some people assume that there must be some theoretical conflict for a researcher who designs a study with both qualitative research and quantitative research. For example, Smith (1983) argues that research methods are inevitably rooted in epistemological and ontological positions, stating that

*“Each approach sponsors different procedures and has different epistemological implications. One approach takes a subject-objective position on the relationship to subject matter; the other takes a subject-subject position. One separates facts and values, while the other perceived them as inextricably mixed. One searches for laws and the other seeks understanding. These two positions do not seem to be compatible given our present state of thinking.” (Smith 1983:12)*

Thus he thinks that the assumption that the quantitative and qualitative methods are complementary is “*unfounded*” (Smith 1983:13) and insists that

*“The present tendency [viewing these two approaches as compatibility] is to either ignore such differences or, if they are noted, to assign them little importance, at least from the point of research practice.” (Smith and Heshusius 1986:6)*

However, this assumption is not necessary. One argument is that “*The research methods are perceived as autonomous*” (Bryman 2008:604). It is not inevitable that each piece of quantitative or qualitative research is connected with distinctive epistemological and ontological assumptions. Thus quantitative research and qualitative research are capable of serving each other. In other words, the two research methodologies are compatible. In arguing the basic beliefs related to ontological and epistemological issues in social science, Denzin and Lincoln (1994) describe four research paradigms: positivism, post-positivism, critical theory and related ideological positions, and constructivism; and they state that “*both qualitative and quantitative methods may be used appropriately with any research paradigm*” (Denzin and Lincoln 1994:105), as questions of methodology is secondary to questions of ontology and epistemology.

In my view, dividing research into qualitative and quantitative is a form of theoretical behaviour, and the assumptions of the theoretical foundations behind them also have been artificially described as two extremes. Indeed, in the real world, the quality and quantity always go together and are embedded into each other. There is no qualitative thing without a certain amount of quantity in its components; and there is no quantity without constraints of a certain quality.

Thus, the real distinction between qualitative research and quantitative research, as De Vaus (2002) pointed out, is not the theoretical foundation, but the structured and unstructured approaches of data collection and the particular logic of analysis. Systematically collecting data and yielding a structured data set, which allows for systematic comparison between cases, is an important feature of quantitative research. Using an unstructured approach to allow different characteristics to emerge is an important feature of qualitative research. Thus, before starting to collect structured data for a certain variable, deciding what these variables may be and which should be included in the data collection is important. Therefore, a design incorporating qualitative research prior to the quantitative collection of data does not lead to conflict, but is, in fact, a complementary strategy.

### ***4.3 Research Design***

With the aforementioned ontological and epistemological views, this research has been designed as quantitative research combined with exploratory qualitative research. In the following sections, the research activities involved, the research strategy, research methods, conceptual framework and the study setting are presented and explained.

#### ***4.3.1 Research Activities***

The research activities involved and their relationships with the expected outcomes

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of this study are presented in the following figure (see Figure 4-1).

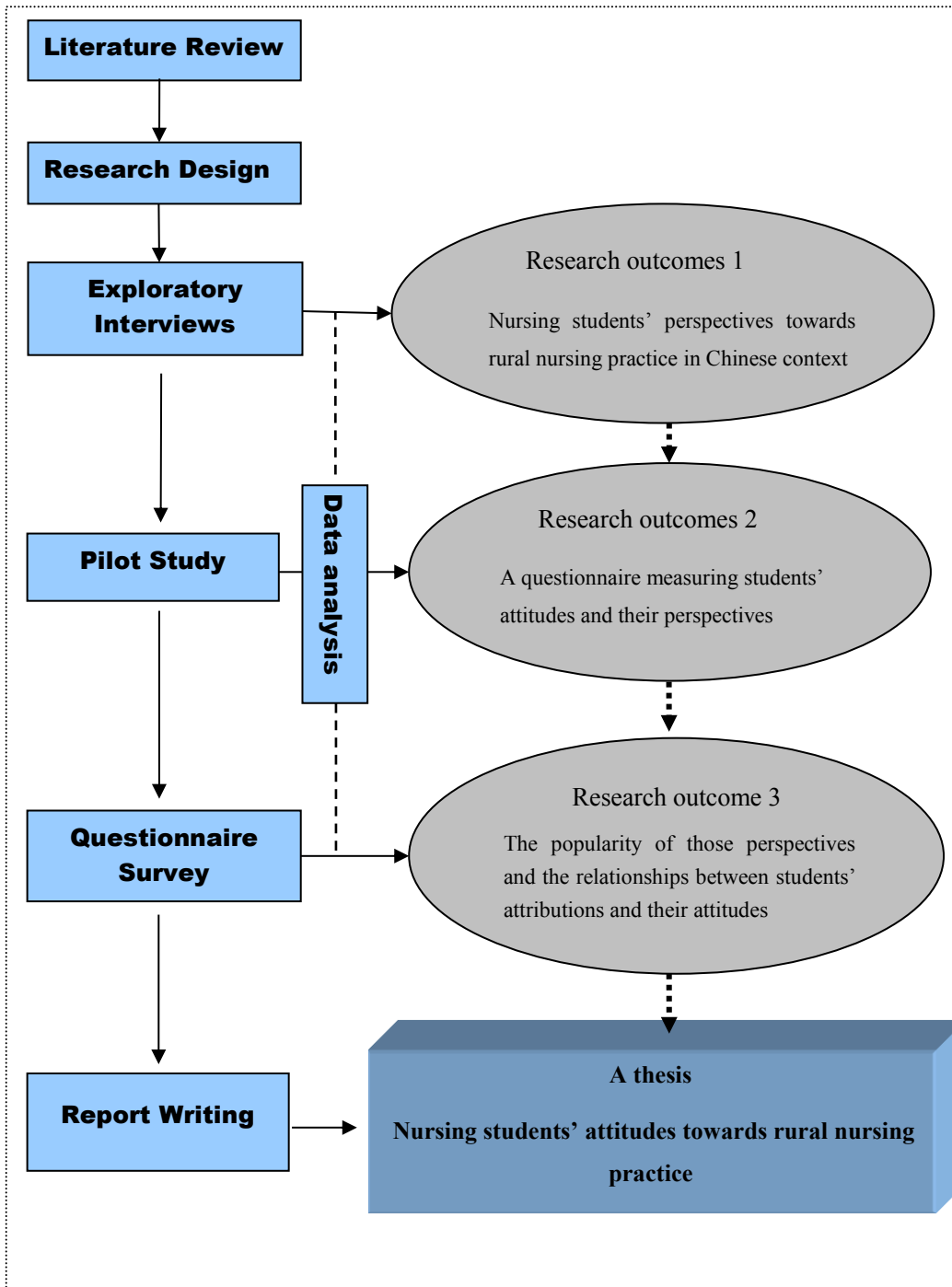


Figure 4-1: Research Activities and Outcomes

The research activities involved in this project include seven major stages: literature review, research design, exploratory interviews, a pilot study, a questionnaire survey and the writing stage.

A review on literature has presented in previous chapters, it showed that most reports on the recruitment of rural nurses were based on the studies conducted in the western countries. As the cultural and political environments are very different between China and western countries, an exploratory study was designed to investigate nursing students' perspectives about rural nursing practice in Chinese context. Based on these perspectives and reviewed literature, a preliminary questionnaire was designed, and this was refined to a formal questionnaire for the survey according to the pilot study. The questionnaire survey was designed as the main study in this research project to explore the prevalence of those perspectives which were found in the exploratory interviews and examine the relationship between students' characteristics and their intentions of working rurally after graduation. The thesis reports all these activities and discusses the findings of this study.

### **4.3.2 The Research Strategy**

In this research, a strategy which is to combine quantitative research with an exploratory qualitative research has been adopted. Research methodologies are commonly divided into two broad types: quantitative and qualitative. Quantitative research uses structured, rigid and predetermined methodology; it emphasises quantification by collecting numerical data. Qualitative research adopts unstructured and flexible methodology, emphasising explanation in the form of words (Kumar 2011). In this research project, a qualitative exploratory interview was designed in the early phase. A quantitative questionnaire survey was then designed as the main study to obtain numerical data to construct correlation models.

Both quantitative and qualitative methodologies have their own strengths and limitations. Combining them can provide complementary data and give a more

complete picture than can be obtained using either method singly (Tripp-Reimer 1985). The qualitative approach can provide rich, in-depth data at an individual level, which enables people to interpret quantitative data more meaningfully. In this research, in order to investigate the perspectives of nursing students and identify the factors influencing their decisions on whether to work in rural areas, qualitative research is needed to define those perspectives and factors. Quantitative research, on the other hand, can be used to collect data on a large scale. It can provide group-level data to meet social policy making need. In this research, quantitative research is thus a suitable strategy to examine the popularity of the identified perspectives, and it permits powerful statistics to be used to demonstrate the similarities and disparities in the effects of those factors on different groups. With the combined strategy, the issues under investigation can be examined both on a macro and micro level.

Although there are advantages in using this strategy, it also raised some challenges practically as well as theoretically. In practice, it was a great challenge for the researcher to carry out a piece of quantitative research combined with an exploratory qualitative research in a limited time. This combination design requires the researcher to be familiar with the questionnaire survey as well as with the interview skills. It also requires more documental works and complex procedures during implementation. In this study, two periods of field work and three sets of ethical approval were required. Nevertheless, the researcher believes the strategy has provided much better data to address the research questions than would have been possible when qualitative or quantitative methods were used in isolation.

### **4.3.3 Research Methods**

As mentioned previously, there are two main research methods used in this study: an exploratory interview and a questionnaire survey. In this section, the reasons for selecting these two methods are explained further.

#### **4.3.3.1 The Exploratory Interview Design**

The exploratory interview was to investigate Chinese nursing students' perspectives towards rural nursing practice.

As mentioned in the previous literature review, with regard to what kind of factors impact on the recruitment of nursing students, most studies were conducted overseas. Since culture and policy contexts are assumed to have a deep impact on this issue, these results were considered to be not enough to determine the potential influencing factors in China. Some of the factors mentioned in those articles might not be as important in China as they were in the country in which they were originally studied; some of the factors that are important in China may have not been identified. Thus, it was necessary to conduct research to see how Chinese students view these issues. The exploratory study was designed for this purpose.

Since it is an exploratory research, qualitative methods were considered. Among qualitative research, interview is one of the most powerful ways to understand humans' thoughts (Fontatna and Frey 2005). There are a variety of forms of interview, including face-to-face individual interviews, face-to-face group interviews, telephone interviews and internet interviews. The face-to-face interview allows for personal communication and makes it possible to gather more detailed information (Denzin and Lincoln 2005) and understand each other clearly, thus it was considered as a suitable way to conduct the exploratory research.

#### **4.3.3.2 The Questionnaire Survey Design**

The questionnaire survey was designed to examine students' views on rural nursing practice, to investigate students' intentions of working rurally both immediately after their graduation and in their future career and to gather information about students' demographic profile. The following reasons influenced the decision for adopting the questionnaire survey in this study:

(1) Quantitative surveys can provide information about the relevant importance of influencing factors. Simply providing the information about the factors which influence students' attitudes is of little help for policy making, since it is difficult to target all the factors. Thus, investigating the relevant importance of these factors is crucial. By means of quantitative research, the researcher can compare the strength of the association of various influencing factors.

(2) Questionnaires are suitable instruments for collecting data on attitudes. Watson (2008:299) described that "*questionnaires are valuable in providing data to inform policy, practice and education*". Because the purpose of this research was to gather evidence for policies and education programs development, the perspectives and attitudes of the majority of students were the main concerns of this research rather than those of a few students. Questionnaires can collect information in a large population in a relatively short period. Thus it was considered as an appropriate data collection method for this study.

(3) Self-completion questionnaires are cheaper and quicker to administer. The face-to-face interview, the telephone interview and the self-administered questionnaire are three basic ways of administering questionnaires (Corbetta 2003). As the sample was widely dispersed geographically and the sample size was large in this study, face-to-face interviews and telephone interviews were not suitable because of the labour involved and because of cost features. The self-completion questionnaire survey method is less expensive and takes up less time (Brink and Wood 1994). Accordingly, it was considered the best method to achieve the goal of this research.

(4) Besides the above reasons, some other advantages of self-administered questionnaires also encouraged me to adopt this method. Firstly, this method has a higher possibility of anonymity. Parahoo (2006:310) stated that "*the self-administered questionnaire is one of the few methods of data collection that can potentially keep respondents anonymous*". The feeling of anonymity may enable participants to report their attitudes and opinions more honestly than other methods. Secondly, this method is convenient for respondents. Participants can fill in self-

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administered questionnaires at their own speed and in their own manner. Thirdly, compared to a structured interview, the interviewer effects can be reduced, although the researcher is still present in the distribution and collection of questionnaires.

The research questions and methods employed are presented in the following table (see Table 4-1).

**Table 4-1: Research Questions and Methods**

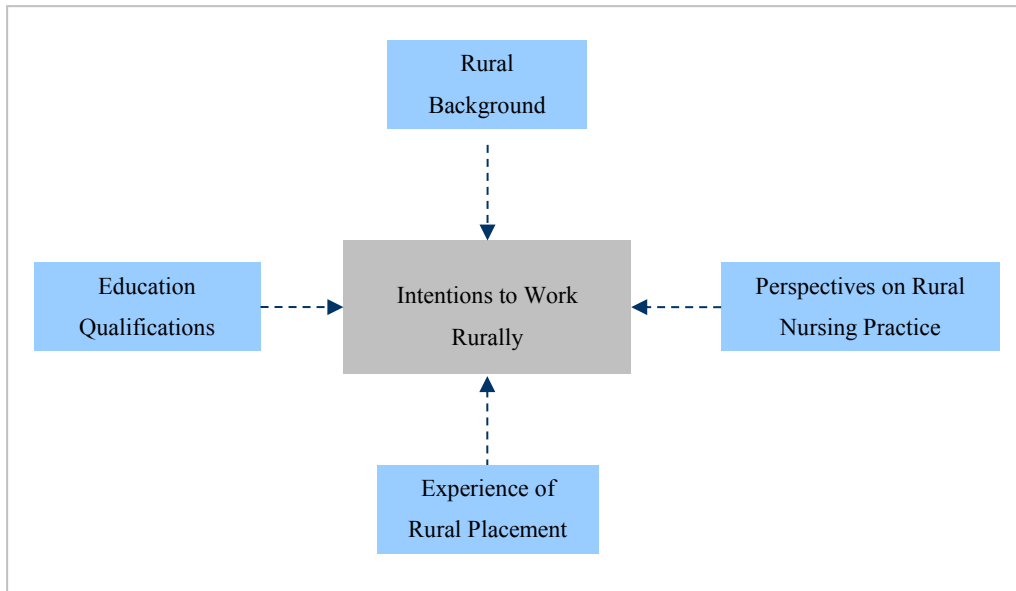
<i>Research questions</i>	<i>Methods</i>
Q1: What are final year nursing students' perspectives on rural nursing practice?	Face-to-face interviews and questionnaire survey
Q2: What are the final year nursing students' intentions with regard to working rurally, both immediately after their graduation and in their career?	Questionnaire survey
Q3: Are there any relationships between students' characteristics and students' intentions to work rurally?	Questionnaire survey

#### **4.3.4 Conceptual Framework**

A clear conceptual framework can make research activities more manageable and help to achieve a high level of conceptual integration (Polit-O'Hara and Beck 2010). This research project, as was shown in the Figure 4-1, consists of an exploratory interview and a questionnaire survey. In the exploratory qualitative research an open minded approach has been pursued as much as possible. In the quantitative research, a conceptual framework was developed to guide the study (see Figure 4-2).

The framework shows that the following relationships were planned to be mainly tested in the quantitative research: the relationships between rural nursing preference

and students' rural background, educational qualifications, the experience of rural placement and their perspectives of rural nursing practice.



**Figure 4-2: Conceptual Framework**

There are many theories about students' rural nursing preference and the influencing factors, as the literature review has shown. However, not all of them can be tested in one study. Based on the evidence from the review and exploratory work and the resources available, the following factors were set to be the main focuses of investigation: rural background, educational qualifications, and rural placement. In all other themes, such as financial rewards, working environment, professional development, community environment and labour market, only students' perspectives on them would be investigated, instead of the reality, such as the true levels of payment or the real figures in the labour market.

In the literature review, the relationship between rural background and rural nursing preferences was positive; however, the extent of the effect varied in different

countries. With respect to the impact of rural placement there were inconsistent results in different studies. In the relationship between the educational qualification and uptake of a rural job, little evidence could be found in the literature. Perspectives on rural nursing practice may impact on students' attitudes to work rurally. The study was designed to explore what kind of perspectives nursing students have in the Chinese context and then what the main barriers and what the main facilitators are for taking a rural job.

Out of above pairs of relationships, rural background can only be an independent variable; the relationship between rural background and the intention to work rurally is one way; that is, the former impacts on the latter. The other three pairs of relationships can be bi-directional. A rural placement may influence a student's intention to work rurally; it also possible that when intending to work rurally, a student may consider taking a rural placement. What kind of educational qualifications they hold may have an impact on whether they have intentions to work rurally; and it is even possible that because of their preference of rural practice they choose a certain level of education programs, although this possibility is low. Perspectives may impact on a nursing student's intention of work rurally and the high or low intention may also change their perspectives on rural nursing practice, although the latter is less likely than the former. Thus, in these three relationships the impact can be in two directions. In the diagram, the dashed line shows the uncertainty of whether these relationships exist.

#### **4.3.5 The Study Setting**

China is one of the biggest countries in the world. Considering the resources available and the time scale, this study was limited to one eastern province. This province was considered as an ideal setting for this study as it was relatively easy for me to get access to participants.

In 2009, the population of this province was 51.8 million, approximately 10.7% of

which were 65 years old or older. Its rural population was approximately 42.4% of the total population and the total number of nurses was 71,337. Among these, 8,000 nurses were employed in small town hospitals and 823 nurses worked in village health stations, accounting for 12.4% of the total number of nurses in the province (National Bureau of Statistica of China 2009).

There were twenty institutions offering nursing education programs in this province in 2010. These programs included diploma, associated, undergraduate programs and master programs.

## ***4.4 Chapter Summary***

This chapter presented the research questions and research design and explained the philosophical foundations of the research design. This research project is designed as a quantitative research combined with an exploratory qualitative interview. Face-to-face exploratory interviews and a self-completed questionnaire survey are argued to be the suitable methods for the exploratory research and the main study respectively. One eastern province in China is selected as the study setting of this research.

# Chapter 5

## The Exploratory Interviews

This chapter reports the exploratory interviews. Firstly, the interview schedule, sampling, access to participants and the interview processes are introduced. Then ethical considerations related to the interviews are given. Finally, data analysis approaches are presented.

### ***5.1 The Interview Schedule***

After the research proposal was approved by the ethical approval committee of the University of Edinburgh, the exploratory study was conducted. The ethical review form, research information sheet and interview consent form of the interviews are provided in Appendix 2, 3 and 4. The exploratory interviews commenced in May and ended in late June 2011. There were eleven interviews in total. All interviews were conducted personally by the researcher.

To ensure the interviews cover the main areas of the subject and at the same time have certain flexibility, a semi-structured interview schedule was created to guide these interviews (see Appendix 3).

The interview schedule covers some basic information about the interview, such as the date and location, and some information about the interviewees like age, gender,

nursing education programs they were attending, rural or urban background status, working experience, years of rural living experience and the length of their rural placement. This information was collected for contextualizing the interviewee's answers.

The interview schedule also listed the primary questions to be asked to ensure the interview focused on the research questions, these questions were:

- What kind of experience of living or working in rural areas do you have?
- How do you perceive the difference between working in a rural area and an urban area?
- What aspects influence your decision to work in a rural area or not?
- What is the impact of working in rural areas on your career (negative and positive)?
- What is the impact of working in rural areas on your life or on your family (negative and positive)?

These questions in their nature were open, they only served to raise the topic, but the actual answers were entirely up to the interviewees. As a semi-structured interview, these questions were also subject to change during the course of the interview; that is, the order of these questions and question wording could be modified; and particular questions could be omitted or added according to a particular interviewee (Robson 2002).

## **5.2 The Sample**

In qualitative research, the lack of transparency is particularly apparent in relation to sampling (Bryman 2008). However, a clear report of sampling is a necessary part of scientific research; it can help readers to judge whether those results are useful for

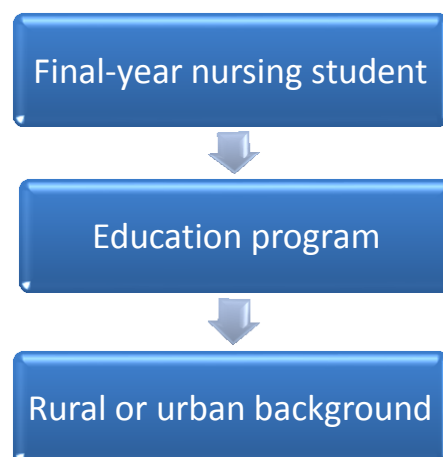
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them. In the following sections, the criteria of sampling, the recruitment process and the characteristics of the sample will be reported.

### 5.2.1 The Sampling Criteria

Purposive sampling was used in this exploratory interview. Purposive sampling is to sample cases in a strategic way, ensuring that “*there is a good deal of variety in the resulting sample, so that the sample members differ from each other in terms of key characteristics*” (Bryman 2008:415). It is not a random sample, but it is also not a convenience sample.

In this study, three levels of criteria were used in the process of sampling (see Figure 5-1). The first criterion for sampling the interviewees was that they were final year nursing students who were then studying in the study setting. In addition to this, the interviews were underpinned by the belief that it is not just individuals being sampled, but also events and contexts as well. Thus, in the recruitment of the interviewees, another two criteria were also used to select participants: educational qualification and rural/urban background.



**Figure 5-1: Three Levels of Criteria in Sampling**

The second criterion, educational qualification, was used to ensure that students in different nursing programs were selected. That is, some participants came from bachelor’s nursing programs, some from associate nursing programs and some from diploma nursing programs. The third criterion, rural or urban background, was used to ensure both rural and urban background students were selected in each nursing program.

All cases in this exploratory phase were selected after considering these three criteria. Figure 5-2 shows all the cases in the sample and their attributes in these three criteria.

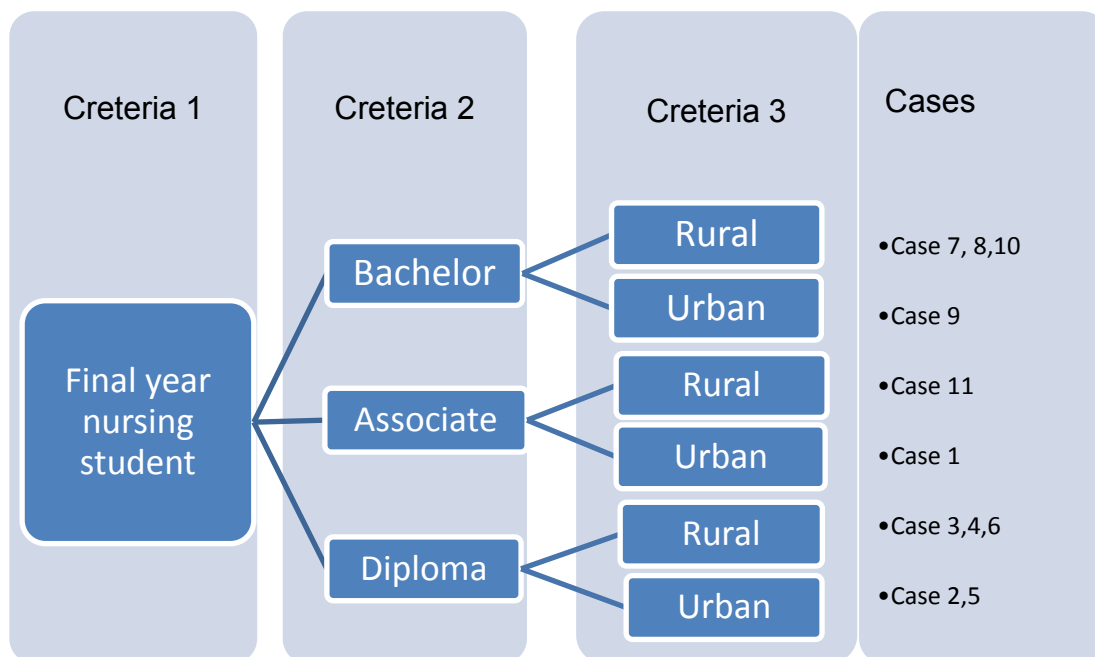


Figure 5-2: Criteria, Attributes and the Cases in the Exploratory Interview

### 5.2.2 The Recruitment Process

The recruitment of participants commenced in May 2011, and ended in late June 2011. In total, there were eleven interviewees, including five diploma nursing

students, four bachelor nursing students and two associate nursing students. As the recruitment and the conduct of interview were iterative, in total the interviews were conducted over a two-month time period.

Access to the participants followed the steps below:

- Making contact with the headers or the chief teachers of nursing schools in colleges or universities by telephone or email;
- After obtaining permission, asked them to advertise or e-mail the research information to one or two classes of final year nursing students.
- According to sampling criteria and the information given by the nursing schools, the researcher selected two to four students in each nursing schools from those students who agreed to be interviewed.
- Making appointments with those students to establish the times and places where the interviews would take place.

This recruitment process ensured that the students interviewed, as well as the school where they were studying were well informed and agreed. There were four cooperating institutions and they were located in different levels and sizes of city and town (see Table 5-1).

**Table 5-1: The Co-operating Institutions in the Interview Study**

<b>Institutions</b>	<b>Locations</b>	<b>Students Interviewed</b>
Institution A	A town	Two diploma students
Institution B	A county city	Three diploma students
Institution C	A district city	Four bachelor students
Institution D	A provincial capital city	Two associate students

### 5.2.3 The Characteristics of the Sample

Following the above criteria and the recruitment procedure, a purposive sample was drawn. In total, there were eleven interviewees. The following table (Table 5-2) shows the detailed information about the age, gender, rural/urban identification, length of living rurally, educational program and the length of rural placement of the sample.

**Table 5-2: The Characteristics of the Interviewees**

Case Number	Age	Gender	Rural/Urban Identification	Length of Living Rurally (Years)	Education Program	Rural Placement (Months)
Case1	21	F	Urban	0	Associate	0
Case2	19	F	Urban	10	Diploma	8
Case3	19	F	Rural	16	Diploma	8
Case4	19	F	Rural	16	Diploma	0
Case5	19	F	Urban	0	Diploma	0
Case6	19	F	Rural	16	Diploma	0
Case7	24	F	Rural	18	Bachelor	1
Case8	24	F	Rural	8	Bachelor	0
Case9	23	F	Urban	0	Bachelor	1
Case10	23	F	Rural	13	Bachelor	0
Case11	23	F	Rural	12	Associate	1

All the interviewees were final year nursing students who were then studying in the study setting but may have come from different places within or out of the province. All the interviewees were female, and their age ranged from 18-24 years old.

In terms of nursing education programs they were attending, among the eleven interviewees, five of them were attending a diploma nursing program, four of them were bachelor students and two of them were associate students. In terms of their birthplace background, four interviewees came from urban areas and seven from rural areas. The number of students from rural areas was much higher than that from urban areas; this reflected the real atmosphere in nursing schools in this province in which fewer urban students chose to learn nursing than rural background students, although it was a purposive sample. In terms of locations of these nursing schools, these four nursing schools were respectively located in a town, a county city, a district city and a provincial capital city.

No one had any work experience before they entered these nursing schools. This is because the adult education system and the regular education system in China are separated; they have different entry examinations. Adult students who have work experience usually attend the adult entry examination and enrol in the adult educational system; whilst students just graduated from high schools usually attend the national college entry examination and enter into the regular education system. Thus students in the regular education system usually have no work experience. In the graduate school, the two systems are converged. In other words, in graduate schools students are mixed; some students have work experience and some may just have finished an undergraduate program and have no work experience.

### **5.3 *The Interviews***

An interview is fundamentally a conversation between two persons, but a research interview is a conversation where the interviewer is seeking responses from the interviewee. To meet its purpose of obtaining information and understanding of issues relevant to the research questions, the procedure needs to be carefully managed (Gillham 2000). To ensure the reliability and the quality of interviews, the interview

place, time, language, duration, record, the environment and procedure were carefully considered.

### **5.3.1 *The Place, Time and Language***

All these interviews have been conducted face-to-face by the researcher personally. Considering that a familiar environment could ease the potential anxiety of the interviewees and reduce artefacts of the interview, all the interviews took place on the campus of the interviewees. Since the first language of all the participants and the researcher are Mandarin, all the interviews were conducted in Mandarin. The time was arranged at interviewees' convenience.

### **5.3.2 *The Interview Procedure***

To ensure the process was undertaken fluently and completely, the following steps were followed in the interviews:

- Give brief greeting;
- Explain the research program again and reiterate the principle of voluntary participation;
- Sign the consent form;
- Remind about the digital recorder;
- Introduce the topic of the interview and guide the discussion by asking questions in the semi-structured interview schedule;
- Thank for the interviewee's participation.

As this interview was designed as semi-structured, the researcher introduced the topic by asking questions according to the semi-structured interview schedule. However, as qualitative research by its nature emphasizes avoiding preconceptions (Mason 2002), during the interview, the interviewees were free to refer to any aspect

of the topic, which in this case was any experience related to rural nursing practice and any factor which may impact on their attitudes towards working in rural areas.

All the interviews lasted between 30 and 40 minutes. A mini-digital recorder was used to record the interviews. Considering that taking extensive notes would distract the free flow of conversation (Kvale and Brinkmann 2009) and may cause some interviewees to feel nervous, notes were only taken briefly before the interviews took place.

During the interviews, to enhance the quality of the interview, the following strategies were kept in the researcher's mind: (1) Keeping a clear mind to pay attention to what the interviewee is saying and what hasn't been said. This is critical in order to keep the sensitivity to the interviewee's answers to avoid losing the opportunity to ask probing questions at the right time. (2) Balancing between the listening and talking based on the characteristics of each interviewee. When facing an introverted and incommunicative participant, like case 2, the researcher asks questions in detail and frequently; when facing very talkative interviewees, like case 9, the focus of the researcher is to keep the direction of the interviews on track.

To reduce interruptions in the interviews, the following measures were undertaken to maintain a quiet environment: Firstly, selecting a quiet room. The majority of the interview rooms were selected by the interviewees. Some of them were empty classrooms and some of them were meeting rooms, but all of them were quiet and comfortable. Secondly, switching off or silencing mobile phones. Almost every student came with their mobile phone on. To reduce the disruption caused by phone calls, when starting the digital recorder, the researcher switched off her mobile phone and asked the interviewees whether they were willing to set to silent or to switch off their mobile phone, most interviewees agreed.

## **5.4 Ethical Issues**

Interviews are a practice which searches private lives and places them in the public arena; this nature defines the importance of the ethical or moral considerations in interview research (Kvale and Brinkmann 2009). In the following sections, the ethics approval, the informed consent and measures of keeping confidentiality in the exploratory interview are reported.

### **5.4.1 Ethical Approval**

The research proposal was reviewed by the ethical approval committee in the University of Edinburgh in April 2011, and as it was conducted outside of the UK, a level-two ethical approval was sought and obtained. The ethical review form is given in the Appendix 2.

There was no formal and independent ethical approval committee established to scrutinise the research project in China. To ensure that the research also meet the Chinese ethical rules, several Chinese experts in this subject were asked to read and comment on these forms and the research proposal.

### **5.4.2 Informed Consent**

According to the ethical guidelines of the Social Research Association, human subjects should not be forced to take part in any research inquiries and participation should be voluntary (Social Research Association 2003). To ensure the voluntary participation principle, two forms of documents have been created and used in the practice: one is the research information sheet and another is the interview informed consent.

The research information sheet was written for potential interview participants (see Appendix 3). A prerequisite of voluntary participation is that potential participants are well informed about the research. In this information sheet, the purpose, procedures, potential cost and benefits of the interview have been clearly written and nursing students were also informed that participation is voluntary and that they can withdraw at any stage.

A written form of informed consent was also developed (see Appendix 4). The informed consent has two main functions: to the participants, it informs them about the purpose and the procedure of the interview, the possible risks and benefits from participation in the interview, and their rights to withdraw from the study; to academic colleagues, it works as evidence that the voluntary participation principle has been implemented. The consent form was signed by the participants and the researcher, and a copy was retained by both parties.

### **5.4.3 Confidentiality**

One feature of interview practice is that the researcher has to know interviewees' personal information to conduct interviews and contextualize interpretations. This feature imposes a great deal of challenge to interviewers in keeping of confidentiality and this challenge has been enhanced by modern techniques. For instance, people may be able to identify the very person by audio tapes; modern information techniques and the internet network may help people to gather information and combine some segmented information to identify a person. Thus careful design and taking any possible prevention is necessary.

Ethical issues are embedded in the entire process of the interview investigation, from the very beginning of interviewee recruitment to the final report. In this interview research, the following preventative approaches were taken to protect confidentiality:

- The personal information of participants, such as name, address, and telephone number, was filed separately from other documents of the interviews and was stored securely in locked cabinets;
- Field notes and consent forms were also stored securely in locked cabinets;
- All interview recordings were labelled with a case number and stored on password protected computers. Access to the documents was strictly limited to the researcher;
- Transcripts were anonymous, and case number was used to replace the participants' names; the electronic versions of these transcripts were stored on password protected computers and the hard copies of these transcripts were kept locked.
- No names or identifiable information would be used in any reports or publications resulting from the study.

## ***5.5 The Processes of Data Analysis***

After the interview data was collected, analysis followed. The processes of data analysis can be described in three general parts: transcriptions, coding and thematic analysis.

### ***5.5.1 Transcriptions***

The interviews were audio recorded. In order to allow more thorough and repeated examination of interviewee' answers and to be marked easily, these recordings were transcribed into punctuated texts. There are many different ways to transcribe audio-recording in terms of the level of detail required (Roulston 2010). In light of the purpose of this study, a regular transcription, which only includes words spoken and not utterances (um, hum) and pauses, was considered to be a suitable form.

The transcription was completed by the researcher personally who conducted these interviews. Whilst it was an arduous and time-consuming task, it offered the researcher great benefits in the later coding and analysis phases. As the language used in these interviews was Mandarin, these interview records were transcribed into Mandarin. For presentation, the researcher has also translated some excerpts into English to illustrate the findings.

### **5.5.2 Coding**

Coding is an essential procedure in qualitative data analysis; it involves finding meaningful segments of data and marking them. Coding can be conducted manually or using computer software. The NVivo program is currently popular software used in the qualitative analysis (Bazeley 2007). In this piece of research, the researcher used NVivo 9 software to help the data coding process.

Coding can be either concept driven or data driven (Kvale and Brinkmann 2009). The concept-driven coding uses codes that have been developed in advance by consulting existing literature in the field; whereas data-driven coding implies that the researchers develop the codes through reading the material (Kvale and Brinkmann 2009). In this analysis, the code process was mainly data-driven but the naming of those factors was impacted by the previous literature review.

In NVivo 9 program, there are free codes and tree codes. In the coding process, the researcher adopted a strategy which uses the free code and tree code together. The processes of coding are: (1) Read the interview transcription briefly and quickly, developing a priori tree code; (2) Read the interview transcriptions carefully, for each paragraph, think about what is this about; and mark those substantial statements; (3) When substantial statements were related to a priori tree code, mark them using the category labels; (4) When coming across some interesting segments, but not certain to which priori tree code they are related, give them free codes; (5) Repeat the process several times until satisfied; (6) Check whether there are substantial

statements that have not been marked and check each substantive statement against the category list.

In this process of coding, some principles, such as remaining open, staying close to the data, keeping codes simple and precise, and comparing cases each other were followed to ensure the quality of coding.

### **5.5.3 Thematic Analysis**

There are two types of interview analysis: focusing on meaning and focusing on language. The latter includes linguistic analysis, conversational analysis, narrative analysis, discourse analysis and so on (Kvale and Brinkmann 2009). In line with the purpose of the interviews, which is to obtain students' perspectives about rural nursing practice to inform the questionnaire design, this analysis followed the type of analysis which focuses on meaning rather than on language. Thematic analysis is one of the most commonly used approaches among those focusing on meaning analysis (Roulston 2010). Although it sometimes may not be recognized as a specific approach since many other approaches also involve searching for themes, statistics shows research papers which claim their analysis approach as thematic analysis are numerous (Bryman 2008). This approach has also been adopted in the analysis. This approach generally entails data reduction, categorization of data, and reorganization of the data into a thematic representation of findings (Roulston 2010).

In this analysis, data reduction was largely done by coding, which is to mark those substantial statements related to the research questions, and to eliminate those repetitive or irrelevant data; the process of coding has been described in the previous section.

Categorization of data was implied through sorting and classification of the codes into thematic clusters. The process of coding produced a large list of free codes and tree codes. Categorization was established by identifying relationships in these

codes. The processes included: (1) Inducting a set of categories from the free codes. (2) Checking whether there were some overlaps in the tree codes. (3) Integrating some categories into core categories. (4) Moving them between the parent level code and child level codes when they were actually at different levels of generality and specificity. (5) Modifying the wordings of categories. The core categories developed in the process were as follows: rural background, rural exposure, community environment, working environment, financial reward and incentives, professional development and family issues, education qualifications, rural nursing social status.

Reorganization of the data into a thematic representation of findings consisted of a process of searching themes and linking these themes with the data set. In searching themes, two data analysis strategies were particularly invoked: one was key words and substantial statements identification, another was the contrast method. Data from different interviewees was compared and contrasted by moving backwards and forwards between transcriptions, notes and the researcher literature. After a certain theme has been reached, appropriate interview data excerpts were selected to represent this theme. Description and interpretation of these themes is given in the next chapter and supported by some excerpts from interview data.

In the above, the researcher has described the interview separately in data collection and data analysis; however, in this research, these two stages overlapped. Transcribing and analyses started when the first three interviews have been conducted and the implications of previous analyses may have shaped the next data collection process.

## **5.6 Reflection on the Credibility of the Exploratory Interviews**

The issue about the credibility of qualitative research is a particular concern in social science research. However, the question of what kinds of criteria are appropriated for guiding and assessing the quality of qualitative research is an on-going debate issue in social sciences. There are different stances with this issue.

One stance is to assimilate the meaning of reliability and validity of quantitative research into qualitative research. This adapted reliability and validity for qualitative research consists of the concepts of internal validity, external validity, internal reliability and external reliability. Internal validity refers the extent of match between the data obtained and the theoretical ideas the researchers developed. External validity refers to the degree to which the findings can be generalized to other settings. Internal reliability, also termed as ‘member validation’, refers to the inner consistency between research team members. External reliability means the degree to which a study can be replicated (Bryman 2008).

Another stance is that qualitative research should be judged according to different criteria from those in quantitative research. There have been several schemes being proposed as possible alternative to reliability and validity, like Guba and Lincoln ’s (1994) and Yardley’s (2000) propositions. Guba and Lincoln (1994) suggested that trustworthiness and authenticity are two set of criteria corresponding to the constructivism for assessing the quality of qualitative inquiry. Trustworthiness is represented by credibility, transferability, dependability and conformability, which parallel with internal validity, external validity, reliability and objectivity, respectively. Authenticity pertains to the political impact of the research. It includes fairness, ontological authenticity, educative authenticity, catalytic authenticity and tactical authenticity. These authenticity criteria are particularly affinity with action research and they have not obtained influential in most social research (Bryman 2008). Yardley (2000) has proposed the following four criteria: sensitivity to context,

commitment and rigor, transparency and coherence, and impact and importance. These criteria emphasize on the reflexive stance, which demands the researcher to reflect the research's sensitivity to its context and theoretical position, the thoroughness of the data collection and analysis, the clarity of research method description and the important impact on the community to which the research has committed.

In light of there are no consensus criteria or dominant criteria to assess the quality of an interview study and since the researcher's philosophical position is close to post-positivism, the assimilating meaning of reliability and validity is adopted to reflect the credibility of this piece of exploratory interview.

The validity of the qualitative interview is related to both the questions and answers (Brink and Wood 1994). In this study, the content validity of the questions was established in three ways. Firstly, the formulation of the questions was based on a comprehensive literature review; and to ensure questions asked in the interview focused on the research questions, an interview schedule was created. Secondly, the relationship between the research questions and research problem was established by consulting with colleagues and supervisors. Thirdly, the data generated in these interviews confirmed that these interview questions generated the information which the researcher intended to search for, and they fitted the research questions.

The validity of responders' answers was ensured by content analysis. Social desirability, used to describe the phenomena that interviewees' answers appear to be given because participants think they were socially desirable (Edwards 1957), is a possible threat to the validity of a study. Analysing these interview data, there was no obvious sign of interviewees' answers were given based on social desirability. The tendency to agree with the interviewer is another threat to validity (Cronbach 1950), but in this study it was avoided because the interview was semi-structured.

The reliability of interview pertains to "*the consistency and trustworthiness of research findings*" (Kvale and Brinkmann 2009:245). It concerns whether a finding

is reproducible at other times and by other researchers. It involves issues in the process of interviewing, transcribing and analysing.

In the process of interviewing, leading questions from the interviewer may influence the answers and thus impact on the reliability of the findings (Kvale and Brinkmann 2009). In this interview, the researcher has tried to avoid any hint in the questions asked. Besides the issue of leading questions, the researcher also considers that the obscurity of the answers may also impact on the consistency of research findings, so in the interview process, an active attitude was adopted to clarify obscure answers as described in previous section.

Transcription is an artificial construction from an oral to a written mode of communication, thus they cannot be considered as the primary data of interview research (Kvale and Brinkmann 2009). Therefore, whether the transcription truly reflects what the interviewee saying is pertinent to the reliability of the findings. In this study, the transcription was written out by the researcher who conducted the interviews, that is, the interview and the transcription were taken by the same person. As such, when taking the transcription, the researcher could recall the scenes of most interviewing vividly; and this should have strengthened the reliability of transcription. Apart from this, each transcription was written out after listening to the audio record carefully and repeatedly.

Reliability of analysis also concerns whether the analysis is trustworthy. In the data analysis stage, faulty interpretation of data can impact on the reliability of analysis (Brink and Wood 1994). In this interview data analysis, the researcher employed NVivo 9 software to establish the analysis documents to illustrate how the findings related to each case and each paragraph. Each finding was checked closely to ensure they was extracted from the data and stayed close to the data.

Reliability is also affected by environment, the extent of concentration of the researcher and the respondent and mechanical defects. For example, the fatigue of researcher or the respondents, faulty recording and equipment failure can all impact

on the reliability of the interview data. In this interview, the researcher was aware of these issues and controlled them as far as possible. For example, arranging a time when the interviewee and interviewer were not tired; allowing the interviewees to select places where they felt comfortable; and ensuring the digital recorder full of battery.

## **5.7 Chapter Summary**

In this chapter, the processes of the interview data collection and data analysis were reported, and the researcher's brief reflection on the exploratory interviews was also given. In summary, the exploratory interview was semi-structured, and eleven final year nursing students were recruited as interviewees. To ensure the reliability of the interview, the process was carefully controlled in terms of the procedure and environment. A digital recorder was used to record these interviews. Ethical approval was obtained before the study commenced and the informed consent was signed by each interviewee. The process of data analysis involved transcribing, coding, categorizing and thematic analysis. The software program NVivo 9 was employed to help to organize the analysis data.



# **Chapter 6**

## **Findings of Exploratory Interviews**

The previous chapter explained how the exploratory interviews were conducted and how the data collected were analysed. This chapter will present the findings drawn from these interviews.

It was found that there were a great number of factors that contribute to students' intentions to work rurally. These factors included rural background, educational qualifications, rural placement, community environment, financial rewards and incentives, rural nursing social status, the nature of the job, professional development, working environment, personal values, family issues, employment policies, the labour market and others.

In the following sections, the researcher will give a detailed description and interpretation of these factors, and present some excerpts from the interviews to illustrate them.

## 6.1 Rural Background

Analysing the interview data, it was found that all interviewees in this study with an urban background expressed an intention to find a job in the city. Most of the students with a rural background also had an intention to work in a city after graduation, but some of them expressed that they might go back to work rurally in their later career (see Table 6-1). Furthermore, most students were only willing to work in a rural area they were familiar with, which might be the place where they were born or the place they had lived in their early lives.

Among the eleven interviewees, there were seven students with rural backgrounds, and their rural living experience ranged from 8 to 18 years. Among them, one interviewee (case 3) stated that she was willing and intending to work rurally, and this was because she was born in a rural area and did not want to leave it.

*“I like working in a rural nursing station ... As I was born in a rural area, my feeling is that I do not want to leave.” (Excerpt from case 3, a rural background diploma student)*

Some interviewees with rural backgrounds expressed that they might work in rural areas in their later career.

*“...after I having worked in a city for a few years, I may consider working rurally, but at the moment of graduation, I think I need to go to a big hospital to educate myself further.” (Excerpt from case 7, a rural background bachelor student)*

*“...When I get old, I may consider going back to my hometown.” (Excerpt from case 8, a rural background student)*

**Table 6-1: Rural Background, Educational Qualifications and Career Intentions of the Interviewees**

Case No.	Educational Qualification	Rural Background	Career Intention
Case1	Associate	Urban, lived rurally 0 years.	Has found a job in a small city hospital.
Case2	Diploma	Born in Beijing, lived in a rural area for 10 years.	Wants to work in urban areas, but hasn't found a job in the city, and may work in a township hospital or leave nursing.
Case3	Diploma	Rural, lived rurally for 16 years.	Wants to work in the rural area where she was born.
Case4	Diploma	Rural, lived rurally for 16 years.	Planning to attend a recruitment examination in a county level hospital.
Case5	Diploma	Urban, lived rurally 0 years.	Planning to attend college entrance examination or work in a big city hospital.
Case6	Diploma	Rural, lived rurally for 16 years.	Planning to work in a Chinese traditional medicine hospital on a temporary contract in a city.
Case7	Bachelor	Rural, lived there for 18 years.	Has found a job in a big city hospital, and willing to consider working rurally in her later career.
Case8	Bachelor	Rural, lived there for 8 years.	Has found a job in a county city hospital, later in her career may consider working in a rural area.
Case9	Bachelor	Urban, lived in rural areas only for summer holiday.	Has found a job in a big city hospital, and has no intention to work in rural health facilities.
Case10	Bachelor	Rural, lived in a rural area for 13 years.	Has found a job in a city hospital
Case 11	Associate	Rural, lived there for 12 years.	Applying for a county city hospital. If this fails, will go back to her rural hometown.

There were four urban background students (case 1, case 2, case 5, case 9), and they all intended to work in a city hospital in their hometown.

*“I do not want to go far from my hometown. When I was very young, I imagined going far away, but now things are different... Now, I think, where you were born is where your roots are.” (Excerpt from case 1, an urban background student)*

And one interviewee from an urban background emphasized that there was little possibility for her to work rurally during her career.

*“En... there is little possibility for that [work in a rural area] — unless there are tremendous incentives. (Excerpt from case 9, an urban background student)*

## **6.2 Educational Qualifications**

In the exploratory interviews, the educational qualifications of these interviewees ranged from diploma and associate to bachelor qualification. Among them, five were diploma students, four were bachelor students and two were associate students. Comparing their answers, it can be seen that there were very obvious differences in job prospects between students with different educational qualifications (see Table 6-1).

For the four bachelor students, they all had found jobs in city hospitals: one in a county city, three in district level cities. Thus, although some claimed that they were willing to work rurally in their later career, whether they would really go to work rurally and how many of them would go there in their later career remains a question.

For the two associate students, one had found a job in a small hospital near a city, the other was planning to attend an employment examination for working in a county

level hospital and if it fails, she said she would go back to her hometown to work rurally.

However, for the diploma students, their job prospects were not as promising as those for bachelor and associate students and most of them had not found a job. Among these five interviewees, one might be forced to work rurally or leaving the nursing if she continued to fail to find a job in the city as she had no intentions to work rurally (case 2), one was planning to get higher educational qualifications (case 5), and one was planning to work in a temporary contract in a county city (case 6). For them, finding a job in a county city is very difficult as the diploma is the lowest qualification in China nursing education currently.

*Excerpt from case 2*

*Interviewer: Now that you are in the process of finding a job, what kind of intention do you have?*

*Student 2: I want to find a job in the city. ...*

*Interviewer: Have you found such a job?*

*Student 2: Not yet. Now I am also planning to get a higher education qualification. For diploma graduates, the only possibility is to go to rural areas. These days those county hospitals do not accept diploma graduates and next year even associate graduates may not be accepted. They will ask for a bachelor degree or above.*

*Interviewer: Really?*

*Student 2: Yes, the diploma level graduates are not eligible. Policies have changed rapidly in recent years. If one does not catch up on educational qualifications, one may be washed away by the society. In nursing, a diploma qualification is too low to be useful.*

Regarding educational qualifications, on all levels of qualification, there were students who were willing to work in rural areas and most of them were willing to work there in their later careers. However, from their statements, it can be seen that in the current labour market it is easy for highly qualified graduates to find a job in city hospitals, whereas for diploma and associate students it is difficult to find a job in a big hospital either because of employer selection or because of local employment policies that ban them from working there.

*“For the students who have a formal bachelor degree, they don’t need to choose this kind of hospital (hospitals in rural areas), they can go to the best hospitals in big cities.” (Excerpt from case 1, an associate student)*

### **6.3 Exposure to Rural Nursing Practice**

From the interviews, it was found that students experienced rural nursing health care in different ways. Despite this, they had some similar impressions of rural health care (Table 6-2).

In the interview, students described two main ways for them to get experience of rural nursing health care. One was visiting rural health facilities as a client or accompanying someone to go there while living in or travelling to rural areas. Most of the interviewees had more or less such experience. Another way was undertaking a rural placement during their nursing studies. For students in different nursing education programs, this experience might vary. It was found that the bachelor program students and the associate program students usually had not experienced a formal rural placement: only a few of them had four weeks rural practice experience and that usually was in their summer holiday of the first year or second year of nursing study. For diploma program students, some of them might take final year

practice in rural township hospitals: among the five diploma students interviewed, two students took eight months final year practice in rural health facilities.

**Table 6-2: Rural Placement and Impressions of Rural Nursing**

Case no.	Rural Placement	Impressions of Rural Nursing
Case2	8 months	No diversity of skills used, only injections. The equipment is not good. The educational qualification of the nurses is lower. The salary is low.
Case3	8 months	Fresh air, poor people need help, people are easy to get along with, a sense of freedom.
Case7	1 month	No so many disputes/complications. Workload is light. The health providers sometimes do not strictly abide to the norms of technical procedures.
Case9	1 month	Equipment is poor. The skills of work team are not good.
Case11	1 month	The educational qualification level is low. The skills used are basic, usually injections. There are lots of injections for children, which rouse some complications and keep nurses busy. The patients there are not severely ill.

During the interviews, students were keen to talk about their impressions of rural health facilities. The main impressions they mentioned about the rural nursing practice were: (1) unstandardized professional behaviours, (2) low qualified staff, (3) only the simple and basic nursing skills were used, usually injection. These will be discussed in detail below.

Unstandardized professional behaviour was one of the most commonly mentioned impressions. One student who had rural placement experience said that the health providers in rural settings did not always follow the strict rules of techniques procedure.

*“They did not always follow the strict procedure of techniques...For instance, when they sterilized the area of injection, they only used an alcohol cotton ball; they poured the alcohol solution into a small bag of*

*cotton balls, then placed them here [pointed to her chest pocket]. When they needed it, they took one out to use.” (Excerpt from case 7)*

*“They lack basic knowledge and do not always follow the rules of procedures in their performance. For instance, when they give injections, the sterile procedure is not strictly followed.” (Excerpt from case 2)*

This was also mentioned by several students who had not taken rural practices but had an experience of being treated in rural health facilities when they lived rurally (case 6 and case 11).

Low qualified staff is another impression mentioned by several students. Students said that the educational level of rural nurses was low and most of them only had a diploma qualification.

*“Most of them have diploma qualifications... These days nurses in the township hospitals have diploma qualification. I do not know the previous situation.” (Excerpt from case 11)*

*“In terms of nursing in rural areas, I felt that the nurses’ knowledge and their skills are relatively poor compared to the nurses in the city. I think the reason for that is historical as most of the nurses in rural areas haven’t received a formal nursing education.” (Excerpt from case 2)*

This was also congruous with the impression of some other students who had lived in rural areas. One student mentioned that in her village, the villagers were sometimes even treated by unqualified personnel or someone who had not got any medical qualification, such as some family members of health workers (see the excerpt from case 6).

*Excerpt from case 6*

*Student 6: ...One time, one woman failed for seven times to give me an injection. Then I ran away.*

*Interviewer: Where did it happen?*

*Student 6: In my village. I think that was because that the woman was the wife of the doctor and she hadn't received any training in medical school. She had only learned something from being beside her husband and when her husband went out, she gave treatments to villagers instead of her husband.*

*Interviewer: Oh, she hadn't qualified?*

*Student 6: All family members could offer some help. There was no rule that it had to be a qualified person. That is to say: all family members could work as medical personnel there.*

The interviews indicated that nursing students perceived rural health settings were places where only some basic skills were used, and some students said that the most frequently used skill was injection.

*"In rural areas, the only skill they use is the injection. Maybe they have good injection skills, but no other skills." (Excerpt from case 2)*

The impact of rural exposure for most of them seemed to be negative. But for one of the students the impact was much positive. She thought that the work in the rural health facility was easy, the air was fresh, and people there were easy to get along with.

*"I would like to go to rural areas... the work is easy in the rural health facility... I think, the salary is not too bad... The air is fresh. There is more complexity things in the city, in the rural areas, people are easy to get along. There are many nurses in city hospitals and the relationships*

*are not easy to cope with... There is a sense of freedom [working in rural areas].” (Excerpt from case 3)*

## **6.4 Community Environment**

During the interviews, the researcher did not deliberately ask questions about community environment. Nevertheless, students mentioned some issues related to the natural environment and social environment in rural communities when they talked about their job intentions.

With regards to the natural environment, students mentioned both positive and negative influencing factors. One interviewee (case 3) mentioned that she appreciated the fresh air in rural areas. One urban background student (case 1) thought that the daily commute was not convenient for her to work in a rural area.

*“My family is based in the city, so it is not convenient to come and go daily. And I don’t know the people there, so it is not meaningful for me to work there. It is too far.” (Excerpt from case 1)*

With regards to the social environment, two interviewees mentioned that the social network they could build in rural areas might not be as wide as the one they could build in the city (case 2 and case 11).

*“You can meet lots of people in the city, so you can have a wide social network and social knowledge.” (Excerpt from case 11)*

*“I know that most graduates do not want to go to rural areas; I guess that few students are willing to work there... I think that if you stay in rural areas, you will fall behind other graduates in terms of the social network you build.” (Excerpt from case 2)*

Contrary to the popular phenomenon that people like to live in places they are familiar with, one rural student mentioned that she desired to experience more and different ways of living, and as she had lived in the countryside for many years, she wanted to experience life in the city after she graduates.

*Excerpt from case 10 (a rural background student)*

*Student 10: In terms of where to live, I like living in the city. Rural living is not convenient in many aspects.*

*Interviewer: You like the life style in the city?*

*Student 10: No, I do not mean I like the life style there. I just want to go there to experience something different. I grew up in the countryside and I have been there for so many years; I am longing for a change.*

## **6.5 Financial Rewards**

In terms of the financial rewards, there was a popular view among the interviewees that financial rewards in cities were better than in rural areas. However, the size of its effect on students' workplace decision varied between different students.

For some students, this was one of the main reasons for them to seek a job in a big city hospital, for example, in case1, case5 and case 11. They mentioned that financial rewards like salary, bonuses and insurance premiums paid by employers would be better in city hospitals than in rural health facilities.

*Excerpt from case11*

*Student 11: To be honest, the main reason is the financial rewards. The financial rewards in big hospitals are better than in other health facilities.*

*Interviewer: What kind of financial reward is higher?*

*Student 11: Bonuses. Bonuses are based on the number of patients a hospital treats.*

*Excerpt from case 5*

*Interviewer: Why do you seek work in a big city hospital?*

*Student 5: I can learn more... Working in a big hospital sounds decent... and another reason is the welfare. I think getting better benefits is important for me.*

*Interviewer: What kind of benefits?*

*Student 5: The salary and insurances. Big hospitals can pay high insurance premiums for their employees.*

*Interviewer: How did you know that?*

*Student 5: From some of my classmates.*

But for others, this was not the case. They claimed that the financial payment would not play an important role in their decision on whether to work rurally, as long as the wage is at a reasonable level (case 4 and case 7).

*Excerpt from case 4*

*Student 4: ...I also heard that the salary in the rural areas is lower than in the cities.*

*Interviewer: Did your classmates tell you that?*

*Student 4: Yes; thus they want to find a job in cities.*

*Interviewer: Then what do you think about that? Does the salary impact on your decision?*

*Student 4: No, it doesn't influence me too much as long as it is not too much lower.*

*Interviewer: What does 'not too much lower' mean?*

*Student 4: Compared to the salary in the city it is not too much lower.*

## **6.6 Rural Nursing Social Status**

In the interviews, more than two thirds of the students mentioned the social status of rural nurses when they were asked about whether to work in a rural area. It seems that students were very concerned about the social status related to rural nursing. In the interviews, the students used the words and phrases, like 'faces', 'prestige', 'proud', 'social status' and 'reputation' to describe their feelings. Out of eleven interviewees, nine of them thought that working in the city was more honorable than working in rural areas (See the excerpts in Case 1, 2, 3, 4, 5, 6, 8, 9, 10).

For example, students mentioned how the workplace would impact on their prestige and the sense of honor.

*"... The appearance of being a nurse in a big hospital is better, to be honest... When people hear of where you are working, they will have different feelings depending on whether you are working in a big hospital or a smaller one." (Excerpt from case 5)*

*"... If I work in a big hospital, they [her family members] can answer proudly when others ask where I am working." (Excerpt from case 6)*

One student held a relatively positive view on rural nursing; nevertheless she mentioned the lower status of rural nurses.

*“... but the bad thing is that it [working in a rural health facility] is not honourable. If you are working in a big hospital, you can be very proud when you tell others where you work.” (Excerpt from case 3)*

A student described how her cousin instructed her on filling in an application form when she was applying for a job; her cousin advised her that it was not worth putting rural hospitals as an alternative because of lack of prestige.

*“... My cousin told me that I need not consider town-level hospitals and that putting the three big hospitals onto the application form was enough... She thinks working in the city has more ‘prestige’. When you are asked where your daughter or cousin is working, a big hospital can make you more proud.” (Excerpt from case 4)*

One bachelor student expressed that it would be unfair for them to feel the prejudice that people put on the nurses working in rural areas.

*“Err... When you tell other people where you work, you have different feelings in terms of a big hospital or a small one. As a bachelor student, if you work in a rural area, you will feel unfairness in your heart because of other people’s prejudice... I think this is because of the reputation issue. Since we have bachelor degrees, why not go to big hospitals where you can get a good reputation. Working there is honourable. Why do we need to go to rural areas?” (Excerpt from case 8)*

Another bachelor student further suggested that the concern of reputation is not only relevant to students themselves, but also to family members, and she implied that students might even sacrifice their own interests to fulfill reputation desires of their parents.

*“... for a bachelor student, it is not good for her status to work in a rural area. In my hometown, there is a very important factor: the parents, the*

*prestige of their parents. For most associated students who choose to work in a famous hospital in a condition of temporary or contracted staff, the only reason is their family members' prestige.” (Excerpt from case 9)*

From the above excerpts, it is apparent that students insisted that if they work in a big hospital, people would think that they are competent in their job and are useful to their relatives when they get sick, and their family members could be very proud of their job. However, if they work in a rural area, people might think they are low qualified and not highly skilled, and their parents and relatives might suffer a loss of prestige in front of other people.

The interview data suggested that the social status of a job is an important determinant in students' decision of a workplace. In the case of rural nursing practice, the social status of rural nurse was not viewed to be good enough. Thus, the lower social status of rural nursing might be a barrier for graduates to take a rural job.

## **6.7 Professional Development**

When analyzing the interview data related to professional development, the following factors were identified: diversity of experience, opportunity of training and continuing study, and opportunity of promotion.

### **6.7.1 Diversity of Experience**

The interviews suggested that obtaining a wide range of practical experience might be an important factor for new graduates in selecting their workplaces. It seemed that these interviewees were mostly considering on what kind of skills they could learn and develop at the very beginning of their career. In the interviews, several students expressed the belief that as a new graduate, they need to learn more.

*“Because I am a new graduate I want to experience more and learn more. After that, it may be possible for me to go to a hospital either in county city or in a town.” (Excerpt from case 10)*

*“I think, although working in the Renmin Hospital is tiring, we are new graduates and have a lot of things to learn.” (Excerpt from case 5)*

Compared to the city hospitals, most of the interviewees thought the health facilities in rural areas were not good for them to experience diverse skills, as the scale of the hospital was small, the patients there were not as severely ill as those in big city hospitals, and the equipment in rural health facilities was not as advanced as that in big city hospitals. The phrase ‘I can learn more’ was used frequently by the interviewees when they described the reasons why they chose to work in a city hospital. This can be evidenced by the interview data in case 1, 4, 5, 7, 8 and 10.

*“... I think for a new graduate, a youth, directly working in a rural hospital, which is usually small in scale, is not good. I think that would limit my own career development. Thus I need to go to a big hospital and experience some things there.” (Excerpt from case 10)*

One student mentioned that it would benefit their professional development because the skills used in the city hospital were better than in rural hospitals.

*“By working in cities, maybe you can develop yourself well... Lots of patients go to city hospitals, because the skills there are better than in rural hospitals, and thus lots of graduates choose to work in the cities.” (Excerpt from case 4)*

One student in the associate nursing program mentioned that obtaining more experience would also be important for continuing to study in a master’s or doctoral program.

*“In a big hospital, you can get more sophisticated experience, and that is also important if you want to continue to study in a master’s or doctoral program.” (Excerpt from case 1)*

### **6.7.2 Opportunities for Training and Continued Study**

In the interviews the opportunity for training was mentioned by one of the interviewees. Her family members thought that working in a big hospital might provide good opportunities for career advancement as there would be more opportunities for training.

*“They [her family members] think the best option is working in a city hospital... They think working in a city hospital may provide good opportunities for career development... You may have more opportunities to be sent to other advanced hospitals for training.” (Excerpt from case 4)*

But this consideration was not mentioned by other interviewees as often as the diversity of experience narrated above.

In the interviews, no interviewee actively mentioned the opportunities of continuing study. Only when the researcher raised the question to one interviewee, the interviewee mentioned the inconvenience of that for a rural nurse and the strong atmosphere of continuing study in the city.

*“After all, it is not as convenient as in the city for you to continue study. And there is a study environment around you. Almost every nurse in the hospital [where she took final year practice] was studying for a continued degree in the form of part-time or distance learning. They went to study each week.” (Excerpt from case 6)*

### **6.7.3 Opportunities of Promotion**

As to the promotion opportunities, like the opportunities for continued study, no students actively mentioned it. When the researcher raised this question to one interviewee, she said that she had not thought about the promotion opportunities when she was looking for her job (see the excerpt from case 8).

*Excerpt from case 8*

*Interviewer: Are you concerned about the opportunities for promotion when you look for a job?*

*Student 8: No, I haven't thought about that. That will have no obvious impact on my decision.*

When the researcher raised this question with another interviewee, she replied that she viewed the opportunities for promotion in rural areas would be better than in the city, as there would be less competition in rural areas than in the city (see the excerpt from case 3).

*Excerpt from case 3*

*Interviewer: Have you thought about the promotion opportunities?*

*Student 3: Yes, I have. I think the opportunities for promotion in rural areas are better. In the city hospitals, there is a lot of competition; even if you have a bachelor degree, promotion is not so easy.*

This phenomenon that no students actively mentioned promotion opportunities may reflect the possibility that they focus much more on the development and learning opportunities rather than the promotion opportunities when they are looking for their first job and that they have no very clear opinion on whether promotion in rural areas is easy or not.

## **6.8 The Nature of the Job**

During the interviews, related to their workplace choices, the interviewees frequently mentioned workload and stress, and one student also mentioned the nightshifts.

### **6.8.1 Workload and Stress**

The workload was another frequently mentioned topic in the interviews. The interviewees expressed that the workload in rural health facilities was light yet heavy in some city hospitals. This feeling was related to the perceived less severely ill patients in rural health facilities (see the excerpt from case 5 and case 7).

*“As there are less patients in rural hospitals, working there is not so busy. If you are working in a big hospital you have to hurry around the wards the whole day, with no free time. In a rural hospital, it is not so busy.” (Excerpt from case 5)*

*Excerpt from case 7*

*Interviewer: In your four-week practice, what kind of impression did you get of their health service?*

*Student 7: The workload is lighter than that of nurses in big hospitals.*

*Interviewer: Really?*

*Student 7: Yes, although they were busy during daytime, they have no such stress as nurses in the big hospitals experience. There were no inpatients in the hospital where I stayed. And because it is near the city of \*\* [name of a city], local people usually go to the city, so there were only a few outpatients and these were usually working immigrants.*

With the heavy workload and high competition, the interviewees often thought that working in a city hospital was very stressful, while in a rural health facility it was relatively easy. This view was not only held by interviewees who had rural placement, like case 7, but also by some interviewees who had not taken a rural practice, like case 4 and case 8. To some extent, the perceived light workload has encouraged some of them to work rurally.

*“Working in a big hospital is stressful... I will go back to my home town... as I think work there is easier... There is less workload in rural hospitals.” (Excerpt from case 8)*

*“It [working in rural areas] is relatively easy... It was my own experience. I felt that working in the towns or villages was easy and comfortable.” (Excerpt from case 4)*

### **6.8.2 Night Shifts**

The interviews revealed that the night shift was also a concern for some students' job decisions. In general, there are fewer night shifts for nurses in community health centres than hospitals in current Chinese health care system. This may have become a reason for some graduates to consider working in a rural community centre in the case they are unable to entry into a community health centre in the city. This can be illustrated by excerpts from case 7 and case 11.

*“I don't want to take night shifts. Each time after taking night shifts, I felt very tired, worn to a frazzle, I couldn't sleep well and sometimes I had headaches... I really want to go to a community centre as there are fewer night shifts there.” (Excerpt from case 7)*

*“My mother told me to go back to the township hospital if I failed in the examination. She said that in the township hospital [now it is called community health centres] there were few night shifts.” (Excerpt from case 11)*

## **6.9 Working Environment**

The term working environment is used as a broad factor related to interpersonal relationships, equipment and techniques in workplaces.

The nurse-patient relationship was mentioned by several interviewees. They perceived the nurse-patient relationship in rural areas as less strained as that in urban areas (excerpt from case 3, 8 and 9). This may be facilitative for students to take a rural nursing place. Students expressed some reasons for that:

(1) The nurses and patients can trust each other as they know each other in rural communities;

*“In big hospitals, interpersonal relationships, especially the nurse-patient relationship are strained... They do not trust each other as they only get along for a short time and they don’t talk much. However, in a rural health facility patients can be treated as relatives and they talk with each other softly. From this reason, I like to work rurally.” (Excerpt from case 9)*

*“It [working in a rural area] is easy, there is no heavy stress, and I can talk to my patients as I do with my acquaintances.” (Excerpt from case 8)*

(2) The rural patient is much easier to deal with and there are more staff in the big hospital, thus the interpersonal relationships are complex.

*“The interpersonal relationships in urban hospitals are complicated. Rural residents are much easier to deal with and the same goes for the relationship between nurses. It is difficult to have a good relationship with all the nurses, as there are so many nurses there.” (Excerpt from case 3)*

In the interviews, some interviewees mentioned that the equipment was poor in rural areas. One student who had taken her rural practice in her summer holiday expressed that this poor equipment might impact on some outstanding students’ decision to work there, as their potential ability may not be fully put to use in these kinds of conditions and they would feel that their skills would be underutilized in this condition.

*“...But as for the equipment there, healthcare providers who mastered advanced skills would not be willing to work there...Because of the poor equipment...they may feel their skills are useless; there is no equipment for them to use.” (Excerpt from case 9)*

## **6.10 Personal Work Values**

The interviews suggested that personal ideology might play an important role in considering a rural job (see the excerpt from case 3).

*“En... I would like to work in rural areas. By doing this, I can help the poor people there. For them, because of the lack of money, it is not possible to receive treatment in big hospitals; the rural health facilities are the only choice for them. I like to work there.” (Excerpt from case 3)*

One interviewee's description also reveals that clinical teachers may have an impact on students' perspectives, and thus impact on their choices.

*"...After that, maybe I will choose to work in some small health facilities, like those in rural areas, since those clinical teachers, who have been working for many years, suggested that we should not go to big hospitals as they are too busy and maybe working in a rural health facility would be a good option." (Excerpt from case 10)*

Personal ideology related to employment may also link to the reasons for them to study nursing. These different reasons for studying nursing may have a crucial impact on their later employment. In the interviews, the following reasons were mentioned by interviewees. (1) Their scores in the national college entrance examination only allowed them to select some unpopular subjects. Nursing is one of those unpopular subjects in China. (2) They were shifted to a nursing major by the university's recruitment department. This happened when their scores reach to the requirements for entering in a particular university but not enough to compete with others students in some popular majors. (3) It is easy for nursing graduates to find a job. (4) Admiration of the role of nurses. (5) To learn something that can be of service to people. Among these reasons, the most popular one is that studying nursing makes it easy to find a job. Five interviewees mentioned it. The excerpt below is one of them.

*"... It was because my father said 'it is difficult to find a job nowadays, but for a nurse, it is easy'; and I have not thought too much, just followed my parents' opinion and became a nurse student." (Excerpt from case 7, a student in bachelor program)*

## **6.11 The Impact of Parents and Other Family Members**

The exploratory interviews revealed that in terms of where to work, the opinions of parents and other elderly family members were important. One interviewee described her family members' participation in her decision of working in a big hospital.

*"I have discussed this with my family members and we all agreed that it would be better for me to find a job in a big hospital...such as the Renmin Hospital. Recently they recruited some diploma graduates... They think working in a big hospital can give me more experience and I can learn more."* (A diploma student, case5)

In some cases, students even relied on their parents' arrangements and their parents' opinions were decisive. Case 8 illustrated an example of the decision-making being largely determined by their parents.

*"...My parents' opinion is more crucial. They asked me to attend that examination [recruitment examination]."* (Excerpt from case 8)

In the interview, one student also mentioned the issue of taking care of their relatives. It indicates that where to work is also an issue of whether it is convenient for a graduate to take care of their relatives when working in a nursing position.

*"...they can take care of their relatives when they need to go to this hospital. For the people in Wenzhou, the relatives' network is very important."* (Excerpt from case 9)

## **6.12 Children's Education Opportunities and Spouse's Employment**

In the interview, one student in a bachelor nursing program expressed her concern about potential children's educational opportunities and her future spouse's job.

*"...The children's education is also an important aspect, as well as my spouse's job." (Excerpt from case 9)*

In China, which school a child can enter depends on where his/her parents are registered in the national Hukou system. Thus, where his/her parents live may impact on their children's educational opportunities. The phenomenon that few students mentioned the issue about children and spouse's job may be related to the fact that these students were all young and unmarried.

## **6.13 The Labour Market**

China has now adopted a market-orientated economic system. Reflecting on the labour market, it means graduates must face the selection of the labour market. In the nursing labour market, educational qualification, profiles of the student, the scores of her academic study, and the network of her parents all may have an impact on employment.

In the interviews, one interviewee in the bachelor nursing program mentioned that if no job in the city could be found, she would go back to the local township hospital or the epidemic prevention station there.

*"My mother suggested to me that going back to the local town hospital or epidemic prevention station is also an option if I could not find a job in the city." (Excerpt from case 8)*

## **6.14 Employment Policies**

In the exploratory interviews, interviewees mentioned some policies related to their working rurally. They were the educational qualification requirement, the work experience requirement, and the local residency requirement. These regulatory policies were usually set by local county governments, thus they might vary across different counties.

The requirement of educational qualification policies set out the rules about what kinds of educational qualification are needed to be employed in various kinds of health facilities. In some counties, the diploma students were not eligible for being employed in a county level hospital, thus diploma graduates were often forced to work rurally or work in the city in temporary positions.

Besides local governmental policy, different hospitals might have their own recruitment requirements. For example, only bachelor students could get a formal position in some three-star hospitals whereas nursing graduates from associate programs could only work in those hospitals as contracted nurses. For students graduating from a diploma nursing program, they might not even be eligible to work there at all (see the excerpt from case 9).

*Excerpt from case 9*

*Interviewer: What are the recruitment requirements for the three-star hospitals in the Wenzhou district?*

*Student 9: For some comprehensive hospitals, like the one I will enter, only bachelor graduates can get a permanent position, and an associate graduate can only work as a contract nurse.*

In the interviews, some interviewees mentioned that in some counties, only local residents were eligible to apply for formal job positions in a county level hospital or a community health centre. If the candidate is not a local resident, she can only work

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in a private hospital or in an informal position, usually on a temporary contract. This can be illustrated by the excerpt from case 6.

*“You need to be a local resident to apply for a job in a community centre here. My Hukou is in the county of \*\* [a name of county], so I need to go back there to apply for a job in a community centre... but I don't want to go back there.” (Excerpt from case 6)*

In the interviews, students mentioned the requirement of work experience. It was revealed that to obtain a position in a community health centre, two years of working experience was required. To encourage graduates to work rurally, a policy had been set up which allows students with no work experience to be employed in rural community centres in some counties. Under this policy, graduates were allowed to enter the rural community centres right after their graduation (see the excerpt from case 9). This requirement in work experience usually only applied to community health centres, not to hospitals.

*“There is a new policy for graduates to work in rural areas. It is to support the rural health institutions. Usually working in a community centre in a city requires two years' work experience, but in rural health facilities, new graduates are allowed to work there.” (Excerpt from case 9)*

## **6.15 Others**

Apart from the above factors, interviewees also mentioned the type of contract and proximity to a central city.

In the interviews, students described two types of contract: permanent contract and temporary contract. The interview suggested that almost all students wanted to find employment under a permanent contract. For most bachelor students it did not seem

to be a problem; while for students in associate program or diploma program, the type of job contract became a major concern in looking a job. If they worked in a big hospital, like a three-star hospital or hospitals in the provincial cities, they might only be a temporary contracted employee. For the diploma level graduates, they were not even entitled to get a formal position in some county level hospitals. This can be seen in the excerpt from a student in the associate nursing program.

*“If I stay in \*\* [a city name], I can only be as a temporarily contracted employee; but if I go back to my hometown, I may get a formal post ... If you are a contracted employee, it is very difficult to transfer to a formal employee.” (Excerpt from case 11)*

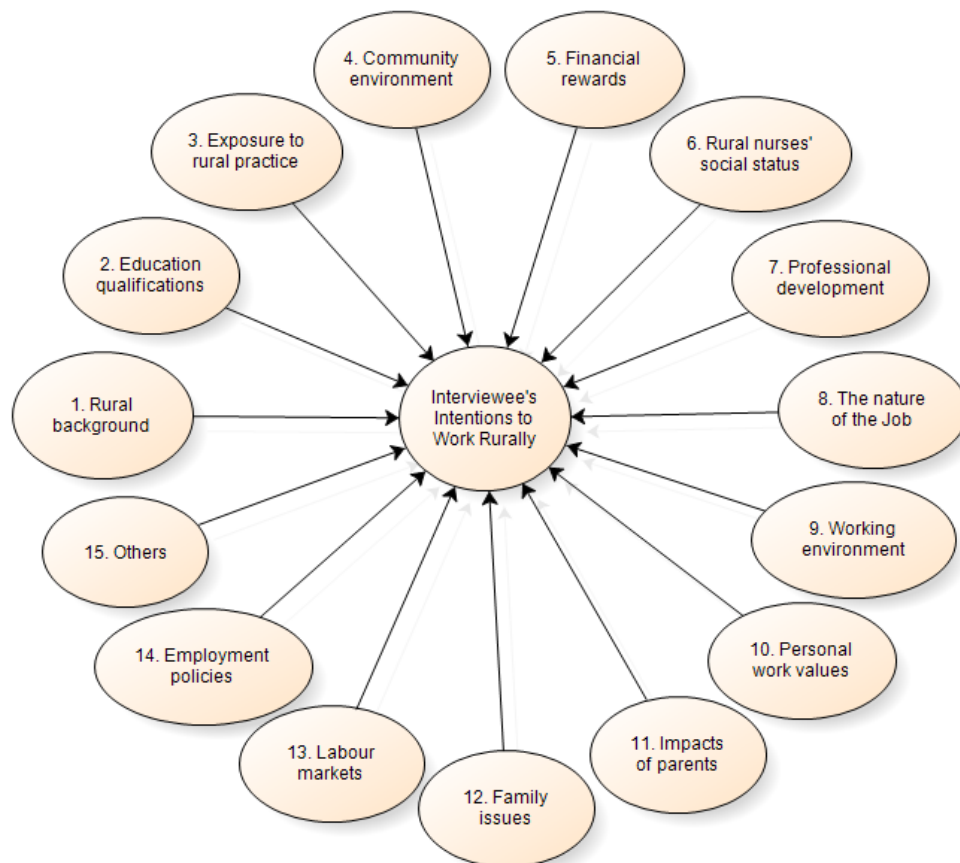
One student mentioned that the proximity to central cities was also a factor contributing to her decision to consider a rural health facility.

*“I hope it is near the central city. If it is too far from a central city or too remote, I do not want to go there.” (Excerpt from case 6)*

## 6.16 Chapter Summary

In the above, the researcher described the factors which might influence the interviewees' decision to take a rural nursing job. They are extracted from the interview data and some corresponding excerpts have been provided as evidence.

To summarize, the following factors were identified: rural background, educational qualifications, exposure to rural practice, community environment, financial rewards and incentives, rural nursing social status, the nature of the job, professional development, working environment, personal values, impact of parents, family issues, employment policies, the labour market, and others. They have been demonstrated in the following figure (see Figure 6-1).



**Figure 6-1: Factors Impacting on Interviewees' Intentions to Work Rurally**

When comparing these findings with previous literature reviews, some factors have been mentioned in the literature, such as rural background, financial rewards and incentives, working environment, educational qualifications, community environment, rural placement, personal values and family issues and the labour market. However, some factors have not been mentioned in the literature, such as the rural nursing social status and type of contract.

In agreement with the report of literature, the exploratory interviews reveal that all interviewees in this study with an urban background wanted to find a job in the city, most of rural background students also expressed that they wanted to find a job in the city, but they were more often expressed that they might go back to work rurally in their later career. The findings about financial rewards, working environment, educational qualifications, community environment, and rural placement were also similar to the literature review.

However, the often mentioned more autonomy in the rural health settings and lack of anonymity in the rural community had not been actively mentioned by the interviewees. Whereas interviewees frequently mentioned about the lower social status of rural nurses, and it was also found that the students seemed to very concern about the permanent contract. These themes were seldom mentioned in the previous literature reports. These issues would be further investigated in the survey.

The interviews have discovered a set of factors related to nursing students' intentions to work rurally. However, interviews can identify the range of factors, but provide weak evidence of the relative importance of these factors. To investigate their relative importance and the strength of their relationship, a questionnaire has been designed based on these findings and the literature review, which the researcher will describe in the next chapter.

# Chapter 7

## Development of the Questionnaire

Based on the findings of the exploratory interview and the previous literature review, a questionnaire was formulated to measure Chinese nursing students' attitudes towards rural nursing. This chapter introduces the questionnaire development processes.

Section 7.1 gives an overall introduction of the processes of the questionnaire development. Sections 7.2–7.4 explain how an initial questionnaire was formulated, including the rationales of question development and the considerations of the layout and ordering of the questionnaire. Sections 7.5–7.6 present the testing and revising processes of the questionnaire. Finally, in section 7.7, reliability and validity of the developed questionnaire are discussed.

## 7.1 Introduction to Questionnaire Development

The development of the questionnaire consisted of two major stages. The first stage was to create an initial questionnaire based on the literature review and qualitative research. The second stage was to test and revise this generated questionnaire. For the stages of questionnaire development and corresponding sections in the thesis see Figure 7-1.

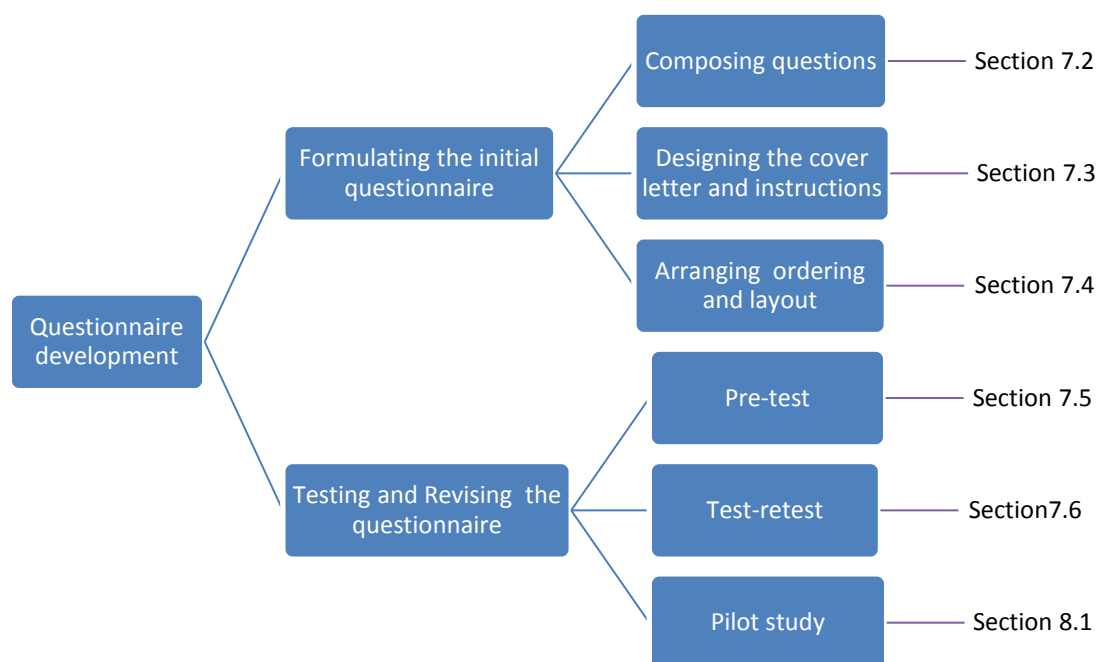


Figure 7-1: The Stages of Questionnaire Development

### **7.1.1 Formulating the Initial Questionnaire**

According to the findings of the literature review and exploratory study and considering the research questions and the potential time needed for students to answer these questions, a questionnaire was constructed. It consisted of a cover letter, three parts of questions, and some instructions.

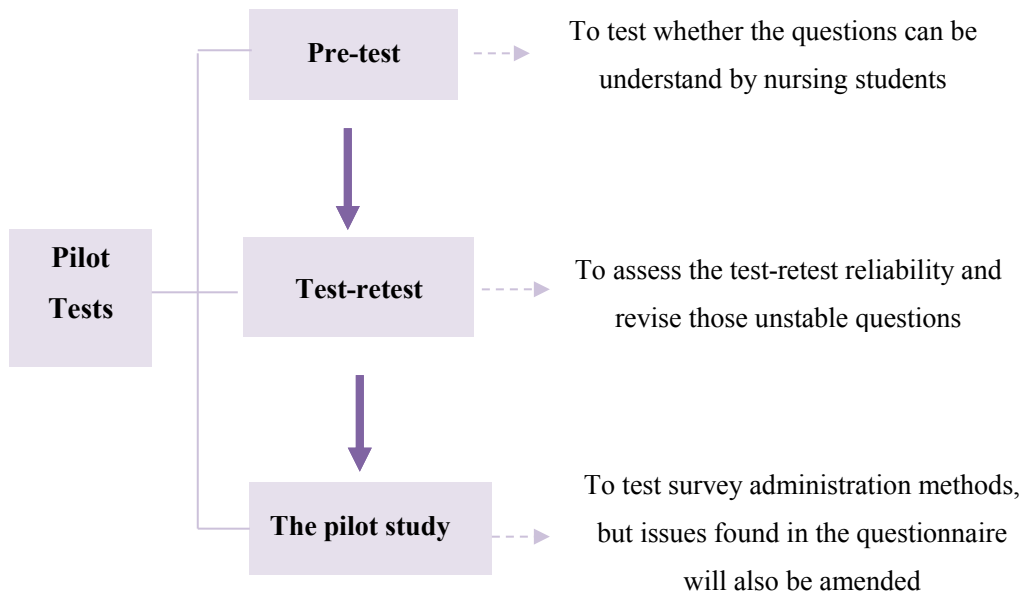
Designing suitable questions is of crucial importance in obtaining the required information. The contents of the questions in this questionnaire were articulated prudently based on comprehensive literature reviews and qualitative research analysis. The rationales of composing these questions are elaborated in Section 7.2.

A cover letter and some instructions were designed to inform the participants about the research and how to fill in the questionnaire. They are introduced in Section 7.3.

The types of questions included in the questionnaire were mainly closed questions. They were presented in the form of simple choice, multiple choice and rating scales. The arrangement of the ordering and layout of this questionnaire is explained in Section 7.4.

### **7.1.2 Pilot Testing the Generated Questionnaire**

To increase the validity and reduce errors in the questionnaire, a set of pilot tests were conducted prior to the main study and a trial analysis was performed. Pilot tests included three stages: a declared pre-test, test-retest and a pilot study.



**Figure 7-2: The Pilot Tests and Their Purposes**

The pre-test was to consult nursing students to evaluate whether the questionnaire could be understood by students easily and to see whether there were any issues regarding the format of the questionnaire. This is further explained in Section 7.5. The test-retest was used to assess the external reliability of the questionnaire. This is reported in Section 7.6. The pilot study was conducted mainly for testing survey administration methods, and to see whether the questionnaire could generate the desired information. Then, according to the feedback and issues found in these processes, the questionnaire was revised, and a formal questionnaire was developed and used in the main study.

## **7.2 Composing Questions of the Questionnaire**

In this section, the questions in the questionnaire are introduced and the rationales behind composing these questions are also explained.

The literature review showed that the following factors might have an impact on rural recruitment: rural background, financial rewards or incentives, rural health settings working environment, professional development, community environment, exposure to rural practice, curriculum of nursing school, compulsory service, personal views, and others, such as age and gender.

In the exploratory interviews, most of these factors were also shown to appear in the study setting. However, there were some differences: (1) there are some influences that are unique to China, which have not been mentioned in the literature, such as the factor related to government employment policies, rural nursing social status, night shifts and parental impact. These factors were designed in the questionnaire and investigated. (2) There are few nursing educational programs which aim to cultivate rural nurses in the Chinese formal nursing education system, and there is no compulsory rural nursing service policy currently in existence in the study setting. Thus in the questionnaire, the researcher has not designed questions which involve these factors.

Questions in the questionnaire (see Appendix 9) were organized into three parts: part A, part B and part C. Part A of the questionnaire aimed to investigate students' perspectives about rural nursing practice. It consisted of twenty eight statements, which were created according to the exploratory interviews and the literature reviews. Participants were asked to choose one option among five alternatives: strongly disagree, disagree, neutral, agree and strongly agree. Part B was designed to examine students' preferences of health institutions and intentions of working in a rural area. It comprised five questions, which investigated their preference of various health institutions, the probabilities of their taking a rural job after their graduation, the probable duration of working in rural areas in their future career, and the reasons

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for their considering taking or not taking a rural job. Part C had eight questions, which were designed to collect participants' demographic information, including gender, age, education programs, rural background/urban background, rural living experience and rural placement. In the following, the rationales of composing these questions are explained.

### **7.2.1 Composing Questions about Students' Demographic Information (Questionnaire Part C)**

In Part C of the questionnaire, eight questions were created to collect participants' demographic information. These included questions about gender, age, education program, rural background, and rural placement (see Table 7-1).

**Table 7-1: Questions and Response Options about Demographic Information**

<i>Questions</i>	<i>Response options</i>
C1. Are you a male or female?	1. Male 2. Female
C2. How old are you?	( ) years old
C3. Were you born in an urban area or a rural area?	1. An urban area 2. A rural area
C4. Which educational program are you attending?	1. Diploma 2. Associate 3. Bachelor 4. Master 5. Other
C5. Have you ever lived in rural areas?	1. Yes 2. No
C6. How long have you ever lived in rural areas in your life?	( ) years
C7. Have you taken a rural placement during your nursing study?	1. Yes 2. No
C8. How long have you been in rural placements during all your nursing study?	( ) months

Age and gender were collected as conventional variables in a survey and as context information for comparison to other samples. The other information was needed to

examine the following relationships: (1) the strength of the relationship between rural identification and students' intentions of working rurally; (2) the relationship between rural living experience and students' intentions of working rurally; (3) the relationship between the educational qualification and students' intentions of working rurally; and (4) the relationship between the rural placement and students' intentions of working rurally.

### **7.2.1.1 Rural Background**

The literature review shows that there is compelling evidence that there was a strong link between rural background and rural practice (Lea and Cruickshank 2005, Dalton et al. 2008, Schofield et al. 2009, Blaauw et al. 2010).

This link also has been shown in the exploratory interviews: students who are willing to work in rural areas usually have a rural background. Among the eleven interviews, there were only a few students who were willing to work rurally currently, such as case 3, and there were some who stated that they might work in rural areas in their later career, like case 7, case 8 and case 11. All these students had a rural background. There were four urban background students (case 1, case 2, case 5 and case 9), almost all of them stated that they intended to work in a city hospital, and one of them clearly explained that there was little possibility of her working in a rural area in her career.

To investigate the relationship between rural background and students' intentions to work rurally, the researcher designed questions C3, C5 and C6 to collect the data about their rural background. In the literature, there were several definitions of rural background. One definition was the place where the individual was born (Blaauw et al. 2010). In some studies, rural background referred to previous living experiences in rural areas (Playford et al. 2006, Smith et al. 2001). There were also studies that used the location of their primary and secondary school to determine students' rural background status (Owen et al. 2007, Dalton et al. 2008, Serneels et al. 2010). In this

study, the rural background status was measured according to rural/urban resident identification in Chinese Hukou system as well as the length of living rurally. In China, rural/urban resident identification is very important information related to a person's rural or urban background. In the interviews, the researcher also felt that the length of living rurally might also impact on student's attitudes. Thus, these two kinds of information were collected in order to investigate the possible relationship.

In detail, question C3 asked about rural/urban resident identification; participants were instructed to give their answers based on their registration in the Hukou registration system. Question C5 and question C6 asked participants about their living experience in rural areas. The former asked whether she/he had ever lived in a rural area, its option is dichotomous; and the latter asked those who answered 'Yes' in question C5 to give specific years of the length of living rurally.

As the relationship between rural background and their intentions to work rurally had been suggested by various studies and the exploratory study, data analysis for these questions aimed to explore the strength of this relationship.

### **7.2.1.2 Educational Qualifications**

In the literature, there was little evidence about how educational qualifications influence the choice of a rural job except one study, which showed that students who studied at a university were less likely to choose a rural job than those in nursing colleges (Blaauw and Erasmus 2009).

The results of the exploratory interviews suggests that educational qualification may influence students' decision regarding a rural job, and the relationship may be negative, in that most bachelor students are more likely to work in provincial or district city hospitals and diploma students are more likely to work in rural areas.

To explore the impact of educational qualification, question C4 was created to obtain information about which education program the participant was attending at the time

of filling out the questionnaire. As there were nursing programs of diploma, associate, bachelor and master's in the study setting, five response options were provided, including an option of others, in the case of some students who might not want to give their answers or at the same time were attending another level of education program in other disciplines.

The analysis aimed to focus on two tasks: to examine whether any relationship between the educational qualification and students' intentions to work rurally exists, and if it does, to examine how strong the relationship is?

### **7.2.1.3 Exposure to Rural Practice**

In the literature, it was widely reported that rural placement could foster positive attitudes to rural practice (Murphy et al. 1995, Fairbanks et al. 2001, Neill and Taylor 2002, Courtney et al. 2002, Bushy and Leipert 2005, Lea and Cruickshank 2005, Manahan et al. 2009, Henry et al. 2009); however, there were also some opposing reports, which believed that rural clinical placement experience had discouraged some students from pursuing rural practice (Lea et al. 2008, Orpin and Gabriel 2005). In a study about rural physicians, the researchers reported that although there was a significant difference in the likelihood of taking a rural job between students who took a rural placement and those who did not have such exposure, after controlling gender, age and rural background, this association was no longer present (Easterbrook et al. 1999).

In the interviews, it was suggested that the length of rural placement and the nature of the placement vary in different educational programs. For most of the interviewees the rural placement seemed to have a more negative impact than positive, except for one interviewee. Thus, the impact of rural placement was not clear in the study setting based on the few cases.

In the questionnaire, questions C7 and C8 were created to obtain data about whether the participants have experience of a rural placement and how long the rural placement lasted. Question C8 was conditional on a 'yes' answer in question C7. This filtering design not only provided a step of logical thinking, but also provided a possible way to check the validity of participant's answer.

Analysis aimed to focus on whether there was a relationship between the rural placement and the possibility of taking a rural job. Analysis of controlling for rural background was also planned.

The next section will turn to explain the rationale of creating questions about students' perspectives on rural nursing practice.

### **7.2.2 Composing Questions about Nursing Students’ Perspectives of Rural Nursing Practice (Questionnaire Part A)**

Some career theories have suggested that career intentions are influenced by individuals’ ‘perceptions’ rather than ‘reality’ (Gottfredson 1981, Bandura 1986). In rural nursing recruitment, Manahan et al. (2009)’s personal value model (see Chapter four) has implied that influencing factors exert their effects through students’ personal values. In light of the notions in these theories and models, this study has supposed that rural nursing practice has its own nature and characteristics, but students’ intentions to work rurally would be more influenced by their perspectives about rural nursing practice than by reality. Under this supposition, the study intended to investigate nursing students’ perspectives on rural nursing practice.

Questions in part A were designed to investigate the extent of nursing students’ agreement on some perspectives of rural nursing practice. These questions were led by the instruction: *Please indicate the extent to which you agree or disagree with the following perspectives (For each row, please choose one answer that best represents your views by ticking the appropriate box)*. Then a set of statements about rural nursing practice and five-point scales followed. For these statements see Table 7-2. For detailed questions see the questionnaire in Appendix 9.

Table 7-2: Items of Perspectives about Rural Nursing Practice

<i>Items</i>	<i>Factors</i>
A1. Community amenities, public transport are poor in rural areas.	Community environment
A2. People in rural areas are friendly.	
A3. I like living in rural areas.	
A4. The financial rewards are higher for nurses working in urban rather than rural areas	Financial rewards
A5. Working in a big hospital sounds more prestigious than working in rural areas.	Rural nursing social status
A6. Working in the rural area is less stressful than in the urban area.	The nature of the job – stress
A7. The workload for nurses in rural health facilities is lighter.	The nature of the job – workload
A8. There are fewer night shifts in rural health facilities.	The nature of the job – night shifts
A9. Working in the rural health facilities allows more personal autonomy than in a city hospital.	The nature of the job – autonomy
A10. Working in rural health facilities has lack of anonymity.	The nature of the job – anonymity
A11. The skills used in rural nursing are simple.	The nature of the job – diversity
A12. I can learn more skills by working in a big hospital than working in rural areas.	Professional development – skills
A13. There are more opportunities of training in the city.	Professional development – training

<i>Items</i>	<i>Factors</i>
A14. Promotion to nurse headers is easier in rural areas than in urban areas.	Professional development – promotion
A15. Promotion through professional grades is easier in rural areas than in urban areas	
A16. It is difficult to undertake a further degree while working in rural areas.	Professional development – obtaining a further degree
A17. The equipment in rural health facilities is poor.	Working environment
A18. The nurse-patient relationship is closer in rural health facilities than in the city.	
A19. I want to help the people in rural areas.	Personal values
A20. My family would not like me to work in a rural area.	Family support
A21. Working in rural areas may reduce my child's education opportunity.	Family issues
A22. I may not be able to get a permanent nursing position in the city, while in rural areas I can.	Labour markets
A23. I may not be able to find a job in the city, because there are too many nursing graduates nowadays.	Labour markets
A24. It is not easy for nurses to change workplaces from rural areas to urban areas.	Employment policies
A25. The current rural nursing recruitment policies are attractive to me.	Employment policies
A26. A diverse range of skills are used in rural nursing.	Related to questions A11
A27. Working in rural areas may reduce the opportunity of training.	Related to questions A13
A28. Promotion through professional grades is more difficult in rural areas than in urban areas.	Related to questions A15

Most of these statements were created based on the findings of the interviews, but some were drawn from the literature review, such as the lack of anonymity and more personal autonomy. In the following sections, the rationales for composing these statements are explained.

### **7.2.2.1 Community Environment**

Community environment refers to the community natural and social environments. For this factor, the findings in the interviews were in general consistent with the literature.

Fresh air was proposed as a merit and public transport system as a barrier of the rural community physical environment both in the literature (Bushy and Leipert 2005, Schofield et al. 2009) and in the interviews.

Regarding the community social environment, kindness of people, peaceful pace of life and less crime were mentioned as other positive factors in encouraging students to choose rural practice in the literature (Bushy and Leipert 2005, Manahan et al. 2009). In the interviews, two interviewees mentioned the disadvantage of social network of professionals who were working in rural areas.

Given that community environment is a very broad concept, investigating the details requires a set of questions, which was not suitable in this questionnaire survey, thus questions A1, A2 and A3 were designed as a few sample questions about community environment in the questionnaire.

### **7.2.2.2 Financial Rewards**

Relating to financial rewards and incentives, in rural nursing recruitment the following have been mentioned: salary, educational financial support, housing allowance, and low loan.

In the literature review, the relative lower financial reward was reported as a barrier to rural nursing recruitment (Moses 1991, Stratton et al. 1992); however, one study reported that students in different countries valued the financial incentives very differently (Blaauw et al. 2010). This means in different countries, the effect of this factor needs to be assessed specifically.

In the interviews, some students emphasized the financial impacts on their job choice. They stated that financial reward was a major reason for them to intend to work in a city (case 1, case 5 and case 10). However, this was not the case for all of the students. Some students claimed that the financial payment would not play an important role in their decision of whether to work in a rural area, as long as it is of a reasonable level (case 4).

To see how students largely view this issue, question A4 was set up in the questionnaire. Discrete choice experiment was used as a methodology to investigate the effects of different kinds of financial incentives in some studies (Mangham et al. 2009, Blaauw et al. 2010). However, it was not employed in this questionnaire design as the effects of different kinds of financial incentives were not the focus of this study.

### **7.2.2.3 Rural Nursing Social Status**

The exploratory interviews suggest that Chinese students are very concerned about the reputation of their work places and the majority of them insist that rural nursing posts have a low social status.

In the literature, few reports about it could be found, but there were some relevant ones. For example, one report mentioned that the rural remote practice had a lack of recognition by nursing colleague in other areas of practice and thus the author suggests that rural nurses need to value their contribution and realize they are not less important (Crook 2004).

In the questionnaire, question A5 ‘working in a big hospital seems to have more prestige than working in rural areas’ was put in the list to test how students in general viewed this issue.

#### **7.2.2.4 *The Nature of the Job***

In the literature, diversity of skills used, lack of anonymity and more personal autonomy were mentioned as important factors which influence rural nursing recruitment.

With regard to the diversity of skills used, there was a controversial perspective between the literature and the findings in the interviews. In the literature, rural and remote practice was perceived as utilising a diverse range of knowledge and skills, and this diversity might encourage students to consider rural and remote practice (McAuliffe and Barnett 2009, Manahan et al. 2009) or might discourage students from taking a rural job (Lea et al. 2007). However, in the interviews, most of the interviewees viewed rural nursing as a position where simple skills were used. In the questionnaire, question A11 and A26 were designed to investigate this factor. Question A26 was an equivalent parallel question to question A11, which was designed to test the reliability of the answers.

In the literature, working autonomy and lack of anonymity were discussed as major characteristics of rural health settings (Bourke et al. 2004). However, in the interviews, these characteristics were not mentioned by any of the interviewees. Instead, interviewees emphasized lighter workload, less stress and fewer night shifts as the characteristics of a rural nursing job; they frequently pointed out that workload in rural settings was lighter, working in rural areas was less stressful and there might be fewer night shifts in rural settings, which was an attraction for those students who did not like to take night shifts.

In this questionnaire, questions A6, A7, A8, A9 and A10 were created to examine students' views about the stress, workload, night shift, autonomy and anonymity, respectively.

#### **7.2.2.5 Professional Development**

Professional development is a broad concept which has been created to group the views related to the opportunity of learning skills, the opportunity of training, the opportunity of getting a further degree and the opportunity of promotion.

In the interviews, most of the interviewees thought they could get wider experience and learn more by working in a big hospital, which would benefit their later career development. That hinted at the idea that working in a rural area immediately following graduation was not good for their professional development. Question A12 was designed to further investigate this view.

The opportunities for education in rural areas were reported to be a major barrier to rural nursing recruitment (Beatty 2000, Mullei et al. 2010). However, few interviewees mentioned this barrier in the interviews; instead, lack of opportunities for training was raised by the interviewees (see Section 6.7.2). Thus a question about the opportunities for training was set up in question A13 and a question about getting a further degree while working in rural area was put in question A16.

There were inconsistent reports about how employees viewed the opportunity of promotion in rural settings in the literature. Some studies reported that it was a negative factor for graduates to seek a rural position (McAuliffe and Barnett 2009); and some studies found that career opportunities and challenge was a second factor which encourages students to practice rurally (Schofield et al. 2009). In the interviews there were students who viewed the opportunity of promotion in rural areas was better than that in the city; there were also students who stated that they had not thought about the opportunity of promotion when they were looking for their

first jobs (see Section 6.7.3). To investigate this topic further, questions A14 and A15 were designed.

#### **7.2.2.6 Working Environment**

In the literature, a lack of resources and technology available in rural health services were identified as negative influencers, while the relaxed and friendly working environment of rural health service were identified as a positive influence on their future rural employment intentions (Lea et al. 2008). Limited professional backup and limited resources were recognized as anticipated professional challenges in rural settings (Bushy and Leipert 2005).

In the interviews, three interviewees mentioned the nurse-patient relationship. They thought the nurse-patient relationship in the rural area was easier to deal with than in urban areas (see Section 6.9). Students thought that the equipment was not advanced enough in the rural settings. All these perspectives were congruous with the literature.

In the questionnaire, questions A17 and A18 were designed to test these views in general at a quantitative level.

#### **7.2.2.7 Personal Commitment**

In the literature, it was suggested that various personal values have impacts on professionals' decisions to come and to stay in rural communities, and these personal views are shaped by their characteristics and experience (Manahan et al. 2009). Mentors and clinical teachers played an important role in shaping students' values, and thus impacted on graduates' rural career pathway (Stagg et al. 2009).

In the interview, one interviewee expressed that she was intending to work rurally, and the reason was largely because she wanted to help people there. With the

commitment of helping people there, she would not care much about the financial rewards or the difficulty of the environment (see Section 6.10). In the questionnaire, question A19 was related to this issue.

#### **7.2.2.8 Parents' Impact**

In the interviews, it was often mentioned that students' decision-making about jobs depended on their family members' opinions, especially parents' (see Section 6.11). However, there were not many similar reports in the literature.

To investigate whether their family members would support their taking a rural job, Question A20 was designed.

#### **7.2.2.9 Family Issues**

In the literature, rural areas were reported to be a good place to raise children, which encourages the potential candidates to take a rural job; and the spouse's workplace was also raised as an issue which influences their choices of locations of their jobs (Bushy and Leipert 2005). In the interview, one interviewee mentioned that she might worry about her future children's educational opportunities and her spouse's job in a rural area. In the questionnaire, Question A21 was designed to examine this factor.

#### **7.2.2.10 Labour Market**

In the literature, few studies in nursing had mentioned the labour market except one study which had identified the work availability as a factor which encourages students to take a rural job (Schofield et al. 2009). However, this study did not explore and explain this factor in detail. In the interview, the labour market seemed

to be an influencer on students' taking a rural job (see Section 6.13). To investigate this factor, question A22 was designed.

In the interview, it was found that students were very concerned about the type of contract offered by the employers. A permanent contract was favored by most of interviewees. Question A23 was set to investigate this issue.

#### **7.2.2.11 Employment Policies**

Some employment policies either set by local governments or health institutions were mentioned by interviewees; they included the educational qualification requirement, the local resident requirement and the work experience requirement.

The findings of the interviews suggest that the impact of policies on students' intentions of working rurally is apparent. There were some policies which prevented some diploma graduates from working in a city or big hospitals, which might have the effect of forcing these graduates to work in rural areas. There were also policies which limited the opportunities for non-local residents to work in a community center, including a rural health community center (see Section 6.14). In the questionnaire, questions A24 and A25 were designed to investigate this factor.

#### **7.2.2.12 Others**

In the literature, there were reports about successful and famous rural medical education programs that involve cultivation of rural health professionals, such as rural campuses and rural placement programs out of urban campuses (Playford et al. 2010). In the study setting, there were not any special rural nursing educational programs in the formal education system; hence this topic was not included in the questionnaire. This is by no means to say that these education programs have no impact on the rural workforce. The same goes for the compulsory service, as there

was no special compulsory service policy enacted in this province or mentioned by the interviews, this topic was not examined in the questionnaire survey.

Questions A27 and A28 were similar to questions A13 and A15, respectively. Initially they were designed to test the reliability of participants' answer, but were deleted after the pilot study as they confused the participants by raising the same questions twice.

To summarize, questions in part A were set to investigate students' perspectives about the following factors: (1) community environment, (1) financial rewards, (3) rural nursing social status, (4) the nature of the job, (5) professional development, (6) personal values on the job, (7) family support, (8) family issues, (9) the labour market, (10) government employment policies. For the links between these questions and the factors see Table 7-2.

### 7.2.3 Composing Questions about Nursing Students' Intentions to Work Rurally (Questionnaire Part B)

In questionnaire Part B, five questions were designed (see Table 7-3). For the detailed response options and scales see the questionnaire (Appendix 9).

**Table 7-3: Questions and Response Options about Students' Preferences of Health Institutions and Intentions of Working Rurally**

<i>Questions</i>	<i>Response options</i>
B1. Indicate the extent of your preference to the following health institutions in your career. A. A hospital in capital cities B. A hospital in county cities C. A hospital in rural areas D. A Community centre in cities E. A community centre in rural areas	10-point scale
B2. Indicate the probability of your taking a rural job immediately after your graduation.	10-point scale
B3. Indicate the probable duration of working in rural areas in your career.	1.Never 2.Part of my career 3.Half of my career 4.Most of my career 5.All my career
B4. What are the most important three reasons for you to consider not taking a rural job?	A list of options
B5. What are the most important three reasons for you to consider taking a rural job?	A list of options

In the following, the researcher gives the explanations of the rationales for constructing these questions and response options.

Examining students' preferences for various health institutions can provide a comprehensive picture of how students view the rural nursing health institutions. In the literature it was reported that posts in rural areas were often considered less desirable in some developing countries, such as Namibia (Fritzen 2007) and also

some developed countries (Oulton 2006), and the capital option had the widest appeal (Orpin and Gabriel 2005). Similar studies had been found in the study setting. So question B1 was designed to examine participants' preferences of health institutions.

Preference is one's likes and dislikes, ranging from what is most desired to what would be the least desired (Gottfredson 1981). In the question, five kinds of health institutions: hospitals in capital cities, hospitals in county cities, hospitals in rural areas, community centres in cities, community centres in rural areas, were listed to ask nursing students to rate their extent of preference. A rating scale was provided with ten points in it and two extremes of most like to most dislike indicating the direction. This linear, numeric scale can provide both absolute measures of importance and relative rankings data; compared to forced rankings, they can provide relatively unrestricted interval data (Alreck 2004). The scales were listed beside each item, which form a visual pattern for the responses and it was considered to be easy for respondents to circle a number.

In the literature, the percentage of nursing students who wish to work in rural areas varies considerably in different countries (Blaauw et al. 2010). In order to examine students' intention to work rurally in the study setting, question B2 asked nursing students to indicate the probability of their taking a rural job right after graduation. This question had not been designed as a 'yes or no' dichotomous question as it was found in the exploratory interviews that it was difficult for students to give a simple 'yes or no' answer on this issue; what they could give was just a probability. So if a dichotomous question was provided, students might be forced to choose 'yes or no', which might cause a large extent of bias; thus a 10-point rating scale was designed to allow students to indicate the probability.

It was also found in the interview, that nursing students might not directly select to work rurally right after their graduation, but might have intentions to work rurally later. The literature also reported that intentions about practice location in the short term might differ from their longer term plans (Schofield 2009). So question B3 was

designed and asked nursing students to indicate the probable duration of working in rural areas in their career, and five alternatives: *never*, *part of my career*, *half of my career*, *most of my career* and *my entire career*, were provided. It was a single-response item; only one alternative was allowed to be singled out from five alternatives.

To understand the underlying reasons for nursing students' choices of working rurally or not working rurally, question B4 and question B5 were set up and asked them to select three main reasons from a list of possible reasons, which was constructed based on the interview data and literature review. The respondents were instructed to tick not more than three reasons for their choices. An open-end option was also provided in the list of alternatives to allow the participants to write their own answers.

Perspectives about rural nursing practice can only provide information about how they view rural nursing practice, but do not directly provide information about which aspect is important for them to consider a rural job. Individual students may value factors differently in different aspects. For example, some students may think financial rewards are important in looking for a job, but some students may think working environment is important to their decisions to take a job. So questions B4 and B5 were designed to provide more direct information about why students choose to work rurally or not.

## **7.3 The Cover Letter and Instructions**

Apart from the main questions in the questionnaire, a cover letter and some instructions were also developed. The following sections briefly explain the construction of the cover letter and these instructions.

### **7.3.1 The Cover Letter**

A cover letter was designed to inform the participants about the research. In the first paragraph, it introduces the researcher and the purpose of the study, and explains the selection of the candidates and the time needed to complete this questionnaire. In the second paragraph, it gives an assurance that the data will be treated confidentially and a declaration that participating in the survey is voluntary. At the end, it provides the email address and the correspondence address of the researchers.

The cover letter covers two pages and it can be separated from other parts of the questionnaire, thus the participants can remove and retain it easily.

### **7.3.2 Instructions**

Instructions for filling out the questionnaire were given alongside each question and at the beginning and at the end of the questionnaire.

At the beginning of the questionnaire, an instruction about the definition of rural nursing practice was presented to define the concept of rural nursing in this study. This instruction was given based on the consideration that there might have different understandings about rural areas and thus rural nursing among the interviewees. To avoid different interpretations, this instruction was given to keep the concepts consistent in this study. This instruction says that “rural nursing practice refers to nursing in the hospitals or the community centres or other health facilities in

townships or villages”. This definition was derived from Chinese government documents (Ministry of Civil Affairs 2006) and had been kept consistent with the purpose of this study.

There were some other instructions in the questionnaire. Within each question, a short instruction about how to give answers was given, such as “please circle one number” and “for each row, please choose one answer that best represents your views by ticking the appropriate box”. At the end of the questionnaire, a reminder of completion was presented.

## **7.4 The Ordering and Layout**

In the above, the development of the content of the questionnaire is reported. In the following sections, the arrangement of the ordering and the layout of this questionnaire are explained.

### **7.4.1 Ordering the Questions**

In ordering the questions, the following points were considered, according to the guidelines recommended in the book of *The Survey in Social Research* (De Vaus 2002).

- Grouping the questions into sections. The questionnaire was organized into three sections: section one was about students’ perspectives of rural practice, section two was to examine students’ preferences and intentions, and section three was for demographic information.

- Demographic questions were asked in the last part of the questionnaire to prevent the possible sensitivity of some participants to some demographic questions, for example, their age and educational qualifications.
- The questionnaire began with questions about participants' perspectives on rural nursing practice and was then followed by questions about their intentions of working rurally. This arrangement not only meets the requirement of going from easy to difficult, but also follows the logical thinking order.
- In part A of this questionnaire, as a series of items was asked, the positive and negative items were mixed up to avoid an acquiescent response.

#### **7.4.2 The Layout**

Regarding the layout, the following points were considered in the questionnaire design:

- The contents were kept in focus and as short as possible to avoid being over length. A lengthy questionnaire may place a burden onto the participants and lead to reluctance or rushed response (De Vaus 2002).
- A variety of print styles were used in the questionnaire to enhance the appearance, and they were kept in a consistent manner. For example, the styles for heading, questions, and instructions were differentiated.
- The arrangement was carefully adjusted according to the contents to ensure the enough space.
- The options of most of the questions in part B and part C were arranged in a vertical format. This vertical arrangement was based on two considerations:

(1) it can clearly distinguish questions from the answer; (2) it is easy to code. Both of these advantages have been argued by Bryman (2004). In part A, since there was a battery of questions with identical options, a vertical format would take too much space, thus the options were arranged horizontally and boxes were used to avoid confusion.

- Clear instructions about how to respond were given in each question. For example, “place a tick in the appropriate box” or “circle one number”.

Finally, the layout and ordering of the questionnaire were tested in the pre-test, which will be described in the next section.

## **7.5 The Pre-test**

To improve the validity and reliability, a pre-test of this questionnaire was conducted. After the questionnaire was designed, the questionnaire was translated into Mandarin. A few classmates who understand Mandarin and English were consulted for the translation and one expert in Chinese literature was consulted for wording and grammar.

Then four final year Chinese nursing students were invited to attend a pre-test. The pre-test took place in a suite. A pen was offered to them, and a brief of this pre-test was given before they began to complete the questionnaire. They were asked to note any editorial suggestions or unclear wordings on the questionnaires. A timer was set to measure the time they spent to finish the questionnaire.

The students finished the questionnaire in 10-15 minutes. After all students had finished, a group discussion was held in the same place. The students were asked to comment on the clarity of questionnaire, including instructions, questions and the response choices. The opinions mentioned in this discussion were as follows:

- (1) It was not daunting for them to finish it. In general, part A is the longest part, and part B and part C are very easy to finish.
- (2) The contents were something that they felt was relevant to them. One of the students said those questions were just what she was concerned about.
- (3) They acknowledged that until being reminded they almost ignored the initial instructions. They explained that since they had been asked to complete questionnaires frequently, finishing the task quickly had become a habit.
- (4) Students asked why the demographic questions were put at the end of the questionnaire. The researcher explained it is to avoid the possible sensitivity of some participants. These students said those questions did not matter for them. So, one student suggested that those demographic questions should be put at the beginning of the questionnaire as Chinese students are used to being asked for demographic information at the beginning; but another student argued that it looks better to arrange them like this.
- (5) One student mentioned it was not common for her to give an answer of extremely, such as “strongly agree” or “strongly disagree”. She mentioned it was Chinese traditional culture to act in a modest manner. Thus, she seldom selects an answer with the word “strongly”.

A native final year student was also asked to look at the English version of the questionnaire. The researcher discussed with her the different meanings of some words, such as preference, like and dislike, kindly and friendly, and the live policies and current policies. All these participants received no remuneration but were thanked for their time.

According to these discussions and comments, a few mistakes were found and corrected; and some revisions were also undertaken to improve the design of the questionnaire.

## **7.6 The Test-retest**

To evaluate the external reliability of this generated questionnaire, a test-retest method was adopted in this study. The test and retest were conducted at the end of October and the middle of November after the ethical approval of the survey was obtained. The results were at an acceptable level. This section will report the procedure and the results of the test-retest.

### **7.6.1 Purposes of the Test-retest**

The test-retest method was adopted to assess the external reliability of this questionnaire. Test-retest is a straightforward way of assessing reliability and in De Vaus's view is "*the only way to check the reliability of a single question*" (De Vaus 2002:52). This method is to ask the same group of people the same questions to calculate the correlation between the two sets of answers. However, there are problems for this procedure. One is that intervening events may cause some discrepancies between the two sets of results. Another is that if the test and retest are too close in time, subjects may recall an earlier answer, thus, an artificial consistency of these two sets may occur (Bryman and Cramer 2011). To avoid these two problems, the test-retest in this survey was arranged at an interval of two weeks.

### **7.6.2 Participants and Procedure**

In line with the purpose of the test-retest, the sample size of it was set to be ten to fifteen. Considering the possibility of the loss of participants in the retest, the initial number of target students was set as about twenty. After obtaining the permission of a nursing school, the researcher went to a study room in a building where the final year nursing students were living during their final year clinical placement. A total of twenty-one students voluntarily participated. The students were instructed how to fill

the questionnaire by the researcher and after they finished the test, they were invited to attend the retest.

Two weeks later, the retest was conducted through an identical procedure. Fifteen of the original students completed the retest. Other students missed either because they were taking a night shift or were out at the time of the retest. Therefore, the final sample for the test-retest study consisted of fifteen students.

The test and retest were administered by the researcher. All students participating in the test and retest were asked to write their own marks on the questionnaire to allow the researcher to match the test and retest questionnaires. Most students used their QQ (a popular internet program in China like Skype) number or email-address at the end of the questionnaire. The finished questionnaires, which the students had labelled with their QQ number or email address, were strictly protected by the researcher. They were stored in a locked drawer and only can be accessed by the researcher. Students participating in the test and retest were totally voluntary.

### **7.6.3 Analyses of Reliability**

The data were entered with double check and analysed using SPSS 19. The value of test-retest reliability should be judged according to different situations. For those items that are not supposed to change over time, a high value is expected. For those items that can be changed easily, a low value may be reasonable.

In this study, since students' perspectives and attitudes towards rural nursing job can change from a period of time to time, but not day to day; in a two-week interval, moderate test-retest reliability was expected. Thus for questions in Part A and Part B, the repeatability coefficient was calculated by single measure intraclass correlation coefficient (ICC). This application of ICC to calculate the individual reliability has been argued by the paper of Weir (2005); and has been adopted in some studies (Evenson and McGinn 2005, Yang et al. 2010).

For questions in part C, as this demographic information is supposed not to change in these two weeks, a high value of reliability is expected, thus a method that directly compares these two data sets was used.

The steps of analysis in this test-retest data was as the following:

- Created two original files, named as Test and Retest;
- Calculated the repeatability coefficient for each item in Part A;
- Calculated the repeatability coefficient for question B1, B2 and B3;
- Check the agreement of these two sets of answers in part C.

The results are reported in three separated parts: the reliability of questions in part A, the reliability of questions in part B, and the reliability of questions in Part C.

#### **7.6.3.1 The Reliability of Questions in Part A**

The values of ICC for each item in part A are shown in Table 7-4. According to Landis and Koch (1977), the strength of test-retest agreement for ICC is classified as follows: below 0.20 is poor; 0.21-0.40 shows a fair agreement; 0.41-0.60 indicates a moderate degree of agreement; 0.61-0.80 means a substantial agreement; and 0.81-1.0 indicates almost perfect agreement. These classifications were used to interpret the results.

The average value of ICC for all items is 0.5188. According to Landis and Koch's (1977) classification, this is in a moderate degree of agreement. Two items (A3 and A11) showed an almost perfect reliability, seven items (A14, A15, A16, A18, A20, A22 and A24) displayed a substantial agreement, and thirteen items (A1, A2, A4, A5, A7, A8, A9, A12, A17, A19, A21, A23 and A25) indicated a moderate reliability. For items A6, A10, A13, A26, A27, and A28, the value of the ICC is relatively low; the differences were significant at the 0.05 level.

**Table 7-4: Correlation Coefficients of Questions in Part A**

Items	ICC	Sig
A1. Poor community amenities	0.561	.012
A2. People friendly	0.596	.007
A3. Like living rurally	0.831	.000
A4. Lower financial rewards	0.497	.025
A5. Lack of prestige	0.547	.014
A6. Less stress	0.164	.271
A7. Light workload	0.402	.061
A8. Fewer night shifts	0.497	.025
A9. More personal autonomy	0.417	.054
A10. Lack of anonymity	0.017	.475
A11. Skills simplicity	0.825	.000
A12. Fewer opportunities for learning skills	0.494	.026
A13. Fewer opportunities for training	0.326	.109
A14. Easy to promotion to a nurse leader	0.678	.002
A15. Easy to promote professionally	0.784	.000
A16. Difficult for taking a further degree	0.669	.002
A17. Poor equipment	0.448	.041
A18. Close nurse-patient relationship	0.736	.001
A19. Willingness to help	0.543	.015
A20. Family members disapproval	0.701	.001
A21. Lack of children education opportunities	0.557	.013
A22. Easy to get a permanent position	0.703	.001
A23. Difficult to find a job in cities	0.467	.034
A24. Difficult to change workplaces	0.715	.001
A25. Attractive recruitment policies	0.547	.014
A26. Skill diversity	0.327	.108
A27. Opportunity of training	0.257	.168
A28. Promotion through professional grades	0.221	.205
Average	0.5188	

Note: The figure .000 in significance column means the value of significance is less than 0.001.

From the results, it can be seen that the average value of reliability is acceptable; however, the value of ICC for each item reveals that the value of some items are low and the differences are significant. Checking the changes for each pair, it was found that students have many changes in questions A27 and A28. As there are similar questions in part A, these two items might have caused students confusion and were considered to be deleted. Question A26 was moved next to question A11. In question A10, there was no big change found in the two sets of tests; the low value of ICC was considered to have been impacted by the low variance. The low value of ICC in question A6 was caused by a substantial change occurring in one case.

### 7.6.3.2 The Reliability of Questions in Part B

The values of ICC for question B1, B2 and B3 are presented in Table 7-5. The values of ICC for these items range from 0.640 to 0.904, with an average of 0.769; According to the Landis and Koch's (1977) classification, these values all reach a substantial agreement or an almost perfect agreement level. All correlations were significant at the 0.05 level. As question B4 and B5 are multiple-choice questions, ICC is not applicable to calculate their reliability.

**Table 7-5: Correlation Coefficients of Questions in Part B**

Items	ICC	Sig
B1a. Hospitals in capital cities	0.818	.000
B1b. Hospitals in county cities	0.730	.001
B1c. Rural hospitals	0.830	.000
B1d. City community centres	0.789	.000
B1e. Rural community centres	0.674	.002
B2. Probability of taking a rural job	0.904	.000
B3. Probable duration of working rurally in career	0.640	.000
Total average	0.769	

Note: The figure .000 in significance column means the value of significance is less than 0.001.

For questions B1, B2 and B3, the results showed moderate to high agreement of the test-retest data. These findings suggest that these indicators are reliable to measure students' preference and intentions of working rurally.

### **7.6.3.3 *The Reliability of Questions in Part C***

In part C, as this demographic information is supposed not to change in two weeks, the answer should be the same in these two sets. Thus direct comparison of those two sets of answers and manually accounting the number of those matched and unmatched was used as a method to examine their reliability.

The answers in question C1 (gender), C3 (rural or urban ground), C4 (education qualification), C5 (rural living experience), were matched exactly in the test and retest. In question C2, C6, C7 and C8, some alterations were found.

In question C2 (age), two students had one year shift between the test and retest data.

In question C6 (living years in rural areas), three students provided different answers in these two sets of measurement. There was one year difference in two students' answers, and there were four years difference in one student's answers.

In question C7 (rural placement experience) and C8 (the length of rural placement), one student wrote a different answer in the test and retest. In the test, she answered she had no experience of rural placement; in the retest, she circled 'yes' in the question C7 and put one month in the question C8.

Although the above alterations in age, rural living experience and rural placement experience in these two sets are smaller, as they are not expected to change over this short period, it reveals some degree of instability of the answers to these questions, especially for question C6 (the length of living rurally) as four students gave alternative answers.

#### **7.6.4 Conclusions and Implications**

There were several limitations in the test-retest. First the sample size of this test-retest is rather small. Secondly, the participants were all bachelor students in one nursing school. With these limitations, the results of the test-retest only serve for estimating the reliability of the generating questionnaire, and not supposed to interpret into a large scale and diverse population.

Despite the limitations, this test-retest provided valuable information on the reliability of this questionnaire. The results of the analysis suggest that most selected items in the survey questionnaire have acceptable test-retest reliability.

This test-retest implies that there are a few modifications required in the questionnaire. The first is to provide more detailed instructions to students in the question about C2 (age) and C6 (years of living in rural areas). The age should be clearly instructed as whole years, and 'years of living in rural areas' should be defined specifically in the instruction, for example, whether to include the time they study in the city. The second is to move question A26 next to question A11 as they measures similar perspectives, and delete questions A27 and A28 to avoid confusing students. The third is to remind students to look at questions closely when they fill in the questionnaire, as some errors may have been caused by students' inattention and half-heartedness. For example, one student ticked the education program 'associate', but all students in this test are in the same nursing bachelor program.

## **7.7 Validity and Reliability**

Validity and reliability are two important concerns in questionnaire design. In the following, some issues related to the face validity and construct validity, external reliability and internal reliability of this questionnaire will be discussed.

The validity is to what extent we have measured the concept it is designed to measure. There are various types of validity, such as face validity, concurrent validity, predictive validity, constructive validity, convergent validity and ecological validity (Bryman 2008). Although it is impossible to examine all the aspects of a measure, some basic steps ought to be taken to ensure the validity of the measure. In this study, to ensure the face validity, some measures have been taken to boost the validity. For instance, an exploratory interview was conducted to inform the contents of the questionnaire design; the generated questionnaire has been discussed and refined in several supervisory meetings; and a pre-test was undertaken to test the questionnaire and consult the nursing students.

The reliability refers to the consistency of a measure and it entails two aspects: external reliability and internal reliability. The former refers to the degree of consistency over time and the latter is related to the consistency of multi-item scales (Bryman and Cramer 2011). The source of unreliability can be due to bad wording or inconsistent coding (De Vaus 2002). To increase reliability, questionnaire wordings were carefully considered and they have been revised based on a pre-test and a pilot study. To assess the external reliability of this questionnaire, the test-retest method was adopted and has been reported in Section 7.6.

If a set of questions is used to measure one concept rather than a single-item indicator, the internal consistency reliability usually needs to be assessed. In this questionnaire, no multiple-item scale was built. But internal consistency also needs to be assessed in those related questions, which is to check the consistency of a person's response on one item compared to his responses in other related questions. The questions A11 and A12 form a pair of equivalent questions designed to measure

the reliability of the answers. The Cronbach's alpha is 0.905 for this pair of questions in the main study, indicating a high internal consistency. There are some other questions which are to some extent related, for instance, the questions about preference in rural hospital, preference in rural community centres, the probabilities of working in rural areas right after their graduation and the probable duration of working in rural areas in their career. The test of reliability of these four items shows that these four items have a Cronbach's alpha at 0.722, meeting expected relationship between them. These results all indicated that the questionnaire has an acceptable level of internal reliability.

## **7.8 Chapter Summary**

The development of the questionnaire went through two stages. The first stage was formulating the initial questionnaire; the second stage was revising the questionnaire by a pre-test, a test-retest and a pilot study. The pilot study will be reported in the next chapter, as it is also related to the survey administration.

The contents of the questions in the questionnaire were formulated based on the literature reviews and the findings of the exploratory interviews. The layout and ordering were carefully considered to facilitate nursing students' understanding of it.

To see whether there were any issues regarding the contents, wordings and formats of the questionnaire, a pre-test was carried out. In the pre-test, four final year Chinese nursing students were consulted and they approved the questionnaire.

To evaluate the external reliability of the generated questionnaire, a test-retest was carried out. A sample of fifteen final year nursing students participated in the test and the retest with a two-week interval. The reliabilities of most questions in the questionnaire were evaluated by single measure intraclass correlation coefficients (ICC). The reliabilities of questions about demographic information were estimated by direct account and those unmatched data were analysed. In general, the results showed that the external reliability of this questionnaire was of an acceptable level.

The internal reliability was assessed by responses to some related questions in the questionnaire. The Cronbach's alpha of a pair of equivalent questions was 0.905 and of four related questions was 0.722. These indicated that the internal reliability of the questionnaire was acceptable.



# Chapter 8

## Data Collection of the Survey

During December 2011 to March 2012, a questionnaire survey was conducted in the study setting. In this chapter, the researcher will report the sampling, access to participants, distribution and collection of the questionnaires and the relevant ethical issues. To improve the quality and efficiency of the main study, a pilot study was carried out before administering the main survey. Thus, the pilot study will be reported first.

### ***8.1 The Pilot Study***

In late November 2011, a pilot study was conducted in the study setting, one eastern province in China. The questionnaire in the pilot study is given in Appendix 9. Thirty pilot questionnaires were collected. In the following sections, the researcher will report the sampling, data collection processes, and its results and implications for the main study. The ethical approval was obtained prior to the data collection.

### **8.1.1 Purposes of the Pilot Study**

In general, a pilot study is used to test whether the survey questions and method operate well, and to gather information prior to a larger study to improve its quality and efficiency (Moser and Kalton 1979). Specifically, in this study, the pilot study was carried out for the following purposes:

- ✚ To check whether the instructions given to the participants in the survey are comprehensible;
- ✚ To check whether the survey questions operate well;
- ✚ To sharpen the researcher's skills in handling the survey procedures;
- ✚ To assess the feasibility of the administration method of the survey.

### **8.1.2 Data Collection of the Pilot Study**

In the pilot study, three institutions which hold different nursing education programs in the study setting were selected. One was a university which delivers the bachelor nursing program, one was a vocational college which provides associate nursing education, and the other was a general college which has a diploma nursing school. From each institution, ten students were invited to participate in the pilot study. In total, thirty participants made up the pilot study sample. These participants were excluded from the main study.

The general procedures of the pilot study were as follows. Firstly, the researcher made calls to the headers of nursing schools or the directors of nursing departments expressing the desire to conduct the questionnaire survey and asking for an email address. Then, the researcher sent emails to the nursing schools, which further introduced the research survey in writing, and listed the things which the school needed to provide if they were willing to cooperate with the survey. The research information sheet was also attached in the email and the nursing school was asked to

distribute it to their students. After obtaining permission and information about their students, ten students for the pilot study were randomly selected by the researcher from the lists of students units in each of these three nursing schools. With the help of their staff, the times and places for administration of the pilot study were arranged.

Originally, the researcher planned to distribute all the questionnaires in the classrooms of those nursing schools, but it was unfeasible for the pilot study to collect data in the university classrooms because the students were taking placements during this period of time. It was inconvenient for them to come back to university classrooms only for completing questionnaires. Thus an alternative method was used in the pilot study, that was to collect data in the places they took placements. Thus in the pilot study, classrooms and meeting rooms in the students' placement hospitals were used to distribute the questionnaires.

The questionnaires together with ink pens were distributed by the researcher to participants. Information about the purpose of the pilot study and instructions were given orally again before participants began to fill in the questionnaire. The researcher remained in the room to answer and collect any questions the students raised as they were filling out the questionnaires. The questionnaires were checked for completeness randomly and some missing data identified was then clarified with the students at that time.

### ***8.1.3 Analysis of the Pilot Study***

In general, the questionnaire was well accepted by students. Participants were happy to participate in the study and there were no complaints about the length of time they spent on it. The average time of completing the questionnaire was within fifteen minutes.

The majority of the completed questionnaires were fully completed. There were a few students who handed in the questionnaire with missing data. This was found by

an immediate check when students handed in the questionnaire. When the researcher identified the missing data, most of the students could immediately recall what had happened and explained the reasons to the researcher. One student who skipped two items in part A said that she skipped these two items because she did it too quickly. One student who circled more than three options in question B4 and B5 said she had not read the instructions of these questions. The student who missed the answer in the question about the length of living rurally explained that at first she wanted to leave the question to have a think later, but after she finished the rest of the questionnaire, she forgot to go back to answer it. These explanations were very useful for the researcher to understand why these missing data occurred and to judge whether modifications was needed to refine the questionnaire.

The completed questionnaires were further checked closely for the purposes of the pilot study, looking for whether there were some missing data and whether they generated the requested information. One piece of missing data was found in the close manual check. The data were manually entered into a computer and checked again. After being double checked, a trail analysis was carried out on the data. As this was a small sample pilot study, only some basic descriptive analysis was carried out to see whether it could generate the relevant information. These results are attached in Appendix 10.

#### ***8.1.4 Implications for Carrying Out the Main Study***

This pilot study provided very useful information for carrying out the main study, especially in the following three aspects: what kinds of modifications need to take for refining the questionnaires, where to distribute the questionnaires, and how to manage the distribution.

#### **8.1.4.1 Implications for Modifying the Questionnaire**

The data gathered from the pilot study and test-retest suggested that the questionnaire was well accepted by nursing students and could generate the information as needed. But to further improve the quality of the questionnaire, a few modifications were undertaken.

- In question C2, which asks the age of the participant, the instruction *last birthday* was added.
- In question C3, which asks the length of living in rural areas, the instruction *Number the years you really living in rural areas; please do not include the years you study in the city* was added.

After these modifications, a final questionnaire was generated (see Appendix 11) and used for the main study.

#### **8.1.4.2 Implications for Where to Distribute the Questionnaires**

Classrooms in universities are considered as ideal places for distributing the questionnaires, but this requires students gathering together in their universities and thus the time for data collection has to depend on when these nursing students gather together. According to the information the researcher gathered, during the initially planned period of data collection, there were some points of time when students would gather in their nursing schools to take examinations or meeting, but that was only for some nursing schools and not all the nursing schools would have gathering points in this limited period. This meant to ensure sampling quality and collect all the needed data, expanding the data collecting places to the placements or extending the period of data collection was needed for the main study. After obtaining the supervisor's and ethical committee approval, the researcher expanded the data

collection place to the placements and extended the data collection period by two months.

#### **8.1.4.3 Implications for Managing the Data Collection Procedure**

Related to the survey procedure management, the following implications were drawn from the pilot study. Firstly, providing an ink pen to participants was found necessary for students who had not brought their pens and was also very helpful to facilitate the process of the survey, thus an ink pen was provided for all participants in the main survey. Secondly, when carrying out the survey on a large group of students, it is difficult for the researcher to check the completeness when participants hand back the questionnaires; thus, to reduce the amount of missing data, before participants start to fill in the questions, the researcher should emphasize the importance of reading the instructions; and after they finish the questionnaire, the researcher should remind them to have a check of the completeness.

#### **8.1.5 Conclusions of the Pilot Study**

The pilot study informed the main study in the following ways: the questionnaire was well accepted by nursing students; the researcher's skills of conducting this survey were well practiced and improved; some strategies of procedure control in undertaking the main survey were established; the places to collect data were considered to be classrooms in the participants' university, meeting rooms or classrooms in their placement institutions. The pilot study also led to the improvement of this questionnaire.

## **8.2 The Main Study**

The main survey was conducted in the period of late December 2011 to the end of March 2012. In this section, the researcher will report the processes of survey data collection, including the sampling process, access and recruitment of participants, the distribution of the questionnaires and how ethical issues were dealt with in the survey.

### **8.2.1 Sampling**

Relating to sampling, the sample population, sampling criteria, sample size and the process of sampling will be reported.

#### **8.2.1.1 The Population**

The population of this survey consists of all the final year nursing students in regular nursing education programs in the study setting.

#### **8.2.1.2 Sampling Criteria**

According to the research purpose and the resources available, the inclusion criteria for the sample in this study were: (1) Final year nursing students who were in diploma, associate, bachelor and master programs. Not all students in all years were selected because of time and resource limitations; and the final year students were selected because this was a key point for them to consider a job location. (2) Students in regular nursing educational programs.

The exclusion criterion is: (1) those in informal and adult nursing training programs. Students in adult nursing educational programs have not been included as they usually already have a nursing job and when they graduate from adult nursing

programs, they do not have to change their job positions; (2) those who have been involved in the pilot study.

### **8.2.1.3 Sample Size**

The required sample size depends on two key factors: the precision required for estimation and the degree of variation in the population (De Vaus 2002, Rees 1995). However, the difficulty is that “*no survey is confined to one purpose, nearly always it seeks information on a number of different variables*” (Moser 1958:117). This study is no exception. The questionnaire has been designed to investigate several issues, such as the extent of their agreement on some perspectives of rural practice, the likely probability of students taking a rural job after their graduation, and the probable duration of working in rural areas in their career. The need for precision and variation in these variables varies. In this situation, De vaus (2002) pointed out that researchers may only select one relatively important factor to estimate the sample size (De vaus 2002). In this study, the researcher selected the variable the probability of taking a rural job immediately following graduation to estimate the sample size. The process of estimation and considerations are presented below:

#### (1) Estimating the initial sample size from previous study results

There were some reports about the difference in taking a rural job between rural background students and urban background students, but the participants in most of those studies were clinic nurses, not students. Some studies related to nursing students, but without the detailed statistical figures for estimating the sample size. One longitudinal study in New Mexico (Daniels et al. 2007) had graduates as participants and with proportions of rural and urban students working in rural areas in its report. Although it also did not perfectly capture the variables in this study, it was conceptually close, thus it was selected to provide the initial point of estimating sample size of this study. The results of this study showed that 43% of

rural background graduates chose rural practice in their career, while for urban background graduates the percentage was 28%. Based on the information above, an index of the effect size for this proportion difference was calculated as following (Cohen 1988, 181):

$$\begin{aligned} h &= |\phi_1 - \phi_2| = |2\arcsin\sqrt{p_1} - 2\arcsin\sqrt{p_2}| \\ &= |2\arcsin\sqrt{43} - 2\arcsin\sqrt{28}| = 1.430 - 1.115 = 0.315 \end{aligned}$$

According to Cohen's guideline, the effect size for this value  $h = 0.315$  is between small and median (Cohen 1988, 185; Polit-O'Hara and Hungler 1995, 459). Based on this information, this study posited an index of effect size of  $h = 0.4$ , as for pursuing a power of 0.80, the claimed effect size should be less than detected differences. According to these requirements and conditions that is effect size at  $h=0.4$ ,  $\alpha=0.05$  and power  $=0.80$ , the researcher checked Table 6.3.5 in the book of statistical power analysis for behaviour sciences (Cohen 1988:195), which presents approximate sample size requirements for estimated population differences between two proportions. The sample size required to reach a power of 0.8 is about 100 for each group; and the total sample size is estimated at 200.

## (2) Estimating the initial sample size from pilot study results

Considering this is an initial study in this area, detecting 0.7 points difference in this variable could be accepted. The pilot study showed the standard deviation of this variable was 1.65. If it is assumed that the population has a standard deviation of 1.65, the index of effect size is  $0.7/1.65 = 0.42$ . The index of effect size for this study was thus set at  $d=0.4$ ; checking Table 2.3.5 for power test in the book of statistical power analysis for the behavioural sciences (Cohen 1988:36), at  $\alpha=0.05$ ,  $\beta=0.8$ , the sample size for each group is 100. The total number was estimated at 200.

(3) Consideration of the size of the population

The relative size of a sample to the population is not as important as the absolute size of a sample (Bryman 2008). The accuracy of the sample largely depends on the absolute size of the sample, not on the relative size of the sample to its population (De vaus 2002:81). Only if the sample represents a relatively high proportion of the population, for example 10% (Moser and Kalton 1979:115); does the estimation of sample size need to be adjusted accordingly. In this study, because the calculated initial sample size is not more than 10% of the whole population (the whole population is around 6800), correction for finite population was not applicable.

(4) Consideration of subgroups

Besides the precision required and variance of the population, another key determinant of an appropriate sample size is the sizes of subgroups which are planned to be analysed (Byman 2008, Moser 1957). De Vaus (2002) suggested that as a rule of thumb, the smallest subgroup should be at least 50 to 100 cases. In this study, two kinds of subgroups will be considered: the rural background group and different education program group. The ratio of the number of students in different education programs is about similar, except students in the master program which was not planned to form an independent group. The ratio of rural and urban background students is estimated at about 3 to 1. Thus a sample size of 200 is enough to ensure the sample size of the smallest subgroup reaches 50, but not enough for 100. As the researcher expected the small group reaching 100, the sample size was expanded to 400.

(5) Adjust the sample size by response rate

The response rates of mail questionnaire surveys for relative nursing studies were reported to range from 50% to 75% (Adams et al. 2005, Rhyne et al. 2006), but

in the situation in which researchers distribute the questionnaires in a gathered place, like a classroom, the response rate was reported at 92% (Mullei et al. 2010). Considering the results in the literature and the conditions of this study, the response rate of this study was estimated at 80%-85%. With this response rate, the target sample size in this study was set at 470-500.

In summary, after considering the precision required, the variance in the population, the size of subgroups in analysis plan, the possible response rate, and along with the considerations of available resources (time, cost), accessibility to respondents, the target sample size of this study was determined at 470-500 in advance of the commencement of the main survey.

#### **8.2.1.4 Stratified and Clustered Sampling**

According to sampling principles and some practical considerations, a stratified and then clustered sampling strategy was used in this study. That is, the sample of this study was derived in two stages: first selecting nursing schools using a stratifying method and then selecting classes from those nursing schools.

The first stage was to stratify nursing education institutions according to the nursing education programs they were offering. The detailed procedures were as follows: (1) separated all the institutions according to the nursing education programs they were offering. Group one: the institutions providing bachelor's or above nursing education; Group two: the institutions delivering the associate's nursing program. Group three: the institutions providing diploma nursing education. The list of nursing education institutions in the study setting was the sample frame for sampling. There were twenty-one nursing education institutions in the study setting at the time when the survey was conducted. (2) Selected two institutions using simple random sampling (the lottery method) in each group. In this survey, a sample of six institutions was selected.

The application of the stratification strategy in this study is based on the argument that “*stratified random sampling tends to have somewhat greater precision than simple random sampling, and it is also generally convenient for practical reasons*” (Moser 1958:79). In practice, the reason for using this strategy was because a clear list of the names of all individual nursing students was not available, but a clear list of nursing education institutions could be obtained; In terms of the greater precision, stratification can ensure that participants in the strata sub-groups are adequate for the analysis (Moser 1958). As this survey was as interested in the results of separated educational groups as in those of the population as a whole, stratified sampling could ensure there would be enough participants in each education program.

The second stage was a cluster sampling, which first randomly selected a sample of classes and then all individuals in the selected classes were included. The procedure was as the following: (1) in each institution, fifty to eighty participants were expected to be recruited. Thus in each institution, two or three classes of students were randomly chosen from the list of the final year nursing students classes provided by the general office. The total classes in each nursing school varied, ranging from four to ten. (2) All individuals in the selected units were invited, except those individuals who had been involved in the pilot study. In the five institutions where the survey took place in the university classrooms, sixty to ninety students were invited. In the institution where the survey took place in their placement hospitals, one hundred and twenty students were invited as a lower response rate was estimated in advance in this situation. (3) All master’s students in the selected university were invited to take part in the survey, as the number of students in the master’s program was very small, less than six students in each university which had the nursing master’s program.

This cluster sampling strategy was used because it could take advantage of existing groups and make the task to inform and organize the participants easy. Thus, it is easily accepted by the cooperating institutions. Indeed, if the researcher had asked to draw a random sample from the list of entire students in their institutions, it would

not be so easily accepted; and even if it were accepted, it would be very difficult to find an appropriate time when all the selected students could attend. Another reason for the cluster sampling was because it was considered to be cost-efficient, just as it was stated “*when the population already exists in cluster, it [cluster sampling] is a practical and cost-efficient method*” (Parahoo 2006:265).

Although there are advantages in taking a cluster sampling, there are also some drawbacks. For example, the cluster sampling may result in a higher standard error compared to a simple random sampling due to “*positive intra-class correlation*” (Moser 1958:91). In this study, students in the same class may have more similar characteristics to each other than to members of other classes. It is also noticed that the number of clusters to be selected at each stage will impact on the representativeness. De Vaus (2002:75) suggests that “*the general principle is to maximise the number of initial clusters chosen and consequently select only relatively few individual or units with each cluster*”. In this study, to increase the representativeness, six institutions were selected as initial clusters and then only two or three classes were selected in each nursing school.

### **8.2.2 Access to Participants**

After the universities or colleges were selected, emails and phone calls were made to general offices or headers of the nursing colleges to explain the purpose of the study and ask permission to conduct the study. This was done in general by the following processes:

- (1) Called the headers of the nursing schools or the directors of nursing departments, expressed the desire to conduct a survey and asked for email address and permission.
- (2) Sent an email to the nursing schools (see Appendix 7), which further introduced the research survey in detail, and listed the things which the schools need to provide if they are willing to cooperate and attached the research information

sheet to the students (see Appendix 8) in the email and asked them to distribute it to nursing students.

- (3) After obtaining permission, the time and places for delivering questionnaires were discussed and arranged with the help of appropriate staff. It is worth noting here that not all the exact dates and times could be set at the very beginning of the process as the researcher hoped; it was a constant communication process; and some dates and times of the survey were confirmed later. A description of participated institutions, places of data collection and the number of questionnaires completed are given in Table 8-1.

**Table 8-1: Institutions and Places of the Questionnaire Survey**

<b>Institutions</b>	<b>Level of Institutions</b>	<b>Places of Data Collection</b>	<b>Questionnaires Completed</b>
Institution 1	A vocational college	Class rooms in the nursing school	80
Institution 2	A secondary health school	Class rooms in the school	66
Institution 3	A comprehensive University	Class room, lecture room and meeting room in placements	89
Institution 4	A comprehensive University	Class rooms in the university	81
Institution 5	A secondary health school in a university	Class rooms in the university	73
Institution 6	A vocational college	Class rooms in the college	56

### **8.2.3 Distribution of Questionnaires**

The questionnaire was distributed in a supervised way. The process, the advantages and limitations as well as the response rate were reported in the following sections.

#### **8.2.3.1 The Supervised Distribution**

The questionnaires were distributed directly to the students in the lecture rooms or classrooms in nursing schools by the researcher in five nursing institutions. In one institution the questionnaires were delivered in students' placement health institutions, as no gathering points could be found in the period of data collection in this university and altering the institution was not considered after delivering the questionnaire in placements was permitted by the ethical approval committee. Lecture rooms, classrooms, and meeting rooms were used in the different placements according to the number of participants and the availability of places.

An oral explanation of the purpose and the procedures was given by the researcher before distributing the questionnaire to the students. The participants were informed that participating in the survey was voluntary and the questionnaire survey was anonymous. An ink pen was offered to each participant to complete the questionnaire. A brief instruction was also given to the students before they started to fill in the questionnaires. Students were asked to have a check of the completeness before they handed in and the questionnaires were collected immediately by the researcher upon completion.

#### **8.2.3.2 The Advantages of the Supervised Distribution**

For a self-administration mode, there are several ways to administrate: handing paper questionnaires to participants in person, mailing questionnaires to potential participants, or administering questionnaires via a website. Considering a potential

lower response rate, internet administration has not been adopted, although it is more economical in terms of travel cost and paper cost accounted, and more time-saving regarding the time needed in coding and entering the data. The mailing method was also eliminated because no clear list of mailing addresses could be obtained and because of the potential lower response rate. The supervised administration which distributes the questionnaires to the participants when they gather in a place was adopted, as this administration method usually has a higher response rate and can give instant instructions to participants and check the completeness by the researcher to reducing the missing data (Bryman 2008).

### **8.2.3.3 *The Limitations of the Supervisory Distribution***

There are also several drawbacks of supervisory administration of the questionnaires in this study. The first drawback is that it requires the permission and cooperation of nursing schools. To organize an activity involving a group of students, permission of the institution is usually needed. In this study, as there were six nursing schools involved, the work of getting their permission and cooperation was indeed the hardest task in the survey. The second is the time point for data collection is limited. Final year nursing students usually have been distributed in the health institutions for practice; thus the time points which students gather in a large group are not many. In this study, it took the researcher a great deal of time and attention to keep connecting with those nursing schools to arrange a suitable survey time. Thirdly, a large amount of travel is involved in the survey. As these six nursing schools involved are in different cities, and with the difficulty in finding a gathering point, in one nursing school, the questionnaire had to be distributed in their placement hospitals, whereby only a small number of students could gather together. So this survey has involved a lot of travel.

### 8.2.3.4 The Response Rate

In total, four hundred and forty-five questionnaires were collected from six institutions. In general, the response rate in these schools was 74%-98%, with a total response rate at 89% (see Table 8-2).

**Table 8-2: The Response Rate of the Survey**

<b>Institutions</b>	<b>Students Invited</b>	<b>Questionnaires Completed</b>	<b>Response Rate</b>
	<b>N</b>	<b>N</b>	<b>%</b>
<b>Institution 1</b>	82	80	98
<b>Institution 2</b>	68	66	97
<b>Institution 3</b>	120	89	74
<b>Institution 4</b>	90	81	90
<b>Institution 5</b>	80	73	91
<b>Institution 6</b>	62	56	90
<b>Total</b>	502	445	89

In the first and second institutions almost all the students who were informed attended the survey, as the survey was arranged before or after they took an examination, so students did not need to come for the survey deliberately and only a few students were absent as they arrived too late. To ensure that they participated voluntarily, the researcher reiterated that participating in the survey was voluntary before distributing the questionnaires.

In the third institution where data were collected in placements, the average response rate was 74%. It is lower than that in other institutions in which data were collected in university classrooms, as it had been predicted. Some students were in night shifts and living far away from their placements, and they were not willing to come to the placement place just for completing a questionnaire. In addition to that, there were always some students on duty and unable to leave their positions although the survey

was arranged at lunch break or at the end of the day.

In the fourth institution, one hundred and eighty students had a meeting together and half of those students (three classes) were informed. They were asked to arrive early if they were willing to participate. Eventually, eighty one students came thirty minutes early and finished the questionnaire with a response rate of 90%.

In the fifth institution, the survey took place before students had their graduate photos, three classes were informed and 91% of the students came to the classroom on time and completed the questionnaires. There were some students who arrived late, but the questionnaires were not distributed to them as the classroom had been arranged for other events immediately after the survey.

In the sixth institution, students in two classes were informed when they had just finished their placement and had a whole day meeting in the nursing school; and fifty-six of them (90%) finished the questionnaires.

In summary, the response rate was affected heavily by the time arranged. If the arranged time was convenient for their participation, such as after an examination or meeting, the response rate was high. If students had to come deliberately for the survey, the response rate was relatively lower.

#### **8.2.4 Ethical Issues in the Survey**

The survey was approved by the ethical approval committee of the University of Edinburgh. Initially, an ethical approval was obtained before the pilot study in October 2011 (The ethical review form is given in Appendix 6). After some amendments were made after the pilot study, a second ethical approval was sought for the revised questionnaire and received in December of 2011 by email. As the study was conducted in China, two experts in community nursing in China were also consulted and their approval for the survey was also obtained. The ethical

considerations related to this survey and preventative measures undertaken are reported in the following.

#### **8.2.4.1 *Avoiding Over Invasion***

Compared to the experimental method, the survey method has fewer risks of physical harm to participants; however, there are still a number of invasions which this method may entail. Related to this, two issues were considered in this survey: one was that completing the questionnaire takes participants' time; another was that investigations about their demographic information may produce psychological stress in some participants. For instance, asking about their educational qualification may cause some students in lower level educational program to be upset. To reduce these negative impacts, the length of the questionnaire has been well controlled and the time for completing the questionnaires was tested in the pre-test and the pilot study. The main survey has confirmed that the average time to complete the questionnaires was about fifteen minutes. The wordings and ordering in the questionnaire have been carefully scrutinized to prevent the possible psychological upset.

#### **8.2.4.2 *Anonymity and Confidentiality***

Considering that reporting their decisions may arouse unnecessary worries in the participants, anonymity and confidentiality were guaranteed by the following protective measures in this survey: (1) The questionnaire survey was anonymous; there were no names in the questionnaires. Thus the participants cannot be easily recognized or traced out. Coding numbers only served for the purpose of data analysis. There was no disadvantage to students if they were absent from the survey. (2) Completed questionnaires were stored in locked drawers. They were only accessible by the researcher. These questionnaires will be destroyed five years after

the study is completed. (3) Data files are protected by password. Except the completed questionnaires, documents related to the survey, such as the emails from nursing schools and the research diary, are all stored in locked drawers or in computers protected by a personal password.

#### **8.2.4.3 Gateway Issues**

This survey was conducted with students in nursing schools. Although nursing students are the main participants, as a way of access, the nursing schools inevitably become gatekeepers. This raises questions about how to respect the rights of the nursing schools and also, in other aspects, how to ensure the information given by those students in the questionnaires has no impacts on their school lives. To deal with the first issue, all the nursing schools involved were given information about the study before the survey, and permissions to access were obtained by telephone or email. The headers of the nursing schools or directors of nursing departments were asked for permission and the permission was guaranteed by asking the involved nursing school to set one cooperating staff to communicate and facilitate the arrangement of time and places of the survey. The second issue was avoided by the procedure of collecting questionnaires. That is, all the finished questionnaires were collected by the researcher and brought back by the researcher immediately after the survey; there was no opportunity for the nursing schools to check or keep the questionnaires.

#### **8.2.4.4 Informed Consent**

In the questionnaire survey, the purpose of the survey and a brief description of the contents of the questionnaire were given in the cover letter. Participants were also informed in the research information sheet and oral briefing before the survey that participation in the study was voluntary. In light of the notion that *“it is commonly*

*considered that informed consent has been obtained when the respondent returns the questionnaire” (Watson 2008:184), the participants in the questionnaire survey have not been asked to sign a consent form in the interests of saving paper and unnecessary procedures.*

### **8.2.5 Limitations of this Survey**

The study has several limitations that should be pointed out. They are imposed by the research design, sampling issues, as well as time and budget constraints.

The first limitation is that the attitudes were self-reported as opposed to objectively measured. Currently little is known about how accurately self-reporting intentions reflect actual behaviours or how the stated intentions of students translate into practice. Further research addressing how self-reported possibility translates into actual behaviour after graduation is needed. Notwithstanding these limitations, these findings revealed some basic relationships in the determination of rural workforce. There is also an advantage in studying self-reporting intentions, in that the potential possibility can be found rather than student’ final selection, which is very useful information in terms of recruitment policy making.

A further limitation is that the generality of the findings remains to be confirmed by future research. Owing to the lack of an existing sample frame, a simple random or systematic random sample could not be obtained, thus the sample of the survey was limited to a cluster sampling, of which the ability to generalize may be lower than using a simple random or systematic random sample. However, the fact that the sample was drawn from six institutions across this study setting and from the different education levels provides some evidence of external validity of this study.

Another sampling issue is that the sample was predominantly young, female nursing students. Although this reflects the real situation in the nursing education in China, the very small sample of male students limits the ability to explore the impact of

gender, which is a conventional variable for most regression analyses; also the homogenous feature in the age limits the ability to detect the impact of age.

Due to funding limitations, the study is limited to one area in China rather than a study across all the regions in the country. As the sample is drawn from one province, the findings in this study will be of limited use in other regions. However, as China has lots of centralized policies, a number of issues raised in the study are likely to be widely applicable to other parts of China.

This study is also limited with respect to time. The data collection point is at only one point in time – at the end of nurse training programs, thus it lacks the ability to examine the changing attitudes overtime. If longitudinal data could be gathered, it would be possible to analyse the formation of students' attitudes and changes due to the institutional, cultural and social context.

### **8.3 Chapter Summary**

Prior to the main survey, a pilot study was conducted in November 2011 in the study setting. Thirty nursing students in three nursing educational institutions were involved. The pilot study showed that the questionnaire was well accepted by nursing students and the administration method of the survey was firmly established.

The main survey took place in the period of December 2011 to March 2012. The sampling was a stratified and clustered two-stage sampling. Six nursing education institutions in the study setting were selected and four hundred forty-five final year nursing students completed the questionnaires, with an average response rate of 89%. Permissions of access to these universities were obtained by communicating with the headers of nursing schools or directors of nursing departments. A supervised distribution was used and the questionnaires were distributed and collected by the researcher. An on-going ethics approval was sought and obtained in the University of Edinburgh. The completed questionnaires were treated confidentially.



# **Chapter 9**

## **Data Processing and Data Analysis Strategies**

After the completed questionnaires were collected, the data went through the stage of data processing and statistical analysis. In this chapter, the processes of data preparation and the strategies of data analysis are reported.

Data preparation usually includes data cleaning, data coding and data entering. Data preparation is to make sure that the data are entered and coded correctly, and thus ensuring the efficiency of data handling and the quality of the data set. The first part of this chapter reports how data preparation was processed before statistical analyses commenced.

After a data set was established, data analysis began. To make sure that the data analysis is actually answering the research questions, some data analysis strategies were formulated to guide the data analysis and they are reported in the second part of this chapter. The software SPSS 19 was used to aid data processing and data analysis.

## **9.1 Data Processing**

The self-completion questionnaire was regular paper based rather than computer read paper based. The processes of data preparation included sight data checking, data coding, data entering and computer data checking.

### **9.1.1 Sight Data Checking**

*“Once the completed questionnaires have been received, recorded and sorted...Each one should be examined to see if it is acceptable for processing and to make any corrections or notation required”. (Alreck and Settle 2004:247)*

Following above recommendation, the data processing in this study began with the sight data checking of each completed questionnaire. The objective of the sight data checking was to determine whether the data were acceptable or not and consider the possible corrections required. Thus sight data checking was demonstrated by checking the completeness of each finished questionnaire, checking whether there were logical inconsistencies in the answers, and at the same time, considering possible corrections for any missing data and inconsistent answers.

#### **9.1.1.1 Checking Completeness**

For each completed questionnaire, a case identification number was written on the front page of the questionnaire. Then each one was examined for completeness. The missing information was also written down on the front-page of the questionnaire.

A few items missing in some questions can be tolerated, but too much missing data may imply that the participants have not paid enough attention to the task, so the rest of the data may also be doubted. Bryman and Cramer suggested that *“If many scores*

*for an individual are missing, it is most probably best to omit this person from the sample". (Bryman and Cramer 2011: 60)*

Based on such consideration and suggestion, some incomplete questionnaires were rejected. The criteria for rejecting or accepting a finished questionnaire as a case when there were missing data was set as follows: (1) The questionnaire consisted of part A, B and C; missing entire section, either part A or part B or part C is unacceptable; (2) Missing more than three items in part A, part B and part C. Based on these criteria, five incomplete questionnaires which have missing data were eliminated from those to be processed (see Table 9-1).

#### **9.1.1.2 Checking Logical Consistence**

The majority of students answered questions logically, but in a few cases there were problems specific to logical inconsistencies. They are illustrated in the following.

There was a case where in question C7 *Have you taken a rural placement during your nursing study* the participant circled the answer "no", indicating no experience of rural placement, but in question C8 *How long have you been in rural placements during all your nursing study*, she put "9 (months)" which was saying she had nine months of rural placement. So these two answers contradict each other and one of them must be wrong. Because which one was wrong could not be figured out from the existing data, these two contradicted answers were treated as missing data based on the reason that "inappropriate or superfluous responses shouldn't be keyed to the data file" (Alreck and Settle 2004:246). However, the case remained in the data file on the judgement that the remaining data was still acceptable using the above missing data criteria. There was a case in which the length of living rurally was one year more than her age, so the calculation was obviously wrong, thus this datum was treated as missing, and the case remained in the data file.

In some cases, the answers in question B2 and question B3 were inconsistent. For example, case 48, in question B2, *Indicate the probability of your taking a rural job right after your graduation*, the student circled 4 in the 1-10 scales, but in question B3, *Indicate the probable duration of working in rural areas in your career*, she circled the option *none of my career*. There were two cases in which the degree of logical contradiction was obvious. Because which answer was right could not be extrapolated from other answers in the questionnaire, these data were treated as invalid and these two questionnaires were omitted from those to be processed.

There were two questionnaires which were handed in together and they had the same responses in all of the questions except the demographic information. This suggested one of these two respondents might have copied another's answers. To avoid overloading certain views, these two cases were excluded from the analysis. There was one case where the participant tended to tick the answer *Neutral* and another case tended to answer *Agree* in part A of the questionnaire ignoring there were obvious inconsistencies, these two questionnaires were also rejected as valid data to enter into the data set.

After the sight data checking of the 445 finished questionnaires, 11 questionnaires were omitted because of aforesaid valid issues related to incompetence, logical inconsistencies or copied answers (see Table 9-1). Finally, 434 questionnaires remained and proceeded to the data coding and the data entering processes.

**Table 9-1: The Number and Reasons for Eliminated Questionnaires**

<b>Institution</b>	<b>Questionnaires Eliminated N</b>	<b>Reasons</b>
<b>Nursing School 1</b>	2	1 Four items missing in part B 1 Three items missing in part A and one items missing in part B
<b>Nursing School 2</b>	0	
<b>Nursing School 3</b>	1	1 Missing data in Part C
<b>Nursing School 4</b>	3	1 Logic inconsistent in B2 and B3 1 Trend to be 'Neutral' in part A 1 Trend to be 'Agree' in part A
<b>Nursing School 5</b>	1	1 Logic inconsistent at B2 and B3
<b>Nursing School 6</b>	4	1 Six items missing in part B 1 Seven items missing in part B and part C 2 Copied answers

### **9.1.2 Data Coding**

Data coding was carried out after sight checking. A code book was created to ensure the coding process was carried out consistently over time. All the answers in the questionnaire were coded as numbers, so the database consisted of numbers rather than a mixture of numbers and other characters. The missing data for all the questions in this questionnaire were coded as '99', this number was used as it was clearly distinct from their real answers and easy to identify. Since all the values were integer numbers, the decimals places were changed from the default 2 to 0, except for the variable C8, which measures the length of rural placement, whose decimal place was changed to 1.

A default code method was used in coding the answers for most of the questions in this questionnaire. Post-coding was carried out in the answers for part A and answers for two open-ended options in question B4 and B5.

#### **9.1.2.1 Default Coding**

For most of the questions in part B and part C, numbers were clearly assigned to particular answers and participants were asked to circle the numbers of their options. Thus a default coding method, which takes the numbers being circled as the pre-code, was adopted in these parts.

#### **9.1.2.2 Data Coding of Part A**

In part A of the questionnaire, for the sake of clarity, blank boxes were left for participants to tick. After the participants completed the questionnaire, a code was allocated and written in each ticked box; that is, the numbers of 1, 2, 3, 4 and 5 were allocated to match the five grades of strongly disagree, disagree, neutral, agree, and strongly agree. The coding was simply to put one of the corresponding numbers in the ticked box.

#### **9.1.2.3 Data Coding of Open-ended Options**

Questions B4 and B5 asked the participants about the most important reasons for them to consider not taking or taking a rural job. In the lists of response options, the last one was an open-end option “*others, pleasing specifying\_\_\_\_\_.*” If participants selected these options, they were asked to specify their answers. Post-coding was carried out when participants had written words in the blank box. In total eleven participants wrote specified reasons for not taking a rural job in question B4 and four

participants gave other specified reasons for taking a rural job in question B5. These answers were proceeded to be post-coded.

The process of post-coding involved categorising and allocating numbers to the categories. There were two types of categorising. (1) Although some students wrote some words in the blank space in open-ended option “others”, some answers were found similar to or the same as one of the given options. For this kind of answer, the researcher coded them with the same numbers as the given options. (2) For those answers which truly had not been mentioned in the given options, a new category was created.

### **9.1.3 Data Entering**

Data from completed questionnaires was entered into an SPSS 19 file. To reduce the impact of missing data, some missing data were imputed based on the related information which appeared before or after the missing data. A scheme for missing data correction was set out to ensure the data corrections were carried out consistently. In questions B4 and B5, there were some answers which did not adhere to the standard answers; for dealing with these nonstandard answers consistently, a scheme for entering data of question B4 and B5 was also formulated.

#### **9.1.3.1 The Scheme for Missing Data Corrections**

- (1) When the answer in question C5, which asks *Have you ever lived in rural areas*, is missing, but in question C6, which asks *How long have you ever lived in rural areas in your life*, the participant has written down the years living in rural areas, the answer of question C5 is corrected from missing to ‘yes’.
- (2) When the answer in question C7 is missing, which asks *Have you taken a rural placement during your nursing study*, but the participant has put the

length of rural placements in question C8, the data in question C7 will be entered as “yes”.

### **9.1.3.2 The Scheme for Entering Data in B4 and B5**

- (1) Scenario one was only answering question B4 or B5. Some participants only answered the question B4 (the main reasons for considering not taking a rural job); and some only answered question B5 (the main reasons for considering taking a rural job). Considering students might only have one of these issues, these two situations were treated as valid.
- (2) Scenario two was less than three answers in question B4 or B5. Question B4 and B5 asked students to give three main reasons for considering a rural job or not. There were students who asked whether circling less than three options was valid because there was only one main reason for them in this question. Considering this kind of answer was logical, only circling one or two main reasons was allowed and was judged as valid.
- (3) Scenario three was more than three answers were given in question B4 or B5. There were participants who circled more than three alternatives in questions B4 and B5. This superabundance did not meet the requirement of the instructions in these two questions, so this kind of answer was treated as invalid. But if after three ticks, they also wrote some words in the blank, these three answers were treated as valid, but the extra words in the blank were treated as redundant data.

### **9.1.4 Computer Data Checking**

After data entering, the data file was checked thoroughly to identify the possible mistakes which might happen during the data entering. Alreck and Settle (1995) point out data cleaning should focus on two kinds of errors: (1) records which appear in the wrong columns; (2) values which exceed the acceptable range of the variable.

In the data cleaning stage of this data set, firstly each column was checked using visual inspection. One misaligned error was detected and corrected. Then the data was converted into an excel file. Some “null” values appeared. Checking the corresponding areas in the SPSS file, it was found that it was caused by blank cells; that is, some missing data had been left blank rather than putting ‘99’ to indicate the missing data. All the errors were corrected or filled up after checking the original questionnaires. Finally, the frequency distribution function was run for all the variables to check the minimum, the maximum, the valid data, the missing data and the total cases. No deviations from these variable ranges were found, and all data were within the permissible range.

## 9.2 Strategies of Analysing Data

After above processes, a data set was generated for analysis. To ensure the data analysis was carried out systematically, some analysis strategies were formulated based on research questions to be answered and the types of variables in the data set.

### 9.2.1 Types of Variables

*“One of the most important features of an understanding of statistical operations is an appreciation of when it is permissible to employ particular tests. Central of them is recognizing the forms of variables.” (Bryman and Cramer 2011:75)*

As it is stated above, to use statistical techniques appropriately, one must recognize the form of variables in the data set. Thus recognizing the forms of variables in the generated data set is the first thing to do in making data analysis strategies. Usually the forms of variables are classified as nominal, ordinal, and interval and ratio level of measurement (Cohen and Holliday 1996). Table 9-2 shows the classification of each variable in this data set.

The variables of gender, rural identification, rural living experience (yes/no), rural placement (yes/no), reasons for not considering a rural job and reasons for considering a rural job are judged as nominal data. Education level (variable C4) is judged as ordinal data. The agreement of statement (variable A1-A26) and the probable duration of working in rural areas in career (variable B3) are measured using a five-point scale, so they are treated as ordinal data before any data transformation is used. The preference of health institutions (variable B1) and the probability of taking a rural job after their graduation (variable B2) are measured using a 10-point scale; these variables strictly speaking are ordinal, but as they have 10 points, these variables are assumed to have similar properties to interval data, thus

they are treated as interval data. The variables of age, length of living rurally, length of rural placement are ratio data.

**Table 9-2: Types of Variables in the Data Set**

<i>Questions</i>	<i>Variable Labels</i>	<i>Responses</i>	<i>Types of Variables</i>
A1-A26	The agreement of statement	5-point scale	Ordinal
B1	The preference of health institutions	10-point scale	Treated as interval data
B2	The probability of taking a rural job right after their graduation	10-point scale	Treated as interval data
B3	The probable duration of working in rural areas in career	5-point scale	Ordinal
B4	Reasons for not considering a rural job	Multiple-response items	Nominal
B5	Reasons for considering a rural job	Multiple-response items	Nominal
C1	Gender	Male/female	Nominal, binominal
C2	Age		Ratio
C3	Rural identification	Rural/urban	Nominal, binominal
C4	Education level	Diploma, associate, bachelor, master,	Ordinal
C5	Rural living experience (y/n)	Yes/no	Nominal, binominal
C6	Length of living rurally		Ratio
C7	Rural placement (y/n)	Yes/no	Nominal, binominal
C8	Length of rural placement		Ratio

## **9.2.2 Data Analysis Strategies**

To investigate students' attitudes towards rural nursing and to identify potential influencing factors, three main research questions were formulated in this study. One was to investigate students' perspectives on rural nursing practice; another was to examine students' intentions with regard to working in rural areas, and the final one was to identify factors which influence their attitudes towards working in rural areas. These three questions were related to each other.

The steps of data analysis were firstly to describe the demographic information, then to analysis the questions for research question one, two and three sequentially. Necessary data transformations were performed in the analysis and are explained in corresponding result sections.

### **9.2.2.1 Description of the Sample**

Before answering research questions, the characteristics of the sample were firstly described. The statistical methods used were mainly descriptive statistics.

Means were used to describe the average age of participants. The percentages and frequency tables were used to describe the distributions of gender and education level of participants. Length of living rural and length of rural placement were depicted in total average, as well as by frequency tables in groups. For example, the years of living rurally were divided into Nil, 1~5, 6~10, 10~15, >15 years. The percentages of participants in each of these subgroups were depicted in a frequency table.

### 9.2.2.2 Data Analysis Strategies for Research Question 1

The first research question asked about final year nursing students' perspectives about rural nursing practice. To investigate students' perspectives on rural nursing practice, exploratory interviews were used to collect students' perspectives. Based on the perspectives collected in the interviews, the survey collected quantitative data about the extent of agreement and disagreement of students in large with these perspectives, measured in five grades: strongly disagree, disagree, neutral, agree and strongly agree. The data are ordinal. Considering the research question, statistical techniques used in these data focussed on the distributions. Specific strategies were set as following:

- (1) As these data are ordinal and only have five grades, the distributions of responses are demonstrated by the percentages in each category. The statistical technique that can be used is the frequency function in descriptive statistics. By using these functions, the percentage of responses for each agreement category can be generated; for example, the percentage of participants that selected the option of 'disagree', and the percentage that selected 'strongly agree'.
- (2) To sort the percentages of responses in each agreement category by the extent of agreement and the extent of disagreement.

Table 9-3: Statistical Techniques Employed to Answer Research Question 1

<b>Analysis purposes</b>	<b>Analysis techniques</b>
Examine the distributions: the percentage of each agreement categories	Descriptive Statistic — Frequency table
Investigate what the mostly agreed and disagreed perspectives are	Sort students' responses by agreement and disagreement

**9.2.2.3 Data Analysis Strategies of Research Question 2**

The second research question asked about the final year nursing students' intentions of working rurally both immediately after their education and in their career. To examine students' intentions of working rurally, quantitative data about students' preference of rural health institutions, the probability of taking a rural job right after their graduation and the probable duration of working in rural areas in their career were collected. The reasons for considering taking a rural job and not considering taking a rural job were also collected. All variables for these data were labelled with a preceding letter B which corresponds to their questions in the questionnaire; for example, variables B2 and B3 correspond to questions B2 and B3, respectively. To answer this research question, descriptive statistics were used to examine the central tendency and distribution and to generate the frequency tables. Inferential statistics were used to compare differences between subgroups. The specific analysis strategies were set out as below.

- (1) To summarize the central tendency of students' preference of health institutions and comparing their preferences of rural health institutions to those of other health institutions, such as the city hospital and city community centres. These could give relatively comprehensive information about students' preference of working in rural health institutions.
- (2) To summarize the central tendency of the probability of taking a rural job immediately following graduation and examine the distribution in each categories in a frequency table.
- (3) To summarize the central tendency of the probable duration of working in rural areas in career and examine the distribution in a frequency table.
- (4) To generate frequency tables to summarise the most often mentioned reasons of taking or not taking a rural job.
- (5) To compare the probability of taking a rural job right after their graduation, the probable duration of working in rural areas in career between subgroups in

rural/urban, diploma/associated/bachelor. ANOVA will be used in variables assumed to be interval data. Nonparametric inferential statistical techniques will be used in the ordinal data comparison, For example, the Mann-Whitney test and Kruskal-Wallis test will be used to test whether differences between subgroups are significant.

Table 9-4: Statistical Techniques Employed to Answer Research Question 2

<b>Analysis purposes</b>	<b>Statistical techniques</b>
Summarizing central tendency of students' preferences in health institutions	Descriptive statistics: median, mean, and standard deviation.
Summarize central tendency and examine distribution of the probability of taking a rural job right after their graduation	Descriptive statistics: median, mean, and standard deviation. Descriptive statistics: frequency table.
Summarize central tendency and examine the distribution of the probable duration of working in rural areas in their career	Descriptive statistics: frequency table, median and mode.
To summarize the percentage for each possible reason	Descriptive statistics: frequency
Comparison between subgroups in rural/urban	2-independent sample t-test for B1 and B2, as they are assumed to be interval data; Mann-Whitney Test for B3 as it is two independent ordinal data.
Comparison between subgroups in diploma/associated/bachelor	ANOVA and Post Hoc (Scheffe multiple comparison) for B1 and B2, as they are comparison of interval data in three groups; Kruskal-Wallis H Test + Mann-Whitney Test for variable B3, as it is three groups comparison for ordinal data.

### 9.2.2.4 Data Analysis Strategies of Research Question 3

The third research question asked about whether there were any relationships between students' attributes and students' intentions to working rurally. To answer this question, association analysis and regression analysis were adopted to investigate the relationships between variables of students' intentions of taking a rural job and potential factors. Rural background, education level, rural placement and perspectives about rural nursing practice were supposed to be potential factors. Specifically, in analysing the relationship between students' attributions and their intentions of working rurally, independent variables were generated from the questionnaire part C (rural identification, education level, the length of living rurally, the length of rural placement) and the questionnaire part A (students' extent of agreement of those statements). The dependent variables were variables B2 (the probability of taking a rural job after their graduation) and B3 (the probable duration of working in rural areas in their career). As variable B2 was treated as interval data, multi-linear regression analysis was used; and variable B3 was ordinal data, ordinal logistic regression analysis was used. The statistical methods employed are presented in the following table.

Table 9-5: Statistical Techniques Employed to Answer Research Question 3

<b>Analysis purposes</b>	<b>Statistical techniques</b>
To examine the relationship between their intentions to work rurally immediately following graduation and demographic factors	Multi-linear regression analysis, dependent variable is treated as interval data.
To examine the relationship between the probable length of working rurally in their career and rural background, educational qualification, and rural placement	Ordinal logistic regression analysis, dependent variable is ordinal data.
To examine the relationship between perspectives and their intentions to work rurally	Association analysis

### **9.3 Chapter Summary**

The data processing was carried out with the help of the software of SPSS19. Data processing comprised of sight data checking, data coding, data entering and computer checking. Sight data checking focused on the completeness of the questionnaire and logical consistence. Default data coding and post data coding were used in the data coding process and a code book has been created to ensure the coding consistent over time. To deal with some nonstandard answers and missing data, some principles were set for data entry and data correction. To detect the possible mistakes which may happen during data entry, computer data checking was carried out to ensure the data were entered correctly.

Based on the variable types in the dataset and the research questions to be answered, some data analysis strategies were set out before the data analysis commenced to ensure the data were analysed systematically.



# Chapter 10

## Results of the Survey

Based on the developed strategies, a statistical data analysis was conducted on the survey dataset. This chapter reports the results of the data analysis.

The structure of this chapter is organised according to the research questions. Firstly, the demographic information about the sample is presented. This is then followed by the research question sequence. Section 2 reports the statistical analysis results pertaining to students' perspectives on rural nursing practice, which correspond to research question one. Section 3 reports nursing students' preferences of health institutions and their intentions to work rurally; this is related to the second research question. Section 4 displays the results of the correlation analysis, which is to deal with the third research question.

In addition, certain statistical details are displayed in tables, graphs and charts.

## 10.1 The Demography of Participants

The data set of the survey consisted of four hundred and thirty-four questionnaires. The results relating to the demographic characteristics of the participants are provided in the following sections. As there were some missing data, the number of participants in each variable was not equal to four hundred and thirty-four. The n-size for each variable is displayed in parentheses.

### 10.1.1 Age and Gender

Exploring the variable of age, the histogram showed that the data were normally distributed. The average age of the participants was 20.53 years old, with a 95% confidence interval in 20.33–20.74 years old.

The majority of the participants were female (99.3%, n=430), whilst only a few participants were male (0.7%, n=3) (see Table 10-1).

**Table 10-1: The Frequency Table of Gender, Rural Background and Education Levels**

	Attributes	Number of Cases	% of Total Sample
<b>Gender</b> (n=433)	Female	430	99.3
	Male	3	0.7
<b>Rural or Urban Identification</b> (n=434)	Urban	103	23.7
	Rural	331	76.3
<b>Education Levels</b> (n=434)	Diploma	136	31.3
	Associate's	159	36.3
	Bachelor's	136	31.3
	Master's	3	0.7

### 10.1.2 Rural Identification and Education levels

With Regard to rural background, the frequency table (see Table 10-1) shows that approximately three quarters of the participants had a rural identification and less than one quarter of them had an urban identification. In terms of education level, most students came from diploma, associate and bachelor programs, whilst only a few from master nursing programs.

### 10.1.3 Rural Living Experience

The statistical results of the variable *length of living rurally* are provided in Table 10-2. Of the 424 cases (10 missing data in this variable), 86% of the participants had a rural living experience, and their average years of living rurally was at 13.6. From the subgroup data, it can be seen that 64.1% of the participants had rural living experience more than 10 years.

**Table 10-2: The Frequency Table of the Length of Living Rurally**

	<b>Group (Years)</b>	<b>Number of Cases (N)</b>	<b>% of Total Sample</b>
<b>Length of Living Rurally (n=424)</b>	Nil	60	14.2
	1~5	43	10.1
	6~10	49	11.6
	11~15	112	26.4
	16~	160	37.7

### 10.1.4 Rural Placement

The results pertaining to whether or not the participants had a rural placement during their nursing study and the length of their rural placement are summarised in Table 10-3. It shows that three quarters of the participants had no rural placement experience; whilst one quarter of the participants had been placed in a rural health setting, but for most of them, the length of rural placement was less than one month.

**Table 10-3: The Frequency Table of the Length of Rural Placement**

	Response Group	Number of Cases	% of Total Sample
<b>Length of Rural Placement (n=425)</b>	Nil	320	75.3
	<1 month	76	17.9
	>1 month	29	6.8

## ***10.2 Perspectives towards Rural Nursing Practice***

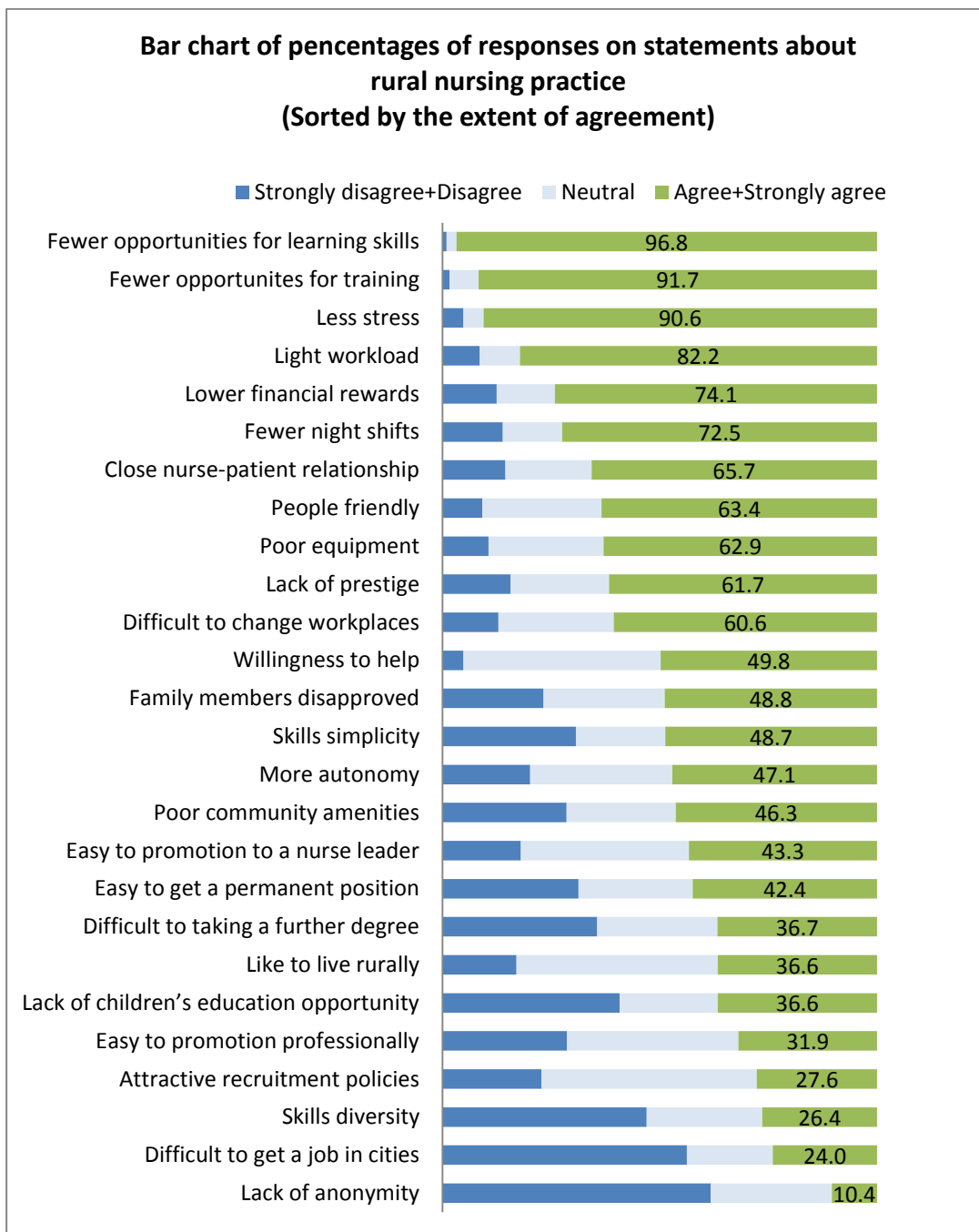
Students' perspectives towards rural nursing practice were measured in Part A of the questionnaire, which consisted of twenty-six statements. Participants were asked to choose one answer which they felt best represented their views by ticking the appropriate box among strongly disagree, disagree, neutral, agree and strongly agree. The numbers 1–5 were used to code the answers. Strongly disagree was coded as 1 and strongly agree as 5. The results are presented in two sections: firstly, the most agree, disagree and neutral perspectives are presented by graphs. Following this, the percentages of responses to each of the twenty-six statements are provided in a table and interpreted in detail.

### ***10.2.1 The Most Agree, Disagree and Neutral Perspectives***

To see which statements participants agreed with the most and which they disagreed with most, five categories (strongly disagree, disagree, neutral, agree and strongly agree) were collapsed into three categories: the percentages of responses in the categories of agree and strongly agree were added, whilst the percentages of responses in the categories of disagree and strongly disagree were added together. Following this, two figures (10-1, 10-2) were created to visualise the results.

#### ***10.2.1.1 The Most Agree Perspectives***

To see with which statements students agreed most, Figure 10-1 was created. This figure was sorted by the extent of agreement, from the largest to the smallest percentages.



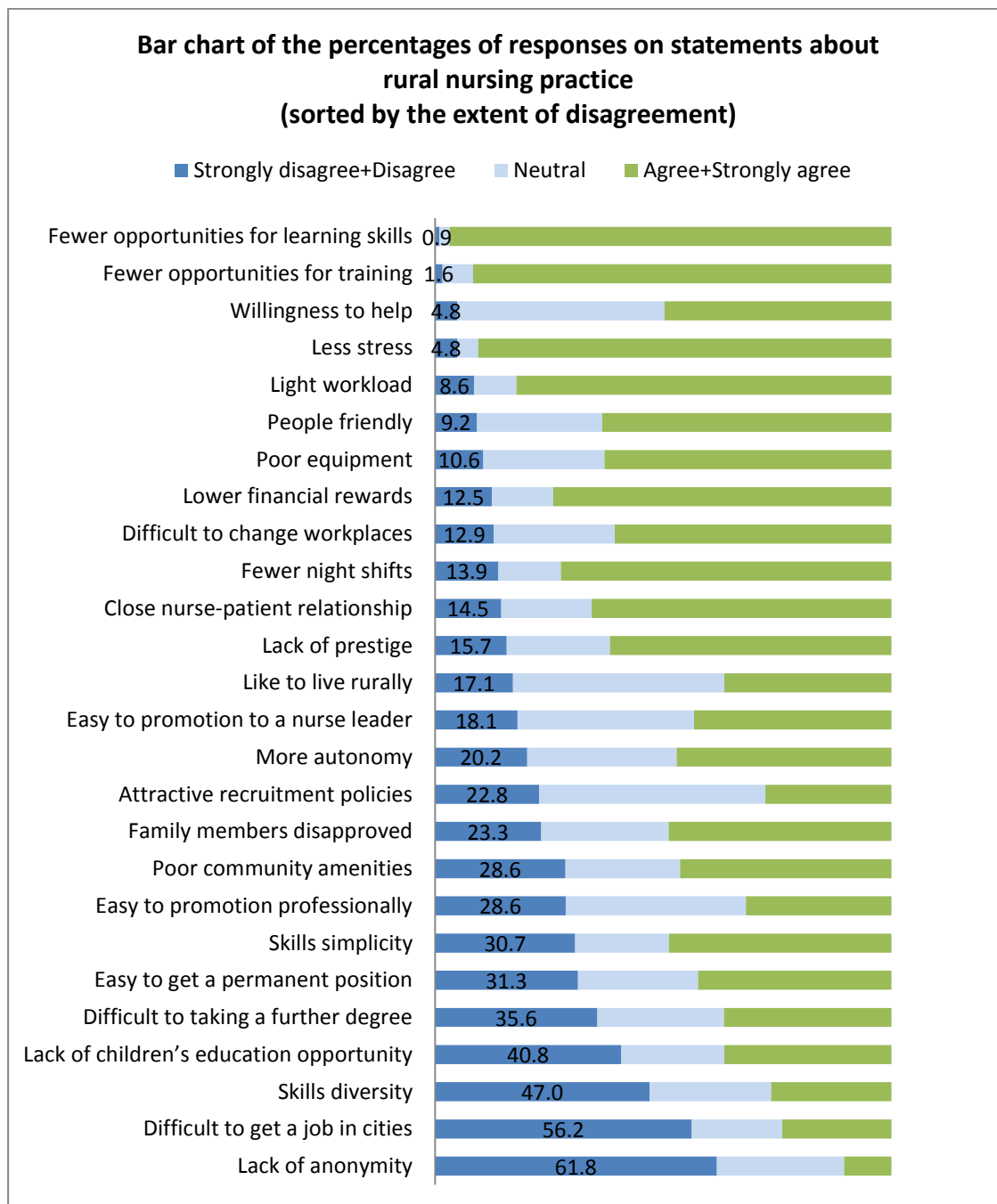
**Figure 10-1: The Percentages of Agreement on Statements about Rural Nursing Practice**

From this figure, some of the most agreed with statements can be found. The first large group of statements which were most agreed with by students were fewer opportunities for learning skills and professional training, less stressful and light workload in rural settings. The statements regarding fewer opportunities to learn skills and fewer opportunities for professional training were ranked in the top two, with more than nine out of ten students agreeing. At the same time, less stress and light workload in rural health institutions also had a large percentage of agreement, ranking third and fourth respectively, with percentages of agreement over 80%.

The second largest group of statements were related to lower financial rewards, fewer night shifts, close nursing-patient relationship, friendly people and poor equipment, lack of prestige and difficult to change workplaces, with percentages of agreement between 60-75%. A lower financial reward in rural settings was ranked fifth, with nearly three quarters of respondents in agreement.

#### ***10.2.1.2 The Most Disagree Perspectives***

In contrast, to examine which statements were mostly disagreed with by students, a figure sorted by the extent of disagreement was generated from the data (see Figure 10-2). It is ranged from the smallest to the largest aggregated percentages of the categories disagree and strongly disagree.



**Figure 10-2: The Percentages of Disagreement on Statements about Rural Nursing Practice**

From the above figure, it can be seen that the statements with which participants disagreed most were those related to anonymity, diversity of skills used, and the ability to find jobs in cities. The majority of the participants strongly rejected the statements that there is a lack of anonymity in rural nursing and that diverse skills are used in rural nursing, and the majority of students did not think that it would be very difficult for them to find a job in cities.

### ***10.2.1.3 Neutral Perspectives***

In contrast with the above trends whereby the data showed that most students clearly agreed or disagreed, there were some items which had a large proportion of participants who were neutral. From the percentage table and these two figures, it can be seen that participants were likely to select the neutral option when it came to the statements regarding recruitment policies, living rurally, and willingness to help. In all of above statements, 45%-50% of students were in a neutral position. As regards the two statements pertaining to promotion, there were no overwhelming percentages in the categories of agree or disagree whilst more than one-third of students had a neutral opinion.

### **10.2.2 Students' Perspectives on Rural Nursing Practice**

To see how students' opinions were distributed in each statement, the percentages of responses for the five options (strongly disagree, disagree, neutral, agree and strongly agree) were calculated. The results are presented in Table 10-4.

From these results, students' perspectives on rural nursing practice are interpreted on the following categories: rural community, rewards of rural nursing practice, the characteristics of rural nursing posts, opportunities for skills development, opportunities for promotion, altruistic orientation, family issues, labour market, and recruitment policies.

#### **10.2.2.1 Perspectives on Rural Community**

In response to the statement that community amenities and public transport were poor in rural areas, around one third of students ticked the option 'agree', one quarter of the students selected 'disagree', and one quarter of the students were neutral. In addition, less than 10% of students fell under the strongly agree and strongly disagree categories. This indicates that the views on community amenities and public transport were diverse.

In terms of rural life, nearly half of the participants took a neutral position on the statement regarding whether they like living in rural areas. This indicates a diverse view on the issue.

**Table 10-4: Percentages of Respondents in Each Agreement Category**

Items	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
Fewer opportunities for learning skills	.0	.9	2.3	53.5	43.3
Less stress	1.2	3.7	4.6	49.8	40.8
Lack of opportunities for training	.0	1.6	6.7	56.2	35.5
Light workload	.9	7.6	9.3	51.9	30.3
Fewer night shifts	2.1	11.8	13.7	45.6	26.9
Lower financial rewards	2.3	10.2	13.4	50.3	23.8
Lack of prestige	2.5	13.2	22.6	41.3	20.3
Close nurse-patient relationship	1.8	12.7	19.8	47.9	17.7
Difficult to change workplaces	2.1	10.8	26.5	44.2	16.4
People friendly	.5	8.8	27.4	47.5	15.9
Family members disapproved	3.2	20.0	27.9	36.2	12.7
Poor equipment	.9	9.7	26.5	50.9	12.0
More autonomy	1.9	18.3	32.7	35.3	11.8
Lack of children's education opportunities	8.3	32.5	22.6	25.8	10.8
Like living rurally	2.5	14.5	46.3	26.7	9.9
Willingness to help	.7	4.1	45.4	40.6	9.2
Skills simplicity	4.2	26.6	20.6	39.7	9.0
Easy to get a permanent position	7.1	24.2	26.3	33.6	8.8
Poor community amenities	2.8	25.8	25.1	37.8	8.5
Easy to promote to a nurse leader	2.8	15.3	38.7	36.6	6.7
Attractive recruitment policies	5.3	17.5	49.5	22.8	4.8
Skills diversity	7.2	39.8	26.6	21.8	4.6
Easy to promote professionally	2.3	26.3	39.5	27.3	4.6
Difficult to undertake a further degree	2.3	33.3	27.7	32.6	4.2
Difficult to get a job in cities	13.6	42.6	19.8	20.3	3.7
Lack of anonymity	11.8	50.0	27.9	8.1	2.3

### **10.2.2.2 Perspectives on Rewards of Rural Nursing Practice**

In relation to financial rewards, three quarters of the participants agreed or strongly agreed with the statement that the financial rewards were higher for nurses working in urban rather than rural areas. This indicates that most nursing students believed that working in rural areas might reduce their potential financial rewards.

With regard to the social status of rural nurses, nearly two-thirds of the participants agreed or strongly agreed that working in a big hospital was more prestigious than working in a rural health facility. Another quarter of students were neutral. This result indicates that there was a lack of respect related to the workplace in rural areas from a nursing student point of view.

### **10.2.2.3 Perspectives on the Characteristics of Rural Nursing Posts**

In response to the statement regarding stress, nearly half of the students agreed with the statement that working in a rural area was less stressful than in an urban area, with another two-fifths of students strongly agreeing. Only less than 5% of students did not agree with the statement. This result indicates that the majority of students agreed that working in rural areas was less stressful than working in urban areas.

In response to the statement pertaining to workload, 82.2% of students agreed or strongly agreed that the workload for nurses in rural health facilities was light. This was ranked as fourth when sorted by the extent of agreement, thus indicating that the majority of participants thought the workload for nurses in rural health settings was not very heavy.

With regard to night shifts, approximately 72.5% of students agreed or strongly agreed that there were fewer night shifts for nurses in rural health facilities.

Responding to the statement that working in a rural health facility allows more personal autonomy than in a city hospital, 32.7% of the participants took a neutral position and 20.2% of the participants disagreed with the statement. This indicates

that the majority of students did not think that rural nursing posts allowed for increased personal autonomy.

In terms of anonymity, 61.8% of the participants disagreed with the statement that working in rural health facilities led to a lack of anonymity. Among the twenty-six statements, this statement was the one with which most students disagreed. Along with the large proportion of disagreement, 27.9% took a neutral position. This result indicates that most nursing students did not think anonymity was a problem for them when considering a rural job.

#### ***10.2.2.4 Perspectives on Opportunities of Skills Development***

In relation to nursing skills used, nearly half of the students agreed with the statement that the skills used in rural nursing were simple, and disagreed with the statement that a diverse range of skills were used. These results indicate that participants felt that skills used in rural nursing were simple rather than complex.

With regard to skills learning and professional training, 96.8% of students agreed that by working in a big hospital they could learn more skills than by working in rural areas whilst 91.7% of students agreed that there were more opportunities for training in the city. These two results indicate an overwhelming feeling amongst nursing students that nursing posts in rural areas lacked opportunities for skills learning and professional training.

In relation to equipment, nearly two-thirds of students agreed with the statement that the equipment in rural health facilities was poor, whilst 26% of students remained neutral. This indicates a negative view on the equipment in rural health settings.

#### ***10.2.2.5 Perspectives on Opportunities of Promotion***

With regard to promotion, students' responses to statements concerning promotion to a nurse leader and promotion through professional grades were similar. The mode

and median both centred on the neutral point, whilst the distribution of disagreement and agreement on promotion through professional grades was almost asymmetric. These results reflect the notion that students may not have a clear view on whether or not promotion in rural areas was easy or not.

In response to the nurse-patient relationship in rural areas, more than 60% of the participants agreed that people in rural areas were friendly and two-thirds of respondents agreed that the nurse-patient relationship was closer in rural health facilities than in the city. This indicates that most students had a positive view on the nurse-patient relationship in rural health settings.

#### ***10.2.2.6 Perspectives on Altruistic Orientations and Family Issues***

In terms of whether or not they were willing to help, a very large proportion of the participants ticked the option of 'neutral' (45.4%). The percentage for disagree or strongly disagree was low.

With regard to the family members' opinions, nearly half of the participants agreed that their family members would not like them to work in a rural area. In relation to children's education opportunities, while 40.8% of responses disagreed or strongly disagreed with the statement that working in rural areas might reduce their child's education opportunity, 36.6% of students took the 'agree' or 'strongly agree' position. This indicates that although there was a certain proportion of students who thought working rurally might reduce their children's education opportunities, a large proportion of students did not feel this way.

In terms of whether it was difficult to undertake a further degree while working in rural areas, the distribution of responses was even and symmetric; indeed, one-third of students disagreed, remained neutral or agreed.

**10.2.2.7 Perspectives on Labour Market and Recruitment Policies**

In response to the statement concerning finding jobs in cities, although approximately one quarter of students (24%) agreed that they were worried they might not be able to find a job in the city, 56.2% of students disagreed with this. This result reflects that the majority of nursing students were not worried about their ability to find a job in a city.

In response to the statement regarding participants' ability to obtain a permanent position, 42.4% of the participants agreed that they might not be able to find a permanent nursing position in the city, while in rural areas they could. This result indicates that more students were worried about a permanent position instead of simply getting a job.

In response to the statement regarding change of workplace, 60.6% of students agreed that it was not easy for nurses to change workplaces from rural areas to urban areas. In response to the statement pertaining to whether current recruitment policies were attractive to them, half of the participants ticked the 'neutral' option, indicating a situation of uncertainty.

## ***10.3 Students' Health Institution Preferences and Their Intentions to Work Rurally***

Students' preferences for various health institutions and intentions to work rurally were measured in part B of the questionnaire. Descriptive and inferential statistical results about them are presented in the following sections. Part 1 reports the statistics pertaining to students' health institution preferences. Part 2 reports the results regarding the probability of taking a rural job immediately following graduation. Part 3 reports the statistical results of the probable duration of working in a rural area in their future career. Parts 4 and 5 present the reasons for and for not considering a rural job.

The *.000* significance figure in all result tables means that the value of significance is less than 0.001.

### ***10.3.1 Students' Preferences for Health Institutions***

To examine students' preferences for rural health institutions, comparisons between means of students' preferences in various health institutions were carried out and differences between rural and urban students were also investigated.

#### ***10.3.1.1 The Most Preferred and Least Preferred Places to Work***

Indeed, question B1 comprised five sub-questions which sought students' preference for different health institutions: B1A for preference of hospitals in capital cities, B1B for preference of hospitals in county cities, B1C for preference of hospitals in rural areas, B1D for preference of community centres in cities, and B1E for preference of community centres in rural areas. They were designed as 10-point rating scales; the direction of 1 to 10 was labelled as from dislike to like. Although, strictly speaking, these variables are ordinal data, as the number of categories is considerably greater,

treating them as interval variables is permitted as in this way powerful analysis techniques can be employed and “*the amount of error that can occur is minimal*” (Bryman and Cramer 2011:72) and also because the results are usually more understandable (Alreck and Settle 1995). During this analysis, in order to benefit from the considerable advantages of using powerful analysis techniques, data generated from ten-point scales were treated as interval data.

The means and standard deviations of students’ health institution preferences are shown in Table 10-5. Among five kinds of health institutions, the high scores appeared in the variable *B1B* (preference of a hospital in county cities) and *B1D* (preference of a community centre in cities), with mean of 7.00 and 6.79 respectively. In contrast, the mean for preference of a hospital and community centre in rural areas was only 5.23.

**Table 10-5: The Mean, Median of Nursing Students’ Health Institution Preferences**

Items	N	Mean	Std. Deviation
B1A Preference of a hospital in capital cities	434	5.76	2.246
B1B Preference of a hospital in county cities	434	7.00	1.862
B1C Preference of a hospital in rural areas	432	5.23	1.890
B1D Preference of a community centre in cities	434	6.79	2.211
B1E Preference of a community centre in rural areas	434	5.23	2.282

In order to gauge the significance of the mean differences between each pair of variables, a paired sample t-test was run as both data were provided by the same respondents. Within five means, a total of ten pairs were composed and compared. The results show that students’ preferences for these health institutions had significant differences with  $p < 0.001$  (see Table 10-6), except for Pair 6 (the preferences of a hospital in county cities versus a community centre in cities,

$p=0.130$ ) and Pair 9 (the preferences for a hospital in rural areas versus a community centre in rural areas,  $p=0.919$ ), both of which had a significance of above 0.05.

**Table 10-6: Paired Samples T-test of Preferences for Health Institutions**

	Pairs	Paired Mean Differences	t	d.f.	Sig.
Pair 1	Preference of a hospital in capital cities – Preference of a hospital in county cities	-1.233	-12.109	433	<.001
Pair 2	Preference of a hospital in capital cities – Preference of a hospital in rural areas	.532	3.684	431	<.001
Pair 3	Preference of a hospital in capital cities – Preference of a community centre in cities	-1.025	-6.570	433	<.001
Pair 4	Preference of a hospital in capital cities – Preference of a community centre in rural areas	.535	3.224	433	.001
Pair 5	Preference of a hospital in county cities – Preference of a hospital in rural areas	1.759	13.641	431	<.001
Pair 6	Preference of a hospital in county cities – Preference of a community centre in cities	.207	1.519	433	.130
Pair 7	Preference of a hospital in county cities – Preference of a community centre in rural areas	1.767	11.501	433	<.001
Pair 8	Preference of a hospital in rural areas – Preference of a community centre in cities	-1.565	-12.942	431	<.001
Pair 9	Preference of a hospital in rural areas – Preference of a community centre in rural areas	-.009	-.102	431	.919
Pair 10	Preference of a community centre in cities – Preference of a community centre in rural areas	1.560	13.882	433	<.001

Among all kinds of hospitals, those in county cities were most preferred by the students, while the hospitals in rural areas were the least preferred. The differences in the mean between the preferences of these three kinds of hospitals had substantial significance.

Among the community centres, the mean of preference of a community in the cities was 6.79, compared to 5.23 in the rural areas. This difference reflects that most students preferred community centres in cities to community centres in rural areas.

Based on these results, the following interpretations were drawn:

- The most preferred institutions were hospitals in county cities and community centres in cities (the difference between these two has no statistical significance);
- The second line of preferred institution was hospitals in capital cities;
- The least preferred institutions were hospitals in rural areas and community centres in rural areas (there was no statistically significant difference between these two institutions).

### **10.3.1.2 Rural and Urban Students' Preferences of Health Institutions Are Similar**

To look at differences in rural and urban groups, 2-independent sample t-test was used. The results are given in Table 10-7.

The results show that rural and urban background students displayed no significant difference in health institution preferences, with the exception that urban background students showed a greater preference towards working in community centres in cities than rural background students ( $p=0.001$ ).

**Table 10-7: Differences in Health Institution Preference in Rural and Urban Groups**

Health institutions	Urban	Rural	Difference	Sig.
Preference of a hospital in capital cities	5.92	5.71	.209	.409
Preference of a hospital in county cities	7.17	6.94	.235	.264
Preference of a hospital in rural areas	4.99	5.31	-.317	.138
Preference of a community centre in cities	7.37	6.61	.762	.001
Preference of a community centre in rural areas	5.11	5.27	-.159	.537

These results are similar to those results drawn from tests which were strictly based on the ordinal data (see Appendix 12). It supports the argument that “*such a restriction [that parametric tests should only be used on interval/ratio data] is unnecessary*” (Bryman and Cramer 2011:176).

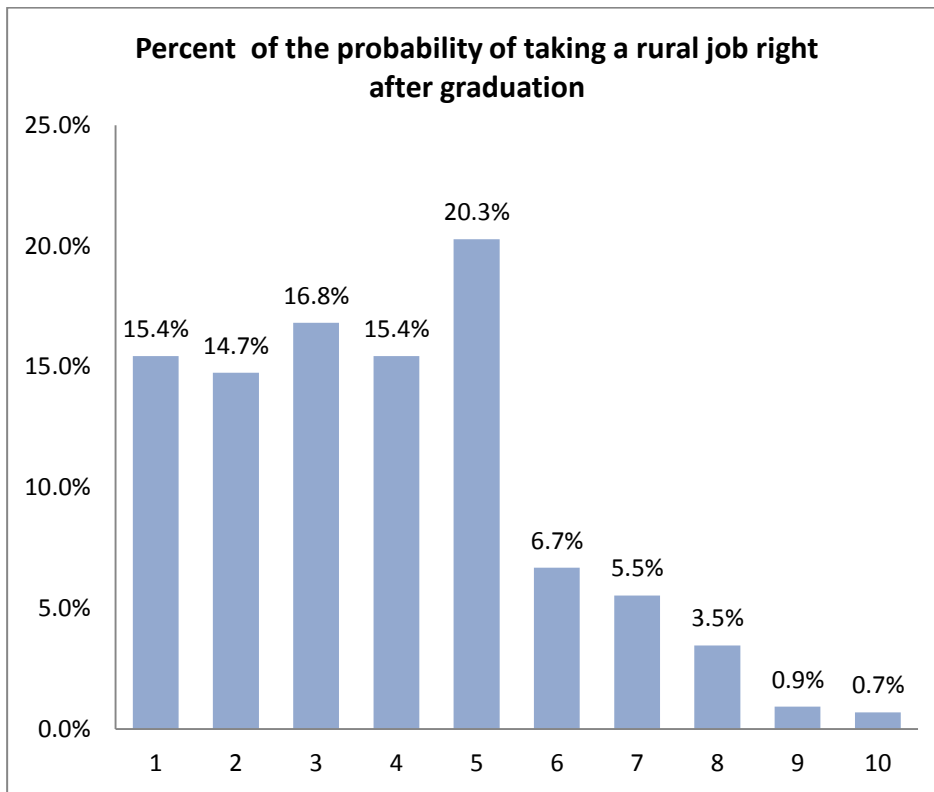
### ***10.3.2 The Probability of Taking a Rural Job following Graduation***

The probability of the students taking a rural job after their graduation was measured using a ten-point rating scale. The data was labelled as variable B2. As mentioned above, strictly speaking, this was ordinal data, but as the number of categories was not small, in order to facilitate the analysis, it was treated as interval data. The median and mean were used to describe the central tendency of the responses to this question; the bar chart was employed to display the distribution of the data; and the 2-independent sample t-test and one-way ANOVA were used to test whether differences between groups were significant.

#### ***10.3.2.1 Only a Few Students with High Probability of Taking a Rural Job Immediately following Graduation***

With an N=434, the median of the probability of taking a rural job immediately following graduation was 4.00 in the range of 1-10, with '1' indicating low probability and '10' indicating high probability. The mean was 3.80, with a standard deviation of 2.03.

In order to effectively demonstrate the distribution of the data, a bar chart was drawn (see Figure 10-3). It shows responses clustered in the range of 1-5 points, with a steep decline after the point of 5. From the cumulative percentage, it can be seen that only 5.1% of students rated their probability of taking a rural job above the 7 point mark.



**Figure 10-3: Distribution of the Probability of Taking a Rural Job Immediately Following Graduation**

### **10.3.2.2 Differences between Groups in the Probability of Taking a Rural Job Immediately following Graduation**

In order to gauge the differences between subgroups, three kinds of subgroups were identified, namely: rural/urban, degree/no degree, and having rural placement/no rural placement. Differences in subgroups were examined and statistical significances of these differences were tested.

#### **10.3.2.2.1 Rural Background Students Were More Likely to Take a Rural Job**

The difference in this variable was explored between the group of students who had a rural identification and the group of students who had an urban identification. The mean of the urban group was 3.14 and 4.01 for the rural group. An independent sample t-test showed that the difference was statistically significant, with a value of significance less than 0.001 (see Table 10-8). This indicates that rural background students were more likely to take a rural job following graduation.

**Table 10-8: Comparisons of Means in Groups of Rural Background for Probability of Taking a Rural Job**

Rural/Urban background	Probability of taking a rural job immediately following graduation		Sig.
	Numbers	Means	
Urban	103	3.14	<.001
Rural	331	4.01	

### 10.3.2.2.2 The More Educated Were Less Likely to Work Rurally

An exploration of the difference between three educational levels revealed that the means were 4.37, 3.98 and 3.09 respectively for the diploma, associate and bachelor groups (see Table 10-9). The data met the requirements for using ANOVA as the dependent variable was continuous and the independent variable was categorical and the values of the dependent variable came from different respondents (Alreck and Settle 2004). The ANOVA test showed that the F value was 15.350, with  $p < 0.001$ ; this indicates that the differences between these groups were significant.

**Table 10-9: Means of the Probability of Taking a Rural Job  
in Educational Subgroups**

	N	Mean	Std. Deviation	F	Sig.
Diploma	136	4.37	1.912	15.350	<.001
Associate	159	3.98	1.816		
Bachelor	136	3.09	2.155		

Further exploration was followed using Post Hoc Tests. It revealed that the mean differences were significant between the bachelor and the diploma group ( $p < 0.001$ ) and between bachelor's and associate's group ( $p = 0.001$ ). However, the difference between the diploma and associate's groups had no statistical significance at  $\alpha = 0.05$  level as the  $p = .241$  (see Table 10-10).

**Table 10-10: Results of Post Hoc Tests on Educational Subgroups**

(I) Education	(J) Education	Mean Difference (I-J)	Std. Error	Sig.
Diploma	Associate	.387	.229	.241
	Bachelor	1.279*	.237	<.001
Associate	Diploma	-.387	.229	.241
	Bachelor	.893*	.229	.001
Bachelor	Diploma	-1.279*	.237	<.001
	Associate	-.893*	.229	.001

According to the homogeneous subsets suggestion, the diploma and associate students were combined into a no-degree group, whilst the bachelor and master students were combined into a degree group. Exploration of the difference between the non-degree group and the degree group showed that the mean for the group with degree was 3.04, and 4.16 for the group without degree. The independent samples t-test showed that this difference was substantially significant with a value of significance less than 0.001(see Table 10-11). This result indicates that students in a degree nursing program were less likely to take a rural job immediately following graduation than students in a non-degree nursing program.

**Table 10-11: Difference in Degree and No Degree Groups  
in the Probability of Taking a Rural Job**

Education groups	N	Mean	Std. Deviation	Sig.
Degree	139	3.04	2.153	<.001
No degree	295	4.16	1.868	

### 10.3.2.2.3 The Impact of Rural Placement upon Students' Intentions to Work Rurally Has no Statistical Significance

In order to test whether there was a significant difference between those who had a rural placement and those who had not taken a rural placement, a 2-independent sample t-test was used. It showed that the mean for the group who had rural placement was 4.05 whilst the mean for the group who did not have a rural placement was 3.72. This difference had no statistical significance at  $\alpha=0.05$  level ( $p=0.143$ ) (see Table 10-12). This result indicates that the impact of rural placement upon students' intentions to work rurally had no statistical significance.

**Table 10-12: Comparisons of Means in Groups of Rural Placement for Probability of Taking a Rural Job**

<i>Rural placement</i>	Probability of taking a rural job immediately following graduation		Sig.
	Numbers	Means	
Having rural placement	108	4.05	0.143
No rural placement	320	3.72	

In summary, the differences in the probability of taking a rural job between students with rural and urban background and between students with degree and no degree were significant. Students with a rural background or students in a non-degree nursing program were more likely to take a rural job following their graduation. However, the difference between the group of students who had a rural placement and the group of students who did not have a rural placement was not significant.

### **10.3.3 The Probable Duration of Working in Rural Areas in Future Career**

The data pertaining to the probable duration of working in rural areas during nursing students' career was collected via question B3 in the questionnaire. This question presented students with five options: none of my career, part of my career, half of my career, most of my career and entire career. The data were ordinal and labelled as variable B3.

Median and mode were used to describe the central tendency and frequency tables were used to depict the distribution of the data. The results showed that the majority of students were willing to work in rural areas for part of their career.

Nonparametric tests, such as the Mann-Whitney test and Kruskal-Wallis test, were used to test the significance of differences in rural/urban and educational groups. They showed that rural background students and non-degree students were more likely to work rurally for a longer period.

#### **10.3.3.1 Most Students Were Only Willing to Work Rurally for Part of Their Career, Rather Than Most or the Entirety of Their Career**

The descriptive statistics showed that the median and mode of the variable all stood at 2, which corresponded to the option *part of my career*. The frequency table (see Table 10-13) shows the detailed distribution in each option.

From the cumulative percentage, it can be seen that 75.3% of the students (n=327) were willing to work in rural areas for part of their career, but only 14.7% of the students (n=1+10+53=64) were willing to work in rural areas for half of their career or above, and 9.9% of the students (n=43) declared that they would never work in a rural area.

**Table 10-13: Frequency Table of the Probable Duration  
of Working in Rural Areas in Career**

Probable duration of working in rural areas	Frequency N	Percentage %	Cumulative percentage %
None of my career	43	9.9	9.9
Part of my career	327	75.3	85.3
Half of my career	53	12.2	97.5
Most of my career	10	2.3	99.8
All my career	1	.2	100.0
Total	434	100.0	

These data were further inspected in the crosstabs. It revealed that among those students who declared that they would work in rural areas half or more than half of their career, 92.2% (n=48+10+1=59) of them were rural background students, and only 7.8% (n=5) of them came from an urban background (see Table 10-14).

**Table 10-14: Crosstabulation of the Probable Duration of Working in Rural Areas  
by Rural Background**

Probable duration of working in rural areas	Rural Identification		Total N
	Urban	Rural	
None of my career	23	20	43
Part of my career	75	252	327
Half of my career	5	48	53
Most of my career	0	10	10
All my career	0	1	1
Total	103	331	434

Cross-tabulation by degree revealed that among those students who declared that they would work in rural areas for half or more than half of their career, only 17.2% ( $n=8+3=11$ ) were in a degree program, whereas, 82.8% of them ( $n=45+7+1=53$ ) were in a non-degree program (see Table 10-15).

**Table 10-15: Crosstabulation of the Probable Duration of Working in Rural Areas by Degree**

Probable duration of working in rural areas	Degree		Total N
	Non-degree	Degree program	
None of my career	18	25	43
Part of my career	224	103	327
Half of my career	45	8	53
Most of my career	7	3	10
All my career	1	0	1
Total	295	139	434

### **10.3.3.2 Rural Background Students and Non-degree Students Were More Likely to Work Rurally for a Longer Period**

As the variable was ordinal level data, in order to explore the difference in rural/urban groups and test its significance, a nonparametric statistics was needed. For the 2-independent group data, Mann-Whitney test was used. The Mann-Whitney test showed that the mean ranks were 174.91 and 230.75 for the urban and rural group respectively, and the difference was significant ( $P<0.001$ ) (see Table 10-16). This indicates that rural background students were more likely to work in rural areas for a longer period in their future career than urban background students.

The same method was used to test the differences in degree /no degree groups and in groups of having/not having rural placement. These results are given in Table 10-16.

**Table 10-16: Comparisons of Means Rank in Groups for the Probable Duration of Working in Rural Areas in Career**

Characteristics	Probable duration of working rurally in career		P value for difference
	Numbers	Means Rank	
<b>Rural background</b>			
Urban	103	174.91	<.001
Rural	331	230.75	
<b>Education</b>			
Degree	139	230.72	<.001
No degree	295	189.44	
<b>Rural placement</b>			
Having rural placement	108	234.18	.011
No rural placement	320	207.86	

The difference in the mean ranks of the probable duration of working rurally in their future career between degree and non-degree students was substantially significant ( $p < 0.001$ ). This indicated that students without a degree were more likely to work rurally for a longer period of time.

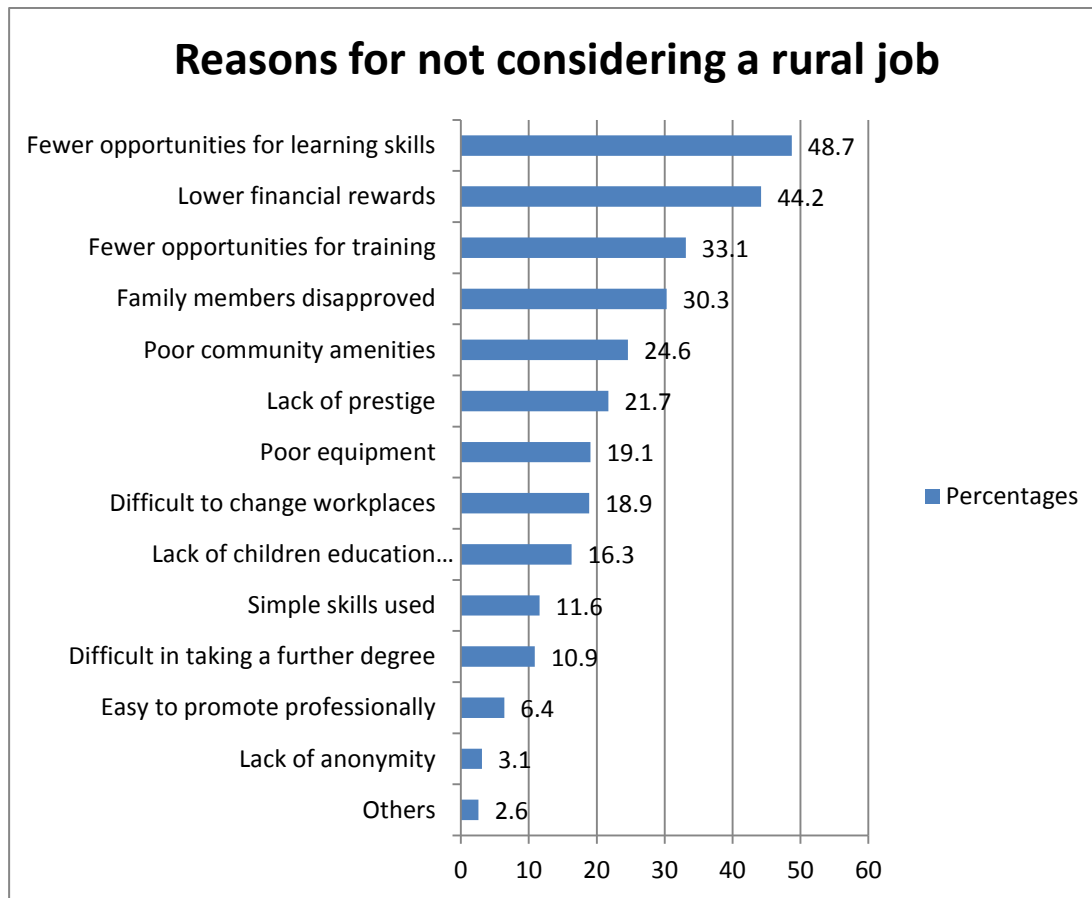
The difference between students having taken a rural placement and students without a rural placement was also significant at  $\alpha = 0.05$  level ( $p = 0.011$ ), with students having taken a rural placement exhibiting higher mean ranks. These results indicated that students having taken a rural placement were more likely to work rurally for a longer period of time in their careers.

### 10.3.4 Reasons for Not Considering a Rural Job

Question B4 investigated the main reasons behind students' choice not to consider a rural job. As this was a multiple-choice question, a frequency table was generated to show the percentages of responses in each option (see Table 10-17). A bar chart was also created in descending order of these frequencies so as to visualise these data (see Figure 10-4).

**Table 10-17: Frequency Table of Reasons of Not Considering a Rural Job**

Reasons for not considering a rural job	Frequency	Percentage
	N	%
Fewer opportunities for learning skills	206	48.7
Lower financial rewards	187	44.2
Fewer opportunities for training	140	33.1
Family members disapproved	128	30.3
Poor community amenities	104	24.6
Lack of prestige	92	21.7
Poor equipment	81	19.1
Difficult to change workplaces	80	18.9
Lack of children education opportunity	69	16.3
Simple skills used	49	11.6
Difficult in taking a further degree	46	10.9
Easy to promote professionally	27	6.4
Lack of anonymity	13	3.1
Others	11	2.6



**Figure 10-4: Reasons for Not Considering a Rural Job**

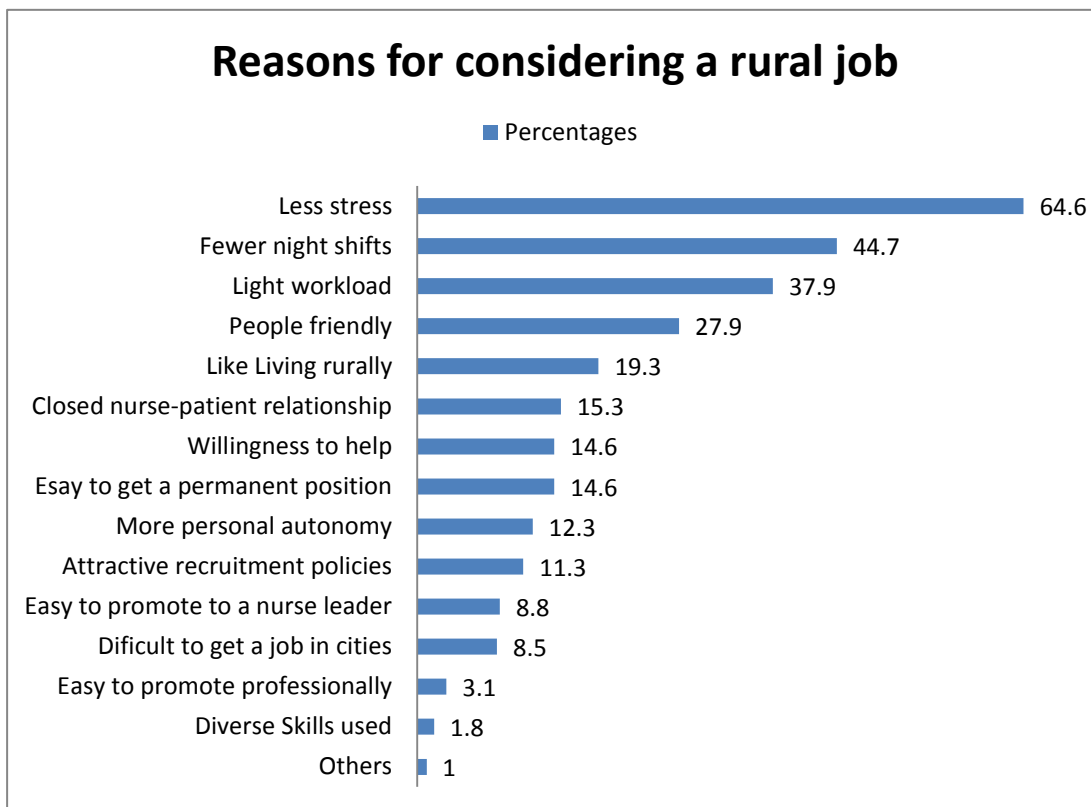
The frequency table and bar chart show that the most popular reasons for participants not considering a rural job were fewer opportunities to develop skills, lower financial rewards and fewer opportunities for training in rural health facilities, with percentages of 48.7%, 44.2% and 33.1%, respectively. Approximately one third of students thought their family members might not be happy with them working rurally; one quarter of students felt the poor community amenities were one of the main reasons. The next most popular reasons were more prestige for nurses who work in the city, poor equipment in rural settings and difficulty to change workplace in rural health settings. Lack of anonymity and promotion professionally easily were listed in the least frequent group.

### 10.3.5 Reasons for Considering a Rural Job

Question B5 investigated the main reasons behind nursing students' choice to consider a rural job. A frequency table of each option was created (see Table 10-18). A bar chart in the descending order of the frequency was also used to depict the results (see Figure 10-5).

**Table 10-18: Frequency Table of Reasons of Considering a Rural Job**

Reasons for considering to take a rural job	Frequency N	Percentage %
Less stress	257	64.6
Fewer night shifts	178	44.7
Light workload	151	37.9
People friendly	111	27.9
Like living rurally	77	19.3
Close nurse-patient relationship	61	15.3
Easy to get a permanent position	58	14.6
Willingness to help	64	14.6
More personal autonomy	49	12.3
Attractive recruitment policies	45	11.3
Easy to promote to a nurse leader	35	8.8
Difficult to get a job in cities	34	8.5
Easy to promote professionally	14	3.1
Diverse skills used	7	1.8
Others	4	1



**Figure 10-5: Reasons for Considering Taking a Rural Job**

The most frequently reported attractive force for considering taking a rural job was less stress; indeed, nearly two thirds of the participants ticked this option. The next most popular attraction of rural nursing was the possibility of fewer night shifts (44.7%), followed by perceived light workload (37.8%) and the friendliness of people (27.9%). The frequencies of occurrence in options related to willingness to help rural people, close nurse-patient relationship and getting a permanent position were similar (15.3% to 14.6%). Only 3.1% of the students considered ease of promotion as an attractive factor for taking a rural job and 1.8% of students considered skills diversity as a reason for rural practice. This meant that students seldom considered a rural job because of skill diversity or ease of promotion.

### **10.3.6 Section Summary**

This section reported the analysis on the data of nursing students' health institution preferences and their intentions to work rurally. In analysing students' responses regarding health institution preferences, it was found that health institutions most preferred by nursing students were hospitals in county city and city community centres, whilst the least preferred settings were health institutions in rural areas.

The exploration of the data pertaining to the probability of taking a rural job immediately following graduation revealed that only a few students had a high probability of taking a rural job immediately following their graduation. With regard to the possible duration of working rurally during their career, only 14.7% of students were intending to work in rural areas for more than half of their career, although three quarters of students were willing to work rurally for part of their career.

Analysis of subgroups showed that rural background students were more likely to take a rural job both during their career and immediately following their graduation than urban group students. In educational groups, the group of students without a degree were more likely to take a rural job. There were no statistically significant differences between diploma students and associated students.

By analysing the data pertaining to the main reasons behind considering or not considering a rural job, it can be seen that the most popular reasons for not considering a rural job were the perceived fewer opportunities to learn skills and potential lower financial rewards in rural nursing; family members' disapproval was also a popular reason for not considering working rurally. The most popular attractive forces for taking a rural job were less stressful, fewer night shifts and perceived light workload in rural health facilities; in addition, the friendliness of people in rural areas also encouraged them to take a rural job.

## **10.4 The Results of Correlation Analysis**

The previous sections have examined differences between certain subgroups. To some extent, these have partly answered questions relating to the relationship between students' personal characteristics and their intentions to work rurally; however, the technique of examining differences in groups is only suitable for exploring individual factors; it is ineffective when it comes to examining the relative effect of a set of factors. In order to investigate the complex relationships of a set of factors, correlation and regression analyses were used.

This section reports the results of correlation and regression analyses. Part 1 reports the impact of students' characteristics on the first dependent variable *the probability of taking a rural job immediately following graduation*. Part 2 reports the impact of these factors upon the second dependent variable *the probable duration of working in a rural area in career*. Following this, part 3 reports the correlation analysis between students' perspectives and their intentions to work rurally.

### **10.4.1 Correlations between Demographic Characteristics and Probabilities of Taking a Rural Job**

The descriptive statistics pertaining to students' demographic characteristics have been presented in section 10.1. This section looks at the influence of these variables on students' intentions to work rurally. In order to examine students' characteristics in terms of the probabilities that they will take a rural job immediately following their graduation, correlation and multiple regression analysis were employed, the results of which are presented below.

#### **10.4.1.1 The Correlation Coefficients**

Generating graphs or tables is a simple way in which to present relationships between two variables, but this depends on the individual's eyeball judgement. Instead of the visual inspection, calculation of the association is a more objective way to obtain information regarding the relationships. There are various kind of measures of association, such as Lambda, Somer's *d*, Gamma and Kendall's tau, Spearman' rho and Pearson' *r*, which provide a single figure for the strength of association to quantify a relationship between two variables (Argyrous 2005).

*As gender, rural identification, whether ever lived rurally, whether taking a rural placement* were nominal variable, and the variable of the probability of taking a rural job was treated as interval data, the Eta was used to measure the strength of their correlations (Argyrous 2005).

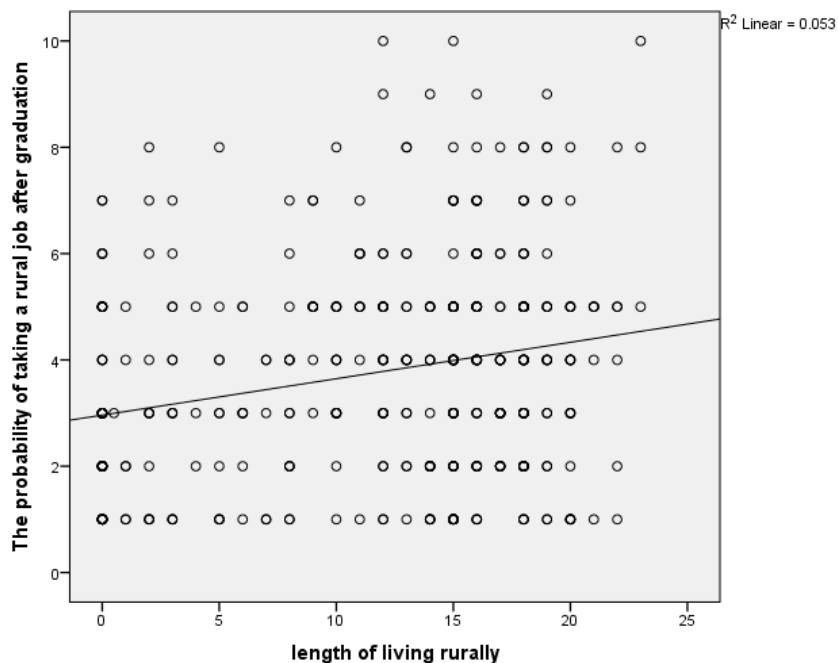
As educational level was an ordinal data, and as such, methods that can be used to measure the associations between ranked data are essential. These include Gamma, Somer's *d* and Kendall's tau. Gamma and Kendall's tau are symmetric measures of association; that is, which variable is specified as independent and which is as dependent do not affect the calculation of Gamma and Kendall's tau. However, in this study, it was clear that the probability of taking a rural job should be treated as a dependent variable. Thus Gamma and Kendall's tau cannot fully utilise the information provided by the data. In contrast, Somer's *d* is an asymmetric measure of association, which is sensitive to one-way dependence model. Thus, Somer's *d* was considered as an appropriate method for use here. The result showed the coefficient of the Somer's *d* was -0.286.

As the variable of the probability of taking a rural job was treated as interval data, Pearson correlation coefficients were used to demonstrate the strength of correlations between students' age, length of living rurally and length of rural placement and the probability of taking a rural job. The values of correlation coefficient and measures used are given in Table 10-19.

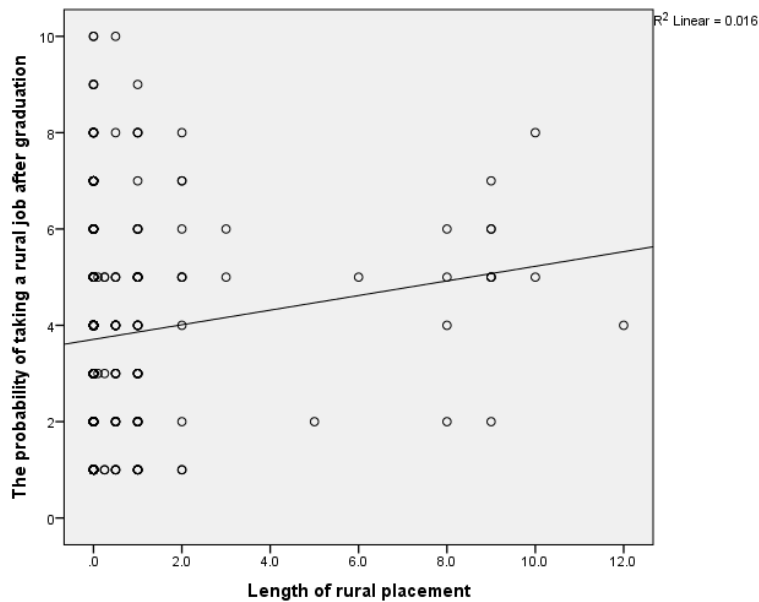
**Table 10-19: Correlation Coefficients between Students' Characteristics and the Probability of Taking a Rural Job Following Graduation**

Variables	Measures	Correlation coefficient
Gender	Eta	.116
Rural identification	Eta	.183
Age	Pearson's <i>r</i>	-.229
Education level	Somer's <i>d</i>	-.286
Whether ever lived rurally	Eta	.214
Length of living rurally	Pearson's <i>r</i>	.231
Whether taking a rural placement	Eta	.071
Length of rural placement	Pearson's <i>r</i>	.127

This analysis showed that the variable *whether taking a rural placement* had a very weak relationship with the dependent variable. Except for that, the variables of *gender, rural identification, age, education level, whether ever lived rurally, length of living rurally, and length of rural placement* all had a correlation coefficient greater than 0.1 with the variable. The scatterplots of the length of living rurally and the length of rural placement with the probability of taking a rural job following graduation are provided in the figures below (Figure 10-6 and Figure 10-7).



**Figure 10-6: Scatter Plot of the Length of Living Rurally with the Probability of Taking a Rural Job Immediately Following Graduation**



**Figure 10-7: Scatter Plot of Length of Rural Placement with the Probability of Taking a Rural Job Immediately Following Graduation**

However, all of these correlations are only based on the bilateral relationships; and there may be some spurious relationship. For example, the result showed that the Pearson correlation coefficients between age and probability of taking a rural job was -0.229; a figure which was statistically significant at  $\alpha=0.01$  level. This showed the variable *age* was negatively correlated with the intentions to work rurally. Considering this relationship may be spurious, a partial correlation was run by setting the educational program as a controlling variable. The result showed that the coefficient between age and probability of working rurally changed to a value of 0.015, and with a high *P* value ( $p=0.755$ ). This indicated that there was no significant relationship between age and intentions to work rurally if the education qualification was taken into account. The direct relationship between age and intentions to work rurally was spurious.

#### **10.4.1.2 The Multi-linear Regression Analysis of the Probable Duration of Working in Rural Areas**

The correlation analysis only measures the degree and significance of the relationship between two variables; and it may not be able to detect some spurious relationships, as is the case with the above example. In order to further examine these relationships, a multiple regression analysis was conducted. In this study, the variable of the probability of taking a rural job was treated as the dependent variable whilst various individual characteristics were tested as independent variables. Based on the above correlation analysis, in this regression analysis those demographic variables which had significant correlations with the dependent variable were selected as independent variables; they were *rural identification, age, education level, whether ever lived rurally, length of living rurally, length of rural placement*. Gender was not included in the independent variables as participants in the survey were predominantly female with only three male participants. In light of this, entering the gender as a variable into the model was considered unreasonable.

There are two possible objectives of regression analysis. This first is to measure the degree and direction of the influence of the independent on the dependent variable; the second is to obtain a formula with which to predict the value of dependent variable in a new case based on the values of the independent variables (Alreck and Settle 1995). The goal of the regression analysis in this study focussed much more on the former objective and less on predicting an outcome for an individual case.

#### **10.4.1.2.1 Data Preparation**

The data in the dependent variable *the probability of taking a rural job immediately following graduation* were generated from the ten-point scale. Historically, researchers treat this kind of data in different ways: one way is to apply parametric models for ordinal outcomes, such as using multiple linear regression analysis, assuming that the robustness of these techniques overcomes any potential interpretation problems. Another approach is to treat the ordinal variable as strictly categorical and apply log linear regression (O'Connell 2006). In this variable, the kurtosis was 0.485 and skewness was 0.485, both of which were less than 1.0. In addition, previous inference analysis showed that there were no significant influences on the final results in treating this variable as interval data or ordinal data. In order to keep a consistent approach with the inferential statistics, the former approach was selected; that is, to treat the data as interval data and use a multiple linear regression to analyse said data.

There are some requirements when it comes to using linear regression analysis (Stevens 1992, Alreck and Settle 1995). Both dependent and independent variables must be interval level. In this analysis, the dependent variable was variable B2, *the probability of taking a rural job immediately following graduation*, which has been argued above to be treated as interval data. The independent variables were *age, rural identification, education level, whether ever lived rurally, length of living rurally, length of rural placement*. Among these independent variables, *age, length of living rurally, and length of rural placement* were interval data, whilst the variables

*rural identification*, *degree*, and *whether ever lived rurally* were binominal data. These were transferred to dummy variables and coded as 0 and 1. After transformation, they could be used in the multiple linear regression analysis, as it is argued that by converting nominal variables into a series of dummy variables, the multiple regression technique can be used (De Vaus 2002).

#### **10.4.1.2.2 Procedure of Regression Analysis**

In order to examine the impact of the set of variables and their joint impact on the dependent variable, the back forward regression analysis method was used. With this method, the whole set of independent variables is put into the model during the first step, following which those unimportant factors are removed step by step (Gray and Kinnear 2012). In the initial model (see Table 10-20), it was found that only two variables, namely *education level* and *length of living rurally* had significant predictability of the dependent variable; variables *age*, *rural identification*, *whether ever lived rurally* and *length of rural placement* had a comparatively small impact on the predictability after controlling all other variables.

The variables of *rural identification* and *whether ever lived rurally* both had significant predictability when they were alone, with a value of  $R$  (0.183) and  $R$  (0.214) respectively. However, after controlling the variable *length of living rurally*, their impacts became insignificant. This indicated that the length of living rurally was the most powerful predictable variable among them, and it was the best presentational index for rural background in this study. *Age* alone had significant predictability on the dependent variable, but after controlling the education level, its predictability had no significance. *Length of rural placement* had significance alone, but controlling the rural background, its impact became no longer significant.

**Table 10-20: Coefficients of Multiple Regressions (Initial model)**

Initial Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	<i>Beta</i>		
(Constant)	1.797	1.945		.924	.356
Age	.084	.106	.091	.792	.429
Rural identification	-.212	.337	-.045	-.628	.530
Associate dummy	-.745	.425	-.177	-1.751	.081
Bachelor dummy	-1.644	.545	-.377	-3.014	.003
Master dummy	-3.899	1.625	-.162	-2.399	.017
Whether ever lived rurally	.533	.395	.091	1.351	.178
Length of living rurally	.063	.023	.211	2.770	.006
Length of rural placement	.069	.059	.055	1.159	.247

Dependent Variable: the probability of taking a rural job immediately following graduation

### 10.4.1.2.3 Final Regression Model

The results of the final model of the multiple regression analysis are displayed in three parts: the explanatory power of the model, relative importance of variables and the regression formula.

The explanatory power of the model can be indicated by the R Square in the model (Alreck and Settle 1995). In this regression analysis, the table of model summary reports that the correlation coefficient was 0.360, the R Square was .129, with an adjusted R Square at 0.121 (see Table 10-21). This meant that 12.1% of variation in the variable of *the probability of taking a rural job* in the sample could be accounted for the set of independent variables *length of living rurally* and *education*.

**Table 10-21: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Final	.360	.129	.121	1.910

In order to test whether an R Square this large could have occurred due to sampling error, an F-test was used. The significance of F tells whether an R square greater than zero is because of sampling error (De Vaus 2002). In the test of this model, the ANOVA test indicated that F was 15.314, with a *P* value of less than 0.001 (see Table 10-22), thus meaning that the chance of an R Square this high (0.129) being caused by simple sampling error was very low.

**Table 10-22: ANOVA Test**

Final Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	223.403	4	55.851		
Residual	1502.616	412	3.647	15.314	<.001
Total	1726.019	416			

Partial regression coefficients shown in the results of regression analysis can indicate the relative importance of factors (see Table 10-23). In the table, the coefficient for each variable indicates how much effect each independent variable had on the dependent variable.

**Table 10-23: Coefficients of Multiple Regressions (Final model)**

Final Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	3.527	.222		15.879	<.001
Associate with dummy	-.528	.233	-.126	-2.267	.024
Bachelor with dummy	-1.289	.239	-.296	-5.392	<.001
Master with dummy	-2.971	1.117	-.123	-2.659	.008
Length of living rurally	.074	.014	.250	5.353	<.001

Dependent Variable: The probability of taking a rural job immediately following graduation

The trends in the model can also be seen in the following two figures. Figure 10-8 shows the correlation between education and the dependent variable, as is evident from the fact that an increase in education qualification level brings with it a decline in the probability of taking a rural job declines. Figure 10-9 is a partial regression plot of length of living rurally, and indicates that when the length of living rurally increases, the probability of taking a rural job increases.

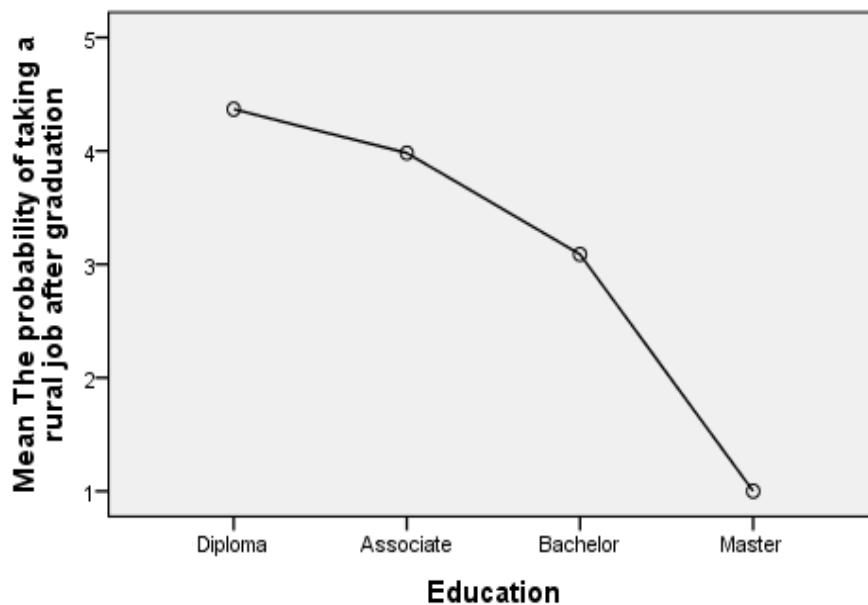


Figure 10-8: Plots of Correlation between Education and the Dependent Variable

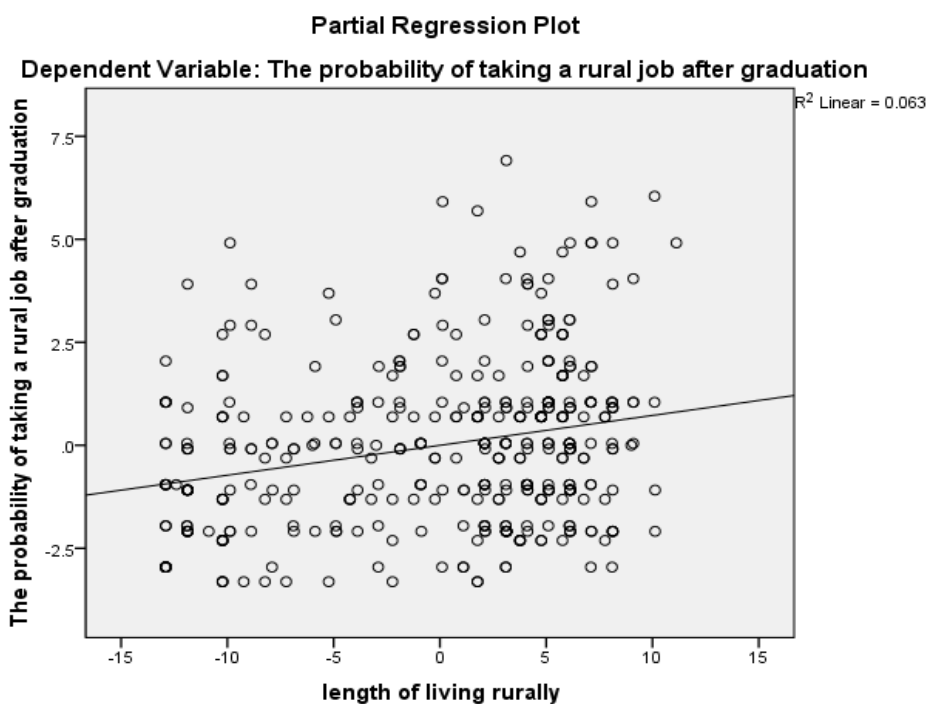


Figure 10-9: Partial Regression Plot of the Length of Living Rurally with the Probability of Taking a Rural Job Following Graduation

The unstandardized coefficients indicated a score increase in the dependent variable with each unit increase in the independent variable (Alreck and Settle 1995). For example, being in a bachelor program decreased by 1.289 the score of the probability of taking a rural job (the total scale score was 10), and being in a master program decreased by 2.971 compared to being in a diploma program.

The standardized coefficient (Beta) indicates the size of standard deviation increase in dependent variable by each standard deviation increase in the independent variable (Alreck and Settle 1995). For example, the Beta coefficient of the length of living rurally was 0.250, thus meaning that for each standard deviation increase in the length of living rurally (the standard deviation for the length of living rurally was 6.9 years), the score in the variable *the probability of taking a rural job* increased by 0.250 of a standard deviation of the probability of taking a rural job (the standard deviation of the probability of taking a rural job was 2.029); that is, the score in the probability of taking a rural job increased by 0.51 (which is  $0.250 \times 2.029 \approx 0.51$ ).

The Beta coefficient can be used to assess the relative importance of each of the independent variables. In the above model, the educational level has been separated into three dummy variables; to see its complete effect, the variable *degree* was used. The results are shown in the table below (see Table 10-24). From the standardized coefficients, it can be seen that the impact of whether having a degree was slightly stronger than the variable of length of living rurally.

**Table 10-24: Comparison of Coefficients  
between Degree and Length of Living Rurally**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.311	.195		16.969	<.001
Length of living rurally	.069	.014	.232	5.067	<.001
Degree	-1.076	.198	-.249	-5.432	<.001

Dependent Variable: The probability of taking a rural job immediately following graduation

### Regression Formula

To further clearly demonstrate this regression analysis result, based on Table 10-23, regression formulas were established.

$$\begin{aligned} & \textit{Predicted Probability of taking a rural job} \\ & = 3.527 + 0.074 \times \textit{Length of living rurally} - 0.528 \\ & \times (\textit{being in an assoate program}) - 1.289 \\ & \times (\textit{being in a beachelor program}) - 2.971 \\ & \times (\textit{being in a master program}) \end{aligned}$$

$$\begin{aligned} & \textit{Probability of taking a rural job} \\ & = 3.527 + 0.074 \times \textit{Length of living rurally} - 0.528 \\ & \times (\textit{being in an assoate program}) - 1.289 \\ & \times (\textit{being in a beachelor program}) - 2.971 \\ & \times (\textit{being in a master program}) + \varepsilon \end{aligned}$$

#### 10.4.1.2.4 Limitations of This Regression Analysis

The establishment of a multiple regression is based on certain statistical assumptions, such as the assumption that the variables tested should be in interval level, the relationships between dependent and independent variables should be linear and independent variables not highly correlated with one another (Alreck and Settle 1995). To meet these assumptions, the dependent variable was assumed to be interval data in this analysis. Some independent variables, such as *education level* and *rural identification* were transferred into dummy variables. The assumption and transformations have made the regression analysis possible and the comparison of the relative importance of independent variables easier; however, at the same time, this assumption and transformations may also result in bias of the prediction.

### **10.4.1.3 Section Summary**

The present section has demonstrated the processes and results of regression analysis. The established regression model has R square at 0.121. It reveals that the variables of *length of living rurally* and *education level* had a significant impact on the probability of taking a rural job. The length of time living rurally had a positive impact while the education level had a negative impact on it.

The variable *length of living rurally* had the most powerful predictability of students' intentions to take a rural job immediately following their graduation among variables pertaining to rural background: *rural identification*, *whether ever lived rurally* and *length of living rurally*.

Compared to the length of living rurally, the variable *degree* had a slightly larger standardised coefficient in the regression model; this meant that the impact of degree on students' intentions to take a rural job was slightly more significant than rural background in these data.

## **10.4.2 Correlations between Demographic Characteristics and Probable Duration of Working Rurally in Career**

In order to examine the relationships of students' demographic characteristics with their probable length of working in rural areas during their careers, correlation and logistic regression analyses were run.

### **10.4.2.1 The Correlation Analysis**

As the variable of the probable duration of working in rural areas was ordinal data and the data pertaining to students' demographic characteristics were either ordinal or internal, the Spearman's correlations coefficients were initially used to examine the strength of correlations between demographic characteristics and the probable duration of working rurally in career. The results are given in Table 10-25.

**Table 10-25: Correlations between Demographic Characteristics and the Probable Duration of Working in Rural Areas in Career (Spearman's rho)**

Variables	Correlation coefficient	Sig. (2tailed)	Number of pairs
Gender	.173	<.001	433
Age	-.158	.001	434
Rural identification	.251	<.001	434
Education level	-.205	<.001	434
Whether ever lived rurally	.240	<.001	433
Length of living rurally	.240	<.001	424
Whether taking rural placement	.122	.011	428
Length of rural placement	.134	.006	425

This correlation analysis showed that all the tested demographic characteristics had significant correlation with the variable *the probable duration of working in rural areas in career*. Among them, rural background, represented by variables of *rural identification*, *whether ever lived rurally*, and *length of living rurally*, had the greatest correlation, especially *rural identification*, with a correlation coefficient at 0.251; in addition to this, *education* was the second largest correlated variable. The variables of *gender*, *age*, *whether taking rural placement* and *length of rural placement* all had significant correlations with a *p* value less than 0.05. In terms of direction, education qualification and age had a negative correlation, while all the others had a positive correlation.

The age had a correlation coefficient of -0.158 with the probable duration of working rurally and was statistically significant at  $\alpha=0.01$  level. However, running separate correlation analyses on degree and no-degree student groups, there was no significant difference found either in degree group or no-degree group (see Table 10-26). This indicated that by controlling the education level *degree*, the age was no longer significantly related to the probable duration of working rurally.

**Table 10-26: Correlation between Age and Students' Intentions to Work Rurally (Spearman' rho)**

	N	Spearman's rho Correlation Coefficient	Sig.
<b>Before controlling</b>			
Total	434	-.158	.001
<b>After controlling</b>			
Degree group	139	-.064	.455
Non-degree group	295	-.024	.687

### **10.4.2.2 Ordinal Logistic Regression Analysis**

As has been argued above, bilateral correlation coefficient analysis is not based on a clear dependent and independent relation, and may not be able to detect some spurious relationships. With this in mind, and in order to further investigate how these demographic factors impact on the variable of the probable duration of working rurally, a regression analysis was carried out. In the analysis, the variable of the probable duration of working in rural areas was defined as the dependent variable and others were defined as independent variables.

As the dependent variable *probable duration of working in rural areas* only had five options and the data were not distributed evenly in each category, logistic regression analysis was adopted. The reason for this application is because logistic regression, as a nonparametric method, is not affected by certain restrictive normality assumptions that apply to parametric analyses (Sheskin 2007).

Logistic regression can be used to predict the outcome of an individual case or a group of membership; it can also be used to find a set of importance of predictors and the strength of association between a set of predictors and an outcome (Tabachnick and Fidell 2000). In predicting the outcome of an individual case or a group of membership, a logistic regression is to predict the probability of a new case falling into a specific category. Instead of predicting the scores of the dependent variable, it provides the probability that a subject will be a member of a specific category (Sheskin 2007). In this analysis, the main purpose was to find a set of important predictors and the strength of association between the set of predictors and the dependent variable.

As the dependent variable was ordinal, an ordinal logistic regression analysis was adopted. The equation of the logistic regression is the probability of having one outcome or another based on a nonlinear function. In the logistical regression, the probability is transformed to odds by the formula,  $odds = \frac{p}{1-p}$  (O'Connell 2006: 11),

and the odds are transformed to logits by taking the natural log. In the ordinal regression, the formula can be written (Tabachnick and Fidell 2000:540) as:

$$P_{(Y>j)} = \frac{e^u}{1 + e^u}$$

Where P is the estimated probability for a case in the categories of above j; the  $e=2.71828\dots$  a natural logarithm;  $u$  is a linear regression equation (Tabachnick and Fidell 2000:518):

$$u = a + b_1x_1 + b_2x_2 + \dots + b_kx_k$$

With the constant  $a$ , coefficients  $b_j$  and predictor  $x_j$  ( $j=1, 2\dots k$ ).

In other words, the linear regression equation is the logit or log of the odds, “*the natural log of the probability of being in one group divided by the probability of being in the other group*” (Tabachnick & Fidell 2000: 518). There are three ordinal regression models: the cumulative odds model, the continuation ratio model and the adjacent categories model (O'Connell 2006). In this study, the cumulative odds model was used, as the focus of the investigation was to clarify trends in the outcome for different explanatory variables, and this model is useful for clarifying trends (O'Connell 2006). The process and the results are presented below.

#### **10.4.2.2.1 Preliminary Analysis and Data Preparation**

Preliminary analysis of the data yielded the following information: (1) in terms of the dependent variable, three quarters of participants declared that they would like to work in rural areas for part of their career, while only 2.3% (10 cases) and 0.2% (1 case) of the participants would like to work in rural areas for most of their career and all their career respectively; (2) regarding the independent variable gender, there were only three males in the sample and the remaining participants were female; (3) with regard to the education level, bachelor, associate and diploma students each

made up more than 30% of the overall sample, but there were only three master students; (4) with regard to the rural placement, one quarter of students had had a rural placement experience.

Based on this information, the data were prepared for ordinal logistic analysis. Two steps of preparations were followed. The first was to combine categories in the dependent variable. The second was to recode independent variables to a suitable reference category.

With regard to the dependent variable, as the number of cases in the category of entire career was too small, the categories were collapsed down from five categories to four categories: 1=no, 2=part of my career, 3=half of my career, 4=most or all of my career. The reason for this is when there are too few cases in a variable, the combination of discrete variables may result in too many cells with no case and the regression analysis may, as a result, produce extremely large parameter estimates and standard errors (Tabachnick and Fidell 2000). The preliminary analysis showed that more than half of the cells had zero frequencies and that there was no difference between the third and fourth threshold. Thus, the combination of the categories of fourth and fifth was considered.

In terms of recoding independent variables, as the logistic analysis in SPSS always uses the highest value category as the reference category, the data needed to be prepared for a suitable reference category being used according to the study purposes. In this study, data were recoded as the following: (1) Education was recoded as: 1=master, 2=bachelor, 3=associate, 4=diploma; the diploma was the reference category. (2) Rural identification was recoded as: 1=rural, 2=urban; urban was the reference category. (3) The variable degree was created from the educational programs: 1=degree (students in bachelor and master program), 2=no degree (students in associate and diploma program); no degree was the reference category.

#### 10.4.2.2.2 The Initial Model

Based on preliminary analysis and data preparation, a logistic regression was run on the recoded dependent variable *probable duration of working rurally in career (recode)*. Independent variables used included *age*, *rural identification (recode)*, *education (recode)*, and *rural placement*. As this study was interested not only in those variables which significantly related to the dependent variable, but also in those variables which had no significant relationship, both the initial model which included all interesting variables and the final model with only significant variables are reported.

The analysis showed that the reduction of the -2 log likelihood was significant in the initial model (see Table 10-27). This indicated that the model had a significant improvement compared to a null model, which was a model without the addition of these predictors. The test of goodness of fit was not significant, thus indicating that the predicted outcome by this model and observed outcome in the data was matched well (see Table 10-28).

**Table 10-27: Model Fitting Information (Initial Model)**

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	278.874			
Final	223.146	55.728	6	<.001

**Table 10-28: Goodness-of-Fit (Initial Model)**

	Chi-Square	df	Sig.
Pearson	131.903	150	.853
Deviance	121.815	150	.956

The value of the Pseudo R-Square test (Nagelkerke) was 0.153, thus indicating a moderate relationship between the dependent variable and the set of independent

variables. Compared to the model of singly predictor of rural resident identification (which had a value of Nagelkerke at 0.82), this has improved.

The parameter estimates table shows the values of the threshold (intercept) and the coefficients of individual predictors (see Table 10-29). As the model is ascending, threshold 1 is the intercept for none of my career versus any other answer; threshold 2 is the intercept for none of my career and part of my career versus half of my career and above, and so on. The significance tests showed that the variables age and *Education3* (associate program) had no significance; while the values of the significant coefficients of variables *rural identification*, *Education1 and 2*, and *rural placement* were significant at  $\alpha=0.05$  level.

**Table 10-29: Logit Estimates of the Model by Multiple Predictors  
(Initial Model)**

		Estimate	Std. Error	Wald	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold	B3 = 1	.812	2.350	.120	.730	-3.793	5.418
	B3 = 2	5.315	2.372	5.020	.025	.666	9.965
	B3 = 3	7.250	2.391	9.196	.002	2.564	11.936
Location	C2Age	.145	.130	1.251	.263	-.109	.399
	Ruralid=1	1.371	.295	21.52	<.001	.792	1.950
	Ruralid=2	0	.	.	.	.	.
	Education=1	-4.631	1.990	5.412	.020	-8.532	-.729
	Education=2	-1.876	.679	7.642	.006	-3.205	-.546
	Education=3	-.688	.511	1.811	.178	-1.690	.314
	Education=4	0	.	.	.	.	.
	Rural placement=1	.658	.266	6.103	.013	.136	1.180
	Rural placement=2	0	.	.	.	.	.

Link function: Logit.

#### 10.4.2.2.3 The Final Model

Based on the exploration of the full model, a final model was run. The dependent variable was the recoded dependent variable *probable duration of working rurally in career (recode)*. The independent variables selected were: *rural identification (recode)*, *degree (recode)*, *rural placement*. The decision for *degree* to be used instead of the variable *education level* was based on two factors: the first was that the initial model showed there was no significant difference between the diploma and associate students, combining them into a non-degree group had a statistical base; another factor was that as the number of master students was small, combining these students with bachelor students as a group of degree students would reduce the cells with no case, thus in turn reducing the standard error of the regression analysis.

The model fitting information provides the number of -2 log likelihood and its Chi-square test (see Table 10-30); it showed the predictive capability of this model has been significantly improved over the null model. Goodness-of-fit test showed that there was no significant difference between the predicted categories and the observed data (see Table 10-31), therefore indicating that the model fits the data well. The Pseudo R-Square measure showed that the value of Nagelkerkes was 0.143, a slight decrease from the previous initial model.

**Table 10-30: Model Fitting Information (Final Model)**

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	122.549			
Final	70.738	51.811	3	<.001

**Table 10-31: Goodness-of-Fit (Final Model)**

	Chi-Square	df	Sig.
Pearson	19.557	18	.358
Deviance	16.056	18	.589

The estimated coefficients for the final regression model are provided in Table 10-32. The values of logit for rural identification and rural placement were positive, thus suggesting that students with rural identification and rural placement had higher odds in the higher categories (which represents higher intention to work rurally) compared to their reference groups, namely urban students and students without rural placement respectively. The coefficient for degree was negative, thus indicating that being enrolled on a degree program was associated with the lower scores on the dependent variable, which in this case means degree students were more likely to be in a lower category (which represents a shorter period of time of working rurally) than non-degree students.

**Table 10-32: Logit Estimates of the Regression Model  
(Final Mode)**

		Esti- mate	Std. Err.	Wald	Exp.	Sig.	95% Confidence Interval	
							Lower bound	Upper bound
Threshold	B3 = 1	-1.651	.264	39.028	0.192	<.001	-2.169	-1.133
	B3 = 2	2.827	.304	86.364	16.895	<.001	2.231	3.423
	B3 = 3	4.760	.412	133.62	116.746	<.001	3.953	5.567
Location	Ruralid=1	1.355	.292	21.568	3.877	<.001	.783	1.927
	Ruralid=2	0	.	.	.	.	.	.
	Degree=1	-1.127	.262	18.516	0.324	<.001	-1.641	-.614
	Degree=2	0	.	.	.	.	.	.
	Rural placement=1	.654	.262	6.248	1.923	.012	.141	1.166
	Rural placement=2	0	.	.	.	.	.	.

From the values of Wald and odds ratios, it seemed that the rural background had the strongest impact on the probable duration of working rurally among these investigated variables. Rural placement had the weakest impact on it.

The test of parallel lines (see Table 10-33) showed that there was no significant difference between this general model and the null hypothesis. The null hypothesis stated that the location parameters (slope coefficients) would be the same across response categories. This indicates that the null hypothesis can be held, namely that one general model can be used to represent the pattern of several separated models (O'Connell 2006).

**Table 10-33: Test of Parallel Lines (Final Model)**

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	70.738			
General	64.594	6.144	6	.407

#### **10.4.2.3 Section Summary**

In summary, this ordinal logistic regression analysis found that rural identification, degree and rural placement had significant impacts on the probable duration of working rurally. Rural identification had a positive impact; a student with rural identification had a higher possibility of working in rural areas for a longer period. Rural placement also had a positive impact on student's intentions of working rurally in their future career. While education level was negatively correlated to the dependent variable, those in a high level education program were less likely to work rurally for a long period.

The following table (see Table 10-34) summarises the impacts of the demographic factors on students' probability of taking a rural job immediately following graduation and the probable duration of working in rural areas in their career.

**Table 10-34: Summary of the Impacts of the Demographic Factors  
on Students' Intentions to Work Rurally**

Variable name	Probability of taking a rural job immediately following graduation		Probable duration of working in a rural area in career	
	Direction	Sig.	Direction	Sig.
Age	+	No	+	No
Gender (Female)	+	No	+	No
Rural background	+	Yes	+	Yes
Education level	-	Yes	-	Yes
Rural placement	+	No	+	Yes

### ***10.4.3 Correlations between Students' Perspectives and Their Intentions to Work Rurally***

Whilst previous sections have examined the relationship between students' demographic characteristics and their intentions to work rurally, this section will examine the relationship between students' perspectives on rural nursing practices and their intentions to work rurally. As students' perspectives and their intentions to work rurally were all measured on the ordinal scale, Spearman rank correlation was used to examine their relationships.

Firstly, the results of the correlations between students' perspectives and the probabilities of them taking a rural job immediately following their graduation (Variable B2) were presented; then, the correlations between students' perspectives and the probable duration of working in rural areas in their career (variable B3) were reported. Finally, a comparison between these two sets of relationships was conducted.

#### ***10.4.3.1 Correlation between Students' Perspectives and Their Probabilities of Working in Rural Areas following Graduation***

Spearman rank correlation analyses were run between students' ratings on the scale of the probability of taking a rural job immediately following their graduation and their extent of agreement with twenty-six statements. These results are presented in Table 10-35.

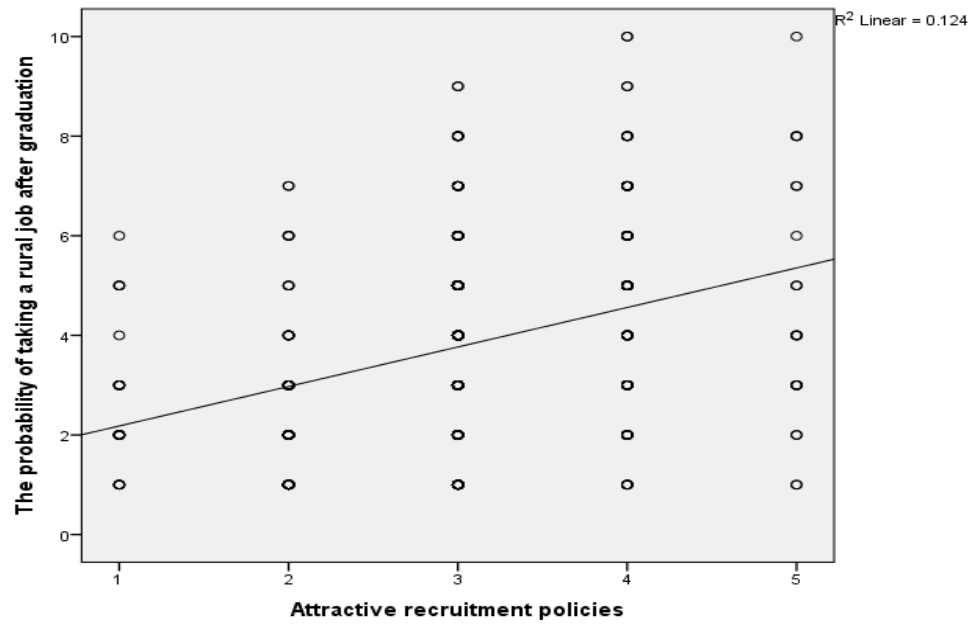
According to the Cohen's guidelines (Cohen 1988), conventionally, a correlation of less than 0.1 is trivial, a correlation between 0.1 and 0.3 is small, between 0.3 and 0.5 is medium, and greater than 0.5 is large. These results showed students' perspectives had trivial, small to medium correlation with their probability of taking a rural job.

**Table 10-35: The Correlation between Students' Perspectives  
and the Probability of Taking a Rural Job Immediately Following Graduation**

Items	Correlation coefficient	Sig. (2tailed)	Number of pairs
Attractive recruitment policies	.363	<.001	434
Family member disapproval	-.342	<.001	434
Difficult to get a job in cities	.278	<.001	434
Willingness to help	.255	<.001	434
Lack of children's education opportunities	-.226	<.001	434
Skills diversity	.184	<.001	432
Lack of prestige	-.168	<.001	433
Like living rurally	.155	.001	434
Skills simplicity	-.154	.001	433
Easy to promote to a nurse leader	-.124	.01	432
Poor equipment	-.107	.025	434
Fewer opportunities for training	-.097	.043	434
Lower financial rewards	-.095	.049	433
Less stress	-.095	.047	434
Difficult to take a further degree	-.085	.078	433
Close nurse-patient relationship	.070	.147	434
Fewer opportunities to learn skills	-.063	.193	434
More personal autonomy	-.061	.205	431
Poor community amenities	-.057	.240	434
Easy to promote professionally	-.050	.304	433
Light workload	-.047	.331	432
Difficult to change workplaces	-.046	.338	434
Lack of anonymity	-.028	.560	434
People friendly	.024	.612	434
Easy to get a permanent position	.013	.784	434
Fewer night shifts	.003	.945	432

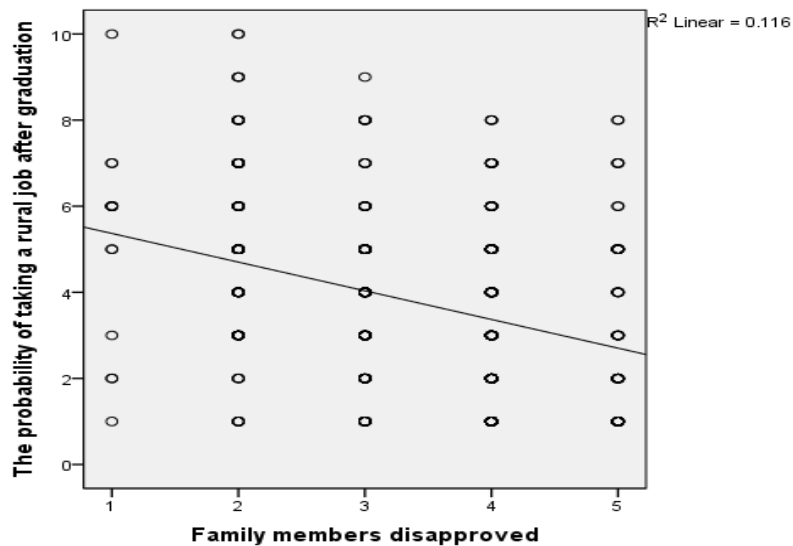
The table shows that students' ratings on attractive recruitment policies had the strongest positive correlation with their probability of taking a rural job immediately

following graduation among the investigated variables, with a correlation coefficient of 0.36; a scatter plot (Figure 10-10) was generated to illustrate this correlation. Variables of perceived difficulty in finding a job in the city and a stated willingness to help rural people also had substantial positive correlations with the probability of taking a rural job, both had a coefficient greater than 0.25.



**Figure 10-10: Scatter Plot of Attractive Recruitment Policies with the Probability of Taking a Rural Job Immediately Following Graduation**

In contrast, family members' disapproval was the strongest negative correlated variable among these perspectives, with a coefficient of -0.34 (a scatter plot is given in Figure 10-11). A perceived lack of children's education opportunities in rural areas was the second strongest negative correlated variable, with the size of correlation coefficient at -0.23.



**Figure 10-11: Scatter Plot of Family Members' Disapproval with the Probability of Taking a Rural Job Immediately Following Graduation**

Variables of skills used simplicity, a lack of prestige and preference to rural living had small but significant correlations with the probability of taking a rural job immediately following graduation at  $\alpha=0.01$  level.

There were no statistically significant correlations found between participants' stated probability of taking a rural job and their perspectives on fewer night shifts, ease of finding a permanent job, the friendliness of people, a lack of anonymity, the difficulty in changing workplaces, and a light workload.

#### **10.4.3.2 Correlations between Students' Perspectives and Their Probable Duration of Working Rurally in Career**

In order to examine the correlation between students' perspectives and their probable duration of working in rural areas in their career, Spearman rank correlation analyses were run on the extent to which students' agreed with twenty-six statements and their rating scores on the scale of the probable duration of working rurally. The results are presented in Table 10-36.

The variable of family disapproval had the strongest negative correlation (with a coefficient greater than 0.3), while the variable of attractive recruitment policies and willingness to help rural people had the strongest positive correlations (both with coefficients of approximately 0.3).

A lack of children's education opportunities and a lack of prestige were the next most prominent group of negative correlated variables, which had a correlation at -0.28 and -0.21, respectively. The variables concerning poor community amenities, skill used simplicity, the difficulty in taking a degree, and lower financial rewards in rural areas, all had a negative coefficient between -0.1 and -0.2, but they were still significant at  $\alpha=0.01$  level. An attraction to rural living and the diversity of skills used in rural health facilities both had positive but small correlations with the probable duration of working rurally in their future career.

The correlations were not significant with variables regarding a light workload, ease of gaining professional promotion, fewer night shifts, ease of gaining a permanent position, the friendliness of local people, the difficulty in changing workplaces, and a close nurse-patient relationship.

**Table 10-36: Correlation between Student's Perspectives  
and their Intention to Work Rurally in Career**

Items	Correlation coefficient	Sig. (2tailed)	Number of pairs
Family member disapproval	-.313	.000	431
Attractive recruitment policies	.310	.000	431
Willingness to help	.293	.000	431
Lack of children's education opportunities	-.276	.000	431
Lack of prestige	-.213	.000	430
Poor community amenities	-.179	.000	431
Like living rurally	.171	.000	431
Skills Simplicity	-.157	.001	430
Skills Diversity	.140	.004	429
Difficult to take a further degree	-.134	.005	430
Lower financial rewards	-.131	.007	430
Poor equipment	-.122	.011	431
Difficult to get a job in cities	.120	.013	431
Easy to promote to a nurse leader	-.112	.020	429
Less stress	-.098	.042	431
Fewer opportunities to learn skills	-.081	.092	431
Fewer opportunities for training	-.079	.101	431
Lack of anonymity	-.076	.115	431
More personal autonomy	-.049	.315	428
Light workload	-.045	.356	429
Easy to promote professionally	-.041	.399	430
Fewer night shifts	-.028	.561	429
Easy to get a permanent position	.019	.699	431
People friendly	-.017	.724	431
Difficult to change workplaces	-.014	.777	431
Close nurse-patient relationship	.007	.880	431

### **10.4.3.3 Comparison between Two Sets of Relationships**

From the above two tables, it can be seen that for most items, the correlation directions and effects of students' perspectives on the probability of taking a rural job and the probable duration of working in rural areas were similar. For instance, the variables related to an enjoyment of rural life, skills diversity, willingness to help rural people, difficulty in gaining a job in cities, attractive recruitment policies were positively and significantly related to both of these two variables; and items such as lack of prestige, skills simplicity, family member disapproval and a lack of children's education opportunities were negatively and significantly related with both of them.

However, there were some variances in these two sets of relationships. For example, the perceived difficulty of finding a job in cities had a relatively strong positive correlation with the probability of working rurally immediately following graduation, with a coefficient of 0.28; but its correlation with the probable length of working rurally in their career was weak, their correlation coefficient was only 0.12.

The variable of *poor community amenities* had a relatively strong effect on the length of working rurally during their career, with a correlation coefficient at -0.179 and a significance value less than 0.001; but its correlation with the probability of taking a rural job immediately following graduation was not significant ( $p=0.240$ ). This is similar in the variable of *difficulty in taking a further degree*. This may indicate the situation of community amenities and the opportunities to take a degree might be more significantly related to long term stay than to a short term job.

#### **10.4.3.4 Section Summary**

The analysis showed that the variable of family disapproval had the strongest negative correlation with students' intentions to work rurally both immediately following their graduation and in their future career. In contrast, the variable of attractive recruitment policies had the strongest positive correlation with these two variables.

The correlation directions and effects of students' perspectives on these two variables for most items were similar. However, the perceived difficulty of finding a job in the cities had a stronger correlation with students' intentions to work rurally immediately following graduation than with during their career; whereas the poor community amenities and perceived difficulty of taking a degree in rural areas had a relatively strong effect on students' intentions to work rurally during their career than that of immediately following their graduation.

## **10.5 Chapter Summary**

This chapter reported the results of the survey. Below is a summary of these results with reference to the research questions of the study.

With regard to the first research question, which aimed to investigate final year nursing students' perspectives on rural nursing practice, the survey showed that the majority of students perceived rural nursing practice as presenting fewer opportunities to learn skills and training, lower financial rewards, lack of prestige and poor equipment. However, at the same time they also felt that it offered less stressful and light workload, fewer night shifts, and a close nursing-patient relationship. In addition, the majority of the participants strongly rejected the statements that working in rural areas results in a lack of anonymity, and that diverse range of skills are used in rural nursing practice.

When answering the second research question, which sought to gauge final year nursing students' intentions to work rurally, the results showed that nursing students with high certainty of taking a rural job immediately following graduation were few. The proportion of students with a probability greater than seven points on the 10-point scale in taking a rural job was less than 5.1%. With regard to the probable duration of working rurally in their future careers, students who were intending to work rurally for more than half of their career were less than 15%; although there were three quarters of students who were willing to work rurally for part of their career.

In order to answer the third research question regarding relationships between students' characteristics and students' intentions to work rurally, correlations and logistic regression analysis were adopted. Regression analyses showed that rural background had a positive impact on nursing students' intentions to work rurally, whilst education level had a negative impact on them. Rural placement had no significant impact on the probability of taking a rural job immediately following graduation, but had a significant impact on the probable duration of working in rural

areas in career. The impacts of age and gender were not significant, as the sample was too homogeneous in these two variables. The correlation analyses showed that the variables relating to family members' disapproval and recruitment policies had the strongest correlation with nursing students' intentions to work rurally.

# Chapter 11

## Discussion

Survey results only serve as a set of evidence; *“they won’t dictate decisions or contain ultimate answers”* (Alreck and Settle 1995:7). To obtain the ultimate answers from the survey, the researchers have to evaluate the survey results in the light of experience, common sense and other information (Alreck and Settle 1995). In agreement with above notion, this chapter will present the researcher’s interpretations and discussion of the results of this survey.

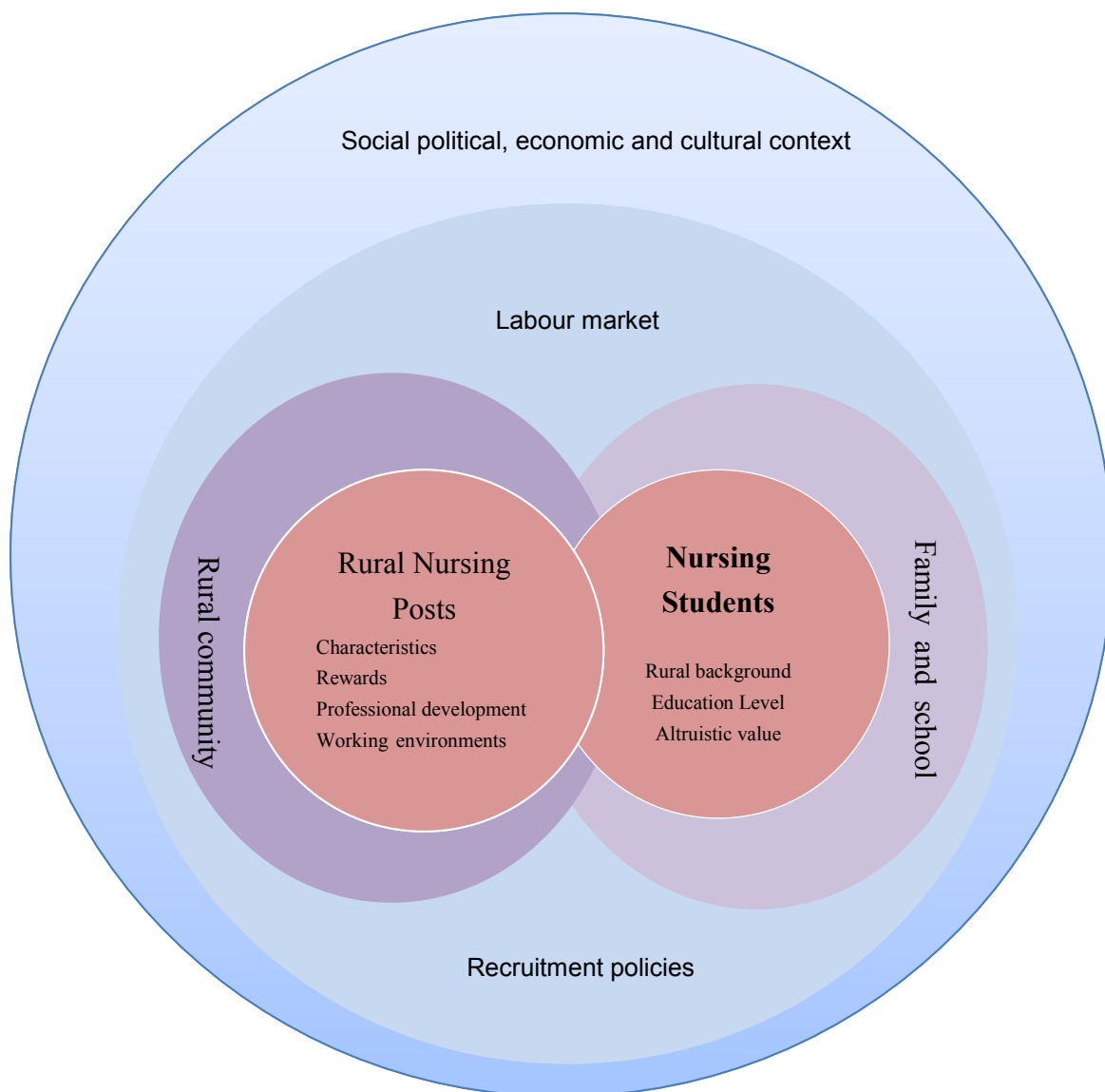
The study found that nursing students’ intentions to work rurally were influenced by a number of factors and the formation of their intentions is a developmental process involving a number of interacting factors. Based on the literature and the researcher’s experience and knowledge, a conceptual model has been constructed to explain and discuss these findings. In line with this conceptual model, this chapter has been organised into four sections. The first section introduces the conceptual model; the second section interprets and discusses the findings related to the six elements which are introduced in the model (rural nursing posts, rural community, nursing students, family and school, the labour market and recruitment policies, and the social economic, cultural and political context); the third section explores the interaction between these factors; and the final section discusses the strengths and limitations of the model.

## **11.1 Introduction of the Conceptual Model**

In chapter four, previous theories were reviewed with regard to the recruitment of health workers and general career development theories. This revealed that there was a clear lack of theories to explain the factors influencing nursing students' intentions to work rurally. Extant general career theories do not offer special frameworks for nursing, and previous nursing studies on the rural workforce also did not offer a comprehensive framework for nursing students. Thus constructing a conceptual model of factors influencing nursing students' intentions to work rurally would be useful to understand nursing students' behaviours when they are facing workplace choices in China and will contribute to the rural nursing recruitment studies beyond.

The constructed model (see Figure 11-1) was named *a conceptual model of factors influencing nursing students' intentions to work rurally*. It is a pictorial representation of the model constructs which visualizes the relation between those elements but the size and overlap do not represent the exact proportion of these components. 'Intention to work rurally' in this model is defined as the stated probability of an individual working in a rural area after graduation.

This model has six interrelated components. The first component is the individual; the nursing students themselves. Each of them has their own unique biological, cognitive, emotional and behavioural character (Bronfenbrenner 1979). The second component is rural nursing posts; the decision targets. Rural nursing posts have their own nature and characteristics as a type of job position. The third component is the environment which directly surrounds the individual, for example: family, school, and internet. The fourth component is the rural communities where rural nursing posts sit. The fifth and six components comprise the context where students' intentions developed and the decisions were made, from the labour market and policy system to the deep social economic, culture and political environment.



**Figure 11-1: A Conceptual Model of Factors Influencing Nursing Students' Intentions to Work Rurally**

## **11.2 The Components of the Model**

As introduced above, there are six components in this conceptual model: rural nursing posts, rural community, nursing students, family and school, the labour market and recruitment policies, and the social economic, cultural and political context. Their relationships with intentions to work rurally are discussed in the following sections.

### **11.2.1 Rural Nursing Posts**

Some career theories have suggested that career intentions are influenced by individuals' 'perceptions' rather than 'reality' (Gottfredson 1981, Bandura 1986). In light of this notion, this study has supposed that rural nursing posts have their own nature and characteristics, but students' intentions to work rurally would be more influenced by their perspectives of rural nursing practice than by any reality. It was found that there was a set of views related to rural nursing posts contributing to students' intentions to work rurally. These contributing factors are classified into four groups: the characteristics of rural nursing posts, the rewards of rural nursing posts, professional development opportunities and work environment.

#### **11.2.1.1 The Characteristics of Rural Nursing Posts**

Occupational characteristics are categorised by a set of attributes, including payment, social status, degree of autonomy, and anticipated positive and negative emotion about the job (Sauermaun 2004). With regard to the characteristics of rural nursing posts, the literature and the findings of this study all suggest that the characteristics of rural nursing posts directly affect nursing students' intentions to work rurally.

In the literature, more personal autonomy and lack of anonymity have been identified as major features of rural nursing practice. More personal autonomy has encouraged

nurses to work in rural areas, whereas the lack of anonymity was identified as a drawback of rural nursing practice (Bourke et al. 2004, Bushy and Leipert 2005).

This survey also showed that lower levels of stress, fewer nightshifts and lighter workload were ranked as the three most frequently mentioned attractions for Chinese students considering a rural job. These rankings highlight that the characteristics of rural nursing posts are important factors in influencing students' intentions to work rurally. However, looking further at the correlation analysis, it was found that all these variables, including the workload, night shift, personal autonomy and anonymity, are not significantly correlated to the variable of the probability of taking a rural job immediately following graduation in this study. This indicated that these variables would not predict each individual student's probability of taking a rural job. This may be caused by the situation that students' responses to those statements are unanimous; that is, there is little variance in these variables. These unanimous responses prevent them from becoming a predictor for individual outcomes.

#### ***11.2.1.2 Rewards of Rural Nursing Practice***

In contrast to what has to be contributed, the amount of reward is another important feature related to a job post. In terms of rural nursing posts, lower financial payment has been reported to be a barrier of rural nurse recruitment (Stratton et al. 1991, Pan et al. 1995, Chhea et al. 2010), and this study found that the low social status related to the rural nursing job was also a barrier in the Chinese context.

The amount of payment has been mentioned as an important factor influencing the recruitment of rural nurses in the literature and the lower financial reward was reported to be one of most crucial barriers to rural nurse recruitment in developed countries, such as the USA (Stratton et al. 1991, Pan et al. 1995), and also in lower income countries like Cambodia (Chhea et al. 2010) and Zambia (Gow et al. 2012). The results of this study are congruous with these reports. In China, the government

plays a crucial role in determining the wages of public sector health workers, so the basic salary may exhibit little variation in various health institutions, but with the market-oriented economy introduced in China since the 1980s, the bonus system now plays an important role in aspects of financial rewards. As has been mentioned in the literature review, the bonuses in cities are usually higher than in poor rural areas (Liu et al. 1996). These may create a situation of lower payment in rural nursing posts compared to city nursing posts. In the survey, the lower financial reward was ranked as the second greatest barrier to them considering a rural job; this indicates that the lower financial reward would influence students' possibility of working rurally in their future career.

Apart from the impact of the financial payment, the study also found that the extent of respectability of rural nursing was an import factor influencing nursing students' intentions to work rurally. In the exploratory interview, around two thirds of the students mentioned that working in cities is more respectable than in rural areas. This was confirmed by the survey in which two thirds of students agreed that working in city hospitals was more prestigious than working in rural areas. The reason for this may be because people associate rural nursing posts with requiring lower qualifications.

In this study, students ranking lack of prestige as one of the major barriers for considering a rural job indicated that the sense of lower respectability has impacted on student's intentions to work rurally. Little was reported about this perception in the literature, although there were some hints at this in the qualitative descriptions of some papers. For example, Crooks (2004) pointed out that rural and remote nurses need to value their contribution and realize they are not less important, as rural nursing tends to suffer from a lack of recognition by nursing colleagues in other areas of practice in Canada. The impact may have been strengthened in the Chinese context as students are usually very concerned about the feelings of their family members and the issue of protecting 'face' or 'prestige' is an important cultural customs in Chinese context (Martin de 2012).

Furthermore, the lower social status of rural nursing posts has more impact on highly qualified students taking a rural job as this group of students have more alternative choices available to them. They may try to avoid being stigmatized. It seems that the lower social status associated with rural work would discourage highly qualified graduates from working rurally. Gottfredson's (1981) circumscription concept could be adopted to explain this impact. In his circumscription and compromise theory, the prestige level of a job is one of the dimensions that determine the circumscription, which is the acceptable zone of one's occupational aspirations. Those jobs low in prestige may be out of the circumscription and become unacceptable according to one's perceptions of job-self compatibility. This theory suggests that the social status of a post is a very important determinant of one's career aspiration. The results of this study echoed this theory in demonstrating that the social status of rural nursing is an important factor in determining nursing students' workplace choice.

### **11.2.1.3 Professional Development Opportunities**

Besides the characteristics of rural nursing posts and its rewards, professional development opportunity is another important factor which relates to the recruitment of rural nursing posts. In the literature, the opportunity for promotion has been reported to be an influencer of rural nurse recruitment. However, this study identified that the learning opportunity was a greater concern for final year nursing students than the opportunity of promotion. They ranked the lack of opportunities to learn skills and the lack of opportunities for further professional training as the biggest barriers for them considering a rural nursing job. This coincides with the findings in a recent review paper in which the authors concluded that new graduates had an expectation that their employers would provide a supportive learning environment for them to gain the skills necessary to become proficient and valuable employees (Bennett et al. 2012).

This result reflects that new nursing graduates still have a strong professional development need after leaving nursing schools. Nursing, like other healthcare

occupations, is a practical occupation. As a novice nurse, early workplace practice is important for them to develop their professional competence (Eraut et al. 2003, 2007). This also reflects that nursing students are aware of the importance of informal learning opportunities in their career and is in congruity with the notion that nurses develop their expertise not only through formal courses in nursing school, but also through a broad range of informal learning activities, including interactions with colleagues and other daily work experiences (Berings 2008).

#### **11.2.1.4 Working Environment**

In the literature, limited resources, limited availability of technology, and limited professional backup in rural health settings were identified as negative aspects of a rural job and they impact on the recruitment of health workers (Lea and Cruickshank 2005, Bushy and Leipert 2005), while at the same time, a relaxed and friendly working environment was identified as a positive influence on rural employment intentions (Lea et al. 2008, Lea and Cruickshank 2005).

Findings in this study consolidated these literature reports. With regards to limited resources and a lack of technology, in the exploratory interview some students mentioned that the equipment was not advanced enough in rural settings and this may render their skills and knowledge useless. In the survey nearly two thirds of students agreed with this view and poor equipment was considered a barrier to take a rural job by one fifth of students. Correlation analysis showed that their views about the equipment were significantly correlated to their intentions to work rurally. This impact could be explained by self-efficacy in social cognitive theory, which suggests that an individual always expects to be able to perform well in an occupation (Bandura 1986, Lent et al. 1994). Regarding the relaxed and friendly working environment, in the exploratory interviews some students mentioned that the nurse-patient relationship in a rural area was easier to develop than in an urban area. These views were confirmed by two thirds of respondents in the later survey and the closer

nurse-patient relationship was identified as attractive to students considering taking a rural job.

In summary, in the above sections, the characteristics, rewards, professional development opportunities and working environment of rural nursing posts and their impacts upon students' attitudes towards rural nursing practice were discussed. It is argued that the nature and characteristics of rural nursing posts as a whole are very important elements in determining students' intentions to work rurally. This echoes some statements in career theories pertaining to the relationship between individuals' perceived fit between themselves and the working environment. For example, early in 1940s, Carter (1940) stated that the development of vocational attitudes is a reflection of the self-concept and of vocational stereotypes. Holland (1959) classified occupational environments into six major classes (the motoric environment, the intellectual environment, the supportive environment, the confirming environment, the persuasive environment and the aesthetic environment) and argues that behaviour is determined by an interaction between person and working environment; when selecting a job, people usually search for an environment that can meet their values and let them exercise their skills and abilities.

The above discussions also show that students in China have unique mixed perceptions of nursing posts in rural areas. On the one hand, they view nursing posts in rural areas as having lower incomes, lower social status and fewer opportunities for learning skills and training; on the other hand, they associate them with a light workload, less stress and fewer night shifts. Apart from that, in contrast to other reports, they did not think that there was much autonomy in rural nursing posts. These mixed perceptions form a unique pattern of views on rural nursing posts in Chinese students' minds. We do not know how much these perspectives reflect the realities, but the above discussion argues that these views certainly have a substantial impact on students' intentions of working rurally. In this study, light workload, less stress and fewer night shifts have been mentioned by most of the students as attractions for them to work rurally, whereas some perceived drawbacks of rural

nursing posts, for example, relative lower payment and lower social status, have a profound negative influence on students' intentions to work rurally.

### **11.2.2 Rural Community**

Rural community is defined as the direct environment surrounding rural nursing posts. It not only shapes the unique nature of rural nursing posts but also impacts on rural nurses' daily life. From this study, it also can be seen that when students consider whether to take a rural job, they not only consider the nature and characteristics of the rural nursing post but also its surrounding community features. This is consistent with Betkus and Macleod (2004)'s filter model, which conveys that job satisfaction only occurs within the context of community satisfaction and rural nurses' decisions to leave or to come are dependent on not only their satisfaction with their job but also their satisfaction with the community environment.

A pleasant community environment is an important contributor to attract students to work rurally, whereas some aspects of rural communities persistently acted as major barriers for students taking a rural job. In this section, the researcher will discuss the impact of rural community on students' intentions to work rurally in two subcategories: physical community environment and the social and cultural community environment.

#### **11.2.2.1 Physical Community Environment**

In the literature on rural nursing recruitment, a set of factors related to the physical environment was reported. For instance, fresh air, wild landscape and rich outdoor recreations have been mentioned as natural merits of rural areas which benefit the recruitment of rural health workers (Manahan et al. 2009, Bushy and Leipert 2005, Schofield et al. 2009). However, poor public transport systems, isolation, distance from friends, and the lack of resources and technology were reported to be negative

aspects for the recruitment of rural health workers (Bushy and Leipert 2005; Schofield et al. 2009, Deaville 2009, Lea and Cruickshank 2005).

In this study, relatively poor amenities and transportation in rural areas were together recognized as a barrier to taking a rural job and ranked by participants as the fifth highest barrier to consider a rural job. This is in accordance with the aforementioned literature reports. But by comparison, it can be seen that the impact of infrastructure and amenities in the study settings is not as severe as that reported in other developing countries like India and Kenya. For example, in a study in India, a lack of infrastructural facilities in rural areas was perceived as the greatest disadvantage of the rural community and was ranked as the highest barrier to taking a rural job by medical students (Saini et al. 2012). In a study in Kenya, persistent poor infrastructural problems were mentioned, such as bad roads, a poor mobile network and lower water supply (Mullei et al. 2010). This may reflect that the infrastructure in rural areas has been improved in China in recent years, especially in some east coast provinces such as the study setting. In these areas, there are basic electricity and water supplies, and the mobile network and internet have also become available in the last decade.

#### **11.2.2.2 Community Social and Cultural Environment**

In the literature, the kindness of people, the peaceful pace of life and less crime were identified as factors which had positive impacts on the recruitment of rural nurses (Bushy and Leipert 2005, Manahan et al. 2009). This study found that most students perceived people in rural areas as friendly and this has a positive influence on their taking a rural job.

In the literature, lack of anonymity has been discussed as a major characteristic of rural health settings and was reported to have a negative impact on rural nursing recruitment (Bourke et al. 2004). However, this view was not held by most of the participants in this study. In the interviews, this characteristic was not mentioned by any of the interviewees. In the survey, the statement that rural health facilities lack

anonymity encountered the strongest disagreement among all the statements with nearly two thirds of students disagreed with it. This is quite a different phenomenon to the view in the literature. This divergence may result from the cultural difference between Chinese and Western countries. In general, Chinese culture tends to be collectivist than individualist (Holt 1997, Bih-Shiaw 2007). This culture encourages sharing instead of keeping too much privacy and the concept of anonymity is not as strong as in Western culture. But along with other customs, this is being challenged by the increasing exchange with Western culture in the 21<sup>st</sup> century.

In summary, the above discussion suggests that the rural community environment is an inherent factor that affects students' decision making. In rural communities, there are factors which can attract students to work there, such as the good natural environment and the friendly people, but there are also some disadvantages which hamper students' decisions to take a rural job, like poor infrastructure, poor equipment and isolation. The above discussion also argues that some views on the rural social environment may differ in different cultures, for instance, Chinese students have different views about the anonymity issue in rural nursing practice from western cultures, and most of them denied that there was a lack of anonymity in rural nursing practice.

### ***11.2.3 The Nursing Student***

Along with the rural nursing posts, nursing students are also at the centre of the model. People's personality, preferences, vocational goals, knowledge and obtained information all impact on their choices and decisions (Sauermann 2004). The nursing students, as the very people who make the workplace choices, ought to be at the centre of the model and their characteristics inevitably impact on their intentions to work rurally.

Some theories have been developed to explain how personalities and the characteristics of individuals impact on their future vocational choices. For example, self-concept theory proposes that people seek jobs compatible with their images of themselves (Holland 1959). Gottfredson (1981) asserts that gender, social class, intelligence, vocational interests and values are the major vocationally relevant elements. Relating to rural nursing, Manahan et al.'s (2009) model emphasises the effect of personal values upon rural nurses' decisions to leave and to come. Betkus and MacLeod (2004)'s filter model also demonstrates the pivotal effects of some demographic and personal circumstances on the retention of rural nurses.

Theoretically, there should be no doubt about the effect of a person's characteristics and attributes upon the decision he/she makes. The issue is which personal attributes are important to a given career and how they develop. In the recruitment and retention of rural nurses, previous studies have found some personal characteristics and attributes were important determinants of attitudes to rural practice, such as rural background, experience of rural exposure, gender, age, career aspiration and the altruistic personality. This study explored rural background, education qualification, gender and age, and asked participants whether they were willing to offer help as an altruistic orientation. The result showed that rural background and educational levels were particularly related to students' intentions to work rurally. An altruistic orientation was also related to their intentions to work rurally. The impacts of these elements are elaborated upon below.

#### **11.2.3.1 Rural Background**

This study showed that rural background has a strong positive impact on students' attitudes toward working rurally. This result adds further evidence to those reports which concluded that rural background has a robust impact and is one of the strongest influences in rural health professional recruitment (Laven and Wilkinson 2003, Lea and Cruickshank 2005, Playford et al. 2006, Schofield et al. 2009,

Manahan et al. 2009, Stagg et al. 2009, Blaauw et al. 2010, Serneels et al. 2010 and Saini 2012).

This evidence demonstrates that rural background has a very robust positive influence on rural employment, and the present study extends these data to show that the relationship also exists in China. As this finding has been reported both in developed countries, like American, Canada and Australia, and in developing countries, like China, India and Ethiopia, it suggests that rural background does not seem to be a context-specific influence on rural employment as most other factors might be.

### **11.2.3.2 Educational Qualification**

In the literature, Blaauw and Erasmus's (2009) study in South Africa reported that students who studied at a university were less likely to choose a rural job than those in nursing colleges. Mullei et al.'s (2010) survey on nursing trainees in Kenya showed that upgrading students with working experience have more negative attitudes towards working in rural areas compared to pre-service students. This study revealed a similar negative effect of education qualifications on the recruitment of rural nurses: students with a high degree would be less likely to enter rural nursing. This may largely reflect that rural nursing posts are less attractive to highly qualified nursing students compared to nursing posts in city health institutions. However, this may also be related to career aspirations and other characteristics of the students who pursue a high degree. For example, May-Karin et al.'s (2004) study with 301 Norwegian nursing students showed that nursing students who emphasise the importance of the bachelor degree for further education are less interested in giving care (care is represented in this study by items such as help others and with human contact).

Except a few reports, educational qualification is seldom found to be a focus of rural nursing recruitment studies and there was little evidence about how educational qualification impacts on rural nursing recruitment. This suggests a need to further

investigate the relationship between educational qualification and the nature of the rural nursing care.

### **11.2.3.3 Altruistic Orientation**

Altruistic personality is difficult to measure. In this study, interviewee's descriptions and participants' responses to the statement about their willingness to offer help may reflect it to some extent. As was shown in the excerpts of the interviews, there were some students who were committed to work rurally and thus would not deeply concern about financial rewards or the harshness of the environment there. These results reflect that altruistic motivation plays an important role in some students' decision to work rurally. This is congruous with reports in some other developing countries. A cohort survey on nursing and medical students in Rwanda and Ethiopia showed that altruistic motivation, which in that study was measured as the importance attached to helping the poor, played an important role in health workers' decisions to work in a rural area (Serneels et al. 2010).

Personal ideology plays an important role in all decision-making, but for some decisions, like the decision to work in a rural area, it may be of the highest importance. The rural health facilities are in a vulnerable position, especially in a country where a great gap exists between rural and urban areas in terms of economic and welfare status. Without a personal sense of dedication, it is hard to stay there. Asking students who have less dedication to sacrifice themselves to work there is costly.

Although there were students who declared their commitment to help others, the result of the survey showed that the proportion of students who were willing to help rural people was not large. It was also found that a very high proportion of participants ticked the neutral option in the statement of willingness to help others. The large trend towards a neutral position is similar to the finding in a report which showed that initially altruistic motivations like helping others seem to be important when students entered nursing schools, but towards the end of bachelor courses, the

helping motives became more ambiguous (May-Karin et al. 2004, Rognstad and Aasland 2007). In this study, the trend of neutrality may partly result from the possibility that it is not easy for students to declare they are not willing to offer help, but it at least demonstrates that most of the students are reluctant to offer altruistic help when it needs to compromise their career opportunities.

In today's China, the younger generation has different motives for entering the nursing profession compared to their predecessors, who were usually led by collectivism. With the economic growth and the structural change in society taking place in recent years, values in society have been characterised by a predominance of self-directed motives, leading to the loss of a collective value system (Martin de 2012). These changed values clearly will have enormous impact on how students make their choices in life.

#### **11.2.3.4 Age and Gender**

Age and gender are important personal attributers, and gender is depicted as an important element of self-concept in career aspiration (Gottfredson 1981). In this study, it has been predicted that the sample would be very homogenous in terms of the age and gender in nursing students in China. During the analysis, age and gender were examined as conventional variables, and the results were consistent with what had been expected that the results were not meaningful enough to postulate to the entire study population.

In the above sections, the impacts of students' rural background, education qualification, gender, age and altruistic orientations upon students' attitudes towards rural nursing practice were discussed. These discussions argue that students' personal attributes play an important role in determining their workplace choices. The extant studies suggest that rural background and altruistic personality have a positive impact on student's intentions to work rurally; while educational level seems to have a

negative impact although its underlying reasons need to be further investigated. But the impact of age and gender is still not clear and more evidence is needed to clarify their effects.

### **11.2.4 Family and Nursing School**

*“Individuals do not live in isolation; rather they exist as part of an influential social system of family, friends, peers, media, schools, and workplaces” (McMahon 2011: 170).* Echoing this perception, the study found that students’ intentions of working rurally were heavily influenced by their surrounding environments. The direct surrounding environment of nursing students consists of those people who directly communicate with them, for example, family members, schoolmates, friends and neighbours, and internet mates. In the context of China, the study found that the family impact was very powerful in influencing students’ intentions of working rurally. School curriculum, rural placement and clinical mentoring were also of influence. These findings are consistent with McMahon’s (2011) system theories of career development, in which he depicted that careers are developed through individual, social and environmental-societal dynamic interaction and that the process of development is a holistic system. The following will further discuss the impacts of family, school curriculum, rural placement and clinical mentoring on students’ intentions to work rurally.

#### **11.2.4.1 Family Impact**

Relating to nursing students’ intentions to work rurally, the results of the study showed that family members’ opinions imposed a heavy influence on students’ decisions and the correlation analysis showed that the disapproval of family members has the strongest correlation with the probability of taking a rural job and the probable length of rural practice. Previous studies have noted that family commitments and issues were an important influence on recruitment to rural areas

(Stephenson et al. 1999, Duffy et al. 1999, Smith et al. 2001). Whilst in the literature family impact was most often related to spouse's employment and children's education, in this study, as nearly all students were younger, unmarried and childless, family members' opinions mainly refer to their parents' opinions, which can be postulated from the exploratory interview.

The higher disapproval from their family members indicates rural nursing posts were not perceived as an ideal post from their parents' views. This phenomenon also reflects a strong family tie culture in China. In Western culture, escaping from the family ties may be viewed as a symbol of freedom of the younger generation. However, in China, family is viewed as a harbour of a person's life. The older generation are often used to being involved in the important decisions of the young, like which university to attend or where to work; and the young usually respect and tend to obey their senior family members' opinions. This culture makes the family members' disapproval has a powerful impact on nursing students' possibility of working rurally.

#### ***11.2.4.2 The Impact of Nursing Schools***

Unlike parents who impact on students by daily conversation or direct participation in their children's decision-making, nursing school teachers and clinical teachers influence students mainly through the educational curriculum and mentoring.

In the literature, it was reported that rural placement, as a part of the curriculum, played a key role in the recruitment of the health workforce to rural locations. This study show that rural placement alone appeared to have a positive impact on students' intention to work rurally, but after controlling for rural background and educational levels, its statistical significance disappeared in the variable of probability of taking a rural job immediately following graduation and fell in the margin ( $p=0.012$ ) in the variable of probable duration to work rurally in future career. This suggests that the positive impact of rural placement on students' intentions to work rurally cannot be firmly statistically confirmed in this study. This

finding was similar to the findings of the study of Easterbrook et al. (1999) and Xu et al. (1997). Easterbrook et al. (1999) found that rural background has an impact on this relationship, but after controlling for rural background, this relationship was no longer significant. Xu et al. (1997)'s multiple logistical analysis showed that the impact of rural practice experience on physicians' choice of practice locations was negligible. The results of this study did not support those reports that undergraduate rural placement is predominantly associated with students' intentions to work in rural areas (Dalton et al. 2008, Courtney et al. 2002).

The lack of impact of a rural placement on students' intention to work rurally may be related to the quality and length of rural placement. Although the ideal length of a rural placement is yet to be determined (Dalton et al. 2008, Playford 2006), the study found that the average time of rural placement the nursing students undertook in the study setting was short, usually lasting only one or two weeks during summer holidays. In addition to the short period of time, most of these placements were arranged by nursing students themselves. Students found a rural community health center or a rural hospital for practice by themselves. To some extent, this kind of administration may result in a lack of a formal organized clinical teaching system in those settings. The lack of strongly positive association in this study may reflect that current rural placement programs were not robust and systematic enough to ensure the effect.

In the literature, it was also reported that a curriculum focused on rural health had a positive impact on students taking a rural job (Wood 1998, Playford et al. 2010). Apart from the school campus curriculum, clinical mentoring was also reported to have an influence on the choice of nursing students' future practice location. For example, Stagg et al.'s study showed that clinical teachers or mentors were key influences on graduates choosing a rural career pathway (Stagg et al. 2009). This study has not directly investigated the impact of nursing school teachers; however, one interviewee's description clearly revealed that her plan of working rurally in her later career was influenced by her clinical teachers. This was congruous with the above report. A negative experience may result in deterring students from rural work,

and a positive experience can foster a desire to return. This may reflect the social learning concept in Bandura (1969) social cognitive theory.

In the above sections, the impact of the family, school curriculum and mentoring are discussed. It is argued that direct environment is vital in forging and shaping students' attitudes towards rural nursing practice. In terms of the Chinese context, the family environment is extremely critical in shaping students' intentions to work rurally. The nursing curriculum, rural placement and careful mentoring can help to foster positive attitudes towards rural nursing; however, currently there is a lack of rurally focused curricula and well organized rural placements in the nursing education system in the study setting.

### **11.2.5 Labour Markets and Recruitment Policies**

Although "*theories of career development typically prefer to envision hypothetical scenarios in which persons operate as free agents in the selection of their career path*" (Lent et al. 1994:107), vocational choice or workplace choice is not purely dependent on personal interests; individuals are not able to escape the impact of the contextual world, just as it has been pointed out that emphasizing the relative static self-attributes may not adequately capture the dynamic interaction between individuals and their changing contexts (Vondracek et al. 1986). The labour market and various recruitment policies formulate a set of dynamic social regulating forces which constrain an individual's choice.

Labour markets provide the possible alternatives for individual choice and recruitment policies limit and guide individual choice. With respect to rural nursing recruitment, there are reports about the compulsory policies in the literature; however, there are few studies examining the marketing force impact. This study revealed that situations in labour markets and recruitment policies have a great deal

of influence on students' intentions to work rurally. The following sections will discuss these impacts further.

#### **11.2.5.1 Labour Markets**

The labour market situation impacts on students' vocational expectations. With respect to the current labour market situation in China, this study has revealed that the current entire nursing workforce shortage has directly impacted on students' intentions to work rurally.

In the literature, a shortage in the nursing workforce has been reported both in developed and developing countries (Oulton 2006, Buchan and Calman 2004, American Association of Colleges of Nursing 2010, World Health Statistics 2010). In China, there are far fewer nurses per 1,000 of the population than in the USA and Australia (World Health Statistics 2010) and the shortage situation has been reported frequently in recent years (Yun et al. 2010, Kalisch and Liu 2009). It has also been reported that the excellent job availability has attracted more individuals to choose nursing education (Kalisch and Liu 2009). However, there are few articles reporting how this shortage has impacted on the recruitment of rural nurses. This study shows that the shortage attracts some students to nursing education with the confidence of finding a job on completion. As students with a degree have no trouble finding a job in the city, they are very reluctant to choose to work rurally. Thus, with the shortage in the entire nursing workforce, attracting highly educated nurses to rural nursing becomes more challenging.

While highly qualified nursing students are reluctant to work rurally, the study also reveals that some diploma or associated students, with little choice available to them, may be forced to work rurally. It was reported that it was difficult for them to find employment in large urban hospitals because these hospitals preferred more highly educated, experienced and mature nurses, thus diploma nurses usually worked as temporary contract nurses or worked in hospitals in rural areas (Duan 2007).

These phenomena can be partly explained by some vocational development theories. For example, Holland (1959) mentioned that vocational opportunities in the labour market could limit the expression of self-interest and thus shape choices in later career development. Gottfredson's (1981) compromise theories pointed out that when some barriers occur in the fulfilment of one's aspirations, some compromise may take place; this also is partly suitable to explain this phenomenon. But all these theories are limited to the personal development dimension. Not many theories can be found to explain how the social and economic environment channels students into nursing and to workplace regardless of their wishes. Thus, further studies and theory development in this aspect may be needed.

The market forces result in a situation where highly qualified graduates are reluctant to work rurally; and for some of the diploma nursing graduates, working in rural areas is their only way to find a formal nursing position, even if they do not particularly want to work there. This means that the workforce in rural areas will continue to be degraded and the social status for rural nurses continue to be low. There is a vicious circle in that: the workforce in rural areas is not highly qualified and as a collective effect, the social status for all nurses in rural areas is lower; with the lower social status linked to the workplace, the higher qualified graduates will be more hesitant to work there. This implies that encouraging the highly qualified nurses to work rurally is a crucial step to disrupt the vicious circle and lift the social status of rural nurses.

#### **11.2.5.2 Recruitment Policies**

Recruitment policies as a social adjustment system to the labour market can impact on students' intentions to work rurally. However, this study revealed that there are currently not many recruitment policies to attract higher qualified nursing students to rural practice in China.

In the interviews, some students expressed that they expected more flexible movement policies and subsidisation policies to encourage them to work rurally. In

the survey, most participants agreed that it would not be easy for nurses to change workplaces from rural areas to urban areas and they identified *difficulty to change workplace* as one of the main reasons for them not to take a rural job. This result seems to be reasonable when considering that a majority of students are only willing to work in rural areas for part of their career, rather than their whole careers. A flexible policy that allows nurses to flow freely among different health institutions may be important to enable those potential candidates to work rurally for a period of time.

In the above sections, the influences of the labour market and recruitment policies upon students' intentions to work rurally are discussed. It is argued that with respect to the current Chinese nursing labour market, the shortage throughout the entire workforce has encouraged some students to enter into nursing education; however, regarding the rural nursing workforce, this shortage makes it more difficult to attract a highly educated nursing workforce. Recruitment policies can work to adjust market forces, however, in terms of attracting highly educated nursing students to work rurally, efficient policies are currently lacking.

### **11.2.6 The Social Economic, Cultural and Political Context**

*“Simple intentional actions make sense only if they are fit into a large pattern of actions, that is, into the recognized rules of a shared form of life. But these rules, too, fit together into the larger patterns of cultural traditions and social relations.” (Bohman 1991:102)*

As above statement in the book of New Philosophy of Social Science (Bohman 1991) argued, intention to work rurally is not a phenomenon that can be isolated

from other processes taking place in a society. In the above sections, the researcher has discussed the influence of family, nursing school, market and recruitment policy. More broadly, individuals live as part of a society, and their behaviours are developed and influenced by that society's culture, economic and political context.

The social culture, economic and political context consists of a set of systems which range from micro environment to macro environment systems. In McMahon's system theory, this is named the environment-societal system, containing socioeconomic circumstances, political and historical influences (McMahon 2011). Related to rural nursing recruitment, there were few theories which explicitly described the impact of the broad social political, cultural and economic context. Perhaps it is so obvious that it isn't necessary to explicitly point it out. However, the researcher felt that discussing the impact of social economy, culture and politics seems to be necessary when trying to make sense of some findings, as Bronfenbrenner described:

*“Such external influences can play a critical role in defining the meaning of the immediate situation to the person. Unless this possibility is taken into account in the theoretical model guiding the interpretation of results, the findings can lead to misleading conclusions that both narrow and distort out scientific understanding of the determinants, processes, and potential of human development.” (Bronfenbrenner 1979:18)*

Although there are few reports that focus on the discussion of social economic, cultural and political impact, multinational studies and some differences found in different countries may have hinted these impacts. In this study, by comparison of the findings with those in other countries, the researcher believes that some differences have revealed the impact of the social context, in that these differences can only be explained by looking into the social context. For instance, the very different perspectives of Chinese students on rural nursing posts compared with other countries, the heavy impact of family members' opinion and the lower social status of rural nurses can only be explained by some social context in China.

Related to Chinese nursing students' intentions to work rurally, rural-urban dualism, the family centred culture and the poor economic base in China may act as important forces in shaping the nature of rural nursing posts and the development of nursing students' perspectives about rural nursing practice in the study setting.

#### **11.2.6.1 Rural-urban Dualism**

China has two segregated citizenship systems: the rural and urban. Rural-urban segregation is enforced by a household registration system called *Hukou*. Individuals born in rural areas receive *Agriculture Hukou* while those born in cities are designated as *Non-agricultural Hukou* (Meng 2012). The creation of this system is due to the poor economic situation and was used to control the flow of the population when the new government was established in 1949. The welfare for rural residents is different from that for urban residents, with urban residents usually being compensated by the government and rural residents almost receiving nothing from the government welfare system (Meng 2012). For instance, as an urban resident, a person is entitled to employment, housing, pension and food subsidies. None of these privileges, however, are available to people with a rural registration (Li and Wu 2010). But rural residents still have taxation duties for using the land. Rural identification is not easy to change. The populations in these two systems are not allowed to transfer easily (Meng 2012, Li and Wu 2010). For most young people, the only way is through academic means, through competing to enter tertiary level education. For those who migrate to cities for a job, the rural residency identification remains unchanged, even if they live and work in a city for the rest of their life. Rural identification disadvantages them in many aspects. For example, access to health care, housing and education in cities is restricted in many ways (Li and Wu 2010).

After half a century under this system, a set of stubborn inequalities has developed, including economic and institutional inequalities. Economically, this system created a poor economic foundation in rural areas (Yang and Zhou 1997) and resulted in poor infrastructure and poor health equipment in these areas. Besides the poor

economic foundation in rural areas, this system formulates some institutional inequalities for rural residents. In the health system, it shows in severe disparities in the health insurance system and workforce distribution. For instance, rural residents are not able to benefit from health insurance which is funded by government and the rural workforce is general poorly qualified (Liu and Rao 2006). This study has clearly shown that health institutions in rural areas were the least preferred by nursing students, both by the rural background students and urban background students. These reflect that the disparity has also penetrated into today's nursing students' preferences. Although there were also similar findings in the literature which reported that posts in rural areas were often considered less desirable (Fritzen 2007, Oulton 2006) and the capital option has the widest appeal (Orpin and Gabriel 2005), the extent and fundamental reasons may differ. Without addressing the dualism of rural and urban residents, great disparities and inequality will remain in China and nursing students' desire to work rurally may continue to be low.

Political impact also reflects on students' perspectives on rural nursing practice. For instance, in contrast to the literature where workplace autonomy has been discussed as a major characteristic of rural health settings (Bourke et al. 2004), the majority of students did not agree with the statement that rural nurses have more autonomy. This perceived lack of autonomy may result from the organizational norm, which usually follows a top-down approach and lacks individual autonomy.

The perceived lack of autonomy is consistent with the assertion that national institutions can influence employment practices (Doellgast et al. 2009) and the reports that in transition countries the autonomy in jobs was low (Esser and Olsen 2012).

#### ***11.2.6.2 Family Centred Culture and High Value on Education***

Values impact on individual activities and an individual's values are largely rooted in social values. A set of studies has demonstrated that cultural values have a substantial impact on an employee's work value (Hofstede 1981, Hofstede 1993,

Holt 1997, Schwartz 2007). Over the course of history, China has been imbued with the cultures of Confucianism, Daoism and Buddhism (Chan 1969). These values, especially Confucian values, have had a profound influence upon people's lives, including their values in career and work (Bih-Shiaw et al. 2007). In this study, it was found that the family-centred culture had an impact on students' intentions to work rurally. For example, as the city hospitals were perceived to have more advanced equipment and treatment, nursing students were more likely to select to work in a big city hospital in order to facilitate their family members' treatment. To protect the reputation of their family, nursing students were reluctant to choose a rural job as the low social status might negatively impact on their family's prestige. For some nursing students, workplace choices were largely decided by their family members' opinions and if their family disagreed, they would not choose to work rurally.

In the last three decades, the strict national college examination system has played a role in selecting college students. Imbued with this culture, people place very high value on academic success and pay a great deal of respect to those professions with highly educated staff. Unfortunately, rural nurses were not well qualified historically, nor are they currently. The nurses working in rural areas are often portrayed by most people in China as not well qualified. The figures in national health worker statistics also confirmed the fact that the workforce in rural areas is poorly equipped. Historically, the workforce in rural areas was worse off, being dominated by bare-footed doctors who only received 3-6 months training. In the traditional culture of placing high value on education in China, the lower qualified workforce in rural areas inevitably results in their low social status as a group and, as being revealed in the study, nursing students perceived rural nurses as having a low social status.

The study also revealed that this lower social status of rural nurses has discouraged highly qualified nurses from working in rural areas. As there were only a few degree nursing educational programs available in China during 1980s-1990s, students in a nursing degree program usually feel some superiority within the nursing profession, as has been described:

*“Within the profession, nurses with higher educational qualifications do enjoy pride and prestige because of the intrinsic value the Chinese culture has put on education and high education in particular” (Xu et al. 2000: P216).*

Concordant with the self-concept theory, this group of students place a higher value on themselves and tend to discount a job with lower social status. The study has revealed that the lower social status was one of the main hampers for students with a degree to take a rural job. This indicates that disruption of the vicious circle is an important step to improve the rural work force.

### **11.2.6.3 Poor Economic Context**

After decades of wars, in 1949 China entered into a new government system with a very poor economic situation. The poor economic situation resulted in a poor infrastructure and poor equipment in health institutions, and the rural-urban dualism exacerbated this situation in rural areas. As mentioned above, the relatively poor amenities, transportation situation, and equipment in rural areas have been identified as one of the main reasons for students’ lack of desire to take a rural job.

The poor economy also results in a lack of health insurance coverage in rural areas. For example, compared to most of the country, fewer people are covered by health insurance. In 2006, 84% of citizens had health insurance in the United States, but in China in 2003, 70.3% of its population paid for all of their health care out of their own pocket, and most of this population lived in rural areas (Kalisch and Liu 2009). Although conditions have improved in recent years with the government’s efforts to increase the coverage of health insurance, the financial burden for rural residents is still heavy. Lack of clients in rural health institutions may partly explain why the rural practice is perceived as having a lighter workload, less stress and fewer night shifts.

On the other hand, the poor economy also results in a lack of basic living amenities for all people. Career choice is determined by the degree to which job and self are

compatible (Gottfredson 1981). This may only be the case in a society where people do not fear basic living. In a society with a lack of basic living amenities, finding a job to ensure a basic living is of the utmost importance, and thus the compatibility between self and the job may become of secondary importance. Maslow's (1943) hierarchy of needs theory suggested that people place greater urgency on basic needs before being capable of expressing needs on the higher levels. When there is not a basic social insurance in existence for most people, the career and workplace choices of young people are more based on social pressures and less based on their own interests. China is a developing country, historically with a weak economy and lack of basic social insurance for most people. Related to the nursing workforce, many nursing students enrol into nursing education not based on their own interest and this study revealed that many students would further enter into rural nursing with reluctance. With a large proportion of the workforce reluctant to be there, the provision of high quality nursing care may be hampered, as in the researcher's view nursing is a career in which the provision of high quality nursing care can only be achieved by a group of workers which are passionate, willing and sufficiently educated.

In the above sections, some political and cultural values and the economic situation are discussed in terms of their influence on the nursing workforce in rural areas. However, the influences of the social political, economic and cultural context are numerous. They penetrate and contribute to the students' values in different stages and different ways. They define what kind of rural nursing recruitment policies are made and what kind of labour markets a society has. They forge the characteristics of rural nursing posts and impact on the development of nursing students. They work as the blueprint to an individual's development and thus define the foundation of rural nursing system. Thus they are also the powerful determinants of students' attitudes towards rural nursing practice.

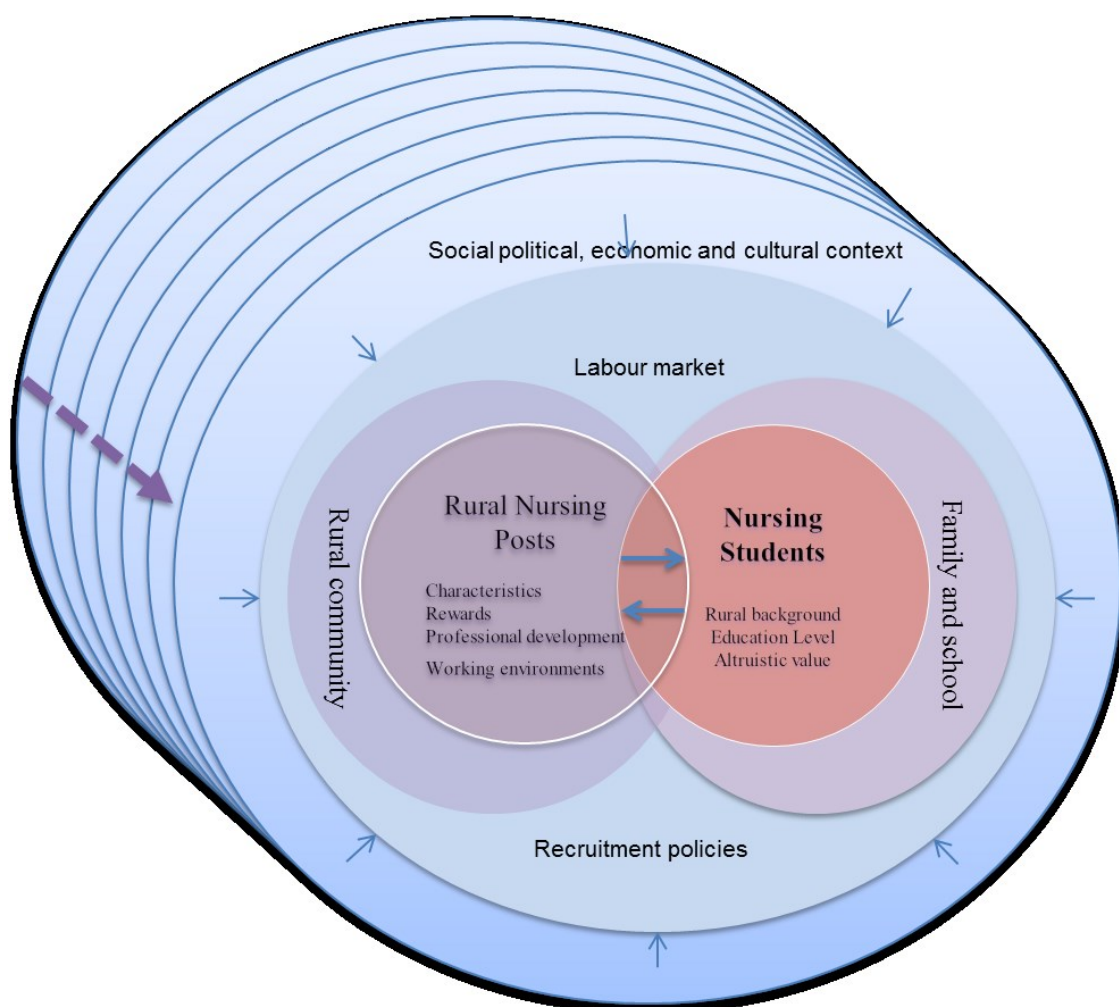
### **11.2.7 Section Summary**

From the above discussions, the researcher concludes that the major factors influencing on students' intentions to work rurally are rural nursing posts, rural community, nursing students, family and nursing school, the labour market and recruitment policies, and the social economic, cultural and political context. Some key points are: (1) Nursing students' characteristics and personal circumstances are pivotal factors in determining their possibilities of working rurally. Nursing students' intentions to work rurally are influenced by their direct surrounding environments, such as family members and the nursing school curriculum. (2) The characteristics of rural nursing posts and their surrounding rural communities have a collective impact on nursing students' intentions to work rurally. (3) The impacts of the labour market and recruitment policies on student's intentions to work rurally are instantly. (4) The social economic, cultural and political contexts are important factors in defining the characteristics of the rural nursing system and its surrounding environment and in constraining the development of the nursing students and their surrounding environment.

Based on the above conclusions and considering the inner relationships between these factors, the researcher proposes a model to depict these factors and their relationships. The model is given in Figure 11-1. Beyond encapsulating the six major factors, the model conveys the following relationships: (1) nursing students and rural nursing posts nest in the centre of the model; (2) nursing students are directly surrounded by their families and nursing school environments; (3) the direct environment of rural nursing posts is the rural community; (4) the labour market and recruitment policies and the social economic and cultural context impact on both the rural nursing students and the rural nursing posts. These insights will be further discussed in the next section, which is devoted to explaining the relationships between these components.

### 11.3 The Interaction between Components

In the discussion so far, the researcher has illustrated a set of main factors that influence nursing students' intentions to work rurally. But indeed, all the impacts only occur when these factors interact with each other. Intentions to work rurally are shaped by the balance between the desire of individual nursing student and the need of rural nursing system; interactions between these two systems were influenced by a wider environment; and more importantly, the impacts of these factors evolve a developmental process in terms of time frame. To depict the developmental nature of these relationships, a dynamic model was created to represent these environmental and developmental potentials (see Figure 11-2).



**Figure 11-2: A Dynamic Conceptual Model of Factors Influencing Nursing Students' Intentions to Work rurally**

The directional arrows indicate the dynamic process between the individual nursing student and the rural nursing posts. The dotted arrow represents the developmental process. The set of surrounding arrows indicates the environmental impact. Three conceptions are developed to convey these ideas; they are dual-core systems, environmental context and developmental process. These conceptions are elaborated below.

### **11.3.1 Dual-core Systems**

There are two systems at the core of the model: one system is nursing students and their direct surrounding environment, and another is the nursing posts and its direct surrounding environment. This dual-core arrangement is designed to convey the notion that intention to work rurally is shaped by the dynamic process between the individual nursing student and the rural nursing post.

Nursing students' intentions to work rurally are shaped by two forces: one is the quality of the job and the other is personal desire. In the case of a rural nursing job, the quality of the job mainly consists of two aspects: the nature of rural nursing posts and the rural community and life. Although the extents of security, payment and autonomy are the main attributes to determine the quality of a job, on an individual level, the quality of the job is due to individual perspectives. On the same job, different individuals have different views, and thus they attach different value to them. According to personal-career fit theory, when making a decision, students will apply self-judgement about the compatibility of self-concept to the occupation images to judge the suitability of the job (Holland 1959). Social cognitive career theory also suggests that people will aspire to enter occupational fields that are consistent with their primary interests. An individual's occupational interests at any point of time are reflective of his or her concurrent self-efficacy beliefs and outcome expectations (Lent et al. 1994). If a student judges the job does not meet his or her self-efficacy and outcome expectations, such as a certain amount of payment, the

student will eliminate the option. For instance, in this study, we found that there were lots of students who thought that the social status of rural nurses is too low for them, thus they eliminated the job option.

### **11.3.2 Environmental Context**

In this model, outside the dual-core, there is a set of environmental systems, which consist of labour market and recruitment policies and social economic, cultural and political context from the inner to outside. This arrangement is trying to convey that nursing students' intentions to work rurally are the result of interaction between nursing students, nursing posts and their environment.

The major career development model supposed that vocational outcomes are jointly determined by persons and their environments. Career choice is based on a number of personal, situational and organizational factors. For example, Bandura's (1986) social cognitive theory advocated a model of interaction between personal attributes, external environment and overt behaviour, and assumed that behaviour results from the interaction of person and environment (Bandura 1986). Holland (1959:35) stated that the essential of his vocational choice theory is that *"At the time of vocational choice the person is the product of the interaction of his particular heredity with a variety of culture and personal forces..."*

This study also found that students' conceptions about rural nursing practice and their intentions of working rurally are developed by the interaction between the students and their environments. This phenomenon echoes Bronfenbrenner's human ecological system theory (1979), which depicted that human behaviour is a product of interaction between the growing human organism and its environment. Thus, this model expresses that intention to work rurally is determined by the interactions between nursing students and their environments. Three kinds of environments: the family and school, labour market and recruitment policy, and the broad social economic, culture and political environment, are especially mentioned.

Family members and school curriculum are very important forces in shaping students' intentions as they directly surround nursing students. In this study family member's disapproval was found to be a major discouraging force for students to take a rural job.

Labour market and policies are objective forces which shape students' intentions. Current labour markets in China give most students optimal opportunities to find a job. For those who hold a high educational qualification and are able to find a permanent job in the city, rural nursing posts are less attractive. Policies related to recruitment are another force to shape students intentions, but currently there are no effective recruitment policies attracting highly educated nursing students to rural areas.

Social economic, cultural and political context has a broad influence on students' attitudes toward rural practice. This study has detected a set of differences in the students' perspectives about rural nursing practice and their attitudes between the Chinese context and other countries. These differences may result from the differences existing in the social economic, cultural and political environment.

### **11.3.3 Developmental Process**

*“By nature men are alike. Through practice they have become far apart” (Chan 1969:45).*

More than eighty hundred years ago, the analects of ancient Confucian doctrines *Lun-yu* described the developmental theme of humanity. The developmental theme this doctrine conveyed is employed to convey the researcher's view that in a temporal scale, nursing students' intentions to work rurally are formed during a developmental process.

Vocational psychologists have long considered that career choice is influenced by some early developmental stages and recognize childhood as a formative period for career preference (Super 1957, Roe 1963, Gottfredson 1981, Hartung et al. 2005). For example, Super's (1957) theory identified six linear career development stages which highlighted the significant role of self-concept and life experience on career interest and choice. Related to rural nursing studies, Manahan et al.'s (2009) personal value model emphasised that personal early experience impacts on health professionals' decisions to come and to stay in rural areas. All these theories suggest that individual experiences in life contribute to the construction of vocational identity and impact on later career choice; furthermore, career intentions are formed over a long time period and can change over time.

Although the data of this study were collected in the final year of nursing students' study, from the description of the interviewees, it can also be seen that students' early experiences influence their views of rural nursing practice and these views influence their intentions to work rurally. This reflects that intention to work rurally is impacted by a developmental process and it is formulated over a long time rather than a short time. The strong impact of the rural background is a good illustration of this developmental impact.

The developmental nature also indicated that students' values may change over time. For example, one study has reported that students emphasised the value of human contact when initially entering into nursing education, and two years after graduation they emphasised high salary and job security (Rognstad and Aasland 2007). With regard to their value on learning skills and promotion, this may also be the case. At the point of graduation, skill development seems to be still important, and it seems to be a very important work motivation for students. But this emphasis may change over their career path, so further longitudinal research may need to look at how these values change over time.

In summary, besides the six components, the dynamic model entails some information about the interaction between these components: (1) dual-core systems. Intentions to work rurally are shaped by the dynamic process between the individual

nursing student and the rural nursing posts. (2) Environmental context. Intention to work rurally is a result of interaction between nursing students, nursing posts and their environment. The outside environments constrain the development of the rural nursing system and also of individual nursing students. (3) Developmental process. The intention to work rurally is a developmental process in temporal scale.

## ***11.4 Strengths and Limitations of the Model***

The developed model absorbs some elements from previous theories and models, but more importantly, it reflects the researcher's own theoretical thinking based on the empirical study. It has several enhancements over other models but also has some limitations.

### ***11.4.1 Strengths of the Model***

The literature review and previous discussions have mentioned a number of theoretical or conceptual models. Some are related to the recruitment of rural nurses or other health workers, a few are related to the general career development theory. But those general career development theories are not specific theories for depicting the influencing factors on nursing recruitment and therefore cannot be entirely suitable to explain the influencing factors on rural nursing; and those models related to the recruitment of rural nurses or other health workers have not sufficiently depicted all the influencing factors contributing to nursing students' intentions to work rurally. With the absorption of some elements from previous models and the support of empirical study, the developed model is an enhanced model in terms of depicting major broad factors and the relationships between these factors which influence nursing students' intentions to work rurally.

This developed model has absorbed some elements from previous theories and models. Firstly, the nested arrangement has been influenced by Bronfenbrenner's (1979) human ecological theory and Hickey et al.'s (2012) nursing career development framework, which has been introduced in the literature review. Secondly, a set of previous categorising approaches (Silagy and Piterman 1991, Heaney et al. 2004) have been used to develop the six components.

However, the developed model has its own strengths and elements of creation. Firstly, it is a dual-core system. This dual-core system distinguishes itself from previous one centre models, for example, Bronfenbrenner's (1979) ecological theory and Hickey et al.'s (2012) nursing career development framework. The dual-core system can better reflect that the intentions to work rurally are influenced not only by nursing students themselves, but also by the characteristics of rural nursing posts. Bronfenbrenner's (1979) ecological theory could be used to depict the factors which influence the personal development, but in terms of career choice, it fails to depict the targeted career system, which is important in terms of choices. Following Bronfenbrenner's (1979) ecological theory, Hickey et al.'s (2012) nursing career development framework was designed to capture the process of nursing students' development and career decisions made during their university program. By using the nested system, their framework tried to depict the relationships between different influencing factors. However, this framework also ignored the targeted career system. This model not only absorbs the nested approach, but beyond that also introduces a dual-core system.

Secondly, this model has the capability to include more broad influences. Previous theories only depicted some aspects of the influencing factors and some of factors were found difficult to place into any of categories. For example, Betkus and MacLeod (2004)'s filter model only depicted some decisive factors for personal circumstances and job availability opportunities; Manahan et al. (2009)'s personal value model only emphasises personal value. Silagy and Piterman (1991) extracted three factors: professional, community and family factors, but reported that one item

related to social and culture facilities did not load significantly onto any of the three factors in their factor analysis.

Thirdly, this model reflects the relationships between influencing factors. This conceptual model not only indicates what kind of factors impact on students' intentions to work rurally, it also indicates how those factors are nested with each other. The nested system and two core systems of rural nursing students and rural nursing posts can reflect the interacting relationship between these influences.

Fourthly, this model reflects the complementary nature of the labour market and recruitment policies. The labour market is a free force which is imposed by the marketing system. Recruitment policies can act as an adjusting force to redress some imbalances. They confront but should be complementary in terms of adjusting students' intentions to work rurally. When the desire of students to work rurally is too low, recruitment policies might stimulate those desires, and when the desire is too high, recruitment policies could act as a suppressant of the high desire. Hickey et al.'s (2012) nursing career development framework mentioned the labour market forces, but it has not captured this relationship.

Finally, this model emphasises the blueprint effect of socioeconomic, cultural and political impacts on students' intention to work rurally, which is often ignored by most nursing recruitment models.

#### ***11.4.2 Limitations of the Model***

Although the proposed model is based on the empirical study and contains complex factors which influence the nursing students' intentions to work rurally, there are limitations which must be recognized.

Firstly, the majority of the empirical findings used in the development of this model are based on non-experimental correlation analysis, which does not permit confident cause and effect claims about those relationships.

Secondly, although the constructions of this model are mainly based on the study's findings, there are also many theoretical assertions in this model based on literature as well as some theoretical arguments.

Thirdly, when the model tries to be inclusive theoretically, the statements relevant are inevitably general; thus the model may fall into the limitation of being too broad. While it can service to integrate present knowledge, this model's function to guide or stimulate further research is limited.

Fourthly, this model has not displayed those precise relationships between factors that this study has reached, for example, the positive relationship between rural background and student' intentions to work rurally and the negative relationship between educational levels and their intentions.

## **11.5 Chapter Summary**

Nursing students' intentions to work rurally are influenced by many factors. To organize and highlight some important factors, a model has been proposed. In this chapter, the researcher discussed the findings of this study in the form of presenting the conceptual model.

Most of the findings are congruous with the literature review, such as the impact of financial reward, continuing educational opportunities, rural background and rural exposure upon students' intentions to take a rural job. However, there are some findings that are different from the literature review, such as perspectives on workload, autonomy and anonymity and the impact of family members. There are also some findings that are unique to this study, such as the low social status related to the rural workplace. Some of these differences may result from the unique sample issue, and some may reflect an impact of the social political, cultural and economic context.

Based on the findings in this study as well as in the literature, the researcher has concluded that the major factors influencing students' intentions to work rurally can be included into six categories: rural nursing posts, rural community, nursing students, family and school, the labour market and recruitment policies, and the social economic, cultural and political context.

Finally, the researcher argues that the impact only happens when these elements interact with each other. Thus, a model which encapsulating these six elements has developed to depict their relationships. The model conveys some insights of the researcher to these relationships: student's intentions to work rurally are shaped by the interaction between nursing students, rural nursing posts and their environments; the nursing students and rural nursing posts consists of a dual core system; rural community, family and nursing school, the labour market and recruitment policies, and the social economic, cultural and political context compose the environmental system; and in terms of time frame, nursing students' intentions to working rurally

are developed over a long period of time and will consistently be subject to change over time.

Although there are several limitations in this study, this piece of research has provided concrete data about students' attitudes towards rural nursing practice. These findings could have comprehensive implications in practice, policy making, nursing education and further nursing research design, which will be further discussed in the next chapter.



# Chapter 12

## Implications of Research Findings

Previous chapters have presented the findings of the research and discussed the differences and similarities of these findings to other studies. This chapter will further discuss what kinds of implications these research findings have. Specifically, this chapter will further discuss how the findings of this study can be used in terms of rural nursing practice, nursing education and policy making.

### ***12.1 Rural Nursing Practice Reform***

The researcher proposes that the nature and characteristics of rural nursing posts are the fundamental factors influencing nursing students' intentions to work rurally. This has significant organizational implications with regards to the reform of rural nursing practice.

In the literature review, it has been argued that the roles of rural nurses are regarded by most experts as generalist rather than specialist, primary care providers rather than pure illness care providers, and expanding and advanced rather than limited roles (Hegney 1997, Bushy 2002, Mahnken 2001). Corresponding to these roles, there were arguments that the requirements of educational preparation for a rural nurse

should be of an advanced level (Hegney 1997, Francis et al. 2001). In support of this, the Canadian Association for rural and remote nursing has pointed out that there is a need to be aware of *“the necessity of a rural nursing component in basic nursing education and opportunities to develop and refine the specialty of rural nursing at a post graduate level”* (Canadian Association for Rural and Remote Nursing 2008:5). However, compared with urban health settings, health settings in rural areas are considered to be of an unfavourable position in the job market. This study shows that higher qualified students have a lower desire to work rurally, and labour market forces in China often force the diploma level nursing graduates to work rurally. This to some extent contradicts the desired requirements for a rural nurse.

How then to deal with the high demand and lower desire related to highly educated nursing students? Stratton et al. (1995) pointed out that a trickle down approach, which works by simply reducing the requirement of rural nurses, should be resisted, since such approaches will not benefit those areas in the long term. This study has also shown that the lower requirements approach will harm the social status of rural nurses, which in turn will further prevent highly qualified graduates from working rurally.

If lowering educational requirements for rural nurses is not a good solution, then the other option is to motivate those that are highly qualified. There are several methods which may help to achieve this goal. One is to provide incentives. This is a simple and straightforward solution, but it is not cost efficient (Wilson et al. 2009). Another way is to raise the attraction of rural nursing practice to nursing students.

This study has shown that current rural nursing practice does not attract the highly qualified nursing students. It implies that for rural nursing practice to be perceived as an advanced nursing practice, reform of the current rural nursing system is needed. The nature of the work and skills of rural nurses both need to be upgraded. For example, the study shows that the skills used in rural nursing are considered to be simple rather than diverse and this creates a situation in which most students perceive that rural nursing practice does not provide much opportunity for new graduates to further develop their skills. If rural nursing practice could move towards a more

advanced nursing system, which may not necessarily be similar to the urban system, for example towards a preventative and community centred nursing system, rural nursing practice may not be just be viewed as a simple version of the urban hospital nursing system. Already some experts have expected that rural nursing practice is a unique but advanced nursing practice, and even one that needs master's degree education preparation (Hegney 1997, Francis et al. 2001, Canadian Association for rural and remote nursing 2008). When rural nursing practice moves towards its unique and advanced nature, the social status of rural nurses might improve as well.

Currently, China is launching a set of health care reform and rural health care system is moving towards a community centred system (The Central Committee of CPC and The State Council 2009). In the researcher's opinion, in this critical time, it is important to set a suitable rural nursing workforce goal for its future. Although the government takes an important role in making policies about the education of nurses and the structure of rural nursing, it is important for rural nursing managers and rural nurses to actively make voice to persuade the government not to set a trickle down approach, which is easy to do for any government.

## ***12.2 Rural Community Improvement***

There are some persistent barriers in the rural community environment which prevent nursing students from rural nursing practice, such as the poor infrastructure, poor transportation system and relative poor economical foundation. Reducing the gap between the workforce of rural and urban areas relies ultimately on a reduction in the inequalities existing between rural and urban residents. This is not an easy task, and may take centuries to happen. However, as has been discussed in previous chapter, in light of the severe disparities that currently exist between rural and urban residents in China, it can be expected that reducing this gap to some extent is possible, and any effort may be rewarded by a large reduction of this gap. In light of most of the gap being rooted in the rural-urban dualism, eliminating the dualism may be a necessary and most important step in reducing the inequality between rural and urban residents.

Modern information techniques have helped to reduce the negative impact of the far distance upon the rural health providers. However, currently China still needs to continue to improve the infrastructure, transportation and amenities in most rural areas, especially in western regions. Although the study has shown that participants in this study were not disappointed with rural transportation and amenities as such as in some other developing countries, the poor transportation and amenities are still barriers for nursing students to take a rural job.

The government providing basic health insurance to rural residents is also important to develop rural nursing practice. Currently, the new rural cooperative insurance system has been launched and is on its way to be implemented in all rural parts of China. But the reimbursement is still low compared to that in urban areas, and with an unstable source of premiums, its future is uncertain (Liu and Rao 2006, Lu et al. 2012). All these indicate that further amendments of the health insurance system in rural areas are needed.

### ***12.3 Taking Advantage of Rural Background and Altruistic Orientation***

The literature has shown that while financial rewards play an important role in the student's choice of rural or urban posts, they alone are not sufficient to guarantee health workers to deliver a good performance in their job. Studies reported that health worker's motivation could make contribution (Lynne Miller et al. 2002, Prendergast 2008). Schemes that target highly motivated health workers can be more effective and reduce workforce cost (Serneels et al. 2010). The existing literature and this study have shown that individuals with certain observable characteristics, such as a rural background or altruistic personality, are easily motivated. Therefore targeting these groups would be a more efficient way of increasing uptake of rural jobs.

Taking advantage of students' rural background entails a need of link between health education and rural background. If there is no opportunity for potential students in rural areas to attend health education, the rural background would be unhelpful for the recruitment of rural healthcare workers. This indicates that providing the opportunities for rural background students to attend health education programs is an indispensable condition for facilitating the recruitment of rural health workers. Several existing strategies were reported in the literature, such as recruiting rural students, establishing rurally based education, extending further rural professional training (Henry et al. 2009, Fisher and Fraser 2010, Smith et al. 2009), or providing rural scholarships for students in university nursing programs (Joyce and Wolfe, 2005). Considering the situation that there are fewer nursing degree programs in China compared to other developed countries, for example, China only has a total of 214 baccalaureate and above nursing programs compared to 1766 in the USA (Kalisch and Liu 2009), further expanding degree nursing programs, establishing rurally based education, extending rural professional training and encouraging highly qualified nursing students to go back to rural areas may be more important in China.

Apart from the rural background, the literature and this study have also shown that personality type has an impact on taking a rural job. Cultivating an altruistic atmosphere among nursing students is an essential requirement of nursing profession and also will be of benefit to rural nursing recruitment. However, in the marketing oriented economy system, economic value has been enhanced greatly while other intrinsic values are declining and tensions between social moral values and individualism have arisen (Wang 2012). Reconsidering the moral foundations of health providers' professional ethics is necessary (Chen 2006). In this climate, finding a new way to foster the faith to help others in the younger nursing generation is a historical task, not only with regards to rural nursing recruitment, but for the entire moral reconstruction in China. It will not be too difficult, as historically, Chinese citizens have had an orientation to fulfil their duty rather than to claim rights (Martin de 2012); personal sacrifices for the common good are largely accepted, although the levels of this acceptance may have declined in recent years.

## **12.4 Nursing Education Reform**

The impact of the nursing school on students' intentions to work rurally implies that nursing education could play a role in improvement of rural nursing workforce. It is in the national interest that the education system provides workers that are trained and willing to work in remote and rural areas. This study shows that apart from government incentive policies, there are some potential things that nursing colleges can do, such as establishing rural health education programs, modifying curricula and improving rural placements to encourage nursing students to work in rural areas.

### **12.4.1 Establishing Rural Health Education Programs**

Several successful and famous rural health education programs that involve cultivating rural health professionals have been reported in the literature.

In the USA, it was reported that a master's degree program which prepares nurses as generalists with advanced knowledge for understanding and addressing rural health care needs was developed in the Montana State University College of Nursing. This program focused on rural nursing in aspects of recruitment, teaching, research and publication (Long et al. 1997).

In Australia, a variety of educational programs was set up to encourage students to be engaged in rural health care. These programs include rural campuses and rural placement programs out of urban campuses (Playford et al. 2010, Usher et al. Mackay 2005). The parallel rural community curriculum in South Australia may also be an example of this. It was the first rural community-based medical education program in Australia and focused on creating a sustainable medical workforce in rural practice. Now it has been internationally recognised as an effective way to address the shortage of rural medical workers (Stagg et al. 2009).

The Northern Medical Program in Canada is also an example of rural health education program. It combines the basic medical education with an early rural clinical exposure and rural placement, delivering medical training in a northern and rural context, and it has now become a model of rural health professional educational program across Canada (University of Northern British Columbia 2010).

In China, nursing education is dominated by the traditional urban-based model and currently there are no degree nursing programs focusing on rural nursing, thus developing some rural-focused nursing programs is critical to improve the nursing workforce in rural areas. Nursing colleges and nursing educators should start to consider these changes in their educational commitments and facilitate these changes to occur.

#### ***12.4.2 Embracing the Rural Context in the Nursing Curriculum***

Apart from establishing rurally based educational programs, amending current nursing educational curriculum in China from the sole urban-based system to a more integrated one, which embraces rural context, is also helpful for the recruitment of rural nurses.

Educating more highly qualified nursing students will undoubtedly improve the rural workforce in the long term in terms of marketing force, but it needs to be complemented by a curriculum reform. That is, the curriculum of nursing education programs needs to embrace rural nursing content. With the opportunities that higher education in China will continuously expand, by which the gross entrance rate to universities is projecting at 40% by 2020 (The Central People's Government of the People's Republic of China 2010), the structural reform of nursing education really needs to take place.

### **12.4.3 Improving Rural Placement**

Rural placement has been adopted as a strategy to increase rural workforce recruitment possibilities in many countries, like Australia and Canada (Dalton et al. 2008, Playford et al. 2006, Manahan et al. 2009). In the literature, it has been argued that to ensure its value and efficiency, the duration and quality of rural placements must be ensured (Playford et al. 2006). This study shows that the effect of rural placements on increasing the possibility of nursing students taking a rural job could not be confirmed in the study setting; this provided important justifications for improving the quality and length of rural placements in the current study setting.

The survey in this study also shows that the length of rural placements for bachelor students and master students is shorter than for diploma students. This may reflect some educators' predisposition which assumes that the bachelor or above programs should aim to cultivate graduates for city hospitals, not for rural areas. Thus, students in bachelor programs have fewer opportunities to take a rural placement. To encourage bachelor students to work in rural areas, developing curricula that facilitate nursing students to take a rural placement may increase students' interest of working in rural areas after graduation.

Besides ensuring a suitable duration and content of rural placement, providing support to students during their rural placement is also important in enhancing a positive feeling about rural placement. For example, Killam and Carter (2010) suggested that distance education support prior to the placement should be undertaken to help students to meet the distinct challenges in rural placements.

## **12.5 Policy Making**

From the previous discussion, some implications for the development of recruitment policy can be assumed, for example providing some financial incentives for highly

qualified nursing graduates to take rural practice, establishing rural nurse practitioner roles and lifting the nursing education level.

### **12.5.1 Financial Incentives**

This study has shown that health institutions in rural areas were least preferred by nursing students, and the urban hospitals and community centres were most preferred. This concurs with the reports from other countries which report that rural nursing positions appeal less than those in metropolitan cities (Orpin and Gabriel 2005, Schofield et al. 2009, Blaauw et al. 2010), but the situation in China is more severe than in those countries. For example, Orpin and Gabriel (2005)'s study in the University of Tasmania also showed that the health institutions in capital cities have the widest appeal to the health science students, while the health institutions in the rural and remote have the least appeal; but it also showed that there were 8% of final year students who declared that they would work in rural areas for almost their entire career, 11.5% students for most of their career, and 27.6% half of their career. These percentages are much higher than the results in this study. In a multinational study (Blaauw et al. 2010), it was shown that in the absence of any human resource policy intervention, the percentages of nursing graduates who would choose a rural job were 82.4% , 43.4%, 36.0% in Thailand, Kenya and South Africa respectively. Therefore, although the rural health facilities were reported to be least preferred, the extent of preference varied in different countries, and in China, the figure indicates a severely imbalanced trend.

Rural health facilities being the least preferred situation indicate that market forces alone are not enough to balance the rural and urban workforces. The wider gap between rural and urban nursing workforces indicates that the implementation of market force ideology has created tensions between economic imperatives and the need for equity in access to health care. Under this trend, the policy should work as an important balancing force given that rural nursing is a job in a harsh environment but with lower financial rewards. That is, to improve the workforce in rural areas, some incentivising policies are needed.

In the literature, a set of incentive policies has been reported with regards to improving the health workforce in rural areas. In the USA, for instance, there were service-linked scholarships, loan repayment programs, service-cancellable loan programs, loan interest rate reduction programs and direct incentive programs (Samir et al. 2008). In Canada, special rural allowances were paid as a direct financial incentive for rural service (Wilson et al. 2009). In some developing countries, public service contracts were implemented in the form of returning the fees of medical training programs (Hammer and Jack 1999). Mandatory deployment of health workers such as compulsory service was also created by some governments over the years to deal with the rural workforce shortage (Frehywot et al. 2010).

Although all these interventions are subject to time and context adjustment, as there are few policies currently in existence in China to encourage nursing students to work rurally, the health administration departments should develop some policies to address this issue. For example, this study has shown that highly qualified nurses are less likely to work in rural areas in the current situation; to improve nursing workforce in rural areas, the government should develop some policies to attract highly educated nursing graduates. From the results of this study it is clear that degree students are less worried about finding a job, but they may desire a permanent position, so offering a permanent position might increase the possibility of their taking a rural job. From the results of this study, we also know that the financial reward is one of the main reasons for students not considering a rural job, thus improving financial rewards may also be useful in attracting highly qualified graduates.

### ***12.5.2 Developing the Nurse Practitioner Role in Rural Areas***

While the financial reward undoubtedly plays an important role in recruiting health workers, it should be considered in line with health workers' motivation. There is a set of theories describing the various motivations which drive an individual's activities, such as Maslow's hierarchy needs theory (Maslow 1943), Herzberg's two-factor motivation theory (Herzberg et al. 1959), and McClelland's need achievement

theory (McClelland et al. 1953). In hierarchy of needs theory, financial security is located to the safety need, which is in relatively fundamental level; and in Herzberg's two factors (motivation and hygiene) theory, salary belongs to the factor of hygiene, which only has potency to prevent dissatisfaction rather than work as a job satisfier. All these theories indicate that financial reward only plays a partial role in motivating individual activities.

In terms of rural health workforce recruitment, various empirical studies have shown that highly motivated candidates have low financial requirements. For example, a study in Rwanda showed that students with higher intrinsic motivation, those who rank 'help the poor' as the most important job attribute, have asked for lower wages for rural service (Serneels et al. 2010). Reardon's (2010) study also showed that non-financial issues, like the workplace culture, rewarding existing employee achievement, and increasing flexibility of the working conditions, were highly rated as factors for nurses staying rural employment. After examining some factors that influence Australian students' intentions to work rurally, Schofield et al.'s (2009:74) study concluded that *"the decision to practise rurally is the result of a complex interaction between a number of factors... Incentives that aim to entice all students to rural practice while considering only one of these variables are likely to be inadequate"*. In this study, in the interview, while there were students who claimed to take a city job because of the higher financial reward there, there were also some students who claimed that the financial payment didn't play an important role in their decision of whether to work in a rural health facility or not, as long as the payment at a reasonable level.

Thus, apart from the necessary financial incentive, in light of the fact that there is no specialised or advanced title for rural nursing practice in China, the researcher suggests that the development of nurse practitioner role in rural areas is also a potential way to attract highly qualified nursing students. This has been used in other countries. For example, it was reported that *"the particular value of nurse practitioners for rural and remote areas has already been legitimised by the first Australian appointments in New South Wales"* (Mahnken 2001:2). Indeed, if rural

nurses are expected to deliver comprehensive care for a wide range of chronic and acute health problems to different population groups, a high level of education is needed. Correspondingly, an appropriate professional title is needed to recognise that their nursing practice is at an advanced level.

### ***12.5.3 Continuing to Lift the Nursing Education Level***

Apart from financial incentives and professional titles, another potential policy to improve the rural nursing workforce is to continue lifting the nursing education level in China. Although previous review has shown that nursing education in China has developed very rapidly during the last thirty years, compared to other developed countries, the nursing education level in China is still low. For example, Kalisch and Liu (2009) compared nursing education between China and the USA. They found that China had more diploma programs than the USA, 400 compared to 73, but fewer associate, baccalaureate, master and doctor programs. The total number of baccalaureate and above nursing programs in China in 2006 was 214 compared to 1766 in 2007 in the USA (Kalisch and Liu 2009). In light of this situation, further lifting the entire nursing education level will alleviate the shortage situation of highly qualified nursing graduates, and thus will ultimately improve the workforce in rural areas.

Expanding nursing education programs in current universities is possible as higher education has been expanding quickly in China since the late 1990s. According to the report of the Ministry of Education, there were 2358 regular higher education institutions in China in 2010, the promotion rate of senior school graduates to higher education was 83.3% and the gross rate of tertiary education enrolment has reached 26.5% in 2010 (Ministry of Education of PRC 2010). With this kind of scale of higher education, it is possible to further expand nursing education programs in current universities.

## **12.6 Social Economic, Cultural and Political Reform**

Lastly, but also importantly, the profound social, cultural and political impact on rural nursing students' intentions to work rurally indicates that improving the rural nursing workforce in rural areas will never be determined by purely professional or individual level issues. The ultimate solution of the issue relies on entire social development, just as the well-known American psychologist Maslow has pointed out that merely dealing with symptoms, rather than with what is behind the symptom, will lead to a state of complete confusion in why they are never resolved (Maslow 1943).

This study has shown that a number of factors influence students' intentions to work rurally and these factors are interrelated, thus they should be considered collectively in efforts to improve the rural work force. Any single or solo policy may result in little effect in the long term. For example, while trying to change students' aspirations and raise students' commitment to rural nursing, reform of the rural nursing system and improvements of the rural community environment are also essential. In particular, increasing the investment in the rural health care system by central and local governments and promoting the relative equality of the distribution of health care resources between urban and rural areas are also needed due to the multifactorial effect.

Essentially, improving the rural nursing workforce should start with a goal of equality in society. If there is no equality goal in society, equal health care will not exist. For instance, if there is a political environment acknowledging urban areas should always be a priority, or if perceptions like 'the rural area workforce should be lower than the urban area workforce' exist in most people's minds, the disparity of the nursing workforce between rural and urban areas will persist.

## **12.7 Chapter Summary**

To summarise, factors influencing nursing students' attitudes towards working rurally are multilevel. This multilevel model indicates that any sole and single action may only provide a limited effect, thus a well improvement of the workforce in rural areas relies on a set of reforms in rural nursing practice, nursing education, policy making and some social welfare system.

In line with the importance of the characteristics of rural nursing posts, reforming rural nursing practice towards an advanced level may help to attract higher qualified nursing graduates. As the rural environment is essential to rural nurses' lives, the improvement of the rural community situation would change nursing students' attitudes towards rural nursing. In light of the positive relationship between rural background and rural practice, establishing some schemes in nursing degree programs to encourage rural background students to work rurally will be cost effective.

In nursing education reform, establishing rural-based nursing education programs, embracing the rural context in the nursing curricula and improving the quality of rural placements are proposed. In policy making, providing necessary financial incentives, developing a rural nursing practitioner role and lifting the entire nursing education level are suggested. Finally, it is argued that to ultimately eliminate the gap between the rural and urban nursing workforces, eliminating the rural-urban dualism and establishing an equality workforce goal for rural and urban nursing practice are fundamental.

# Chapter 13

## Recommendations for Future Research

As discussed in the previous chapter, findings from this study could provide some implications for rural nursing practice reform, nursing education reform and nursing recruitment policy making. However, this study was limited by time and budget constraints, and some sampling issues, which have been presented in section 9.2.5. Considering the findings and limitations of this study, the following recommendations for future research are proposed.

### ***13.1 Expanding Study Settings***

Due to the limited funding, and the fact that the survey was conducted by only one researcher, the study was limited to one area in China. If a team of researchers and enough supporting funding are available, a study across several regions in the country could be designed. In that case, the sample size could be further enlarged and the generality and representation of the findings will be further improved. Thus the first recommendation for future research is to organize a nationwide research team and apply for national level research findings to undertake a cross regional study in China.

## ***13.2 Improving Sampling***

The sample of this study was predominantly female. This was a true reflection of nursing education in China, but a very small sample of male students limited the ability to explore the impact of gender. To investigate the effect of gender, boosting the number of male students in the sample could be considered for future research.

Owing to the lack of an existing sample frame, a simple random or systematic random sample was not obtainable. Thus, the sample of the survey was limited to a cluster sampling, of which the generalisation ability was lower than the simple random or systematic random sample. If a sample frame had been obtained, even in the cluster sampling, a strata sampling could have been designed to increase the representativeness of the sample and reduce the sample size. Thus, for future research, if possible, a more accurate sample frame should be pursued.

This research is limited to the nursing students. Although it is the main constituent of current rural nursing recruitment, it is not the only one. With the labour market developed, recruiting those mature nurses to rural nursing will increase gradually. Thus, expanding the sample to mature nurses to investigate their views on rural nursing and their possibility of working rurally is also a meaningful research.

The study also has not involved nurses who are currently working in rural areas in China; a study investigating the circumstances of rural nurses is also worth doing.

## ***13.3 Longitudinal Studies***

This study is limited by time. The data were collected at only one point in time – at the end of the nurse training programs. Thus it lacks the ability to examine the attitude change overtime.

A longitudinal design would make it possible to analyse the changes over time and to examine how accurately self-reporting intentions reflect actual behaviours or how the stated intentions of students are translated into practice. Therefore, for a long-period research project, a longitudinal design is recommended. The data collection time can be at several critical points, for example, when nursing students entering nursing schools, the final year of their study, one year after their graduation and five years after their graduation. Longitudinal multilevel modelling and latent growth curve modelling can be considered for use in data analysis.

### **13.4 Research Focuses**

The findings of this study can also provide some information for future research in terms of research focuses.

The positive relationship between a rural background and rural practice has been confirmed in different cultures and studies, and future research should focus on the comparison of the magnitude of the effect. However, without a certain comparable variable, it is difficult to compare the effect of a rural background. Findings from this study suggest that the length of rural living has the strongest correlation with the possibility of taking a rural job. In light of the fact that the length of rural living can be used in different cultures, this variable can be considered suitable for comparison of the effect of a rural background.

In the literature, the findings concerning the effects of rural placement were controversial. The results of this study support the possibility that the relationship between the rural placement and the rural practice may be spurious caused by a rural background. This indicates that future research on the rural placement should examine whether there is spurious relationship caused by other factors, such as a rural background or level of education. As the duration and nature of the rural placement may impact its effect upon students' intentions of working rurally, studies

which specifically focus on the duration and the nature of the rural placement should be considered in the future.

### **13.5 Others**

Although some implications for policy making have been assumed in the previous chapter, this study has not directly focussed on the policies. With regard to the interventions of rural nursing recruitment, far more research needs to be done. For example, based on the findings of this study and literature review, discrete choice experiment studies on interventions in attracting newly graduated nursing students to rural areas, or some action research, can be designed.

Findings from this study indicate that there are different views on rural nursing practice in the Chinese context when compared with other cultural contexts. International cooperative research will make rural nursing study more effective in terms of looking at the similarities in different cultures and make the study more comparative in terms of looking at the differences using the same variables and research methods. Therefore, the researcher thinks, conducting some international cooperative research will be very promising.

## ***13.6 Chapter Summary***

In this chapter, the researcher proposed some recommendations for future research in rural nursing in China. In terms of the scale of the research, nationwide and international cooperation studies are proposed. Regarding the timeline, a longitudinal study is recommended. In terms of research focus, some alternative research topics and alternative sampling methods are also suggested.

The end of this research marks the beginning of future research. The researcher will continue to conduct studies in the area of rural nursing, and will aim to achieve a yet high goal, and in the same time, hope more researchers will engage in rural nursing.



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## Conclusion

This study consists of an exploratory interview and a subsequent quantitative questionnaire survey. The exploratory interview identified a set of perspectives that Chinese nursing students hold about rural nursing practice. The survey measured final year Chinese nursing students' stated rural career intentions and their demographic information.

The results show that in general, most nursing students in the study setting prefer to work in the city than in rural areas; the hospitals and community health centres in rural areas are the least preferred place of work. Only a few nursing students intend to work in rural areas immediately after their graduation; and the proportion of students who are prepared to work in rural areas for long period is very few, the majority of the students are only willing to work in rural areas for a short period of their career. Perceived factors such as lack of opportunities to develop their skills, lower social status, lower salary, and family disapproval are potential barriers to students opting for a career in rural health settings. Logistic regression analysis shows that rural background and educational level are the most important predictors of individual nursing students' intentions to work rurally within this study. Rural background has a positive impact on uptake of a rural job and students with a degree are less likely to work rurally.

Based on these findings and literature review, a conceptual model has been constructed to explain the influencing factors of Chinese nursing student's intentions to work rurally, in which there are six elements: rural nursing post, rural community, nursing students, family and school, labour market and recruitment policy and the social economic, cultural and political context. Practically, these findings have provided some implications for policy making, nursing curriculum reform, rural nursing recruitment practice and social reform. Theoretically, this constructed model could provide a framework for further research design.



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# Appendices

Appendix 1: Summary of Reviewed Papers

Appendix 2: Ethical Review Form for the Exploratory Interview

Appendix 3: Researcher Information Sheet to Interview Participants

Appendix 4: Interview Consent Form

Appendix 5: Interview Schedule

Appendix 6: Ethical Review Form for Questionnaire Survey

Appendix 7: Research Information Sheet of the Survey to Nursing Schools

Appendix 8: Research Information Sheet of the Survey to Nursing Students

Appendix 9: Questionnaires of the Pilot Study

Appendix 10: Results of the Pilot Study

Appendix 11: Questionnaires of the Main Study

Appendix 12: Comparison of Parametric and Nonparametric Test



## Appendix 1: Summary of Reviewed Papers

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Adams et al. (2005)	Development of a questionnaire measuring student attitudes to working and living in rural areas	Queensland, Australia	Students who undertook a rural placement in South Australia; n=243	Questionnaire survey, pre- and post-placement; Exploratory factor analysis	The factors extracted were: (1) friendliness and support in rural areas; (2) isolation and socialisation problems associated with living and working in rural areas; (3) enjoyable aspects of living in a rural area; and (4) opportunities that working in a rural area provides.	The study identified four factors associated with student attitudes to living and working in rural areas. The resulting factors provide a more integrated reflection of the rural experience, rather than the rigid categorisation of professional, social and personal issues.
Betkus et al. (2004)	Retaining public health nurses in rural British Columbia: the influence of job and community satisfaction	Rural British Columbia	Front-line PHNs in 48 rural and small urban communities in British Columbia; n=124	Mail questionnaire survey	PHNs were most satisfied with their professional status, professional interaction and autonomy, their communities' acceptance of their partners, friendliness of the community and their friends. They were least satisfied with their salary. Job satisfaction or community satisfaction was not found to influence retention. Instead, "filter factors" such as age, retirement, family needs and the economy affected PHNs' intent to stay or leave.	If PHNs are to be retained in rural areas, their economic and family life situations merit greater attention, as does their experience of living and working in rural communities.
Bigbee (1993)	The uniqueness of rural nursing			Literature review	Rural nursing is a unique specialty area of general practice with distinguishing characteristics and dynamics, including close interaction within the community, a truly generalized approach, and increased autonomy, cohesiveness, and community visibility. This area of specialty practice requires nurses to be highly competent and well prepared in all aspects of professional practice.	Rural nursing is a unique and challenging field of nursing that requires a "special breed" of nurses committed to high-quality, comprehensive professional nursing care.

<b>Author</b>	<b>Title</b>	<b>Setting</b>	<b>Participants</b>	<b>Design and Methods</b>	<b>Main findings</b>	<b>Conclusions</b>
Blaauw et al. (2010)	Policy interventions that attract nurses to rural areas: a multi-country discrete choice experiment	Kenya, South Africa and Thailand	Graduating nursing students; n=300	A discrete choice experiment (DCE); Mixed logit models were used for analysis	Nurses' preferences for different human resource policy interventions varied significantly between the three countries. In Kenya and South Africa, better educational opportunities or rural allowances would be most effective in increasing the uptake of rural posts, while in Thailand better health insurance coverage would have the greatest impact.	Intervention packages tailored to local conditions are more likely to be effective than standardized global approaches.
Bourke et al. (2004)	Developing a conceptual understanding of rural health practice			Review	Five concepts, important in distinguishing rural health practice, are presented and discussed. These are rural-urban health differentials, access, confidentiality, cultural safety and team practice.	Rural health is not just health in a rural setting but health in a complex web of social relations, cultural history and socio-political networks.
Bushy (2002)	International perspectives on rural nursing: Australia, Canada, USA			Review Articles in Australia, Canada and the USA	Inherent features of ruralness at an international level are described as greater distance between services and providers.  The legal role and scope of advanced practice nurses may be somewhat better delineated in the USA than in Australia and Canada.  There is a socialised healthcare reimbursement model In Canada and Australia.	Summary articles prepared by nurse scholars describe more similarities than differences among rural nurses in Australia, Canada and the USA.  Collaborative efforts are critical to refine the theoretical foundations for rural nursing to guide education, research, practice, and policy development in our global village.

<b>Author</b>	<b>Title</b>	<b>Setting</b>	<b>Participants</b>	<b>Design and Methods</b>	<b>Main findings</b>	<b>Conclusions</b>
Bushy and Leipter (2005)	Factors that influence students in choosing rural nursing practice: a pilot study	USA	Students from the USA and Canada, who were enrolled in graduate and undergraduate programs of nursing, and were attending an international rural nursing conference; n=100	A paper and pencil short answer survey	Those who have life experiences and connections in small communities are more likely to choose this setting. Post-graduation employment preference was reinforced by on-going exposure to rural theory and practice settings in their programs of study.	Evidence based findings are critically needed to recruit and retain nurses to address critical nursing shortages in rural regions in North America and globally.
Courtney et al. (2002)	The impact of rural clinical placement on student nurses' employment intentions	Queensland, Australia	Final year Bachelor of Nursing students; n=212	Quasi-experimental pre-post placement survey design	A 12% increase (to 89%) in the number of students intending to seek employment in a rural setting, compared to a 5% increase (to 46%) in students who undertook a metropolitan placement. One-third of the students who chose a rural placement had no previous experience of a rural lifestyle and over half of these students indicated their intention to work in a rural setting following their clinical placement.	These results support the theory that undergraduate rural clinical experience can have a positive influence on the recruitment of health professionals to rural areas.
Dalton L. et al. (2008)	Rural placements in Tasmania: do experiential placements and background influence undergraduate health science student's attitudes toward rural practice?	Tasmania	Students in undergraduate health science; n= 239	Survey In 2005 -2006	Nursing students' average intention to practise rurally significantly increased after the placement for students. Rural background status was defined according to location of primary and secondary school attendance	Rural placements in the undergraduate health science programs have a predominantly positive influence on students' intention to work in a rural community post-graduation.

<b>Author</b>	<b>Title</b>	<b>Setting</b>	<b>Participants</b>	<b>Design and Methods</b>	<b>Main findings</b>	<b>Conclusions</b>
Daniels et al. (2007)	Factors in recruiting and retaining health professionals for rural practice	New Mexico, USA	Graduates from 12 health professional programs in New Mexico; n= 765	A mail survey collecting longitudinal data	Size of childhood town, rural practicum completion, discipline, and age at graduation were associated with rural practice choice. Those who first practiced in rural versus urban areas were more likely to view the following factors as important to their practice decision: community need, financial aid, community size, return to hometown, and rural training program participation. Those remaining rural versus moving away were more likely to consider community size and return to hometown as important. Having enough work available, income potential, professional opportunity, and serving community health needs were important to all groups	Rural background and preference for smaller sized communities are associated with both recruitment and retention. Retention efforts must focus on financial incentives, professional opportunity, and desirability of rural locations.
Deaville et al. (2009)	Perceptions of UK medical students on rural clinical placements	UK	Medical students in Year 1 and Year 3 of a regional medical school; n=24	Focus group discussions	There is no clear workforce or health education policy that encourages rural background student recruitment. Student perceptions in both groups were rather negative about rural placements. Rural practices were thought to provide a narrow range of patient contact and learning opportunities. Rural life was thought to be unattractive, especially out of formal placement hours. Even relatively small distances from friends and social outlets were regarded as barriers.	This study adds to our understanding of the challenges faced by UK medical schools wanting to implement rural health education initiatives within their curricula. It is clear that many students have a poor understanding of what 'rural' means and of rural health issues in general. Some students view rural clinical placements as unattractive and even relatively small distances are seen as major barriers.
Dunkin et al. (1992)	Job satisfaction and retention of rural community health nurses in North Dakota	North Dakota, USA	Community health nurses; n=258	A mail questionnaire survey	The greatest factor influencing the nurses' choice of current position was job availability, followed by preferences for the particular health care agencies or communities.	Retention of rural nurses should focus on strategies that go beyond improving job satisfaction.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Easterbrook et al. (1999)	Rural background and clinical rural rotations during medical training: effect on practice location	Canada	Physicians who graduated from the Family Medicine Program at Queen's University, Kingston; N=159	Mail questionnaire survey	Physicians who were raised in rural communities were 2.3 times more likely than those from non-rural communities to choose to practise in a rural community immediately after graduation. They were also 2.5 times more likely to still be in rural practice at the time of the survey. There was no association between exposure to rural practice during undergraduate or residency training and choosing to practise in a rural community.	Physicians who have roots in rural Canada are more likely to practise in rural Canada than those without such a background.
Fisher & Fraser (2010)	Rural health career pathways: research themes in recruitment and retention			Literature review	Four stages of rural pipeline were identified: (1) making career choices; (2) being attached to place; (3) taking up rural practice; and (4) remaining in rural practice.	Utilising the 'rural pipeline' or rural health career pathways as a template for medicine, nursing and allied health would strengthen current approaches to the recruitment and retention of professionals in rural areas and provide a consolidated evidence base that would assist in policy development to improve availability and service provision of the rural health workforce.
Francis et al. (2001)	Rural nurses: knowledge and skills required by rural nurses to meet the challenges of a changing work environment in the 21st century: a review of the literature			Literature review	The rural nursing environment differs from that of non-rural environments in that rural nurses are required to be experts in a range of clinical nursing specialties. Rural nurses are challenged by professional isolation, increasing expectations from employers and communities that nursing staff be multi-skilled, changing technologies and continuing fiscal constraints on healthcare.	The role of the rural nurse should be legitimised through appropriate legislation.  The health and education systems should come together to work in a more integrated approach to provide nursing education.  Universities need to be encouraged to establish rural clubs and focus on providing quality clinical placements in rural areas, to provide students with valuable rural experiences.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Frehywot et al. (2010)	Compulsory service programmes for recruiting health workers in remote and rural areas: do they work?	Australia, Ghana, Haiti, India, Mozambique, Nigeria, Norway, Peru and South Africa	Key government officials from 9 countries	Literature review; Interview	Three different types of compulsory service programmes were identified in 70 countries. As governments consider the cost of investment in health professionals' education, the loss of health professionals to emigration and the lack of health workers in many geographic areas, they are using compulsory service requirements as a way to deploy and retain the health workforce. Some of the compliance-enforcement measures include withholding full registration until obligations are completed, withholding degree and salary, or imposing large fines.	Compulsory service programmes have been used worldwide as a way to deploy and retain a professional health workforce within countries.
Hanson & Jack(2008)	Health worker preferences for job attributes in Ethiopia: Results from a discrete choice experiment	Ethiopia	Health workers; n= 861	Discrete-Choice Experiment	Doubling wages paid to nurses for work in rural areas outside cities increases their labour supply from 4% to 27%, while the non-wage attribute that is most effective in inducing them to relocate to rural areas is the quality of equipment and drugs.	Providing financial incentives is an effective way to improve the supply of health workers to rural areas in Ethiopia.
Hanson & Jack (2010)	Incentives could induce Ethiopian doctors and nurses to work in rural settings	Ethiopia	219 doctors and 642 nurses	Discrete-Choice Experiment	For doctors, we found that higher wages and quality housing incentives had the biggest impact on their willingness to practice in towns in rural areas. For nurses, improvements in the availability of medical equipment and supplies were the factors most likely to bring about a move to a rural village.	Choosing the right incentive package requires a consideration of both the effects of different packages on health workers' choices and the cost of those packages.
Hays et al. (1997)	Why doctors leave rural practice	Queensland Australia	Rural doctors left their communities during 1995; n=37	Semi-structured interviews	Participants appeared to be subject to a dynamic balance between opposing pressures to stay and pressures to leave. In time, they became susceptible to 'triggers' to leave. These triggers were sometimes locality-specific and could be difficult to address, particularly without early intervention.	Developing strategies that address specific concerns of rural doctors, particularly if they are identified early will benefit retention of rural doctors.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Heaney et al.(2004)	Choosing to practice in rural dietetics: what factors influence that decision?	New South Wales, Australia	Twenty-three students/new graduates from the Bachelor of Health Science	Focus groups	Factors that influence the decision of dietetic students and newly graduated dieticians to consider working in a rural area: job prospects; rural lifestyle; comfort zones; support networks; promotion opportunities/professional development; type of work/work role; rural needs; and time frame.	Choosing a location to work (whether it be a rural one or not) is a complex process and involves a number of interacting factors. Also those factors that may influence one dietician to choose a career in a rural area may also be the factors that influence another dietician not to choose a career in a rural area.
Henry et al. (2009)	Why do medical graduates choose rural careers?	Australia	Interns of medical graduates; n=17. Officers and other key staff in 9 Australian medical schools	Interview	Prior rural residence is the strongest predictor of choice of a rural career but extended rural exposure during medical training also has a significant impact. The most significant influencing factors are: professional support at national, state and local levels; career pathway opportunities; contentedness of the practitioner's spouse in rural communities; preparedness to adopt a rural lifestyle; educational opportunities for children; and proximity to extended family and social circle.	Strategies are suggested to increase the number of graduates choosing a career in rural medicine. Stage 1: Contact between rural secondary schools and the medical profession. Stage 2: Selection of rural student into medical programs. Stage 3: Rural exposure during medical training.
Juhl et al. (1993)	Job satisfaction of rural public and home health nurses	USA	Registered nurses in rural Midwestern state; n=258	Questionnaires	Public and home health nurses both groups reported low satisfaction with salary. Public health nurses were significantly less satisfied with their salaries than were home health nurses. Home health nurses, however, were significantly less satisfied with benefits/rewards.	These differences may be partially explained by divergent salaries, roles, and responsibilities between public health and home health nurses.
Killam et al. (2010)	Challenges to the student nurse on clinical placement in the rural setting: a review of the literature			Literature review	Students face political, environmental, community-based, nursing-related, organizational, relational, and personal challenges on rural placement. Challenges vary according to the placement setting and available student supports.	An exploration of financial and distance education supports prior to the placement would be beneficial.
Laurence & Wilkinson (2002)	Towards more rural nursing and allied health services: current and potential rural activity in the Division of Health Sciences of the University of South Australia	Australia	The seven Schools comprising the Division of Health Sciences of the University of South Australia	A survey	Five Schools (71%) offer rural placements for undergraduates, four (57%) are doing rural research and three (43%) provide some services to rural communities. Contingent on appropriate resources, all Schools expressed a strong desire to substantially increase the amount of rural activity.	This research highlighted the paucity of data in this area and suggests the need for a national survey.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Lea & Cruickshank (2005)	Factors that influence the recruitment and retention of graduate nurses in rural health care facilities	Australia	New graduate nurses in northern New South Wales	A qualitative study (specific methods has not mentioned in the abstract)	No guarantee of a permanent appointment upon completion of the graduate programs was an important factor influencing their retention within rural health care facilities. Previous connection with area and positive experiences in a rural health care facility during undergraduate preparation were significant factors influencing the graduate nurses' decision to pursue a rural graduate nurse position.	This paper presents two major themes from the study that describe the factors that influenced the new graduate nurse to seek and accept a graduate nurse position within a rural health setting and the factors that influenced their retention.
Lea et al. (2008)	The lure of the bush: do rural placements influence student nurses to seek employment in rural settings?	New South Wales	Final year Bachelor of Nursing students; n=75	Pre- and post-clinical placement survey; individual interviews	The relaxed and friendly working environment of rural health services and the proximity of the rural health service to friends and family were positive aspects of their rural clinical placement that would influence their future employment intentions.  Negative aspects which discourage them from seeking rural employment were a lack of resources and technology, the patient acuity in rural health services, and the lack of support available for staff.	Nurse academics can play a significant role at the grass roots level by providing more comprehensive exposure to rural nursing practice and rural course content in undergraduate curricula.
Monique et al. (2007)	Undergraduate nursing students' preparedness to "go rural"	Canada	Undergraduate fourth year nursing students	A focused ethnography examining	Having a positive rural-based experience also has the potential for recruiting new staff.	These preliminary findings suggest that student preparation for the rural hospital placement includes cognitive and psychological preparation, as well as the acquisition of common advanced clinical skills.
MacLeod et al. (2004)	The nature of nursing practice in rural and remote Canada	Canada	Registered nurses; n=3933	A national survey; Analysis of the Registered Nurses Database; Systematic analyses of policy and administrative documents	There is a need for an appropriate supply of nurses who are suitably educated for the roles they need to assume.  18 % of registered nurses in Canada are providing care to the 22% of Canadians living in rural and small town Canada.  A larger proportion of rural than urban nurses work in community-based settings, reflecting the importance of this type of workplace in rural Canada.  Registered nurses in rural and remote Canada have greater demands for an expanded role of practice.	Better understanding the realities of rural and remote practice, as well as by addressing in a more concerted way issues such as education and workplace supports, the strengths of rural and remote nursing practice can be better mobilized.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Manahan et al. (2009)	Personal characteristics and experiences of long-term allied health professionals in rural and northern British Columbia	Northern British Columbia Canada	Allied health professionals practicing long term in northern BC; n=26 (speech language pathologists 6, psychologists 4, occupational therapists 4, social workers 8, and physiotherapists 4)	Telephone interviews	<p>Participants identified past positive experiences and rural background as influencing their practice location decision.</p> <p>The community's need for healthcare professionals, career advancement opportunities, welcoming employers, peer support, as well as promises of continuing education and inter-professional teamwork as key to their decision.</p> <p>Individual factors and personal preferences such as the need for adventure, wilderness, and outdoor recreation, and community factors also are identified.</p>	The findings imply a combination of varying personal values impact the decision to come or stay in rural and northern communities. Personal characteristics and experiences help to shape these personal values. Over time and depending on stage of life, personal values change. Age and stage of life, rural background, and location of family members also have bearing on personal values, which in turn impact recruitment and retention.
McAuliffe & Barnett (2009)	Factors influencing occupational therapy students' perceptions of rural and remote practice			Review the literature on occupational therapy students' perceptions of rural and remote practice	<p>A student's rural background was reported to be one of the strongest factors in their decision to work rurally.</p> <p>An undergraduate rural program is one useful strategy to overcome the rural health professional shortage.</p> <p>Factors such as rural fieldwork experience and fieldwork supervisors are likely to be influential. Negative influential factors include a student's desire to work as a 'specialist', and personal, social and professional factors, such as a lack of professional development opportunities in a rural setting.</p>	<p>The relationship between a student's rural background and the likelihood of working in a rural area is evident.</p> <p>Rural and remote practice is characterised by a diversity of healthcare needs. This diversity may attract rural health professionals and encourages undergraduate students to consider rural and remote practice.</p>
McNair et al. (2005)	Australian evidence for inter-professional education contributing to effective teamwork preparation and interest in rural practice	Victoria, Australia	Medical, nursing, physiotherapy and pharmacy students in a pilot inter-professional education (IPE) placement in rural Victoria, Australia from 2001 to 2003	Pre- and post-placement questionnaires	<p>Placements strengthened nursing and allied health students' intention to work in rural health settings after graduation.</p> <p>Nursing and allied health students had significantly higher levels of agreement on the positive impact of RIPE placements than medical students.</p> <p>The rural inter-professional educational experience improved inter-professional abilities in a group of students who have the potential to influence change towards collaborative practices in their future workplaces.</p>	The results obtained provide sufficiently strong evidence to justify the continuation and expansion of this educational model in the Australian setting.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Meyer et al.(2005)	Recruiting and retaining mental health professionals to rural communities: an interdisciplinary course in Appalachia	Ohio University USA	Undergraduate and graduate students who seek mental health services employment in rural areas	Case study for a distance-learning course	Faculty from 5 disciplines (health administration, nursing, psychology, social work, and special education) collaborated to develop and teach a distance-learning course designed to encourage undergraduate and graduate students to seek mental health services employment in rural areas and to provide the skills, experience, and knowledge necessary for successful rural practice.  The integration of faculty from multiple disciplines enriched the material presented in the course and illustrated inter-professional differences.	Given that the delivery of mental health care demands collaboration and teamwork and that rural practice relies increasingly more on the use of technology, our experience suggests that more team-based, technology-driven courses are needed to better prepare students for clinical practice.
Mullei et al. (2010)	Attracting and retaining health workers in rural areas: investigating nurses' views on rural posts and policy interventions	Kenya	Trainees from four Medical Training Colleges; n=345	Individual interview; A self-administered questionnaire; Focus group discussions	Attitudes to working in rural areas were significantly positively affected by being older, but negatively affected by being an upgrading student.  Positive aspects of rural life included lower costs of living and more autonomy at work. Negative issues included poor infrastructure, inadequate education facilities and opportunities, higher workloads, and inadequate supplies and supervision.  Rural allowances and the ability to choose their rural location were identified as strategies which could improve rural recruitment.  Short term contracts in named locations were not favoured due to their lack of pension plans and job security.	This study identified a range of potential interventions to increase rural recruitment and retention, with those most favoured by nursing students being additional rural allowances, and allowing choice of rural location.
Neill & Taylor (2002)	Undergraduate nursing students' clinical experiences in rural and remote areas: recruitment implications	Australia	Two cases in Flinders University	Case study	Provide rural clinical experience for nursing students, especially for those from urban background, offers recruitment possibilities.  Adequate financial support for students during these placements is essential.	It is crucial for recruitment that all nursing students have well-supported, financial secure opportunities to considered careers in rural areas.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Orpin & Gabriel (2005)	Recruiting undergraduates to rural practice: what the students can tell us	Australia	Health science students at the University of Tasmania; 148 first year and 87 final year students	Online survey	<p>Over one-third of first years and 56.3% of final years indicated a general preference for rural life and practice and almost 90% expected to spend at least some of their career in rural practice.</p> <p>There was a statistically significant relationship between rural practice orientation and rural origin among first years, although this relationship was weaker among final years.</p> <p>The only perception of rural practice very widely shared (by more than 80% of respondents) was the possibility of developing better patient relations.</p> <p>Over two-thirds felt that rural exposure had actually influenced them away from such a career. Three students reported that undertaking a rural placement influenced them towards, and 35 away from, a rural/remote career.</p>	The ultimate measure of the success of undergraduate interventions will be workforce changes over time. In the meantime more research is needed into undergraduate experience of rural health to provide the data needed for the careful design of coursework, detailed planning of the placement experience and long-term strategies to address those aspects of rural practice that are of most concern to these emerging health professionals.
Owen et al. (2007)	Predicting rural practice using different definitions to classify medical school applicants as having a rural upbringing	USA	Physicians who graduated in 1994-1999 from the University of Virginia School of Medicine; n=599	Cohort study, Logistic regression models	<p>In univariate analyses, the high school, college, and permanent addresses were all predictive of rural practice.</p> <p>In the multivariate analysis, only the "grew up rural" self-description was predictive of rural practice location using three of the definitions of rural.</p> <p>In a secondary analysis, self-description of growing up rurally and applicants' career preferences at matriculation were predictors of rural practice.</p>	Physicians' self-description about having grown up in a rural area was the best predictor of rural practice. Recruiting more applicants who match this definition of rural background should increase the number of rural physicians.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Playford et al. (2006)	Going country: rural student placement factors associated with future rural employment in nursing and allied health	Western Australia	Allied health and nursing students from three Western Australian universities who had taken a rural placement in their final year of study between 2000 and 2003; n=429	Longitudinal survey; the years prior to- and post-graduation	Of 429 participating allied health and nursing graduates, 25% had entered the rural workforce.  Factors with a positive bivariate association with rural employment were: rural background, health discipline, self-reported value of placement, non-compulsory rural placement, and placements of four weeks or less.  After controlling for rural background, the value and duration of the placement were significantly associated with rural employment.	Previous work showing that any prior rural background is a significant predictor of rural work.  Rural practitioners of both urban and rural origin who undertake voluntary rural placements are more likely to enter rural practice and consequently mandatory placements may not be helpful to increasing the rural workforce.  The quality of a placement is a highly significant factor associated with future workplace choice.
Playford et al. (2010)	Does teaching an entire nursing degree rurally have more workforce impact than rural placements?	Western Australia	Nursing graduates; n=149	Longitudinal cohort study; Rural nursing school and urban nursing school	The rural school graduated a significantly higher proportion of rural-working graduates.  However there was no difference in the rural workforce choices of students from rural backgrounds, irrespective of their university location.	Both rural universities and affirmative action for selecting rural students into nursing programmes are effective workforce strategies, but that rural campuses have the added benefit of encouraging under-represented rural students to access university education.
Ranmuthugala et al. (2007)	Where is the evidence that rural exposure increases uptake of rural medical practice?			Literature Reviews	The inconsistency in the Australian evidence relating rural exposure to uptake of a rural career is clear. Few studies attempt to identify the influence of specific aspects of rural training programs (in terms of nature, timing, frequency and duration) on uptake of rural practice. Others fail to distinguish between structured short term rural placements and the longer longer-term.	There is a need to identify which aspects are most effective in increasing the uptake of rural practice, thereby helping to address the medical workforce shortage experienced in rural Australia.
Reardon et al. (2010)	Nursing recruitment and retention issues: similarities and differences rural United States and Australia	Australia and the United States	Rural based Nurses in Australia and the United States; Sample size has not been mentioned in the abstract	Survey; Factorial analysis	Significant differences were identified by country. The workplace culture and morale, rewarding existing employee achievements, and increase flexible working conditions were highly rated by participants when they were asked what areas management needed to focus on to improve recruitment and retention.	The findings indicated non-financial issues rated high as factors nurses considered when leaving rural employment.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Saini et al. (2012)	What impedes working in rural areas? A study of aspiring doctors in the National Capital Region, India	India	Medical students; n=201	A cross-sectional study; semi-open-ended questionnaire	<p>Of the respondents, 160 (79.6%) had a rural background. In total 110 (54.7%) indicated an interest in working in a rural area after graduation with 68 (33.8%) willing to set up their practice in a rural area.</p> <p>Students with a rural background were more likely to be willing to practice in a rural area. Those whose parents were highly qualified (postgraduate education or higher) were significantly less likely to practice in a rural area.</p> <p>Potential benefits of working in a rural area included 'health services for the poor/ benefit for the nation', and 'gain of knowledge about rural people and their diseases'. Potential drawbacks included 'lack of infrastructural facilities', 'less salary' and 'low standard of living'.</p>	The medical students surveyed had a positive view of the importance of rural health care. However, factors such as infrastructure and salary were perceived as potential barriers to a career in rural health.
Schofield et al. 2007	Decision criteria in health professionals choosing a rural practice setting: development of the Careers in Rural Health Tracking Survey (CIRHTS)	Australia	Students on placement at the Northern Rivers University Department of Rural Health, New South Wales	Survey (The Careers in Rural Health Tracking Survey )	The Careers in Rural Health Tracking Survey questions both students and their spouses about employment preferences and related family factors. It contains questions about the size of towns respondents would be willing to work in, and when they would consider working there. It also asks in which regions of Australia students and partners would be prepared to work.	Information about the time dimension in decision-making, areas most likely to face shortages, and about the types of clinicians most likely to work in certain regions, will be crucial when developing initiatives to attract new graduates to rural practice.
Schofield et al. (2009)	Where do students in the health professions want to work?	Australia	Medical, nursing and allied health students; n=121	The Careers in Rural Health Tracking Survey	<p>Students showed a preference for working in large urban centres within one year, but would consider moving to a more rural location later in life.</p> <p>Only 10% of students surveyed said they would never work in a rural community with a population of less than 10,000. Almost half the sample (45%) reported wanting to work overseas within five years.</p> <p>The type of work available in rural areas was found to be the factor most likely to encourage students to practice rurally, followed by career opportunities and challenge.</p>	The decision to practise rurally is the result of a complex interaction between a number of factors including ethnicity, discipline, age and sex, among others. Incentives that aim to entice all students to rural practice while considering only one of these variables are likely to be inadequate.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Serneels et al. (2010)	Who wants to work in a rural health post? The role of intrinsic motivation, rural background and faith-based institutions in Ethiopia and Rwanda	Rwanda	Nursing and medical students in Rwanda; n=412	A cohort survey; a regression analysis	Health workers with higher intrinsic motivation--measured as the importance attached to helping the poor- as well as those who had grown up in a rural area and Adventists who had participated in a local bonding scheme were all significantly more willing to work in a rural area.	Intrinsic motivation and rural origin play an important role in health workers' decisions to work in a rural area, in addition to economic incentives, while faith-based institutions can also influence the decision.
Silagy & Piterman (1991)	Attitudes of senior medical students from two Australian schools towards rural training and practice	Victoria, Australia	Final-year medical students; n=314	A cross-sectional, self-administered questionnaire survey; factor analysis	The majority of the students expressed a desire to do their internships and postgraduate training in a metropolitan hospital.  A strong relationship was observed between a student's rural background and the student's subsequent intention to train and work in a rural area.	The majority of medical students favour a metropolitan training post.
Smith et al. (2001)	Factors influencing student nurses in their choice of a rural clinical placement site	Queensland, Australia	Final-year Bachelor of Nursing students; n = 137	Questionnaire survey design	Possession of a rural background, previous work experience in a rural community and family, financial and/or employment commitments all influenced students' choice of undertaking a rural clinical placement.  Students who have previously lived and/or worked in a rural area are more likely to choose a rural setting for clinical placements or postgraduate employment.	The value of rural clinical placements as a method of increasing awareness of employment opportunities in the rural setting is considerable. Family, financial and employment commitments should be considered in the development of recruitment and retention strategies for health professionals to rural areas.
Stagg et al. (2009)	A new model to understand the career choice and practice location decisions of medical graduates	Australia	Graduates of The South Australian Flinders University Parallel Rural Community Curriculum; n=46	A retrospective survey	Graduates in a general practice vocational training program are more likely to be on a rural career pathway than graduates in a specialty other than general practice.  A key influence on graduates' practice location is geographic location prior to entering medical school.  Key influences on graduates choosing a rural career pathway are: having a spouse/partner with a rural background; clinical teachers and mentors; the extended rural based undergraduate learning experience; and a specialty preference for general practice.	The PRCC is influencing graduates to choose a rural career path. The PRCC program affirms the career preferences of rural origin students while graduates with little rural exposure prior to the PRCC report being positively influenced to pursue a rural career path. The Four Qs Model is a useful model in that it demonstrates consistent themes in the characteristics of PRCC graduates and assists understanding of why they choose a rural medical career.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Stratton et al. (1998)	Recruitment barriers in rural community hospitals: a comparison of nursing and non-nursing factors	USA	Directors of nursing (DONs) practicing in rural community hospitals; n=164	Survey; Exploratory factor analysis	<p>Directors of nursing reported community-related barriers such as spouse's employment as the most severe obstacles to successful registered nurse recruitment. However, upon examination conducted by using multiple regression analyses, only those factors related to nursing delivery and professional interaction were found to be statistically significant predictors of existing staff RN full-time equivalency vacancy rates.</p> <p>The barrier deemed to be the most severe was "employment opportunities for spouse," which is more reflective of local and regional economic concerns than of staffing or patient care issues.</p> <p>Among those barriers classified as directly related to nursing, salary was perceived by DONs to be most severe in their efforts to recruit RNs to their respective rural hospital settings.</p>	Given that barriers related to individual nursing staffs are likely to be far more amenable to change than those associated with rural environments, these findings offer encouragement to nursing administrators who are faced with the difficulties of attracting RNs to rural practice settings.
Szigeti et al. (1991)	Barriers to the retention of registered and licensed practical nurses in small rural hospitals	North Dakota	RNs and LPNs who worked in North Dakota hospitals with fewer than 100 beds; n=291	Mail questionnaires survey	Overall job satisfaction and performance constraints were the only variables to make significant contributions to the prediction of turnover intention for both RNs and LPNs.	Clinical ladders for promotions, the identification of potential performance constraints, and supervisory training are suggested as target areas in which rural hospitals might focus attention for managing turnover in RNs and LPNs.
Turner & Scott (2007)	University rural health clubs: nurturing the future Australian rural workforce	Australia	The student members of these clubs throughout Australia comprise the National Rural Health Network (NRHN)	Report	Key features of RHC and the NRHN are: (1) providing positive rural experiences; (2) peer promotion of rural health; (3) personal and professional development; (4) providing a volunteer workforce for rural health initiatives; and (5) cross-disciplinary interaction. The NRHN is currently investigating methods to quantify the impact of the RHC on the career choices of potential rural health professionals.	The NRHN and its constituent clubs are student-driven initiatives occupying a unique place in addressing the rural workforce shortage. Although little formal evidence exists for their success, the issues raised in this article illustrate their importance and broader benefits in this field.

Author	Title	Setting	Participants	Design and Methods	Main findings	Conclusions
Wilkinson et al. (2003)	Impact of undergraduate and postgraduate rural training, and medical school entry criteria on rural practice among Australian general practitioners: national study of 2414 doctors	Australia	Rural and urban general practitioners; n=2414	Questionnaire survey	<p>Rural GPs were more likely to report having had any rural undergraduate training (odds ratio 1.61) than were urban GPs.</p> <p>Rural GPs were much more likely to report having had rural postgraduate training (OR 3.14).</p> <p>As the duration of rural postgraduate training increased so did the likelihood of working as a rural GP.</p> <p>South Australians whose final high school year was rural were more likely to be rural GPs.</p>	Undergraduate rural training, postgraduate training and medical school entry criteria favouring rural students, all are associated with an increased likelihood of being a rural GP.
Wilson et al. (2009)	A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas			Literature review	Five intervention categories were identified in the literature relating to redress the inequitable distribution of healthcare professionals to rural and remote areas: Selection, Education, Coercion, Incentives and Support.	Although coercive strategies address short-term recruitment needs, little evidence supports their long-term positive impact. Current evidence only supports the implementation of well-defined selection and education policies, although incentive and support schemes may have value.
Wood (1998)	Effects of educational focus on a graduate nurse's initial choice of practice area	South-eastern United States	Nurses graduates; n=136	Mail questionnaire survey	<p>Students who attended a nursing program focusing on rural nursing were twice more likely to practice in rural areas than nurses who completed an urban-focused nursing program.</p> <p>Another factor that had an impact on the graduate nurses' choice of practice area was the students' original places of residence.</p> <p>Age and marital status, two factors that have been found to affect mobility of graduates, were not significant determinants in graduate choice of initial practice area.</p>	Students attending rural community nursing educational focus program were more likely to come from rural areas, complete their education, and return to rural areas at twice the rate of rural students who completed their education in the urban program.

## **Appendix 2: Ethical Review Form for the Exploratory Interviews**

**University of Edinburgh  
School of Health and Social Science**

**RESEARCH AND RESEARCH ETHICS COMMITTEE  
Ethical review form for level 2**



<b>1 THE RESEARCHERS</b>		
Your name and position		YUEXIAN TAO, PhD student
Proposed title of research		Nursing students' attitudes towards working in rural areas
Funding body		No
Time scale for research		May 2011 – May 2012
List those who will be involved in conducting the research, including names and positions (e.g. 'PhD student')		Dr. Elaine Haycock-Stuart, Supervisor Dr. Sheila Rodgers, Supervisor
<b>2 RISKS TO, AND SAFETY OF, RESEARCHERS</b>		
Those named above need appropriate training to enable them to conduct the proposed research safely and in accordance with the ethical principles set out by the College	<b>No</b>	
Researchers are likely to be sent or go to any areas where their safety may be compromised, or they may need support to deal with difficult issues.	<b>No</b>	
Could researchers have any conflicts of interest?	<b>No</b>	

<b>3 RISKS TO, AND SAFETY OF, PARTICIPANTS</b>		
Could the research induce any psychological stress or discomfort?	<b>No</b>	
Does the research involve any physically invasive or potentially physically harmful procedures?	<b>No</b>	
Could this research adversely affect participants in any other way?	<b>No</b>	
<b>4 DATA PROTECTION</b>		
Will any part of the research involve audio, film or video recording of individuals?	<b>Yes</b>	The interviews will be recorded by a digital recorder.
Will the research require collection of personal information from any persons without their direct consent?	<b>No</b>	
How will the confidentiality of data, including the identity of participants (whether specifically recruited for the research or not) be ensured?		Transcripts will be anonymous. They will be coded and be kept locked and separated from the participant demographic information.  No name or identifiable information will be used in any reports or publications resulting from the study.
Who will be entitled to have access to the raw data?		The researcher and two supervisors: Dr. Elaine Haycock-Stuart and Dr. Sheila Rodgers
How and where will the data be stored, in what format, and for how long?		Paper documents, including the participant demographic information, will be stored securely in locked cabinets.  Interview audio records will be saved in password protected computers.

What steps have been taken to ensure that only entitled persons will have access to the data?		Access to the documents will be strictly limited to the researcher and two supervisors. Passwords will be needed to open the data files in the computer.
How will the data be disposed of?		All documents including the names of participants will be destroyed within five years after the study is finished.
How will the results of the research be used?		The results will be disseminated by publishing research paper, and presenting the study in research seminars, national and international conferences.
What feedback of findings will be given to participants?		The information of the publication of the findings.
Is any information likely to be passed on to external companies or organisations in the course of the research?	<b>No</b>	
Will the project involve the transfer of personal data to countries outside the European Economic Area?	<b>No</b>	
<b>5 RESEARCH DESIGN</b>		
The research involves living human subjects specifically recruited for this research project  <i>If 'no', go to section 6</i>	<b>Yes</b>	
How many participants will be involved in the study?		Ten nursing students will be selected as interviewees.

What criteria will be used in deciding on inclusion/exclusion of participants?		Final year nursing students who are currently studying in the study setting, China
How will the sample be recruited?		After obtaining potential institutions' permission, advertised by meetings and/or emails to the potential students, then select the suitable interviewees.  All students have the right not to take part in the interview and the survey.
Will the study involve groups or individuals who are in custody or care, such as students at school, self-help groups, and residents of nursing home?	<b>No</b>	
Will there be a control group?	<b>No</b>	
What information will be provided to participants prior to their consent? (e.g. information leaflet, briefing session)		A research information sheet
Participants have a right to withdraw from the study at any time. Please tick to confirm that participants will be advised of their rights, including the right to continue receiving services if they withdraw from the study.	<input checked="" type="checkbox"/>	This right will be advised in the process of recruitment verbally and will be iterated in the research information sheet and consent form in written.
Will it be necessary for participants to take part in the study without their knowledge and consent? (e.g. covert observation of people in non-public places)	<b>No</b>	
Where consent is obtained, what steps will be taken to ensure that a written record is maintained?		The consent form will be signed by the participants and the researcher, and a copy will be retained by both parties.

In the case of participants whose first language is not English, what arrangements are being made to ensure informed consent?		All participants are Chinese, they can read and speak Mandarin, thus the consent form will be written in Chinese and the interviews will be conducted in Chinese.
Will participants receive any financial or other benefit from their participation?	<b>No</b>	
Are any of the participants likely to be particularly vulnerable, such as elderly or disabled people, adults with incapacity, your own students, members of ethnic minorities, or in a professional or client relationship with the researcher?		Students in Hangzhou Normal University, where I work, will be invited to participate in the study, but I am not directly teaching them, and they are all adult final year university students.
Will any of the participants be under 16 years of age?	<b>No</b>	
Do the researchers named above need to be cleared through the Disclosure/Enhanced Disclosure procedures?	<b>No</b>	
Will any of the participants be interviewed in situations which will compromise their ability to give informed consent, such as in prison, residential care, or the care of the local authority?	<b>No</b>	
<b>6 EXTERNAL PROFESSIONAL BODIES</b>		
Is the research proposal subject to scrutiny by any external body concerned with ethical approval?	<b>No</b>	
If so, which body?		
Date approval sought		

Outcome, if known or		
Date outcome expected		
<b>7 ISSUES ARISING FROM THE PROPOSAL</b>		
<p>In my view, ethical issues have been satisfactorily addressed</p> <p>Signature: Yuexian Tao</p> <p>Date : 5th April, 2011</p>		

## **Appendix 3: Research Information Sheet for Interview Participants**



Nursing Studies  
School of Health in Social Science  
The University of Edinburgh  
Medical School  
Teviot Place  
Edinburgh EH8 9AG  
Telephone: +44 131 650 3889  
+86 571 28865393

### **Research Information Sheet for Interview Participants**

**Title of Research:** Nursing students' attitudes towards working in rural areas

**Name of the Researcher:** Yuexian Tao

**Supervisors:** DR Elaine Haycock-Stuart; DR Sheila Rodgers

Dear students,

You are being invited to participate in a research interview. However, before you decide whether to accept this invitation you need to know what this study is about, what would you have to do and if there are any potential risks. The following provides information about the study.

#### **1. Who is the researcher?**

The researcher of this study is Yuexian Tao, a PhD student in the School of Health in Social Science at the University of Edinburgh. This study is conducted under the supervision of two Lecturers at the University of Edinburgh: Dr. Elaine Haycock-Stuart and Dr. Sheila Rodgers.

#### **2. What is the Purpose of the study**

The purpose of the interview is to understand students' perspectives towards working in rural areas. It will provide useful information for the efficient recruitment of rural nurses, and evidence for government policy makers. It will also be helpful for developing curriculum that aim to cultivate rural nurses.

### **3. What would I have to do?**

If you agree to participate in this research study, the following will occur:

- You will be asked to participate in an individual interview lasting between 30 and 40 minutes.
- You will be asked to discuss the following topics: perspectives on rural nursing practice, experience in rural nursing practice, and your career intentions.
- You will also be asked your age, gender and details of the educational program you are currently attending.
- If you agree to participate in this research study, an audio recording of this interview will be made for the purpose of the research.

### **4. Confidentiality**

The data gathered from this study will be kept confidential. No individual identities will be used in any reports or publications resulting from the study. All audio recordings and transcripts will be given codes and stored separately from any names or other identification information of the participants. Research information will be kept in locked files at all times. Only the researcher and her supervisors will have access to the files and the audio recordings. You will be given a copy of this consent form to keep.

### **5. Are there possible risks in taking part?**

You will be asked about some personal opinions and you might feel uncomfortable talking about some things. However you are free to decline to answer any questions that you do not wish to answer.

### **6. Are there any direct benefits and compensation for taking part?**

There will be no direct benefits for you if you participate in this study, and no compensation will be received for the interview.

### **7. What will be the findings used for?**

The findings of the study will be used for the completion of the researchers' PhD thesis; and the researcher may also seek to publish these findings in academic journals or publications.

**8. Do I have to take part?**

No. Participation in the research study is voluntary. It is entirely up to you whether or not you take part in this study.

**9. Can I change my mind?**

You are free to decline to participate in this research study, or you may withdraw your participation at any point of time.

**10. How to contact the researcher, if you have any question about the study**

Please contact Yuexian Tao if you want to take part in the study or have any further questions. Email: [taoyuexian@yahoo.com.cn](mailto:taoyuexian@yahoo.com.cn); Telephone: +86 57128865393; Mobile phone: +86 13306506430 (China), +44 07553196708 (UK).

If you want to speak to her supervisors about this study you can contact to Dr. Elaine Haycock-Stuart at [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk) or to Dr. Sheila Rodgers at [s.rodgers@ed.ac.uk](mailto:s.rodgers@ed.ac.uk).

If you wish to speak to someone who is not involved in this study about this study, please contact Dr Graeme Smith at [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk) or phone +44 (0)131 650 3901.

Address for all correspondence:

School of Health in Social Science  
The University of Edinburgh  
Medical School, Doorway6  
Teviot Place  
Edinburgh EH8 9AG



## Appendix 4: Interview Consent Form



Nursing Studies  
School of Health in Social Science  
The University of Edinburgh  
Medical School  
Teviot Place  
Edinburgh EH8 9AG  
Tele +44 131 650 3889

### Interview Consent Form

**Title of Study:** Nursing Students' Attitudes towards Working in Rural Areas

**Name of Researchers:** Yuexian Tao

**Supervisors:** DR Elaine Haycock-Stuart; DR Sheila Rodgers

**Please initial box**

1. I confirm that I have read the information sheet for the above study as provided by the researcher.
2. I am aware that my participation in this interview is voluntary and that I am free to withdraw at any time without having to give an explanation.
3. I agree for the interview being electronically recorded and understand that this recording will be used for research purposes only.
4. I understand that the data gathered in this study is confidential and anonymous with respect to my personal identity and that the findings will be published.
5. Any questions I have asked about the purpose and nature of the interview have been answered.
6. I agree to be interviewed in the above study.

\_\_\_\_\_  
Name of Participant                      Date                      Signature

\_\_\_\_\_  
Name of Researcher                      Date                      Signature



## ***Appendix 5: Interview Schedule***

### **Interview Schedule**

Nursing students' perspectives on rural nursing practice

<b>Name:</b>	<b>Date:</b>	<b>Site:</b>
<b>Greeting and Main Steps</b>		
1. Greeting		
2. Signing the consent form		
3. Explaining the audio recorder		
<b>Topics</b>		
<b>1. Experience of living or working in rural areas</b>		
Have you ever lived in a rural area? If yes, what was this experience like?		
Have you had any experience of working in rural areas? (including rural placement)		
What was positive about the experience?		
What was negative about the experience?		
How have those experiences influenced you?		

## **2. Difference between working in rural areas and urban areas**

How do you think working in a rural area differs compared with an urban area?

Prompt questions

Which would you prefer and why?

Which do you prefer least and why?

What are the positive and negative aspects and why?

## **3. Decision making**

Have you thought about working in rural areas after you qualify as a nurse?

Do you have any plans to work in the rural areas after you qualify? If so why? If not why not?

What aspects influence your decision to work in a rural area or not?

#### **4. Career impacts**

How do you see the impact of working in rural areas on your career in the short term (negative and positive)?

How do you see the impact of working in rural areas on your career in the long term (negative and positive)?

What things could be done to make working in a rural area more attractive to you?

#### **5. Life or family life impact**

What impact would working in rural areas have on your life or family life?

What things could be done to make working in a rural area more attractive to you and your family?

## Demographic Information

**Age:** Years ( )

**Gender:** 1. Male 2. Female

**Background:** 1. Urban area 2. Rural area

**Lived in a rural area:** 1. No 2. Yes, years ( )

**Working experience:** 1. No 2. Yes, years ( )

**Program attended:** 1. Diploma 2. Associate 3. Bachelor's 4. Master's

**Rural placement:** 1. No 2. Yes, months ( )

## Others

## Appendix 6: Ethical Review Form for the Survey

University of Edinburgh  
School of Health is Social Science

RESEARCH AND RESEARCH ETHICS COMMITTEE  
Ethical review form for level 2 and level 3 auditing



<b>1 THE RESEARCHERS</b>		
Your name and position		YUEXIAN TAO, PhD student
Proposed title of research		Nursing students' attitudes towards working in rural areas
Funding body		
Time scale for research		October 2011 – December 2012
List those who will be involved in conducting the research, including names and positions (e.g. 'PhD student')		Dr. Elaine Haycock-Stuart, Supervisor Dr. Sheila Rodgers, Supervisor
<b>2 RISKS TO, AND SAFETY OF, RESEARCHERS</b>		
Those named above need appropriate training to enable them to conduct the proposed research safely and in accordance with the ethical principles set out by the College	<b>No</b>	
Researchers are likely to be sent or go to any areas where their safety may be compromised, or they may need support to deal with difficult issues.	<b>No</b>	
Could researchers have any conflicts of interest?		A little bit, as being a teacher in Hangzhou Normal University and this is one of the potential universities which may be involved in the survey.

<b>3 RISKS TO, AND SAFETY OF, PARTICIPANTS</b>		
Could the research induce any psychological stress or discomfort?	<b>No</b>	
Does the research involve any physically invasive or potentially physically harmful procedures?	<b>No</b>	
Could this research adversely affect participants in any other way?	<b>No</b>	
<b>4 DATA PROTECTION</b>		
Will any part of the research involve audio, film or video recording of individuals?	<b>Yes</b>	The part of the interview involves audio recording. An ethical approval for that part has been obtained and the interviews have been finished.
Will the research require collection of personal information from any persons without their direct consent?	<b>No</b>	
How will the confidentiality of data, including the identity of participants (whether specifically recruited for the research or not) be ensured?		The questionnaire survey is anonymous; Coding numbers will only serve for the purposes of data analysis; No name or identifiable information will be used in any reports or publications resulting from the study.
Who will be entitled to have access to the raw data?		The researcher and her two supervisors: Dr. Elaine Haycock-Stuart and Dr. Sheila Rodgers
How and where will the data be stored, in what format, and for how long?		Paper documents, including the participant demographic information, completed questionnaires will be stored securely in locked cabinets.
What steps have been taken to ensure that only entitled persons will have access to the data?		Access to the documents will be strictly limited to the researcher and passwords will be needed to open the data files in the computer.

How will the data be disposed of?		The completed questionnaires will be destroyed five years after the study is finished.
How will the results of the research be used?		The results will be disseminated by publishing research paper, and presenting the study in research seminars, national and international conferences.
What feedback of findings will be given to participants?		The information of the publication of the findings.
Is any information likely to be passed on to external companies or organisations in the course of the research?	<b>No</b>	
Will the project involve the transfer of personal data to countries outside the European Economic Area?	<b>No</b>	
<b>5 RESEARCH DESIGN</b>		
The research involves living human subjects specifically recruited for this research project <i>If 'no', go to section 6</i>	<b>Yes</b>	
How many participants will be involved in the study?		300-500 final year students will be invited to complete the questionnaire.
What criteria will be used in deciding on inclusion/exclusion of participants?		Final year nursing students who are currently studying in the study setting, China
How will the sample be recruited?		Participants in questionnaire survey are recruited by: select institutions and units by simple random sampling, all students in the selected units will be invited to complete the questionnaire, except those who have been involved in the interviews or the pilot study. All students have the right not to take part in the survey.
Will the study involve groups or individuals who are in custody or care,	<b>No</b>	

such as students at school, self-help groups, and residents of nursing home?		
Will there be a control group?	<b>No</b>	
What information will be provided to participants prior to their consent? (e.g. information leaflet, briefing session)		information leaflet and briefing session
Participants have a right to withdraw from the study at any time. Please tick to confirm that participants will be advised of their rights, including the right to continue receiving services if they withdraw from the study.	<input checked="" type="checkbox"/>	
Will it be necessary for participants to take part in the study without their knowledge and consent? (e.g. covert observation of people in non-public places)	<b>No</b>	
Where consent is obtained, what steps will be taken to ensure that a written record is maintained?		The consent form will not be signed, the return of the questionnaire as a form of consent.
In the case of participants whose first language is not English, what arrangements are being made to ensure informed consent?		All the questionnaire and questionnaire cover letter will be written in Chinese.
Will participants receive any financial or other benefit from their participation?	<b>No</b>	
Are any of the participants likely to be particularly vulnerable, such as elderly or disabled people, adults with incapacity, your own students, members of ethnic minorities, or in a professional or client relationship with the researcher?	<b>Yes</b>	Some participants may be students in Hangzhou Normal University, and I am a teacher there. But currently I am not taken any courses in Hangzhou Normal University as a full-time student in the University of Edinburgh.

Will any of the participants be under 16 years of age?	<b>No</b>	
Do the researchers named above need to be cleared through the Disclosure/Enhanced Disclosure procedures?	<b>No</b>	
Will any of the participants be interviewed in situations which will compromise their ability to give informed consent, such as in prison, residential care, or the care of the local authority?	<b>No</b>	
<b>6 EXTERNAL PROFESSIONAL BODIES</b>		
Is the research proposal subject to scrutiny by any external body concerned with ethical approval?	<b>No</b>	
If so, which body?		
Date approval sought		
Outcome, if known or		
Date outcome expected		
<b>7 ISSUES ARISING FROM THE PROPOSAL</b>		
<p>In my view, ethical issues have been satisfactorily addressed.</p> <p>Signature: Yuexian Tao</p> <p>Date: 28th, September 2011</p>		



## **Appendix 7: Research Information Sheet of the Survey – to Nursing Schools**



Nursing Studies  
School of Health in Social Science  
The University of Edinburgh  
Medical School  
Teviot Place  
Edinburgh EH8 9AG  
Telephone: +44 131 650 3889  
+86 571 28865393

### **Research Information Sheet of the Survey – to Nursing Schools**

**Title of Research:** Nursing students' attitudes towards working in rural areas

**Name of the Researcher:** Yuexian Tao

**Supervisors:** DR Elaine Haycock-Stuart; DR Sheila Rodgers

\*\*\* Professor/ Director,

Thank for your time. I am doing a research about nursing students' views towards rural nursing practice. Now I am in the stage of conducting a survey. Several nursing schools will be invited to take part into the survey. Your school is one of those to be invited.

I want to invite 50-80 final year nursing students in your nursing school to take part in the survey, the time of conduction will be at the period of December 2011 to May 2012. The way of administration is to distribute the questionnaires to students in classrooms in universities or meeting rooms and classrooms in the student placement institutions. The questionnaire will take about 15-20 minutes to complete.

If your school is willing to take part in, the things which need you to cooperate are as the followings:

- (1) Provide the information about the final year nursing students, including the number of students, where their classrooms are or where their placement institutions are, the time

available for conducting the survey. In specific, if there are times for students to gather in the school during this period, please inform me about these times and the places; if the students no longer gather together during this period, the researcher will go to placement institutions to complete the survey, please inform where the students are taking their placement.

- (2) Please help to distribute the information sheet of the survey to students (see the attachment), such as by email or by teachers, informing the students about the survey in advance.

Please contact Yuexian Tao if you have any further questions. Email: [taoyuexian@126.com](mailto:taoyuexian@126.com); Telephone: +86 57128865393; Mobile phone: +86 13306506430 (China), +44 07553196708 (UK).

If you want to speak to her supervisors about this study you can contact to Dr. Elaine Haycock-Stuart at [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk) or to Dr. Sheila Rodgers at [s.rodgers@ed.ac.uk](mailto:s.rodgers@ed.ac.uk).

If you wish to speak to someone who is not involved in this study about this study, please contact Dr. Graeme Smith at [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk) or phone +44 (0)131 650 3901.

Address for all correspondence:

School of Health in Social Science  
The University of Edinburgh  
Medical School, Doorway6  
Teviot Place  
Edinburgh EH8 9AG

## **Appendix 8: Research Information Sheet of the Survey – to Nursing Students**



Nursing Studies  
School of Health in Social Science  
The University of Edinburgh  
Medical School  
Teviot Place  
Edinburgh EH8 9AG  
Telephone: +44 131 650 3889  
+86 571 28865393

### **Research Information Sheet of the Survey – to Nursing Students**

**Title of Research:** Nursing students' attitudes towards working in rural areas

**Name of the Researcher:** Yuexian Tao

**Supervisors:** DR Elaine Haycock-Stuart; DR Sheila Rodgers

**Dear nursing students,**

You are being invited to participate in a research questionnaire survey. However, before you decide whether to accept this invitation you need to know what this study is about, what would you have to do and if there are any potential risks. The following provides information about the study.

#### **1. Who is the researcher?**

The researcher of this study is Yuexian Tao, a PhD student in the School of Health in Social Science at the University of Edinburgh. This study is conducted under the supervision of two Lecturers at the University of Edinburgh: Dr. Elaine Haycock-Stuart and Dr. Sheila Rodgers.

#### **2. What is the Purpose of the study**

The purpose of the study is to understand students' perspectives towards working in rural areas. It will provide useful information for the efficient recruitment of rural nurses, and

evidence for government policy makers. It will also be helpful for developing curriculum that aim to cultivate rural nurses.

### **3. What would I have to do?**

You will be asked to fill a self-completion questionnaire. It will take you about 15-20 minutes to finish. The topics included in the questionnaire are: (1) the extent of agreement on some perspectives on rural nursing practice; (2) your career intentions. (3) your age, gender and which level of the educational program currently attending, whether you were born in rural or urban, whether you take rural placement during nursing study. This information is required to enable the researcher to analysis the data.

### **4. Confidentiality**

The questionnaire survey is anonymous. Each completed questionnaire is given a code number for data analysis. The data gathered from this study will be kept confidential. After the study completed for five years all completed questionnaires will be destroyed.

### **5. Are there possible risks in taking part?**

There are no potential risks in taking part in this questionnaire survey.

### **6. Are there any direct benefits for taking part?**

An ink pen will be provided to each participant by the researcher during the participation. No other direct benefits or compensation will be received for you participating in this study.

### **7. Do I have to take part?**

No. Participation in the research study is voluntary. It is entirely up to you whether or not you take part in this study. I appreciate your participation.

### **8. How to contact the researcher if you have any question?**

Please contact Yuexian Tao if you have any further questions. Email: taoyuexian@126.com; Telephone: +86 57128865393; Mobile phone: +86 13306506430 (China), +44 07553196708 (UK).

If you want to speak to her supervisors about this study you can contact to Dr. Elaine Haycock-Stuart at [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk) or to Dr. Sheila Rodgers at [s.rodgers@ed.ac.uk](mailto:s.rodgers@ed.ac.uk).

If you wish to speak to someone who is not involved in this study about this study, please contact Dr. Graeme Smith at [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk) or phone +44 (0)131 650 3901.

Address for all correspondence:

School of Health in Social Science  
The University of Edinburgh  
Medical School, Doorway6  
Teviot Place  
Edinburgh EH8 9AG



## **Appendix 9: The Questionnaire of the Pilot Study**



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School of Health in Social Science  
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Edinburgh EH8 9AG  
Telephone: +44 131 650 3889  
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# Questionnaire Cover Letter

**Title of Research:** Nursing students' attitudes towards working in rural areas

**Name of the Researcher/position:** Yuexian Tao / PhD student

**Supervisors:** DR. Elaine Haycock-Stuart; DR. Sheila Rodgers

Dear nursing students:

You are invited to participate in a survey about nursing students' attitudes towards working in rural areas. The purpose of this survey is to gain information about nursing students' views about working in rural areas. The results of this study are to assist policy development and rural nursing curriculum development. You are invited to participate in this survey by a basis of randomly selection. It will take you 15-20 minutes to complete this questionnaire.

The questionnaire survey is anonymous; you do not need to write down your name in the questionnaire. Each completed questionnaire is given a code number for data analysis. Your answers will be kept strictly confidential. After the study completed for two years all completed questionnaires will be destroyed.

Participation in the research study is voluntary. It is entirely up to you whether or not you take part in this study. I appreciate your participation and look forward to your

complete and candid responses.

If you have any questions about the survey, and how the information is used, please contact me. Email: [taoyuexian@yahoo.com.cn](mailto:taoyuexian@yahoo.com.cn); telephone: +86 57128865393; mobile phone: +86 13306506430(China). Address: Nursing College, Hangzhou Normal University, 16 Xuelin Street, Hangzhou, China, 310036.

If you want to speak to her supervisors about this survey you can contact to Dr. Elaine Haycock-Stuart at [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk) or to Dr. Sheila Rodgers at [s.rodgers@ed.ac.uk](mailto:s.rodgers@ed.ac.uk).

If you wish to speak to someone who is not involved in this study about this study, please contact Dr. Graeme Smith at [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk) or phone +44 (0)131 650 3901.

Address for all correspondence:

School of Health in Social Science  
The University of Edinburgh  
Medical School, Doorway6  
Teviot Place  
Edinburgh EH8 9AG

Sincerely,  
Yuexian Tao

## Nursing students' views about working in rural nursing practice

### Instruction:

Rural nursing practice refers to the nursing in the hospitals or the community centres or other health facilities in township or villages.

### Part A: Perspectives

**A1-A28. Please indicate the extent to which you agree or disagree with the following perspectives.** (For each row, please choose one answer that best represents your views by ticking the appropriate box)

<b>Perspectives</b>	<b><i>Strongly Disagree</i></b>	<b><i>Disagree</i></b>	<b><i>Neutral</i></b>	<b><i>Agree</i></b>	<b><i>Strongly Agree</i></b>
A1. Community amenities, public transport are poor in rural areas.					
A2. People in rural areas are friendly.					
A3. I like living in rural areas.					
A4. The financial rewards are higher for nurses working in urban rather than rural areas.					
A5. Working in a big hospital sounds to have more prestige than working in rural areas.					
A6. Working in the rural area is less stressful than in the urban area.					
A7. Workload for nurses in rural health facilities is light.					
A8. There are fewer night shifts for nurses in rural health facilities.					
A9. Working in a rural health facility allows more personal autonomy than in a city hospital.					
A10. Working in rural health facilities is lack of anonymity.					
A11. The skills used in rural nursing are simplex.					

<b><i>Perspectives</i></b>	<b><i>Strongly Disagree</i></b>	<b><i>Disagree</i></b>	<b><i>Neutral</i></b>	<b><i>Agree</i></b>	<b><i>Strongly Agree</i></b>
A12. I can learn more skills by working in a big hospital than working in rural areas.					
A13. There are more opportunities for training in the city.					
A14. Promotion to a nurse leader is easier in rural areas than in urban areas.					
A15. Promotion through professional grades is easier in rural areas than in urban areas.					
A16. It is difficult to undertake a further degree while working in rural areas.					
A17. The equipment in rural health facilities is poor.					
A18. The nurse-patient relationship is closer in rural health facilities than in the city.					
A19. I want to help the people in rural areas.					
A20. My family would not like me to work in a rural area.					
A21. Working in rural areas may reduce my child's education opportunity.					
A22. I may not be able to get a permanent nursing position in the city, while in rural areas I can.					
A23. I may not be able to find a job in the city, because there are too many nursing graduates nowadays.					
A24. It is not easy for nurses to change workplaces from rural areas to urban areas.					
A25. The current rural nursing recruitment policies are attractive to me.					
A26. A diverse range of skills are used in rural nursing.					
A27. Working in rural areas may reduce the opportunity of training.					
A28. Promotion through professional grades is more difficult in rural areas than in urban areas.					

## Part B: About Your Job Orientation

**B1. Indicate the extent of your preference to the following health institutions in your career. (Please circle one number)**

A. A hospital in capital cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

B. A hospital in county cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

C. A hospital in rural areas

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

D. A community centre in cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

E. A community centre in rural areas

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

**B2. Indicate the probability of your taking a rural job immediately after your graduation. (Circle one number)**

1	2	3	4	5	6	7	8	9	10
Extremely unlikely									Extremely likely

**B3. Indicate the probable duration of working in rural areas in your career. (Circle one)**

1. Never
2. Part of my career
3. Half of my career
4. Most of my career
5. All my career

**B4. What are the most important three reasons for you to consider not taking a rural job? (Please circle three)**

1. Community amenities, public transport are poor in rural areas.
2. The financial rewards are higher for nurses working in urban rather than rural areas.
3. Working in a big hospital sounds to have more prestige than working in rural areas.
4. Working in rural health facilities is lack of anonymity.
5. The skills used in rural nursing are simplex.
6. I can learn more skills by working in a big hospital than working in rural areas.
7. There are more opportunities for training in the city.
8. It is difficult to undertake a further degree while working in rural areas.
9. The equipment in rural health facilities is poor.
10. My family would not like me to work in a rural area.
11. Working in rural areas may reduce my child's education opportunity.
12. It is not easy for nurses to change workplaces from rural areas to urban areas.
13. Promotion through professional grades is more difficult in rural areas than in urban areas.
14. Others; please specify \_\_\_\_\_.

**B5. What are the most important three reasons for you to consider taking a rural job? (Please circle three)**

1. People in rural areas are friendly.
2. I like living in rural areas.
3. Working in the rural area is less stressful than in the urban area.
4. Workload for nurses in rural health facilities is light.
5. There are fewer night shifts for nurses in rural health facilities.
6. Working in a rural health facility allows more personal autonomy than in a city hospital.
7. Promotion to a nurse leader is easier in rural areas than in urban areas.
8. Promotion through professional grades is easier in rural areas than in urban areas.
9. The nurse-patient relationship is closer in rural health facilities than in the city.
10. I want to help the people in rural areas.
11. I may not be able to get a permanent nursing position in the city, while in rural areas I can.
12. I may not be able to find a job in the city, because there are too many nursing graduates nowadays.
13. The current rural nursing recruitment policies are attractive to me.
14. A diverse range of skills are used in rural nursing.
15. Others; please specify \_\_\_\_\_.

## **Part C: Demographic Information**

**C1. Are you a male or female? (Circle one)**

1. Male
2. Female

**C2. How old are you?**

(        ) years old

**C3. Were you born in an urban area or a rural area?** *(Circle one)*

1. An urban area
2. A rural area

**C4. Which educational program are you attending** *(Circle one)*

1. Diploma
2. Associate
3. Bachelor
4. Master
5. Other

**C5. Have you ever lived in rural areas?** *(Circle one)*

1. Yes
2. No *(go to question C7)*

**C6. How long have you ever lived in rural areas in your life?** *(Number the years)*

(        ) years

**C7. Have you taken a rural placement during your nursing study?** *(Circle one)*

1. Yes
2. No *(go to the end notice)*

**C8. How long have you been in rural placements during all your nursing study?** *(Number the months)*

(     ) months

**The end notice:**

Thank you for your participation. Please hand in the completed questionnaire to the researcher.

## ***Appendix 10: Results of the Pilot Study***

### **The Results of Data Analysis in the Pilot Study**

#### **The characteristics of participants**

The pilot study sample consisted of thirty participants. Among them, only one participant is male, all others are female. The average age was twenty years old. The majority of the participants were rural background students. Most of the students have rural living experience; the average length of living rurally was 13.2 years. Regarding the rural placement, among thirty students, only four have rural placement experience and for most of them the length of rural placement was less than one month.

#### **Students' perspectives about rural nursing practice**

According to the frequency table in part A, the majority of participants agreed with most of the perspectives in the item list, but seems to disagree with item A10 (Working in rural health facilities lacks anonymity), A16 (It is difficult to undertake a further degree while working in rural areas), A21 (Working in rural areas may reduce my child's education opportunity), and A23 (I may not be able to find a job in the city), A26 (A diverse range of skills are used in rural nursing). They were likely to have a neutral opinion on the Item A3 (I like living in rural areas), A20 (My family would not like me to work in a rural area); and they were also likely to take a neutral position in the item related to current rural nursing recruitment policies and whether promotion through professional grades is more difficult or easier in rural areas than in urban areas.

### Students' preferences towards different health institutions

In question B1, which asks their extent of preference towards different health institutions, the highest mean score appeared in B1B (preference of a hospital in county cities and B1D (preference of a community center in cities, with an average score of 7.47 and 7.13. In contrast, the average score for hospitals and community centers in rural areas was 5.43 and 5.10. These reflected that the rural areas were relatively less preferred by most of the participants in the pilot study.

**Table 1: The mean, median and mode in question B1**

	<i>Mean</i>	<i>Median</i>	<i>Mode</i>
B1A. preference of a hospital in capital cities	6.03	6	8
B1B. preference of a hospital in county cities	7.47	8	8
B1C. preference of a hospital in rural areas	5.43	5	5
B1D. preference of a community centre in cities	7.13	8	8
B1E. preference of a community centre in rural areas	5.10	5	6

### The probabilities of taking a rural job

Question B2 asks the probabilities of their taking a rural job right after their graduation, the average score is 3.63 in the ten-grade scale.

**Table 2: The mean, median and mode in question B2**

	<i>Mean</i>	<i>Median</i>	<i>Mode</i>
The probability of your taking a rural job right after your graduation	3.63	4	5

### **The probable duration of working in rural areas**

Question B3 investigates the probable duration of working in rural areas in their career. It is measured using five grades. The median and mode in this question is 2, which corresponds to the answer 'part of my career'. As most participants answered this question in a similar way, there is no substantial variation in the answers of this question. However, this information itself is of interest in this research.

### **The reasons for taking or not taking a rural job**

The most frequently reported reason for students not to work rurally is that the financial rewards are higher for nurses working in urban rather than rural areas. The second popular reason was related to the opportunities of training. The third popular reason was that they thought they could learn more skills by working in a big hospital than working in rural areas.

The most popular reason for students to consider taking a rural job is that working in a rural area is less stressful than in an urban area. The following options made up the second popular group of reasons for taking a rural job: fewer night shifts, liking living in rural areas and the nurse-patient relationship.



## ***Appendix 11: The Questionnaire of the Main Study***



Nursing Studies  
School of Health in Social Science  
The University of Edinburgh  
Medical School  
Teviot Place  
Edinburgh EH8 9AG  
Telephone: +44 131 650 3889  
+86 571 28865393

# Questionnaire cover letter

**Title of Research:** Nursing students' attitudes towards working in rural areas

**Name of the Researcher/position:** Yuexian Tao / PhD student

**Supervisors:** DR. Elaine Haycock-Stuart; DR. Sheila Rodgers

Dear nursing students:

You are invited to participate in a survey about nursing students' attitudes towards working in rural areas. The purpose of this survey is to gain information about nursing students' views about working in rural areas. The results of this study are to assist policy development and rural nursing curriculum development. You are invited to participate in this survey by a basis of random selection. It will take you 15-20 minutes to complete this questionnaire.

The questionnaire survey is anonymous; you do not need to write down your name in the questionnaire. Each completed questionnaire is given a code number for data analysis. Your answers will be kept strictly confidential. After the study completed for five years all completed questionnaires will be destroyed.

Participation in the research study is voluntary. It is entirely up to you whether or not you take part in this study. I appreciate your participation and look forward to your complete and candid responses.

If you have any questions about the survey, and how the information is used, please contact me. Email: [taoyuexian@yahoo.com.cn](mailto:taoyuexian@yahoo.com.cn); telephone: +86 57128865393; mobile phone: +86 13306506430 (China). Address: Nursing College, Hangzhou Normal University, 16 Xuelin Street, Hangzhou, China, 310036.

If you want to speak to her supervisors about this survey you can contact to Dr. Elaine Haycock-Stuart at [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk) or to Dr. Sheila Rodgers at [s.rodgers@ed.ac.uk](mailto:s.rodgers@ed.ac.uk).

If you wish to speak to someone who is not involved in this study about this study, please contact Dr. Graeme Smith at [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk) or phone +44 (0)131 650 3901.

Address for all correspondence:

School of Health in Social Science  
The University of Edinburgh  
Medical School, Doorway6  
Teviot Place  
Edinburgh EH8 9AG

Sincerely,  
Yuexian Tao

## Nursing students' views about working in rural nursing practice

### Instruction:

Rural nursing practice refers to the nursing in the hospitals or the community centres or other health facilities in township or villages.

### Part A: Perspectives

**A1-A26. Please indicate the extent to which you agree or disagree with the following perspectives.** (For each row, please choose one answer that best represents your views by ticking the appropriate box)

<i>Perspectives</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
A1. Community amenities, public transport are poor in rural areas.					
A2. People in rural areas are friendly.					
A3. I like living in rural areas.					
A4. The financial rewards are higher for nurses working in urban rather than rural areas.					
A5. Working in a big hospital sounds to have more prestige than working in rural areas.					
A6. Working in the rural area is less stressful than in the urban area.					
A7. Workload for nurses in rural health facilities is light.					
A8. There are fewer night shifts for nurses in rural health facilities.					
A9. Working in a rural health facility allows more personal autonomy than in a city hospital.					
A10. Working in rural health facilities is lack of anonymity.					
A11. The skills used in rural nursing are simplex.					
A12. A diverse range of skills are used in rural nursing.					

<b><i>Perspectives</i></b>	<b><i>Strongly Disagree</i></b>	<b><i>Disagree</i></b>	<b><i>Neutral</i></b>	<b><i>Agree</i></b>	<b><i>Strongly Agree</i></b>
A13. I can learn more skills by working in a big hospital than working in rural areas.					
A14. There are more opportunities for training in the city.					
A15. Promotion to a nurse leader is easier in rural areas than in urban areas.					
A16. Promotion through professional grades is more difficult in rural areas than in urban areas.					
A17. It is difficult to undertake a further degree while working in rural areas.					
A18. The equipment in rural health facilities is poor.					
A19. The nurse-patient relationship is closer in rural health facilities than in the city.					
A20. I want to help the people in rural areas.					
A21. My family would not like me to work in a rural area.					
A22. Working in rural areas may reduce my child's education opportunity.					
A23. I may not be able to get a permanent nursing position in the city, while in rural areas I can.					
A24. I may not be able to find a job in the city, because there are too many nursing graduates nowadays.					
A25. It is not easy for nurses to change workplaces from rural areas to urban areas.					
A26. The current rural nursing recruitment policies are attractive to me.					

## Part B: About Your Job Orientation

**B1. Indicate the extent of your preference to the following health institutions in your career. (Please circle one number)**

A. A hospital in capital cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

B. A hospital in county cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

C. A hospital in rural areas

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

D. A community centre in cities

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

E. A community centre in rural areas

Dislike					Like				
1	2	3	4	5	6	7	8	9	10

**B2. Indicate the probability of your taking a rural job right after your graduation. (Circle one number)**

1	2	3	4	5	6	7	8	9	10
Extremely unlikely									Extremely likely

**B3. Indicate the probable duration of working in rural areas in your career. (Circle one)**

1. Never
2. Part of my career
3. Half of my career
4. Most of my career
5. All my career

**B4. What are the most important three reasons for you to consider not taking a rural job? (Please circle three)**

1. Community amenities, public transport are poor in rural areas.
2. The financial rewards are higher for nurses working in urban rather than rural areas.
3. Working in a big hospital sounds to have more prestige than working in rural areas.
4. Working in rural health facilities is lack of anonymity.
5. The skills used in rural nursing are simplex.
6. I can learn more skills by working in a big hospital than working in rural areas.
7. There are more opportunities for training in the city.
8. It is difficult to undertake a further degree while working in rural areas.
9. The equipment in rural health facilities is poor.
10. My family would not like me to work in a rural area.
11. Working in rural areas may reduce my child's education opportunity.
12. It is not easy for nurses to change workplaces from rural areas to urban areas.
13. Promotion through professional grades is more difficult in rural areas than in urban areas.
14. Others; please specify \_\_\_\_\_.

**B5. What are the most important three reasons for you to consider taking a rural job? (Please circle three)**

1. People in rural areas are friendly.
2. I like living in rural areas.
3. Working in the rural area is less stressful than in the urban area.
4. Workload for nurses in rural health facilities is light.
5. There are fewer night shifts for nurses in rural health facilities.
6. Working in a rural health facility allows more personal autonomy than in a city hospital.
7. Promotion to a nurse leader is easier in rural areas than in urban areas.
8. Promotion through professional grades is easier in rural areas than in urban areas.
9. The nurse-patient relationship is closer in rural health facilities than in the city.
10. I want to help the people in rural areas.
11. I may not be able to get a permanent nursing position in the city, while in rural areas I can.
12. I may not be able to find a job in the city, because there are too many nursing graduates nowadays.
13. The current rural nursing recruitment policies are attractive to me.
14. A diverse range of skills are used in rural nursing.
15. Others; please specify \_\_\_\_\_.

## **Part C: Demographic Information**

**C1. Are you a male or female? (Circle one)**

1. Male
2. Female

**C2. How old are you? (Last birthday)**

(       ) years old

**C3. Were you born in an urban area or a rural area?** *(Circle one)*

1. An urban area
2. A rural area

**C4. Which educational program are you attending** *(Circle one)*

1. Diploma
2. Associate
3. Bachelor
4. Master
5. Other

**C5. Have you ever lived in rural areas?** *(Circle one)*

1. Yes
2. No *(go to question C7)*

**C6. How long have you ever lived in rural areas in your life?** *(Number the years you really living in rural areas; please do not include the years you study in the city)*

(        ) years

**C7. Have you taken a rural placement during your nursing study?** *(Circle one)*

1. Yes
2. No *(go to the end notice)*

**C8. How long have you been in rural placements during all your nursing study?** *(Number the months)*

(        ) months

**Thank you for your participation.**

爱丁堡大学社会科学健康学院护理系  
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## 调查问卷封面

课题名称: 护理专业学生对从事乡村护理的认识和态度研究

研究者: 陶月仙

单位/身份: 英国爱丁堡大学博士生

导师: DR Elaine Haycock-Stuart; DR Sheila Rodgers

亲爱的同学:

为调查了解护生对乡村护理工作的认识和态度, 优化乡村护理培养课程和相关行政部门决策, 基于随机抽取的原则, 诚邀你参与本课题的问卷调查环节。该问卷大约需要花费 **15-20** 分钟的时间。

参与问卷调查是自愿的, 你有权选择参与或不参与。因此, 我对你的参与表示衷心的感谢, 并希望你能坦诚而完整地完成任务。

为保护个人隐私, 该问卷是匿名的, 你不需要在问卷上具名。为便于统计, 每一份完成后的问卷将被标以一个编码。这些问卷会得到严格保护, 并且会在该研究完成五年后被及时销毁。

若你对本课题有任何疑问, 可以随时联系我。联系方式: 电子邮箱 [taoyuexian@126.com](mailto:taoyuexian@126.com); 电话: 0571—28865393; 手机: 13306506430 (中国); +447435774552 (英国)。地址: 杭州师范大学护理学院, 杭州下沙高教园区学林街 16 号, 邮编 310036。

若有关于本课题的疑问想联系我的导师，可以通过以下方式：DR Elaine Haycock-Stuart 邮箱 [e.a.haycock-stuart@ed.ac.uk](mailto:e.a.haycock-stuart@ed.ac.uk)；DR Sheila Rodgers 邮箱 [s.rodgers@ed.au.uk](mailto:s.rodgers@ed.au.uk)。

若有关于这个课题的疑问，想与一个与本课题无关的校方人员联系，可以联系 Dr. Graeme Smith，他的联系方式是：邮箱 [Graeme.smith@ed.ac.uk](mailto:Graeme.smith@ed.ac.uk)，电话：+44（0）1316503901。

以上所有人员的通信地址是：

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爱丁堡泰维奥特泰维奥特路医学院楼  
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陶月仙

2011年10月

## 护生对从事乡村护理的认识和态度调查

导语:

在本研究中,乡村护理是指在县城关镇以外的镇、乡、村的医院、社区卫生服务中心、村医疗服务站从事以服务于农村人口为主的护理工作。

### 第一部分:你对乡村护理的认识

**A1-A26.** 请标明你对以下观点的认同度(在合适的方格中打钩).

	非常不认同	不认同	中立	认同	非常认同
1. 乡村的生活、交通等基础设施太差.					
2. 居住在乡村的人们比较友好.					
3. 我喜欢生活在乡村.					
4. 城市医院的工资奖金比乡村的高.					
5. 在城市大医院工作比在乡村工作有面子.					
6. 相比城市,乡村医疗机构护士的工作压力小.					
7. 在乡村医疗机构,护士的工作量轻.					
8. 在乡村当护士可以少上夜班.					
9. 乡村护士在工作中有更多的个人自主性.					
10. 在乡村当护士缺乏个人隐私.					
11. 在乡村医疗机构中日常使用的护理技术是单一的.					
12. 乡村医疗机构使用的护理技术是多样化的.					

	非常不认同	不认同	中立	认同	非常认同
13. 在大医院工作能学到更多的技能.					
14. 在城市当护士有更多的培训机会.					
15. 在乡村工作行政职务晋升比城市里容易.					
16. 在乡村工作专业技术职称晋升比城市里容易.					
17. 在乡村工作对进一步提升学历不利.					
18. 乡村医疗机构的设备太差.					
19. 乡村医疗机构的护患关系比在城里亲近.					
20. 我很希望去帮助生活在乡村的人们.					
21. 我的家人不喜欢我去乡村工作.					
22. 在乡村工作影响子女教育.					
23. 在城里, 我可能拿不到正式工的身份, 而在乡村可以.					
24. 现在的护理毕业生很多, 我可能在城市里找不到工作.					
25. 护士要从乡村调到城市很难.					
26. 现行乡村护士招聘政策对我很有吸引力.					

第二部分：你的就业意向

**B1. 请标明你对以下就业机构的喜爱程度：(在 1 与 10 之间圈出你认为合适的数字)**

A. 省级医院

非常不喜欢 非常喜欢  
1 2 3 4 5 6 7 8 9 10

B. 市县级医院

非常不喜欢 非常喜欢  
1 2 3 4 5 6 7 8 9 10

C. 乡村医院

非常不喜欢 非常喜欢  
1 2 3 4 5 6 7 8 9 10

D. 城市社区卫生服务中心

非常不喜欢 非常喜欢  
1 2 3 4 5 6 7 8 9 10

E. 乡村社区卫生服务中心

非常不喜欢 非常喜欢  
1 2 3 4 5 6 7 8 9 10

**B2. 标明你一毕业后就直接去乡村工作的可能性(在 1 与 10 之间圈出你认为合适的数字).**

完全不可能 完全可能  
1 2 3 4 5 6 7 8 9 10

**B3. 标明在你的职业生涯中有可能在乡村工作的时间.(请在合适的数字上划圈, 单选)**

1. 永远不会
2. 部分职业生涯
3. 一半职业生涯
4. 大部分职业生涯
5. 所有职业生涯

**B4. 你考虑不去乡村工作的原因是什么? (请你圈出三个主要原因)**

1. 乡村的生活、交通等基础设施太差.
2. 城市医院的工资奖金比乡村的高.
3. 在城市大医院工作比在乡村工作有面子.
4. 在乡村当护士缺乏个人隐私.
5. 乡村医疗机构日常使用的护理技术单一.
6. 在大医院工作能学到更多的技能.
7. 在城市当护士有更多的培训机会.
8. 在乡村工作对进一步提升学历不利.
9. 乡村医疗机构的设备太差.
10. 我的家人不喜欢我去乡村工作.
11. 在乡村工作影响子女教育.
12. 护士要从乡村调到城市很难.
13. 在乡村专业技术职称晋升比城市里难.
14. 其它, 请具体写出\_\_\_\_\_.

**B5. 你考虑去乡村工作的原因是什么? (请你圈出三个主要原因)**

1. 居住在乡村的人们比较友好.
2. 我喜欢生活在乡村.
3. 相比城市, 乡村医疗机构护士的工作压力小.
4. 在乡村医疗机构, 护士的工作量轻.
5. 在乡村当护士可以少上夜班.
6. 乡村护士在工作中有更多的个人自主性.
7. 在乡村工作行政职务晋升比城市里容易.
8. 在乡村工作专业技术职称晋升比城市里容易.
9. 乡村医疗机构的护患关系比在城里亲近.
10. 我很希望去帮助生活在乡村的人们.
11. 在城里, 我可能拿不到正式工的身份, 而在乡村可以.
12. 现在的护理毕业生太多, 我可能在城市里找不到工作.
13. 现行乡村护士招聘政策对我很有吸引力.
14. 乡村医疗机构使用的护理技术是多样化的.
15. 其它, 请具体写出\_\_\_\_\_.

### 第三部分:你的基本情况

C1: 性别 (请在合适的数字上划圈, 单选)

1. 男
2. 女

C2: 年龄 (请填写周岁)

(         )岁

C3: 出生地 (请在合适的数字上划圈, 单选)

1. 城市
2. 农村

C4: 现就读的学历是: (请在合适的数字上划圈, 单选)

1. 中专
2. 大专
3. 本科
4. 硕士
5. 其它

C5: 你是否曾经在乡村生活过? (请在合适的数字上划圈, 单选)

1. 是
2. 否 (跳到C7)

C6: 你在乡村生活的时间有多长? (请计算实际生活在乡村地区的年数; 在城市就读的年数请不要计算入内)

(         )年

C7: 你是否在乡村医疗卫生机构实习或见习过? (请在合适的数字上划圈, 单选)

1. 是
2. 否 (跳到结语)

C8: 你在乡村医疗卫生机构实习或见习的时间有多长?

(         )月

非常感谢你的参与!

## **Appendix 12: Comparison of Nonparametric and Parametric Test**

### **Comparison of the Results of Nonparametric Test and Parametric Test**

As student's preferences of health institutions were measured in 10-point scales, during the data analysis, both of nonparametric test and parametric test techniques were run to see whether these two techniques lead to different conclusion. The analysis showed that the results drawn from the parametric test were similar to those results drawn from tests which were strictly based on the ordinal data (see the table below). This supports the argument that the restriction that parametric tests should only be used on interval data is unnecessary (Bryman 2011).

**Table: Comparison of the results of nonparametric test and parametric test on students' preferences of health institutions**

Pairs of Comparison		Parametric test		Nonparametric test	
		t	Sig. (2-tailed)	Z	Sig. (2-tailed)
Pair 1	Preference of a hospital in capital cities – Preference of a hospital in county cities	-12.109	<.001	-10.756	<.001
Pair 2	Preference of a hospital in capital cities – Preference of a hospital in rural areas	3.684	<.001	-3.553	<.001
Pair 3	Preference of a hospital in capital cities – Preference of a community centre in cities	-6.570	<.001	-6.530	<.001
Pair 4	Preference of a hospital in capital cities – Preference of a community centre in rural areas	3.224	.001	-3.470	.001
Pair 5	Preference of a hospital in county cities – Preference of a hospital in rural areas	13.641	<.001	-11.563	<.001

Continuing table

Pairs of Comparison		Parametric test		Nonparametric test	
		t	Sig. (2-tailed)	Z	Sig. (2-tailed)
Pair 6	Preference of a hospital in county cities – Preference of a community centre in cities	1.519	.130	-1.485	.137
Pair 7	Preference of a hospital in county cities – Preference of a community centre in rural areas	11.501	<.001	-10.327	<.001
Pair 8	Preference of a hospital in rural areas – Preference of a community centre in cities	-12.942	<.001	-11.382	<.001
Pair 9	Preference of a hospital in rural areas – Preference of a community centre in rural areas	-.102	.919	-.093	.926
Pair 10	Preference of a community centre in cities – Preference of a community centre in rural areas	13.882	<.001	-12.204	<.001