Study and Comparison of Elderly Care System in Germany and China

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by

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ABSTRACT

In the context of globalization and information revolution, the interactions in terms of knowledge exchange between developed and developing countries in the world have became more and more intensified in many aspects. This thesis focuses on the analytic study and bilateral comparison of elderly care systems in Germany and China. As one of the most important social security components, elderly care has a huge impact on the social stability and sustainability. Thus, many countries have put it on a strategic position and strive for an ideal, efficient, sustainable and adaptive solution to confront the challenges brought by population aging. Germany, as one of the most developed countries in the world, has established a solid and comprehensive elderly care system based on its social welfare foundation. China, as one of the most rapid developing and populous countries, has undergone a radical demographic change and a rapid aging process in the last several decades, which pose massive challenges for contemporary China. Therefore, a comprehensive study and comparison of the elderly care systems in both countries are of great scientific value for transferring theoretical and practical experiences. In the work, firstly a brief review and comparison of background information with respects to population development and living situation of the elderly in Germany and China are given. Then, the analysis of elderly care system is dissected in the following major dimensions: long-term care insurance (LTCI), forms of elderly care, and nursing education. Establishing a stable and sustainable long-term care insurance is imperative for elderly care system. The construction and development of LTCI in both countries are discussed and bilateral compared. The major forms of elderly care in the two countries, consisting of home care, community care, ambulant care and institutional care, are analyzed. Additionally, the insights of practical and academic nursing education systems in the two countries are depicted as well, such as the present status and future reforms. In the end, the knowledge transfer and potential collaborations are addressed.

CONTENTS

1

INTRODUCTION

Under the background of globalization and information revolution, the interchange in terms of economy, culture, technology, arts and social systems between different countries has become much more important and valuable. As two nations that have huge impacts on the rest of the world, nowadays, Germany and China have been linked together more intensively than any other time in the history [1]. The collaboration between two countries keep expanding and intensified in many aspects. This thesis focuses on the study and comparison of a very important topic regarding social security, which is the elderly care system in both countries. Germany, as one of the most developed and industrialized countries in the world, has gone through a long journey on this topic, from the beginning of baby booming after the second world war to the process of aging population. Germany has created one of the most famous and stable social security and insurance systems that cover the most critical aspects of social life, such as health, pension, jobs, family and elderly care, etc. China, as one of the major developing countries in the world, has grown to be the second largest economical entity. However, along with the rapid development of economy, many social problems arise, and the solutions to resolve these challenges are still under considerations.

One of the most challenging social problems is the care and nursing service for the elderly. The elderly security is recognized as a very important part of the entire social security system. The construction of a stable, sustainable and healthy system for elderly care has

been a critical issue for all the countries. Especially for China, the birth control policy has dramatically changed the structure of population, which leads to the process of population aging running much faster than expected. China has entered the era of "aging before getting rich" [2], hence, the construction of elderly care security and service system is challenging the Chinese authorities. With the pressure of supporting such a huge amount of elderly people, plenty of researchers have concentrated on this topic to seek a feasible solution that adapts to China's conditions. Not only the theoretical exploration, but also a series of practical reforms and implementations have been tried out by the Chinese authorities. Even though some of these policies have contributed positively, seeking for a better and more adaptive solutions has never stopped. On the other hand, Germany also encounters many challenges in improving its elderly care system. With the increasing number of aging population and longer life expectation [3], Germany also keeps publishing new laws, policies and measures to ensure stable service delivery to the elderly, including, for instance, the prolongation of the retirement age, absorption of more labor force from other countries, and the extension of fund raising resources, etc.

In this work, a comprehensive study and comparison analysis on the elderly care systems in both Germany and China are given. The goal is to depict the development and current circumstance of the elderly care systems in both countries, extract the significant features that can represent both systems, explore the advantages and disadvantages, compare the major differences, and ultimately analyze the valuable successful experiences that could be mutually beneficial for both nations to tackle with the common problems of elderly care service. To achieve this objective, the thesis has chosen several topics that are most relevant and important to describe an elderly care system, based on which the thesis is subdivided into several chapters. Firstly in Chapter 2, a background knowledge about the population development and the living situation of the elderly people in Germany and China is delineated. Secondly, since the long term care insurance (LTCI) plays a central role in the elderly care system, it is necessary to elaborate its main features, such as the financing model of fund raising, service content and distribution, premium standards and so on in Chapter 3. Thirdly, the various forms of elderly care services are depicted for both countries in Chapter 4. Fourthly, nursing education serves as another important component in the structure of elderly care system. Chapter 5 briefly reviews the development of the nurs-

ing education systems in both Germany and China, including the description of various forms of training and education, the configuration of academic degrees and their corresponding requirements. In the end, the experience and knowledge of developing a sustainable, feasible and extendable elderly care system accumulated in Germany and China are analyzed, and the parts that could be worth exchanging between the two countries are summarized in Chapter 6 and Chapter 7. Chapter 8 focuses on the problem of nurse stuffing shortage in both countries, and a list of possible ways of collaboration to resolve this issue are discussed. The conclusion and discussion are summarized in Chapter 9, and the outlook focusing on how to strategically improve the elderly care systems in both countries and what can be learned from each other is proposed in Chapter 10.

POPULATION DEVELOPMENT

To have a better insight of elderly care system, the development of population ought to be studied first, due to the fact that the population structures have huge impact on the construction of a proper elderly care system for a country. For instance, a population structure dominated by old age group is under higher pressure of fulfilling the demands of the elderly than the one dominated by younger age group. Therefore, it makes a lot of sense to investigate the history, current situation and futuristic trend of the population development in Germany and China, to achieve a better overview of the population structure. More specifically, the statistical results of basic important indexes describing the population development, such as annual birth rate, death rate, and total amount of population, etc., are given. Then, other important indexes that directly reflect the importance of an elderly care system are analyzed, such as the aging process, the population pyramid, and the old-age dependency ratio. All these descriptive indexes will be studied for both nations. Furthermore, a comparison study will be carried out in this work.

LIVING SITUATIONS OF THE ELDERLY

The aging process of population is highly related to the economical development of a country, and the elderly have more demands on the social security system, ranging from financial security and care service to spiritual comfort. To better understand the truly needs of

the elderly, regular surveys on their living situation are the major information resource and research foundation. In both Germany and China, these kind of surveys based on large-scale subjects have been established and conducted many years, for instance, the SHARE project supervised by the European Union and the CHARLS study conducted in China.

In this work, a series of statistical results of the key questionnaires enlisted in the SHARE and CHARLS surveys are analyzed, which enables a clear overview of the living situations of the elderly in both countries. The main contents of the surveys can be categorized into the following sections: basic information of the subject, family situation, health and body functions, pension security and financial status, which basically cover all aspects and indicate the quality of the elderly people's individual and social lives. The current living situation of the elderly determine the needs and services that they require from the elderly care system. For instance, important indicators, such as the marriage status, number of children, self-care ability and chronic disease management, will influence the configuration and resource allocation of the services provided by the elderly care system.

LONG-TERM CARE INSURANCE (LTCI)

According to the definition of US National Institute of Aging, long-term care involves a variety of services designed to meet a person's health or personal care needs during a short or long period of time [4]. These services help people live as independently and safely as possible when they can no longer perform everyday activities on their own. From the perspective of supporting LTCI financially, there are mainly three types of fund raising resources for long term care: social insurance, allowance and commercial insurance. Similar to other social security insurances like health and pension systems, LTCI is also treated as a combination of social welfare and commercial services. It integrates the efforts from governments, commercial groups and individuals. In Germany, LTCI is taken into account as a national responsibility, which has been written into the constitution. Securing the life quality of every elderly citizen becomes a basic and important mission of the state. The law of nursing insurance was stipulated in 1994 and implemented in 1995 [5]. In China, with the development of aging population, decreased family members, and increased female employment, urgent needs for the construction of LTCI pushed the Chinese government to solve the elderly care issues from state level. Many researchers tried to analyze the theory

and practice developed in other countries, such as Germany, Japan, USA and South Korea, and strive for a suitable LTCI system that integrates the advantages of all existing solutions and adapt with China's national conditions. In this work, major aspects regarding the LTCI developed in Germany and China are elaborated, including the analysis of the needs for nursing care, the main categories of care services, the differentiation of different level of care services, the important reforms and changes in the history of LTCI and the common financial models used for fund raising.

DIFFERENT TYPES OF ELDERLY CARE

Based on the locations where the care services are given and the different caregivers, the types of elderly care can be subdivided into home-based, nursing institution-based and community-based. Home-based care takes place in the home of the person receiving services or at a family member's home, and provides health, personal and support services to help people living as independently as possible. The caregivers are mainly the unpaid family members, partners, or friends. Additionally, home-based care service can also be delivered by paid caregivers, such as nursing professionals like nurses, homemakers or even health care workers. The theoretical nursing knowledge and experience gained by professional education and training enable a higher service quality.

Another major type of elderly care is given in the nursing institutions or nursing homes, which can be established and managed publicly by the state or privately by commercial partners. The residents of a nursing home are mainly the elderly who have poor health conditions or disability or the persons who need rehabilitative stays following a surgery or injury. The advantages of nursing homes are obvious, around-the-clock care services can be provided with professional caregivers such as nurses, nursing assistants, housekeeping or recreational staff and direct access to physicians on site. However, some of the disadvantages also make the elderly people facing a hard decision to resident in nursing homes. For instance, the cost is higher, life in nursing homes can be depressing, and the proximity to other family members is lost, etc.

From the perspective of combining advantages of both home and nursing home-based care, another type of care service based on the community has been developed. The aim of community care is to enable the elderly with various types of disability to live at their

own homes rather than enter a nursing care institution, satisfying the needs of living together with their family and friends. The community care balances maximally between the needs for independent and flexible life and for professional medical and nursing care. To achieve this goal, a joint efforts have to be made by integrating the provision from local social service authorities, private or voluntary agencies, and family members. In this work, the development history and current circumstance of various elderly care services running in Germany and China are discussed in details.

TRAINING AND EDUCATION OF ELDERLY CARE PROFESSIONALS

Since nursing is an occupation which needs specialized professional knowledge about health care, physical care and mental care. A complete and efficient education system is critical for training nursing professionals. In order to become a registered elderly care professional and specialized practitioner, theoretical education and practical training are required. In many countries, nurses learn the profession in a special nursing school which is often a subsidiary of a hospital. A nursing professional can be entitled with different level of academic degrees, including bachelor, master and even doctor. The configuration of nursing education systems should conform to the realistic conditions of a country. Germany and China have both made a lot of achievement in building their own nursing education systems, which will be delineated in the following chapters of this work.

REFERENTIAL THEORY AND PRACTICE AND COLLABORATIONS

The main contribution of this thesis is to study the elderly care systems of Germany and China in several dimensions, to compare the current development, and to analyze the referential theory and practice worth of learning from each other. Although the elderly care systems in both countries share some features in common, there are still some unique theoretical and practical experience being worth of exchanging. For instance, the construction of China's LTCI may use the German LTCI system as a reference, plus the adaptations based on China's own conditions. Vice versa, the successful application of Chinese traditional medicine in elderly care could be transferred to Germany as well. Another instance is that, with the rapid development of internet technologies, innovative online applications have

been enormously altered the life style of Chinese people, including the elderly. Many online service applications put their focus on serving elderly customers to match their needs in health management, care services, living supplies, sport activities, social networking, rehabilitative training, and even spiritual satisfaction. With the assistance of these high tech solutions, the life quality of the elderly has been elevated to a large extent, which can be similarly beneficial for German elderly people. In this work, the theoretical and practical knowledge that could be mutual beneficial for both countries are summarized. Moreover, the possible collaborations are discussed as well.

2

BACKGROUND

In this chapter, a brief review of population development and living situation of the elderly in both China and Germany is given. These two background knowledge is highly related to the study of elderly care system. The population development of a country is important in the study of its demographic change and extent of population aging. The overview of living situation of the elderly gives a better understanding of the life quality and care demands of the elderly, which definitely have to be concerned in the construction of elderly care systems.

2.1. POPULATION DEVELOPMENT

In this section, the history and present situation of the population development are briefly reviewed. The statistical results of important indexes depicting the population development, such as population volume, birth rate, death rate, growth rate, life expectancy, etc. are given for both Germany and China.

2.1.1. POPULATION DEVELOPMENT IN GERMANY

According to Federal Office of Statistics of Germany, about 82.8 million people are living in Germany at the end of 2017, making it the most populous country in the European Union,

the second most populous country in Europe after Russia, and the 16th most populous country in the world [6]. Germany's population development has gone through the following stages since the Second World War [7].

POPULATION DEVELOPMENT STAGES

The first stage is the so-called baby-boomer period, which is also the highest birth rate in Germany. The years after the Second World War were marked by high birth rate [8, 9]. From 1947, significantly more births than deaths were registered. The birth rate reached its peak in 1964 with 1,357,304 live births. These cohorts are referred to as the baby boomers, that is, someone born during the demographic birth boom between 1946 and 1964 [9].

Then Germany's population development went into the next stage. The subsequent baby-boom changed to a rapid decline in births in the late 1960s. From 1965 the birth rate started to decline as a result of introduction and widespread availability of anti-baby-pills and changing attitudes to the family [10]. The number of children born alive dropped from their peak in 1964 (1.36 million) to 782,000 in 1975. Since 1972 there has been more deaths than births every year in Germany. Between 1975 and 1985, the number of births reached only about 56 percent of the level of 1964 [11].

In the 1990s, there were once again more births, mainly because there were more women of childbearing age. A slight increase in the average number of children per woman also contributed to this. However, the Germany‘s population has changed little since the mid-1990s. From 1997 (812,000 births), a continuous decline in birth rates has been observed again. In 2005, 700,000 children were born. In 2011, the lowest birth rate since 1946 was registered with 663,000 new-borns. Slight growth was recorded only in 2007 and in 2010, which have been increased by 1.3 and 1.9 percent, respectively [12]. However, since there was a migration surplus in parallel in almost all years, the population has tended to increase until 2002 and since then decreases more slowly than it would have been without immigration [12]. The distribution of the annual birth number over the years between 1950 to 2013 is plotted in Fig. 2.1, and the development of total population corresponding the to same time period is listed in Fig. 2.2.

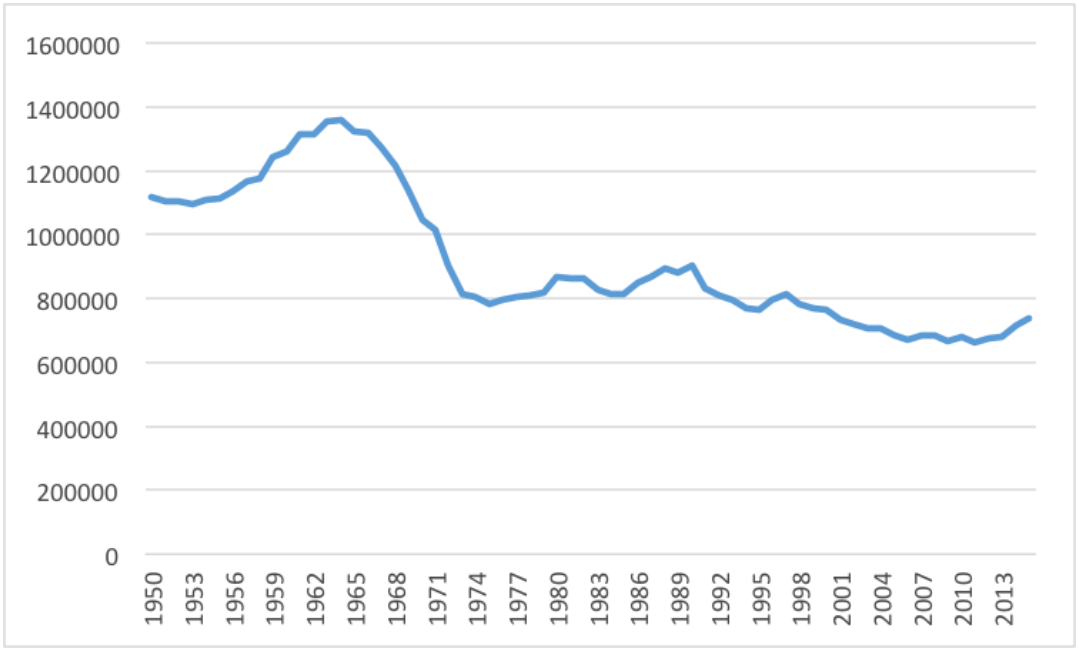


Figure 2.1: The statistics of annual births in Germany from 1950 to 2013 (Data source: Statistical Yearbook, Federal Statistical Office)

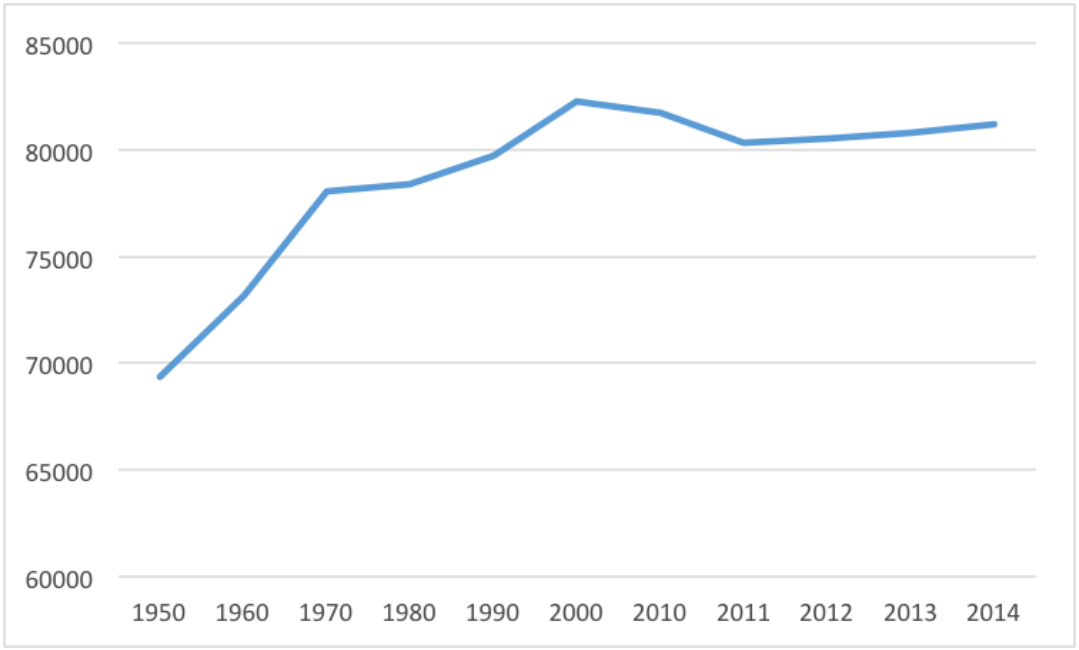


Figure 2.2: Development of total population of Germany, in thousand (Data source: Statistical Yearbook, Federal Statistical Office)

POPULATION AGING

The major demographic change in Germany is the aging population - the increasing number of people in the retirement age. Meanwhile, the German population is characterized

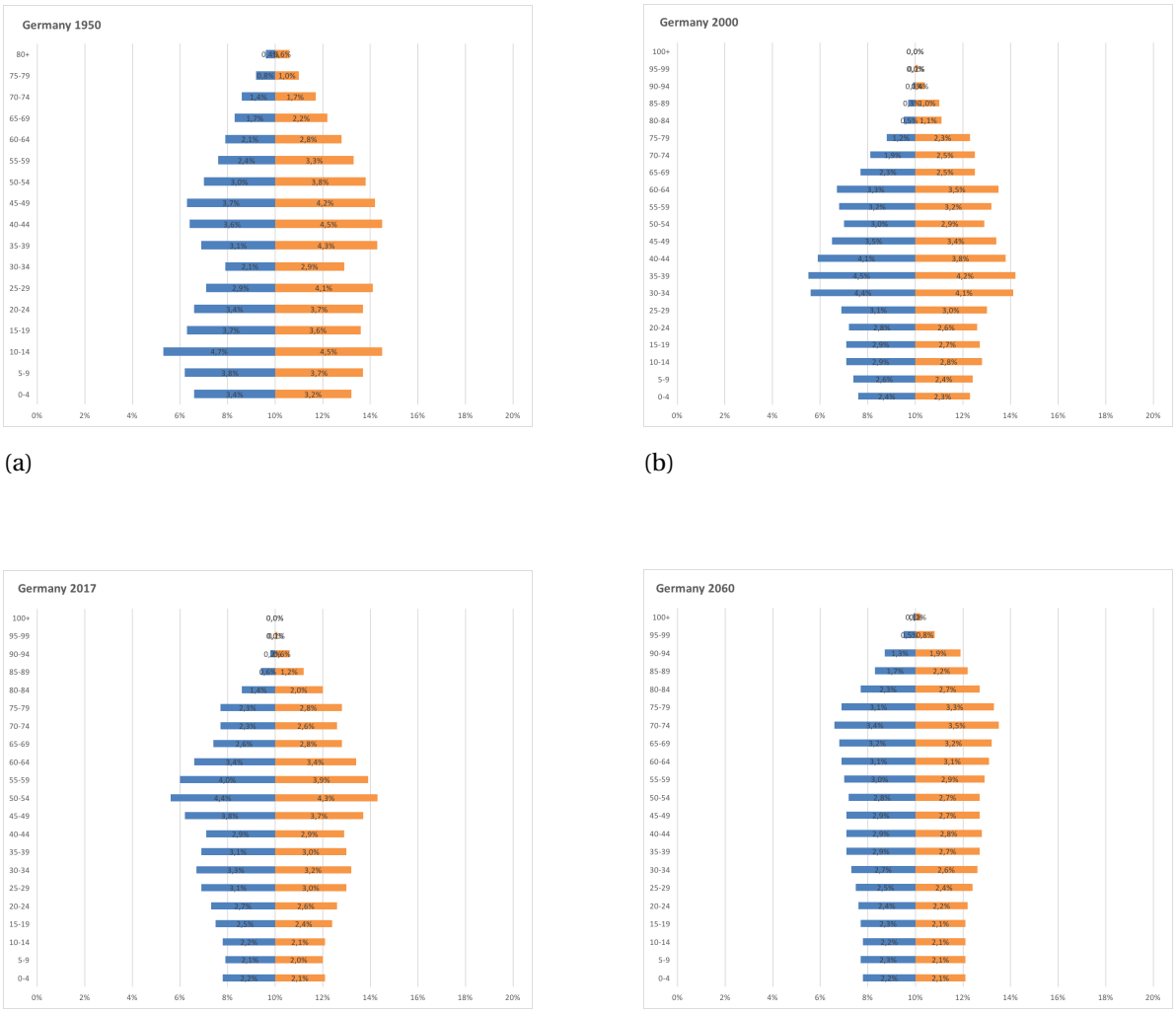
by smaller cohort of young people. The proportion of young people under 21 years old was still 30.3 percent in 1960. Only 11.6 percent of the population was above 65 years old at that time [13]. Since the end of the 19th Century, the ratio of young people in the population has shifted over that of the elderly. The ratio of elderly people above 65 years old in 2016 was 21.26 percent, which means one in every five people in Germany is at least 65 years old [14, 15].

Under the assumptions of 12th coordinated population projection, the population in the prime age will be decreased significantly in 2020. Pessimistic estimate suggests that the lower limit of the population in prime age will be 42 million in 2030 and 33 million by 2060. On the other hand, optimistic estimation suggests that the upper limit of the population in prime age will be 43 million in 2030 and about 36 million in 2060. By 2030, the proportion of the population aged over 65 years old to the total population will increase from 21 percent estimated in 2010 to 29 percent. However, by 2060, this proportion will increase to 34 percent, and the number of people over 70 years old will be doubled.

At the same time, the total population of the oldest-old will also change. In 2010, there were 4.3 million elderly people over 80 years old in Germany, accounting for 5 percent of the total population. By 2050, the number of the oldest-old is expected to be 10 million reaching the historical peak, exceeding one seventh of the total population, and then decrease again. In terms of the dependency ratio, the number of elderly people aged 65 and over who need to be supported by every 100 working people aging between 20 and 64 years old, is 24 in 1990, and this ratio has increased to 34 in 2010. It is expected that this number will increase rapidly to 54 in 2030. By 2060, every 100 people in prime age need to support 67 elderly people, which is doubled compared to the number in 2010 [15].

One of the most important tools that demographers use to understand and visualize the population is the classic population pyramid, which is also called "age-sex pyramid". It shows the distribution of various age groups in a population, which forms the shape of a pyramid when the population is growing [16]. A lot of information about the demographic change and other indications related to population can be extracted from this graphical overview. It is massively used to predict the tendency of various population related indexes, such as population momentum, fertility rate development and dependency ratio, etc. The following four population pyramids reflect the changing age structure in Germany in 1950,

2000, 2017 and 2060 and visualize the aging process of the Germany's population (see Fig. 2.3).



(a) (b)

(c) (d)

Figure 2.3: Population pyramids in the year 1950, 2000,2017 and 2060 of Germany. The diagrams are based on the data extracted from `https://www.populationpyramid.net/germany`)

The Demographic Transition Model (DTM) is based on historical population trends and can be categorized into five stages as: high stationary, early expanding, late expanding, low stationary and declining. From stage one to five, the shape of the pyramid changes from its ideal form with big base and skinny top representing high fertility rate, to a form with extremely low fertility rate. By observing the change of population pyramid, it basically conforms to the situation of most developed countries, which normally have a population represented in stage three, four and five. Germany's population pyramid has undergone a

change from high to low fertility level. The cohort of the elderly people keep growing, and the cohort of young and working class are shrinking.

The aging process began in Germany unnoticed for a long time. The phase at the end of the 19th century with the first birth decline is called fertility-led aging. From 1950, the demographic aging process in Germany started to be clear. The aging of the population is mainly caused by the long-term low birth rate and increasing life expectancy [13]. Since the 1970s, life expectancy has increased, mainly as a result of the decline in mortality at older ages, and the aging process has been driven by fertility as well as mortality [17].

The population pyramid in 2017 is even narrower at the bottom and shaped more like a rhomboid due to the baby-boom cohorts of the 1960s. The population pyramid in 2060 show how the baby-boomer bulge moves up to the top of the pyramid and swells the number of elderly people [18]. Meanwhile the middle and the base of the pyramid are projected to narrow considerably. The trend of decreasing numbers in younger age cohort will continue to accelerate the aging process. The chart given in Fig. 2.4 shows the trend of population over 65 years old in Germany from 1960 to 2016. In general, the demographic changes of Germany is featured with the increased proportion of the elderly and elevated dependency ratio, which indicates a typical aging population.

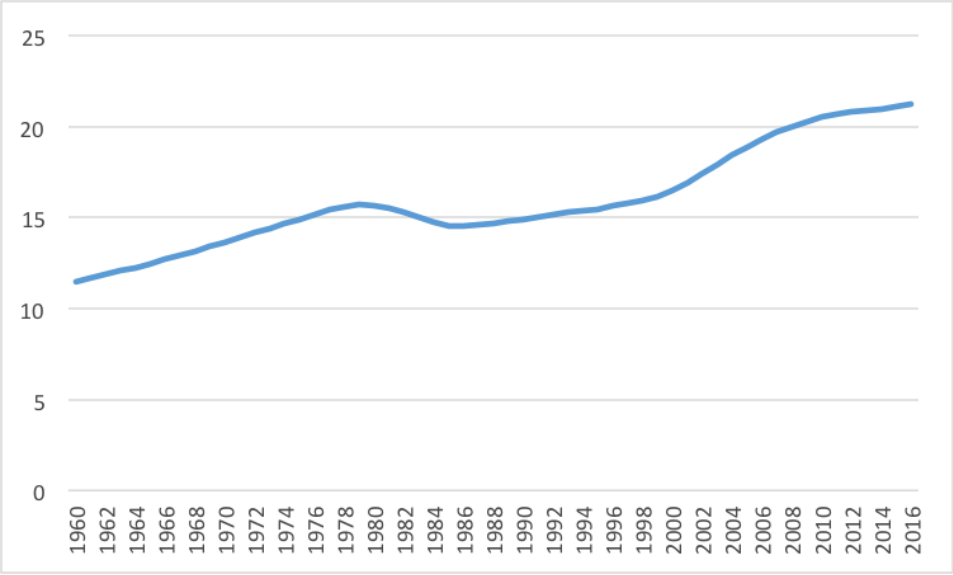


Figure 2.4: Population ages 65 and above (percent of total) in Germany (Data source: Statistical Yearbook, Federal Statistical Office)

2.1.2. POPULATION DEVELOPMENT IN CHINA

China is the most populous country in the world. The total population of the People's Republic of China was last recorded as 1347 million people at the end of 2010 [19]. According to the data from World Bank, the population experienced a steady increase in the last 50 years, and almost doubled from 715.2 million in 1965 to 1371 million in 2015. The development of China's population has gone through a long and tortuous path like the development of Chinese society. Since the founding of the People's Republic of China, China's population development has experienced two different periods. First, before the implementation of the birth control policy, the development of the population is in an unplanned and spontaneous period of high growth. Second, after the implementation of the birth control policy, the population development is gradually moving toward a planning and controllable period with steady growth rate. Besides the national policies, the development of population is highly related to the social and economic development as well. Combined with different situations of social and economic status, the development process of China's total population can be classified into the following stages [20].

POPULATION DEVELOPMENT STAGES

The first stage of high population growth(1949-1957). Before the establishment of People's Republic of China, there were frequent wars and social unrest. The development of economy was ruined dramatically, which leads to the fact that the population was developing slowly. At that time, the development can be characterized by high birth rate, high mortality rate, and low growth rate. After the founding of the country, many aspects including the social stability, economic development, people's living standards and medical and health conditions have continued to be improved. Correspondingly, new characteristics have been revealed in the development of the population. The mortality rate has dropped drastically, while the birth rate has remained at a high level. This has led to a status of population development with a high natural population growth rate. The first peak was reached after the founding of China. The average of annual birth rate was 37‰from 1949 to 1954 and 30‰from 1955 to 1957 [21, 22]. By 1957, the mortality rate dropped to 10.8‰, and the total population reached 647 million. In the eight yeas between 1949 and 1957, about 94 percent of the women gave birth to three children, more over, nearly half of them gave birth

to six children. The net population was increased by 105 million [23], which represented as the "first population birth peak" after the founding of the People's Republic of China.

The stage with low population growth (1958-1961). The famine suddenly took place for three consecutive years in China from 1958 to 1961. The natural disaster caused the economic situation being stagnating and affecting significantly the people's living standards. As a result, the mortality rate was again suddenly increased, and the birth rate declined sharply. In 1959, the population mortality rate rose to 14.6‰, and further to 25.4‰in 1960. At the same time, the birth rate was only 20.9‰. The natural growth rate of the population dropped sharply. From 1960 to 1961, the population experienced negative growth for two consecutive years [24, 25].

The second stage of high growth rate (1962-1970). After the famine for three consecutive years ended, the economy was gradually developed, and the medical care was as well further improved, so that the death rate declined further. The abnormal status of the population development also quickly altered. Many couples have postponed the births planning during the years of famine, and the upcoming strong compensatory births have caused the birth rate risen rapidly. Hence, China's population entered its second peak of birth. The annual birth rate reached at 43.6‰in 1963, which was the highest peak in the second half of the twentieth century in China [26]. Then, the population growth has entered an unprecedented peak since the founding of the People's Republic of China, and this trend continued until the nineteen seventies of the twentieth century. During this period, the average birth rate was 36.8‰, while the mortality rate dropped to under 10‰and steadily declined year by year. It dropped down to 7.6‰in 1970. The rise in birth rate and the decline in death rate have made the annual average natural growth rate of the population at this stage reaching 27.5‰. The annual average birth population reached 26.88 million, and the 8-year net increase population is 157 million [27, 28]. As a result, the second birth peak of the population occurred after the founding of the People's Republic of China. As a matter of facts, the second birth peak was even higher than the first one. Based on these two birth peaks, China's total population increased rapidly. By the end of 1971, the total population was 1.573 times that of the number in 1949, when the country was found. The dramatic increase in the total population during this time of period had a tremendous impact on many aspects, such as the age structure of the population, the subsequent population development, and even the

socio-economic operation.

The stage of controlled population growth (1971-1980). From the 1960s, the contradiction between the population and other social-economical environmental problem had become gradually apparent. To cope with the situation, the Chinese government issued a call for family planning and made attempts to inhibit population growth by a birth control policy in 1962. However, it was handled very careless. China's first birth control policy with preliminary effectiveness is the Wan-Xi-Shao policy in 1973, which means literally "later, longer and fewer". The Wan-Xi-Shao policy promotes delayed marriage (rural women 23 years of age, male 25 years of age, in the city even later), maximum two children for one couple and with a interval about four years [29, 30]. This brought a fundamental change in the development of China's population in the late nineteen seventies. The population has entered a planned and controllable period of growth from unplanned and spontaneous high growth status.

Until 1979, the government intensified the birth control program with the well-known one child policy. At the Fifth National Congress in September 1980, the birth control policy was legislated into a national policy. Since then, a whole package of measures were applied to enforce this restriction, including not only administrative steps and socio-psychological pressure, but also financial incentives and penalties. One-child families are rewarded with premiums and preferential benefits. In contrast, families with unplanned births will be punished with draconian fines, payroll deductions or exclusion of certain social welfare benefits [31, 32]. During this time of period, the birth rate and the natural growth rate declined rapidly from 30.7‰and 23.4‰in 1971 to 18.2‰and 11.9‰in 1980, respectively. The authorities claim that the policy has prevented more than 250 million births between 1980 and 2000 [33] and 400 million births from about 1979 to 2011 [34, 35]. However, due to the large population base, the absolute increase in the net population of China at this stage is still considerable. From 1971 to 1980, the total population of the country increased from 852 million to 987 million, which yields a net increase of 135 million and exceeds the net increase in the first birth peak period.

The third stage of high population growth (1981-1990). After entering the 1980s, birth control was identified as a basic national policy, and the measures to control population growth became more stringent. Over 90 percent of young married couples were restricted

to have only one child. However, since the population born in the "second population birth peak" in the early 1960s has gradually entered the reproductive age, the birth rate has rebounded. The annual birth rate was almost above 20‰. The period from 1981 to 1990 was customarily referred as the "third birth fertility peak". During this period, China's total population increased by 143 million. By the end of the third birth peak, China's population growth has reached a new level. In 1990, the total population reached 1.143 billion.

The stage of steady population growth (1991-present). After the 1990s, with the continuous strengthening and improvement of family planning work, the high birth rate of the population in the 1980s was controlled and continued to decline steadily. In 1991, the birth rate was 19.7‰and continuously decreased to 12.1‰in 2008. A total of 7.6‰has been reduced in 13 years. The birth rate has remained stable at a low level [36]. In 1998, the natural population growth rate fell below 10‰for the first time. Since 2000, the annual net increase in population was accounted less than 10 million, and the Chinese population has entered a stage of steady growth. The overall development of total population from 1950 to 2017 is illustrated in Fig. 2.5.

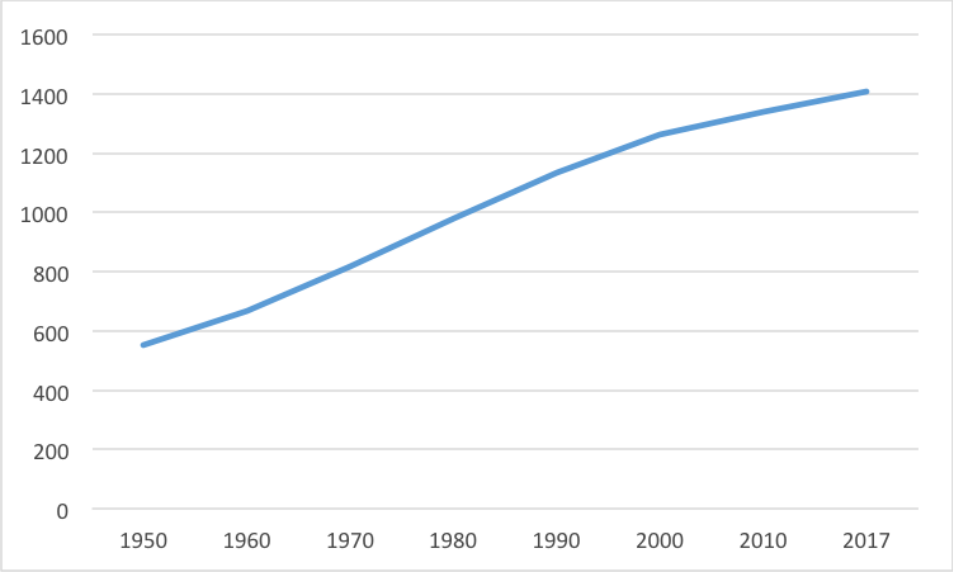


Figure 2.5: Development of total population of China, in millions (data source: National Bureau of Statistics of China)

POPULATION AGING

Despite its effectiveness in controlling population growth, the one child policy led to a sharp decline in the birth rate and significantly altered the course of population aging

in China. After the introduction of the one child policy, the birth rate in China fell from 33.4‰in 1970 to 12.1‰in 2015. Since the early 90s, the birth rate is in steady decline. At the same time, the natural population growth rate has decreased from 25.8‰in 1970 to 5.9‰in 2004. The combined fertility rates have declined from 5.8 children per woman in 1970 to 1.57 children in 2015. Figure 2.6 shows a detailed statistics of China's birth rate from 1949 to 2015.

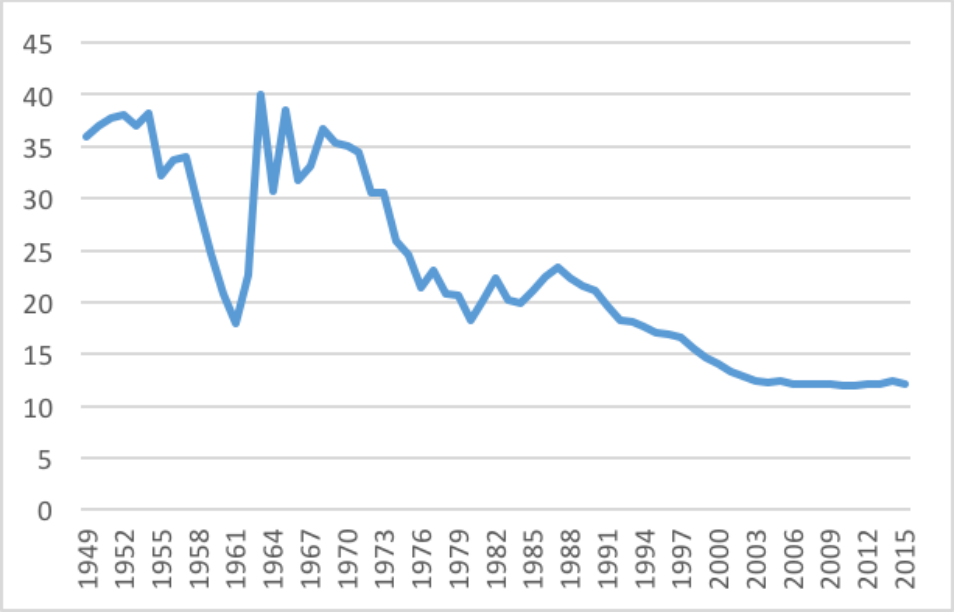
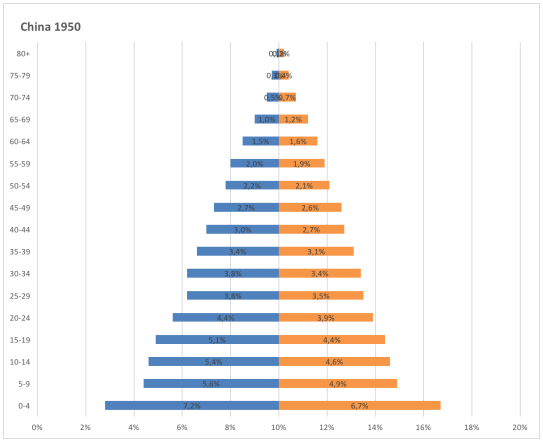
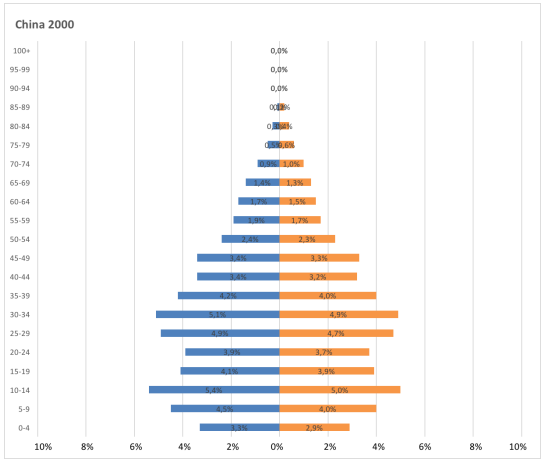


Figure 2.6: Birth rate (‰) development in China (data source: National Bureau of Statistics of China)

Along with the decreasing fertility rate, the population age structure in China has changed dramatically. The following four population pyramids as shown in Fig. 2.7 reflect the demographic structures in 1950, 2000, 2017 and 2060, visualize the aging process of the Chinese population.



(a)



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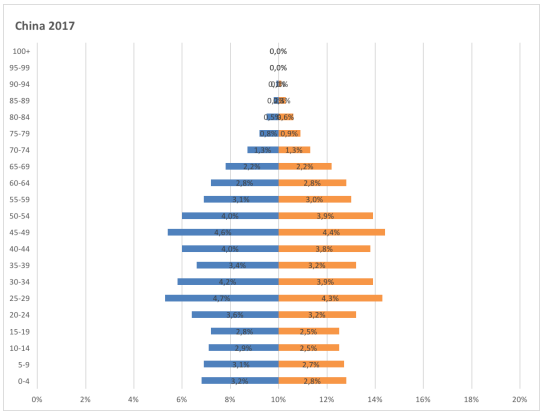

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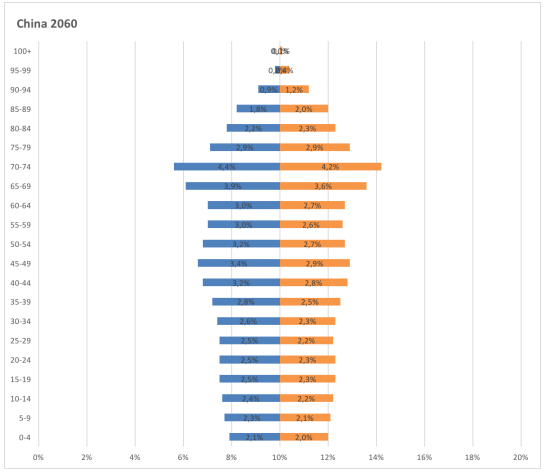

(d)

Figure 2.7: Population pyramids in the year 1950, 2000,2017 and 2060 of China. (Data source: `https://www.populationpyramid.net/china`, self drawn)

In 1950, very high proportion of China's population was children and young people. More than 43 percent of the population were under the age of 20. However, people age 65 and above accounted for a very small proportion, only 4.4 percent. This age structure that was dominated by young people generally remained unchanged until the advent of the second population growth peak that began in 1970. From 1970 to 2000, the age structure of China's population accomplished the transition from young to adult type and gradually turned into an aging country. As shown in Fig. 2.7 , the top of the pyramid was narrow at the beginning of this century, which suggested that the proportion of the elderly people

was still small [37]. However, this was only the first stage in China's population aging. The lower parts of the population pyramid will continue shrinking, and the top of the pyramid will continue growing over time.

Dramatic demographic change has occurred during the period from 2000 to 2020. The population structure was substantially altered from high fertility rate to low fertility rate. The population aging process was accelerated with a high velocity, entering a typical stage of aging structure. During these 20 years, China's population growth rate is not large, but the age structure of the population is changing rapidly. In 2017, about 22.7 percent of the population were under the age of 20, the percentage of working population aging from 20 to 64 had increased to 67.2 percent. Meanwhile, the percentage of older people, aging 65 and above, had increased to 10.1 percent [38, 39].

China has completely finished the transition of the age structure from prime to elderly dominance. In the next 30 years from 2020 to 2050, the total number of elderly people in China will continue to grow. By 2050, the total number of people aging 65 and above will reach 320 million [40]. By 2060, the proportion of children and young adults under the age of 20 will be less than half of that in 1950, representing 17.9 percent as compared to 43 percent. The population "pyramid" of 1950 will essentially be reversed and stands on its "head". It can be anticipated that the extent of China's aging process will reach its peak.

The chart illustrated below in Fig. 2.8 shows the trend of population over 65 years old from 1960 to 2016. By the end of 2016, the amount of population over 65 years old is 150 million, which represents 10.8 percent of the total population.

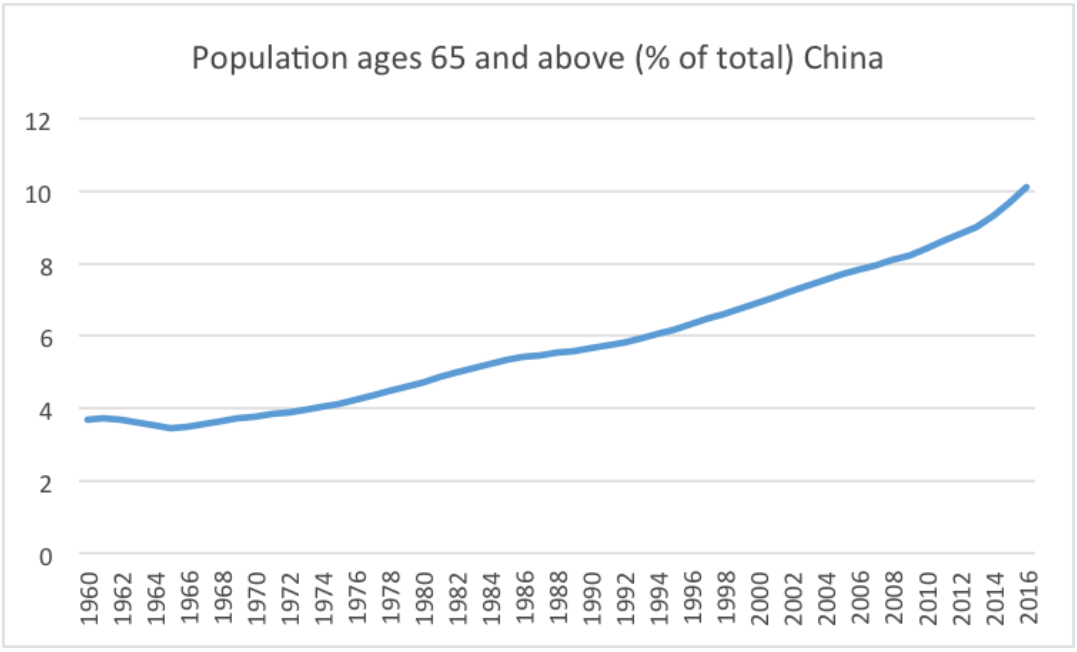

Figure 2.8: Population ages 65 and above (percent of total) in China (Data source: `https://data.worldbank.org`, self drawn)

The altering in population age structure poses a series of challenges for caring for the elderly, including the strains on the social security system, medical insurance, nursing care, caring institutions, and nursing education [41, 42]. The Chinese government realizes that further pushing one child Policy will undoubtedly increase the trend of aging. In November 2013, China decided to launch a policy encouraging second child, in which a couple is allowed to have the second child, if at least one of them is single child in the family of their parents. Till then, the one child policy, which has been in operation for nearly 40 years, has begun to break [43–46].

In 2016, the Chinese government introduced a complete second child policy that allows a couple have two children. Policy makers expect that after the release of the second-child policy, the average number of new births will reach 3 million a year. By 2050, about 30 million laborers will be added to reduce the proportion of the elderly population by 2 percent. In fact, in the first year after the full operation of the second child policy, the total number of births in 2016 was 17.5 million. Compared with 16.55 million in the whole year of 2015, only an increase of 1 million was achieved, which is far lower than previous predictions [47]. Zheng Zhenzhen, a demographer at the Institute of Population and Labor Economics of the Academy of Social Sciences, believes that the people's fertility intention

and reproductive behavior have undergone fundamental changes. Although there are still boys' preferences in some regions and cultures, early childbearing and high fertility are no longer the main problems for most of the people. Less births and delayed births have become a popular culture in some areas, especially in the cities. At present, the total fertility rate in China is roughly between 1.4 and 1.6, which is significantly lower than the fertility willingness of 1.93 [48]. There is a huge gap between the fertility willingness and the actual fertility behavior.

2.1.3. COMPARISON OF POPULATION DEVELOPMENT IN GERMANY AND CHINA

The age structure of the population is closely related to the demographic transition. In most of the countries in the world, along with the demographic transition and the development of society and economy, the age structure of the population will gradually change from young and adult to old type. The demographic transition in Germany is also progressed and intensified gradually along with the industrialization and modernization process, which takes more than 150 years [49]. However, the demographic transition of China is carried out under the conditions of underdeveloped economy, and it has obvious traces of human intervention [50, 51]. Therefore, the transition process has undergone a more rapid change, and the age structure of the population has also suffered a relatively rapid change, which means a direct transition from a relatively young population structure to a relatively aging population structure. The aging process of China's population has the following characteristics:

- First, the number of elderly people is large. In 2017, the number of elderly people aged 65 and above in China has reached 150 million, accounting for one-fifth of the world's elderly population and one-half of Asia's.

- Second, the population is aging rapidly. It took only about 18 years for the age structure of China's population to shift from prime to elderly [52, 53]. Compared with Germany, the speed is very astonishing. It is anticipated that by 2020, the proportion of elderly people aged 65 and above in China will reach 11.92 percent, which means one out of every eight people will be 65 years old and older. After 2020, the extent of aging will continue to enlarge. By the middle of the 21st century, the proportion

of the elderly population will reach 25 percent, which means one out of every four people will be elderly [54].

- Third, the aging process of the population is not adapted with the level of social and economic development [55]. The aging process of Germany has been completed during the developed period of economy, which enables high resilience to the aging change. At the same time, due to the slowly aging progress, it is allowed for a long time of preparation and adaptation. The population aging of China is caused by a sharp decline of fertility. The aging takes place ahead of adequate economic development, that is, "getting old before getting rich" [56]. As a result, the weak economic foundation does not have the ability to support the elderly.

- Fourth, the population aging in different regions is quite different. The age structure of the developed cities along eastern coast such as Shanghai stepped into the elderly age as early as 1979 [57, 58], while the underdeveloped provinces in west such as Qinghai and Ningxia entered the elderly society around 2010 [59, 60], resulting in a difference of about 30 years.

- Fifth, the trend of population aging is apparent [61]. In recent years, the number of elderly over 80 years old in China has grown at an average annual rate of about 4.7 percent. The age group of 80 or above is growing faster than any younger segment of the elderly population. In 2010, the elderly population over 80 years old was 17.8 million, accounting for 15.8 percent of the total elderly population [19].

The age structure of the German population is characterized by higher proportion of elderly people and lower proportion of young people compared with the situation in China. The proportion of elderly people in China is comparatively low at 10.8 percent. This age group in Germany has a share of 21.1 percent of the total population. Correspondingly, the proportion of people under 15 years old in the total population in Germany, with 12.7 percent, is considerably lower than that in China (17.2 percent) [62]. Also, the significantly lower median age of the population in China can be readily seen: 37 years. The median age in Germany is 45.9 years based on the statistics in 2015 [63, 64]. From these statistics, it seems that China confronts population aging at a relatively early stage.

Another important demographic index is the old-age dependency ratios. It is the ratio of the population aged 65 years or over to the population aged between 20 and 64, which measures the number of elderly people as a share of those at working age. China's old-age dependency ratio is currently only around 14, indicating that 100 people at working age have to support just 14 people at age 65 and above. This rate is currently around 32 in Germany, and it will change dramatically over the next few years. In China, the old-age dependency ratio will reach at around 37,2 in 2050, while in Germany this rate will be around 55 in 2050 [65–70]. A detailed comparison of old-age dependency ratios of Germany and China with respect to the time period from 1950 to 2050 is illustrated in Fig. 2.9.

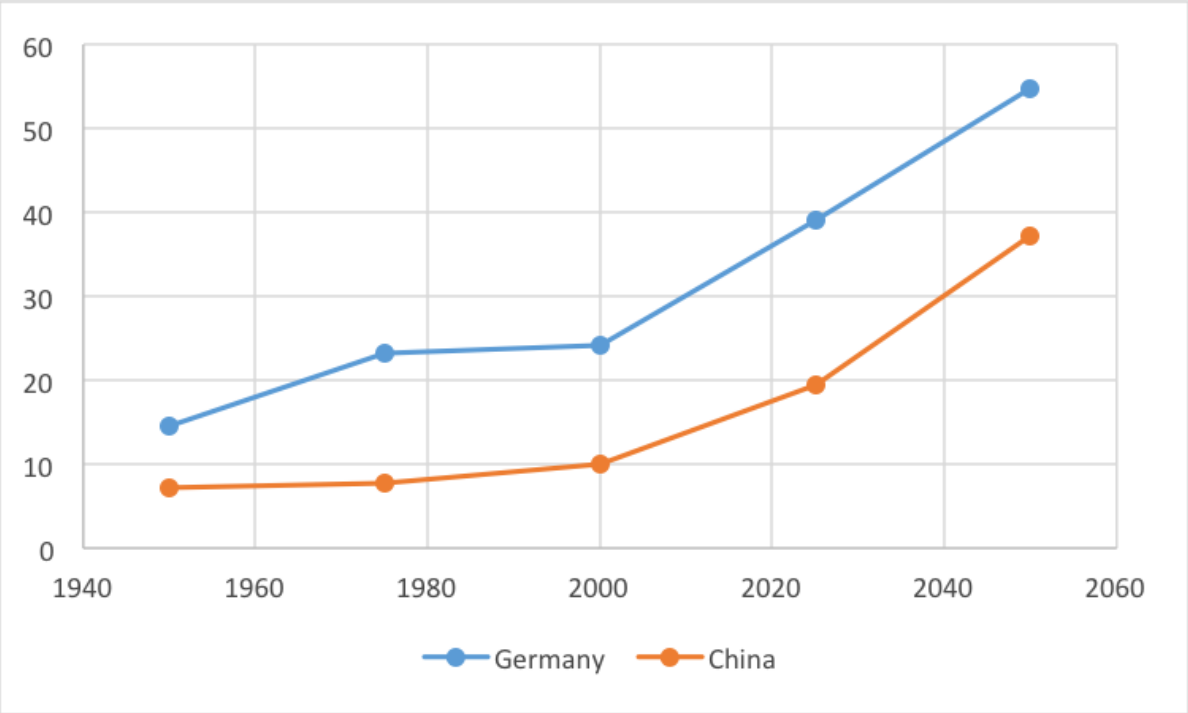

Figure 2.9: Old-age dependency ratios of Germany and China (Data source: World Population Ageing 1950-2050, Population Division of the United Nations)

2.2. LIVING SITUATION OF THE ELDERLY

In this section, an overview of the living situation of the elderly in Germany and China is introduced and compared. The key purpose behind is to explore the realistic situation of the elderly life quality to better understand their truly demands on the social welfare systems, such as pension and care needs. Most of the developed and developing countries

keep monitoring the living situation of the elderly. Regular surveys with a large scale of subjects are carried out, such as the SHARE project in Germany and CHARLS project in China, which provide an official, stable and comprehensive information resources to for elderly care research studies.

2.2.1. LIVING SITUATION OF THE GERMAN ELDERLY

SHARE STUDY

The Survey of Health, Ageing and Retirement in Europe (SHARE) is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of more than 120,000 individuals aged 50 or older (more than 297,000 interviews). SHARE covers 27 European countries and Israel. The main contents of the surveys can be categorized into the following sections: basic information of the subject, family situation, health and body functions, pension security and financial status, which basically cover all aspects and indicate the quality of the elderly people's individual and social lives. The SHARE questionnaire includes the following modules: demographics, family structure/transfer, health status and functioning, biomarkers, health care and insurance, work, retirement and pension, income and consumption, assets (individual and household), and community level information. SHARE has received critical support from the European Commission (Horizon 2020), the US National Institute on Aging, and national sources, especially the German Federal Ministry of Education and Research. In this section, a selection of most representative indicators that directly reflect the elderly living situation in Germany are statistically analyzed.

MARITAL STATUS

First of all, the marital status of the elderly should be concentrated. Many evidence have shown that the marital status of the elderly exerts big influence to their life quality. The married elderly have a longevity advantage over the unmarried ones. According to the SHARE survey, about 71.68 percent of the elderly people in Germany are married and living together with their spouse, and about 15.95 percent of the elderly are windowed. The elderly people who get divorced have taken 6.94 percent, and 3.54 percent of the surveyed subjects have never been married. Another group who married but living separated from spouse

takes about 1.72 percent. From the statistics, most of the German elderly are in married status and living with their spouse, which indicates most of them can enjoy the life with their companions and be supportive in daily life. Figure 2.10 has shown the percentages of each marital group.

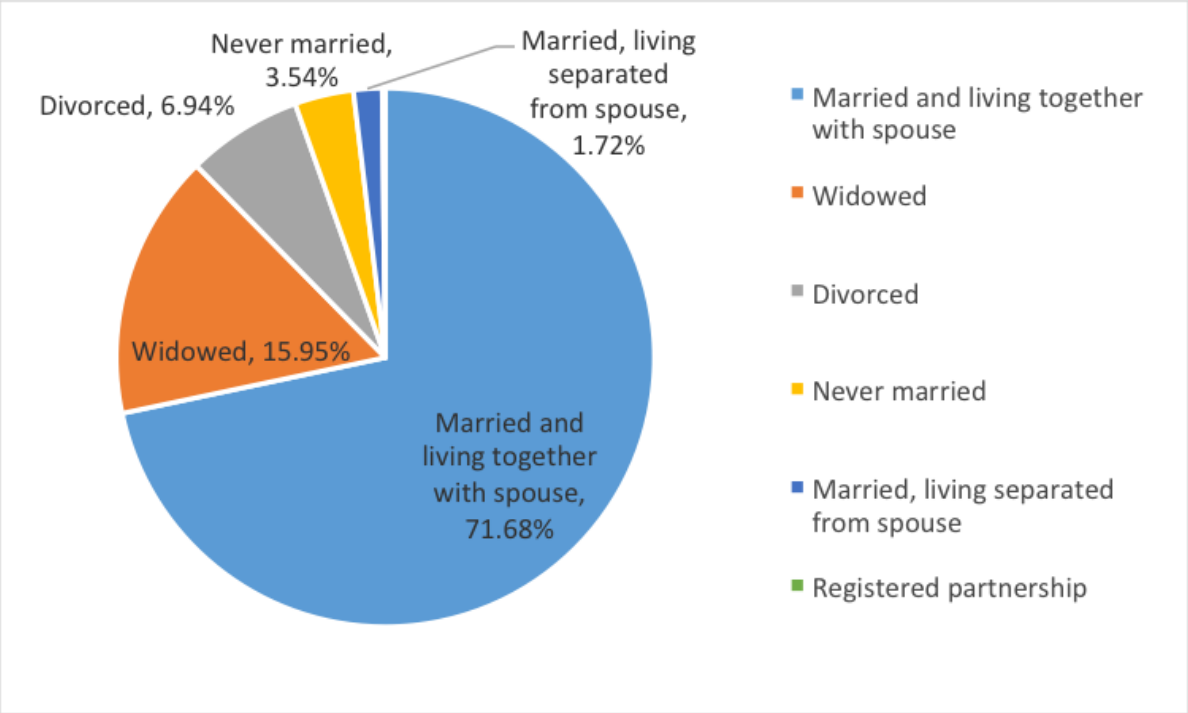

Figure 2.10: Marriage status of the elderly people in Germany (Data source: SHARE survey wave 6)

NUMBER OF CHILDREN

The number of family members is also important to the happiness of the elderly, especially when they are in sickness and need someone to take care of them physically and mentally. Ambulant care is still taking the dominant role in Germany's elderly care system. Regular care and visit of the offspring can greatly comfort the elderly. Based on the survey, about 22 percent of the elderly in Germany have one child. People having 2 or 3 children represent 40percent and 19 percent, respectively. 9.6 percent of the elderly people have no child and 1.43 percent have more than 5 children. From the statistics, it shows that the nearly half of the elderly have 2 or 3 children. It is rear for the elderly to have no children at all. It can be seen that German people pay great attention to the family. The distribution of the number of the children is listed in Fig. 2.11.

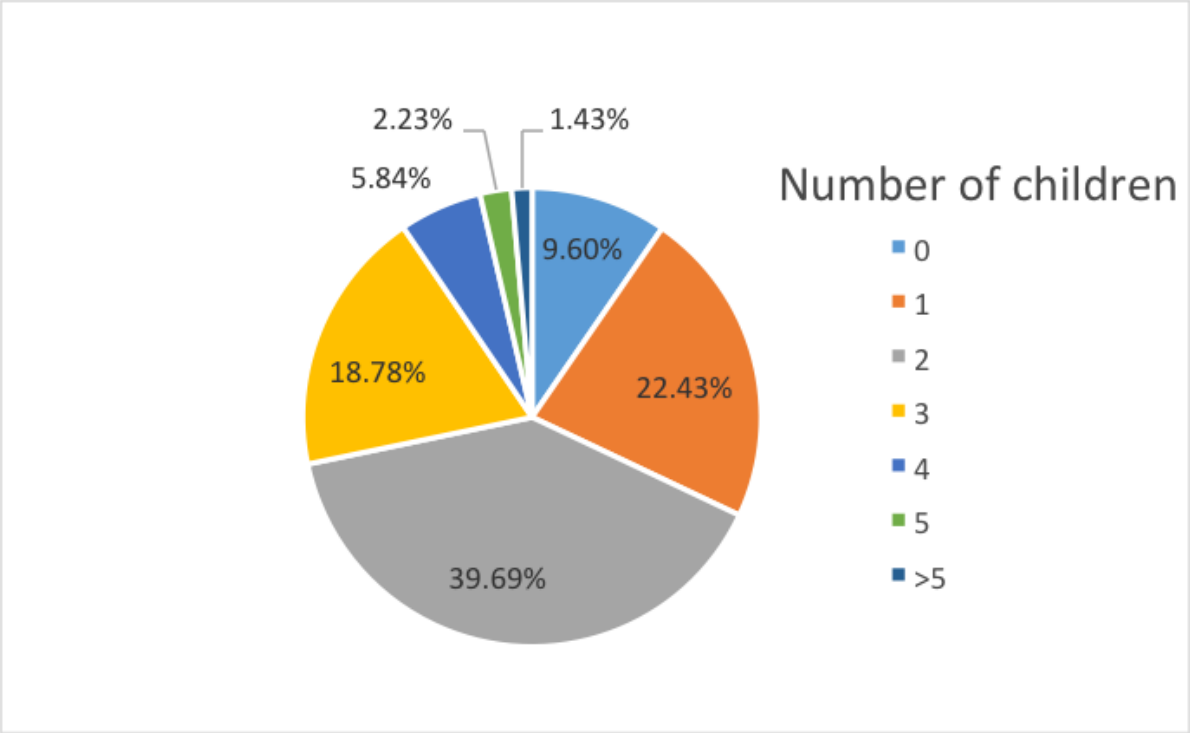

Figure 2.11: Number of children of elderly people in Germany. (Data source: SHARE survey wave 6)

MEETING FREQUENCY WITH CHILDREN

For the elderly, the regular meeting with their children and grand children brings a lot of happiness. It is a natural question that how often the elderly meet with their children. Based on the results of the SHARE study, about 23 percent of the elderly meet with their children almost every day, and nearly 28 percent of the elderly meet their children several times a week, which means nearly half of the elderly meet their children quite frequently. The other half of the elderly do not have a meeting with their children not very often, however, the frequency of once a week can still be guaranteed for 24 percent of the elderly. Only 2.87 percent of the subjects confirmed that they never met with their children in the survey. It can be concluded that the family meeting are quite active with a relatively high frequency in Germany. Most of the elderly people could meet their child/children quite often, once or several times a week. The statistical results of the meeting frequency derived from the SHARE study is shown in Fig. 2.12.

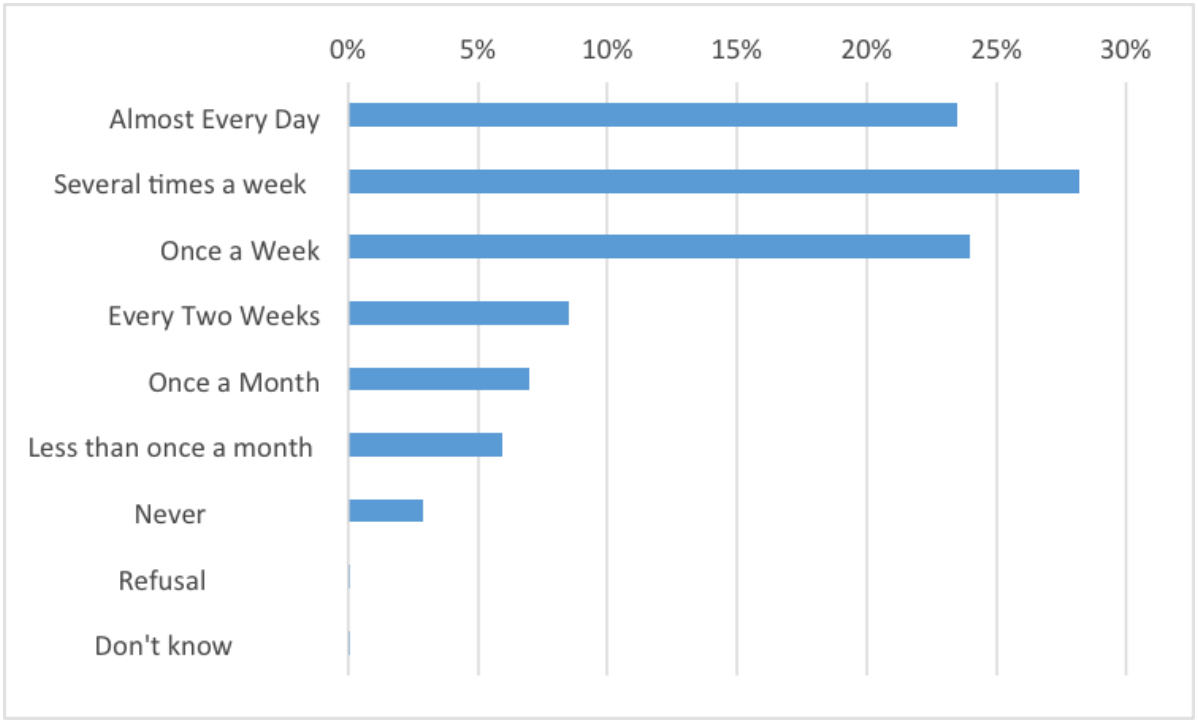

Figure 2.12: Frequency of meeting with their child/children of the elderly people in Germany. (Data source: SHARE survey wave 6)

SELF ASSESSMENT OF HEALTH CONDITION

In the SHARE study, health condition of the subjects is of much concern, many questions are related to health conditions of the elderly. One particular question is designed to investigate how healthy the candidates think about themselves. Nearly 40 percent of the interviewee assess themselves with a good condition. Only about 15 percent of the elderly consider themselves to be in excellent or very good health status. Another group of candidates, about 35 percent of respondents, thought their health was fairly alright, and the respondents who have given a poor self assessment of health status take about 10 percent. As shown in Fig. 2.13, most of the elderly people in Germany consider themselves in good health status, only a small part of them assess their own health situation as poor. The reasons behind might lie in the enthusiasm with sport activities and the solid health and elderly care systems.

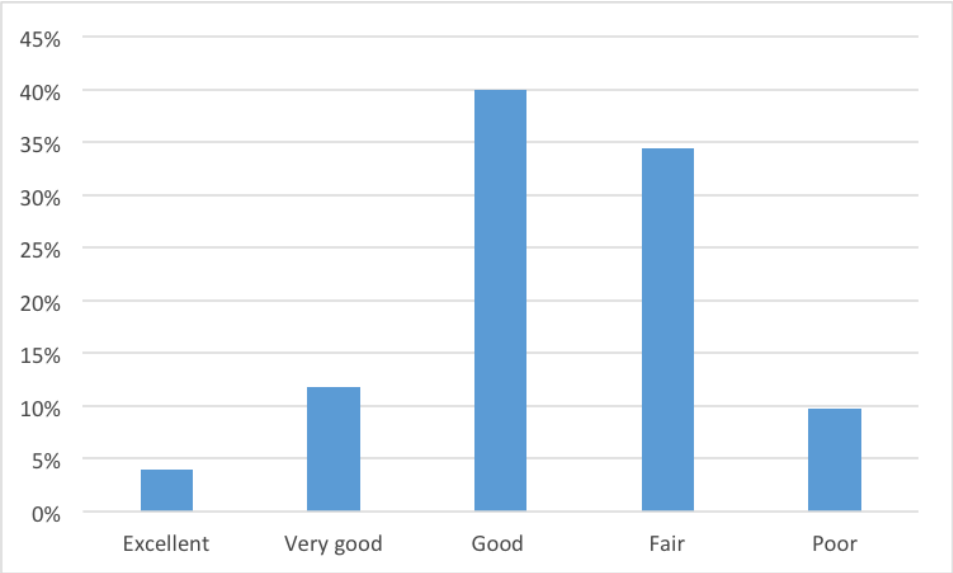

Figure 2.13: Self assessment of health status of elderly people in Germany. (Data source: SHARE survey wave 6)

CHRONIC DISEASES

Another question of the SHARE study regarding the health condition of the elderly is the type of chronic diseases that the subjects are suffering. It is very common that the elderly people bear single or multiple chronic diseases, even though their general physical condition is acceptable. Based on the results of the survey, the most common chronic disease that harms the elderly health is the hypertension. About 48 percent of the elderly people are diagnosed with hypertension. Other common chronic diseases are dyslipidemia, diabetes, heart problems, arthritis and cataracts, which have been all reported with more than 10 percent of the interviewee. Other chronic diseases such as chronic lung diseases, cancer, stoke or Parkinson disease are confirmed with lower probabilities less than 8 percent. It is noticeable that hypertension, hyperlipidemia and hyperglycemia are still the major threats to the elderly's health, as shown in Fig. 2.14.

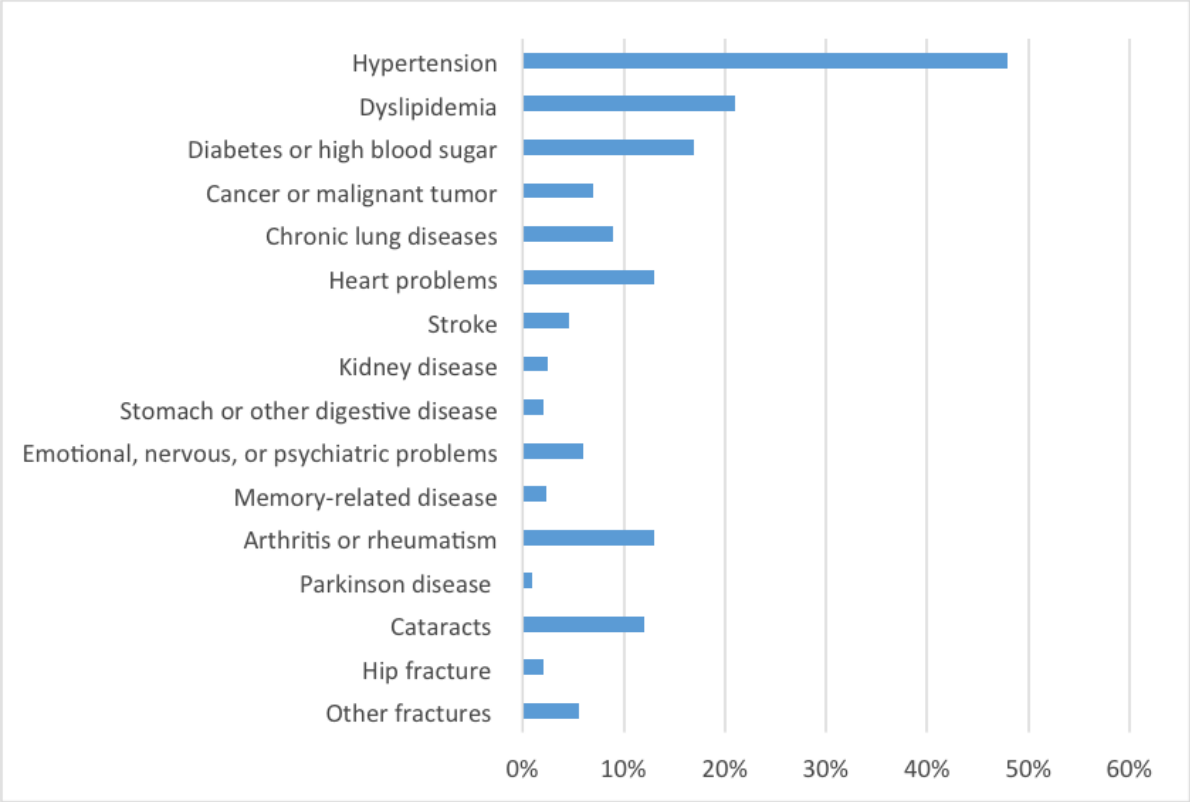

Figure 2.14: Which kind of chronic diseases elderly people are suffering in Germany. (Data source: SHARE survey wave 6)

CAUSE OF DEATH

Normally the chronic diseases are not the direct causes for death of the elderly. Based on the report of WHO, the most common cause of death for both female and male in Germany is chronic ischaemic heart disease. Heart failure took the second place in the top 10 causes of death of female. Next to ischemic heart disease, the second and the third causes of death of male are lung or bronchial cancer and heart attack [71]. Figures 2.15 and 2.16 have ranked the top 10 causes of death of female and male in Germany, respectively. The statistics shows that most of the causes of death for both male and female are the same but with different ranking positions. For instance, lung cancer is the second major cause of death for male, which might be correlated to the fact that there are more male smokers than female.

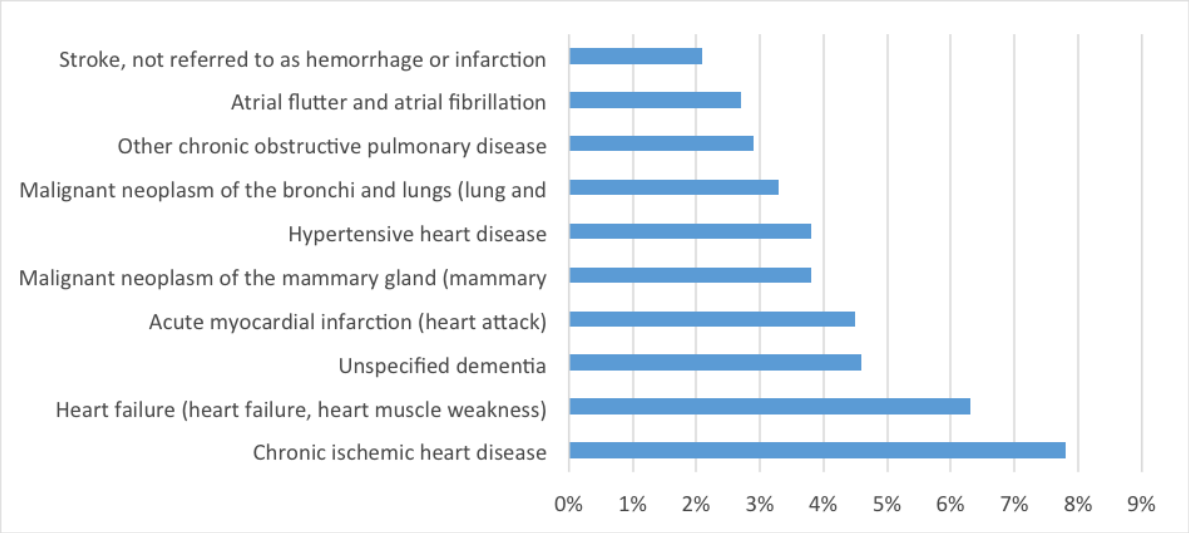

Figure 2.15: The 10 most common causes of death of female in Germany 2015[71]

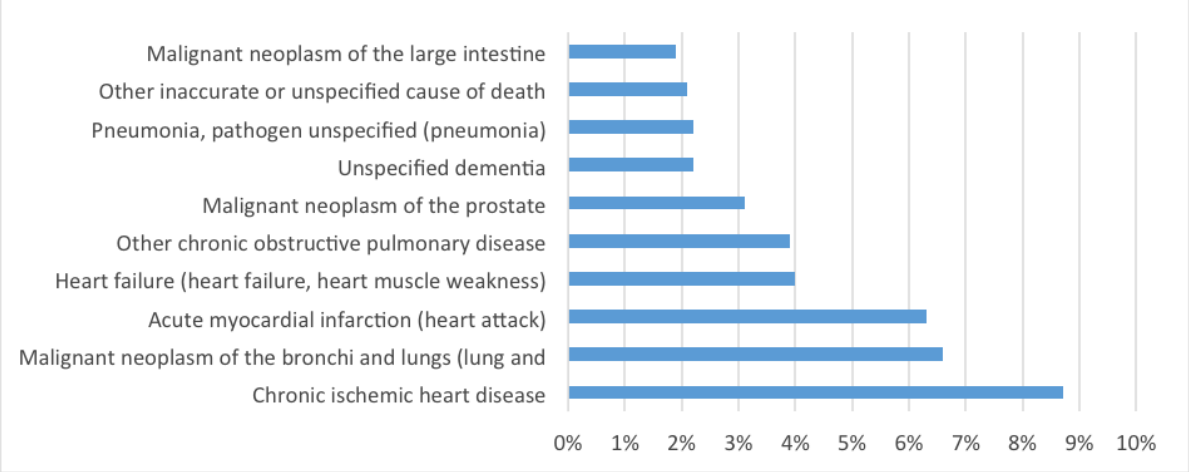

Figure 2.16: The 10 most common causes of death of male in Germany 2015[71].

TYPE OF DISABILITIES

The statistics of disability of the elderly reveals for which aspect the elderly might needs assistance most. Based on the data published by German Federal Department of Statistics, the most common disability among elderly people is physical disabilities [72], which can affect the mobility or dexterity of a person. About eight percent of the elderly in Germany suffered from mobility problems. Examples of physical disabilities include amputation, arthritis, cerebral palsy, upper limbs,multiple-sclerosis,muscular dystrophy,acquired spinal injury (paraplegia or quadriplegia), post-polio syndrome and spina bifida etc. Moreover, there are a large variety of different kinds of physical disabilities that may have existed

since birth or it could be the result of an accident, illness, infection, disease, degeneration, medical condition or the result of congenital factors. The elderly with physical disabilities require nursing care assistance or some aiding equipment. Other type of disabilities that challenge the life of the elderly include brain damage, visual, hearing and speech impairment (See Fig. 2.17).

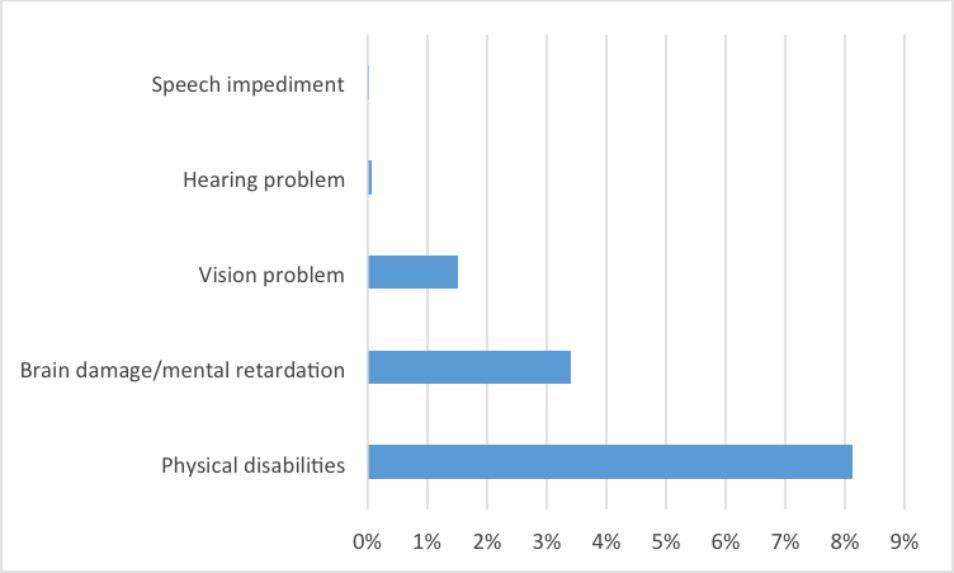

Figure 2.17: Status of disability of elderly people in Germany[72].

2.2.2. LIVING SITUATION OF THE CHINESE ELDERLY

CHARLS STUDY

The aim of the China Health and Retirement Longitudinal Study (CHARLS) is to collect a high quality nationally representative sample of Chinese residents ages 45 and older to serve the needs of scientific research on the elderly. The baseline national wave of CHARLS is being carried out in 2011 and includes about 10,000 households and 17,500 individuals in 150 counties/districts and 450 villages/resident committees. The individuals will be followed up every two years. All data will be made public available one year after the end of data collection. The design of CHARLS is based on the Health and Retirement Study (HRS), and it is related to the aging surveys such as the English Longitudinal Study of Aging (ELSA) and the Survey of Health, Aging and Retirement in Europe (SHARE).

The pilot survey of CHARLS was conducted in two provinces (Gansu and Zhejiang) in 2008 and collected data from 48 communities/villages in 16 counties/districts, covering

2,685 individuals living in 1,570 households. The response rate of the pilot survey was 85%. The CHARLS questionnaire includes the following modules: demographics, family structure/transfer, health status and functioning, biomarkers, health care and insurance, work, retirement and pension, income and consumption, assets (individual and household), and community level information. CHARLS has received critical support from Peking University, the National Natural Science Foundation of China, the Behavioral and Social Research Division of the National Institute on Aging and the World Bank.

In this section, a selection of most representative indicators that directly reflect the elderly living situation in China are statistically analyzed. Notice that the samples that were selected by CHARLS study are the residents ages 45 and older, this work only focuses on the elderly ages 65 and older. Hence, the samples age between 45 and 64 were excluded from the statistical analysis derived here.

MARITAL STATUS

Still the marital status of the elderly is considered first. According to the CHARLS survey, about 72.73 percent of the elderly people in China are married and living together with their spouse, and about 22.72 percent of the elderly are windowed. The elderly people who get divorced have taken 0.46 percent, and 0.93 percent of the surveyed subjects have never been married. Another group who married but living separated from spouse takes about 2.72 percent. From the statistics, most elderly people in China are married with spouse. The proportion of those who are never married and the divorce rate are much lower than the corresponding numbers in Germany. Figure 2.18 has shown the percentages of each marital group of the elderly in China.

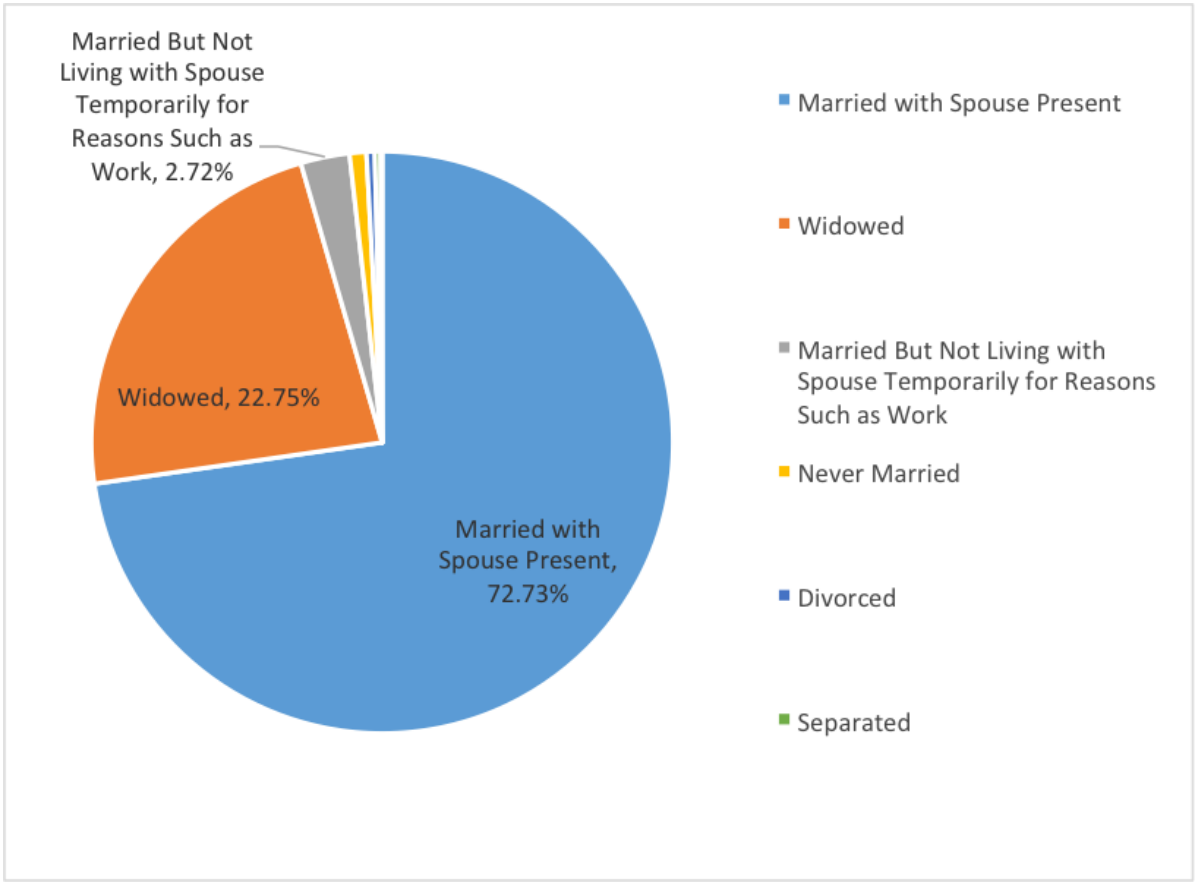

Figure 2.18: Marriage status of the elderly people in China (Data source: CHARLS survey 2015)

NUMBER OF CHILDREN

In China, home care is taking the dominant role in China's elderly care system. According to the CHARLS survey, only 6.13 percent of the elderly people in China have one child, and about 20,38 percent of them have two children. Elderly people having three or four children represent 25.11 percent and 20.64 percent of them, respectively. About 5.22 percent of the elderly people have no child and 9.58 percent have more than five. Compared with Germany, most of the elderly people in China have more than two children. The proportions of elderly people having only one child or no child are higher in Germany. The detailed statistical results regarding the number of the children is given in Fig. 2.19.

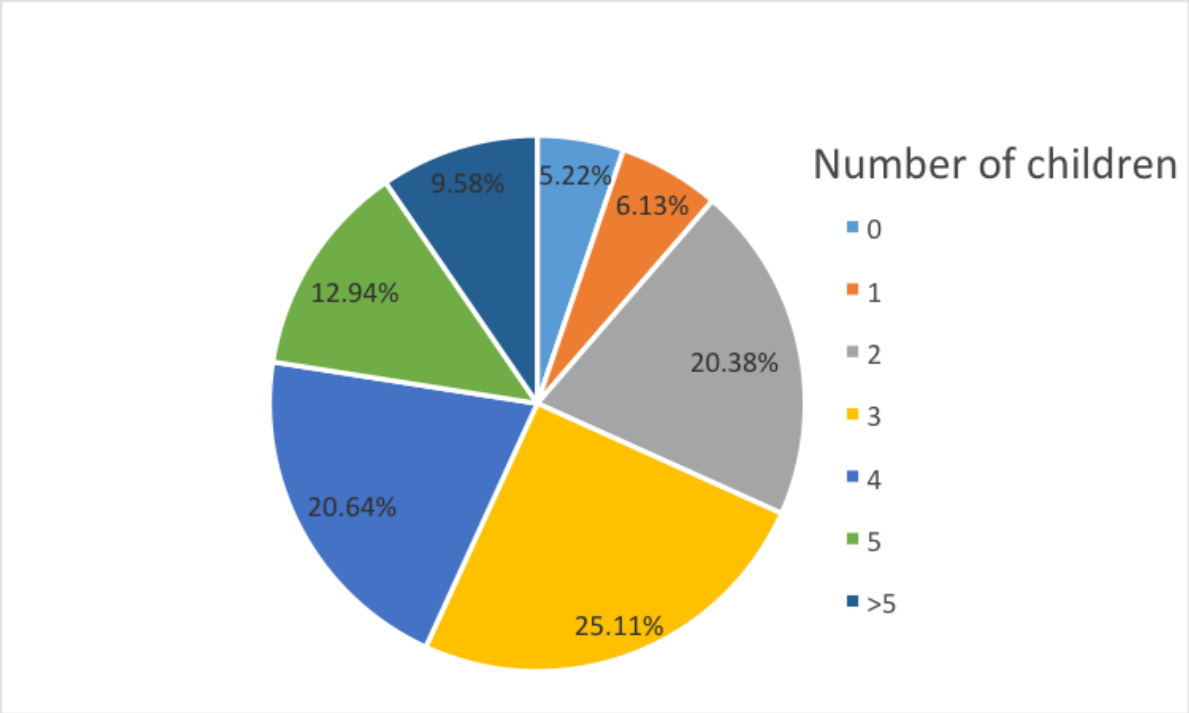

Figure 2.19: Number of children of elderly people in China. (Data source: CHARLS survey 2015)

MEETING FREQUENCY WITH CHILDREN

The statistical results of the meeting frequency derived from the CHARLs study is shown in Fig. 2.20. Based on the results of the CHARLS study, about 20 percent of the elderly meet with their children almost every day, and nearly 7 percent of the elderly meet their children several times a week. Similar to Germany, most elderly people in China meet their child or children often. However, the proportion of elderly people who meet their child/children with a relatively low frequency is higher than that of Germany. For instance, about 17 percent of the elderly get a chance to meet their children only once a year. Other low frequencies such as once every six months, once every three months and once a month also associated with larger percentage numbers, which are 8%, 9%, and 12%, respectively. About 4 percent of the elderly people never have visit of the child/children. The major reason behind it is the unbalanced economic development in China. There are much more working opportunities in the developed provinces on the east, or economic central cities in the same province, which leads to the people rush to these regions or cities for a better working life. Additionally, due to the rapid pace of development and limited working holidays, the chance for the children to meet with their parents is rare during the year. They

can only come visit their parents in the spring festival (traditional Chinese new year).

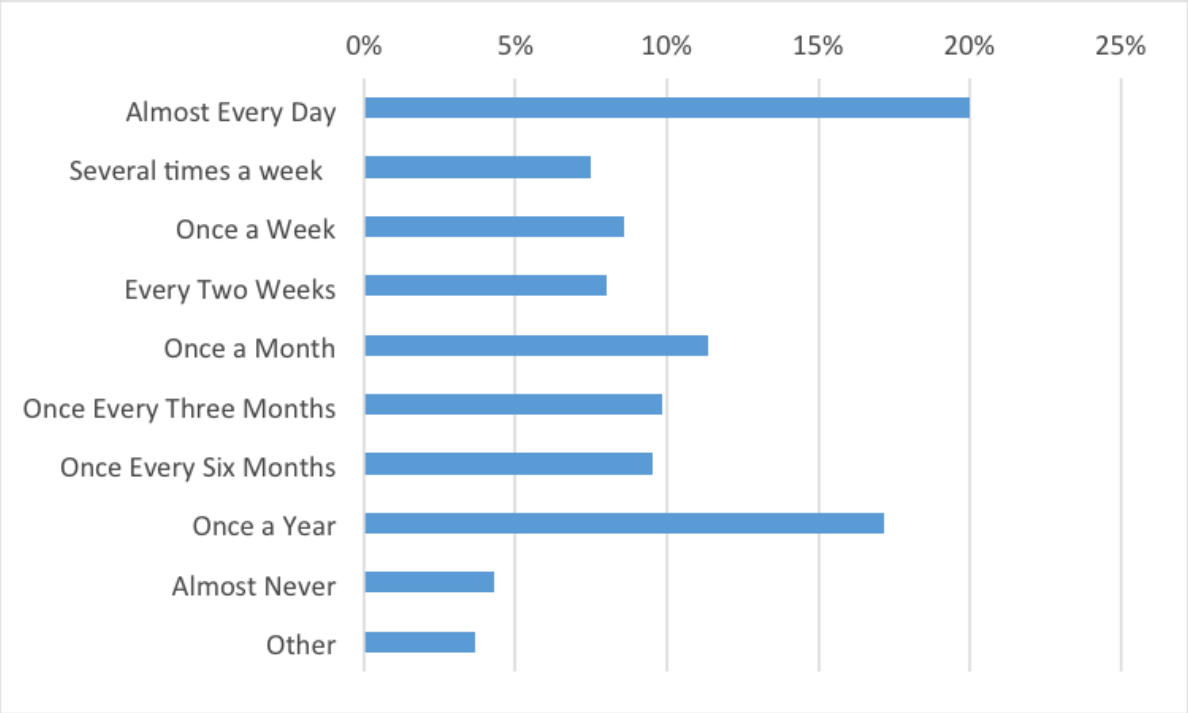

Figure 2.20: Frequency of meeting with their child/children of the elderly people in China (Data source: CHARLS survey 2015)

SELF ASSESSMENT OF HEALTH CONDITION

Similar to the SHARE study, health condition is one of the most important topics, and many questions raised in CHARLS study are related to health conditions of the elderly. Regarding the question how healthy the candidates think about themselves, almost the same distribution with slight differences is observed compared to the results of German elderly. Nearly 30 percent of the interviewee assess themselves with a good condition. Only about 15 percent of the elderly consider themselves to be in excellent or very good health status. Another group of candidates, about 35 percent of respondents, thought their health was fairly alright, and the respondents who have given a poor self assessment of health status take about 18 percent. As shown in Fig. 2.21, most of the elderly people in China consider themselves in good health status, only a small part of them assess their own health station as poor.

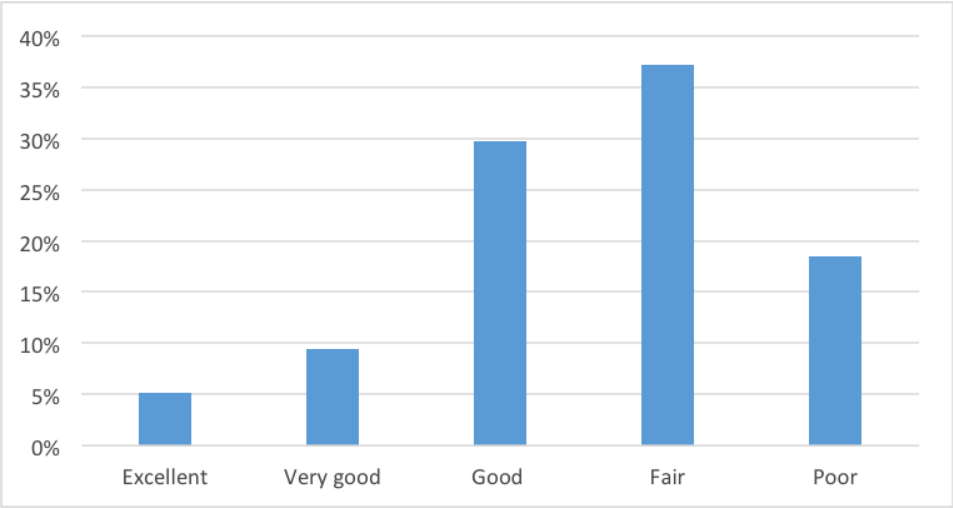

Figure 2.21: Self assessment of health status of elderly people in China (Data source: CHARLS survey 2015)

CHRONIC DISEASES

Based on the results of CHARLS survey, the most two common chronic disease that harms the elderly health in China are the hypertension and arthritis. About 39 percent of the elderly people are diagnosed with hypertension, and also 39.51 percent of people aged over 65 years old are diagnosed by the doctor with arthritis or rheumatism. The reason that arthritis acts as most popular chronic disease might resides at the polluted environment and smoking. The third popular chronic disease the elderly are suffering is the stomach or other digestive diseases, which accounts for 24.76 percent. Other common chronic diseases are heart problems, dyslipidemia, chronic lung diseases and diabetes, which have been all reported with more than 10 percent. of the interviewee. Other chronic diseases such as chronic lung diseases, cancer, stoke or Parkinson disease are confirmed with lower probabilities less than 8 percent. It can be seen that hypertension, arthritis and digestive disease are the major threats to the elderly health in China, as shown in Fig. 2.22.

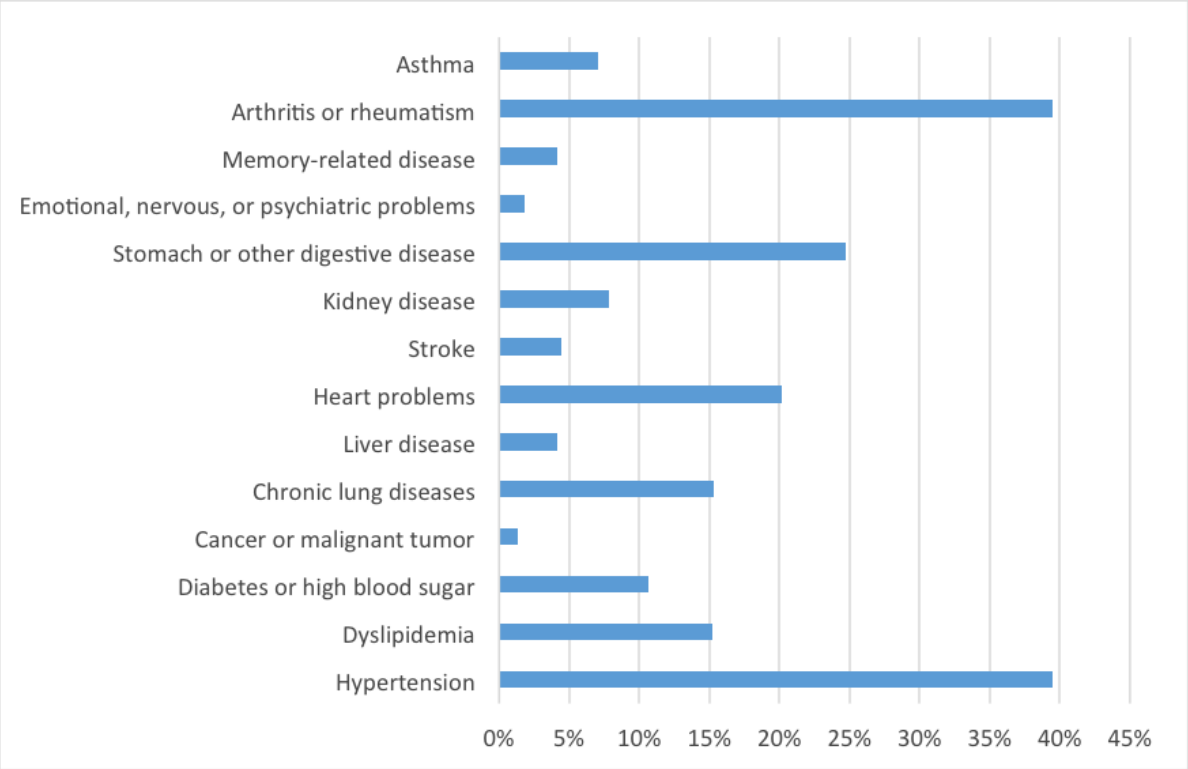

Figure 2.22: Which kind of chronic diseases elderly people are suffering in China (Data source: CHARLS survey 2015)

CAUSE OF DEATH

Based on the report of WHO, the most common cause of death for both female and male in China is different. Ischaemic heart disease has been the major cause of death for the female, whereas the malignant neoplasms is the number one killer for the male. Stroke takes the second place in the top 10 causes of death of both female and male. Figures 2.23 and 2.24 list the ranked top 10 causes of death of female and male in China, respectively. The statistics shows that the top ten causes of death for both male and female are the same but with different ranking positions. Compared to the corresponding statistics of Germany, there is still a large overlap among the causes of death in two countries, which means basically the elderly in both countries face the same life threats.

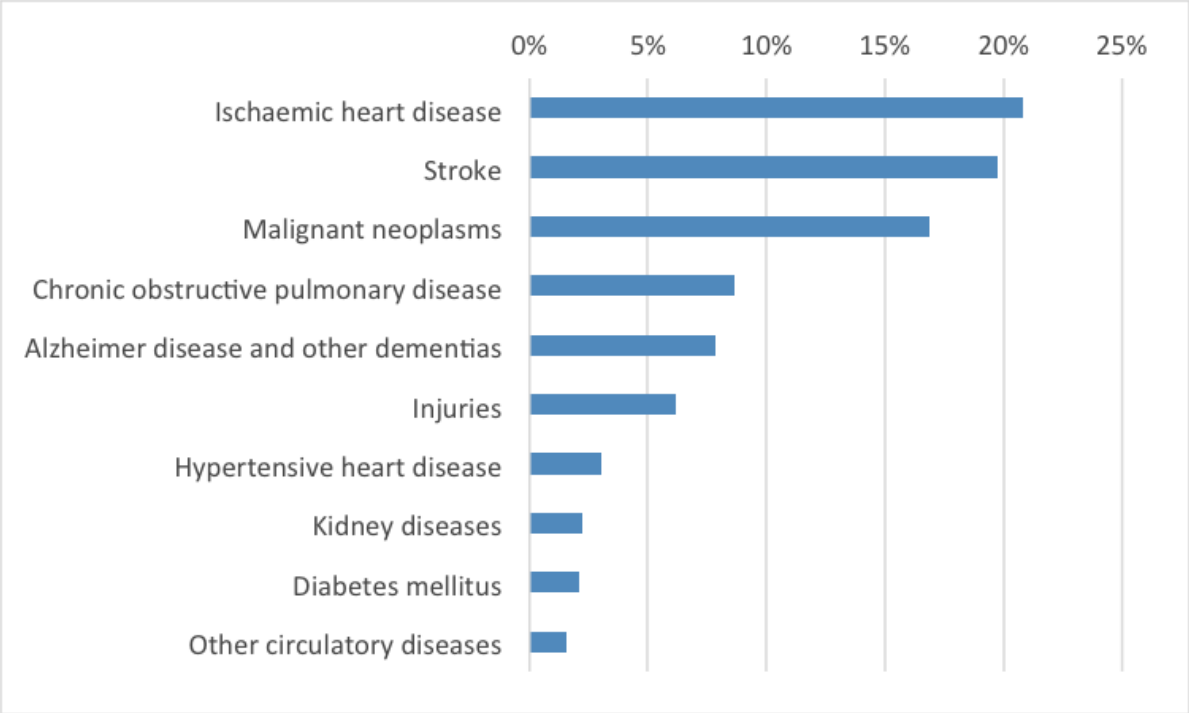

Figure 2.23: The 10 most common causes of death of female in China 2016[71].

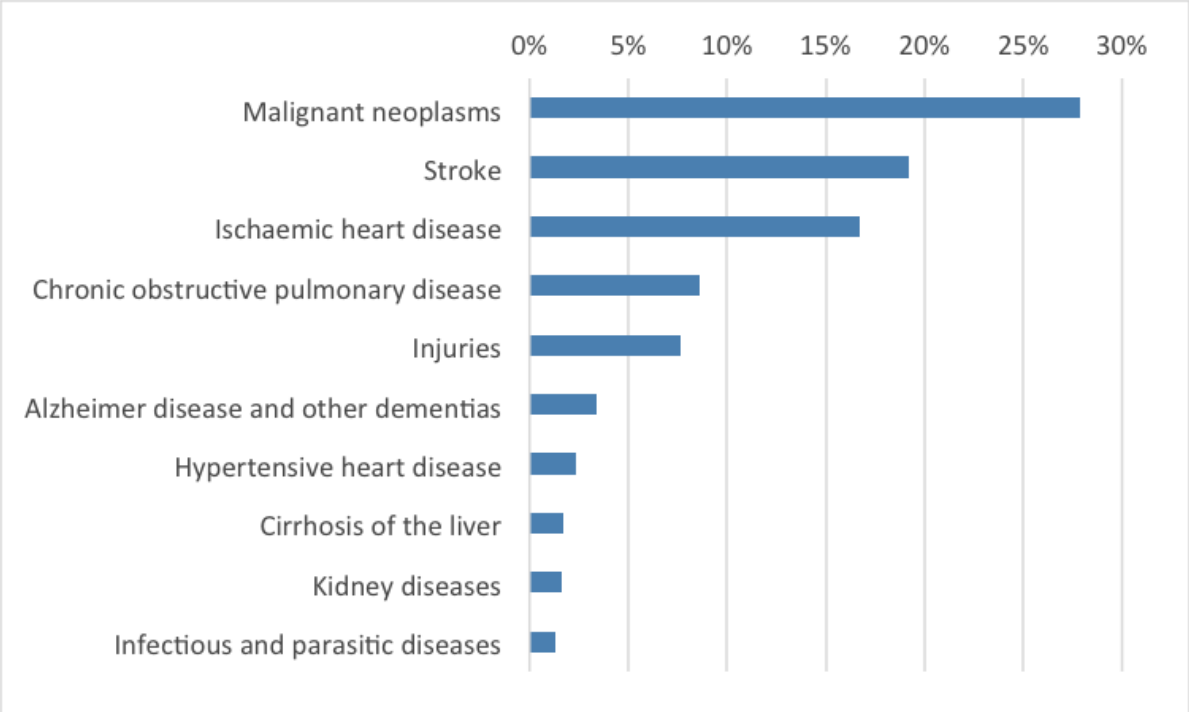

Figure 2.24: The 10 most common causes of death of male in China 2016[71].

TYPE OF DISABILITIES

Based on the data published by CHARLS study, the most common disability among elderly people of China is hearing problem, which is different compared to the German elderly who suffer most from physical disabilities. About twenty-eight percent of the elderly in China suffer from hearing weakness, and about eighteen percent of the elderly have difficulties in vision. One possible reason could be the corresponding screening programs for hearing and vision in China are not as complete as in Germany. Early detection of the hearing and vision problems will end up with more successful treatments. Besides, the hearing aid devices are not as popularized as in Germany, due to the high cost. Other type of disabilities that challenge the life of the elderly include physical disabilities, brain damage, and speech impairment (See Fig. 2.25).

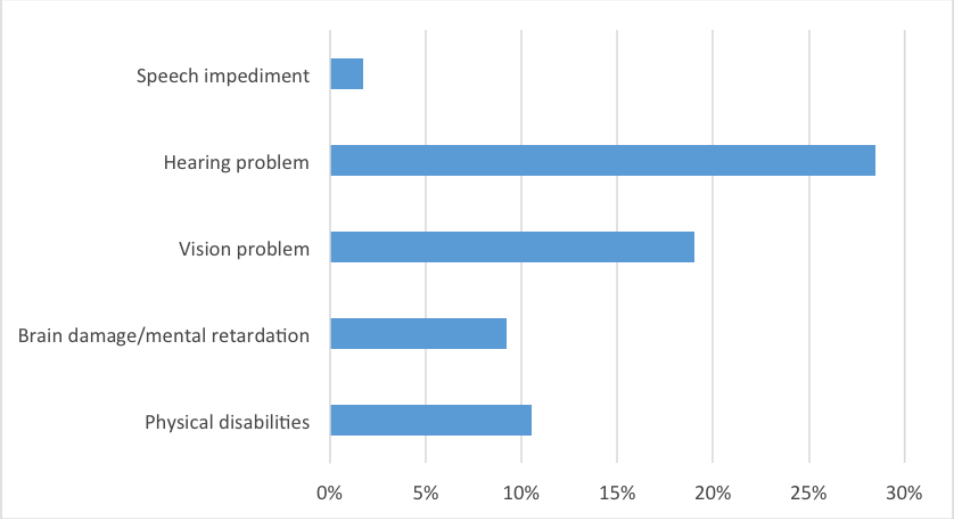

Figure 2.25: Status of disability of elderly people in China. (Data source: CHARLS survey 2015)

2.2.3. COMPARISON OF LIVING SITUATION OF THE ELDERLY IN GERMANY AND CHINA

COMMON CHRONIC DISEASES

As mentioned above, the most common chronic diseases of the elderly in Germany are hypertension, dyslipidemia, diabetes or high blood sugar, arthritis or rheumatism, and heart problems. On the other hand, the most common diseases among Chinese elderly are hypertension, arthritis or rheumatism, stomach or other digestive disease, heart problems

and chronic lung diseases.

The first apparent difference is that the incidence of stomach or digestive diseases among Chinese elderly is higher than that in Germany. According to WHO data, almost three quarters of the new stomach cancer cases occurred in Asia, and more than two fifths occurred in China. About forty-nine percent of all new oesophageal cancer cases occurred in China [73]. The incidence of chronic digestive disease in Germany is not that significant. One of the most important reasons that may lead to stomach cancer is certain dietary habits, which may result in exposure to N-nitroso compounds that are associated with an increased risk of gastric and oesophageal cancer [74]. Specifically, these eating habits include high intakes of salt-preserved or smoked foods and low intakes of fresh fruit or vegetables, fresh meat or fish and dairy products. As a developing country, it was a very common phenomenon that in winter pickled vegetables with salt served as main dishes, resulting in low intake of fresh vegetables, when the living standards are relatively low previously. An analysis of 60 relevant studies suggested a potential 50 percent higher risk of gastric cancer associated with intake of pickled vegetables, and perhaps the association is even stronger in China [75].

Besides, H. pylori infection is a major cause of peptic ulcer disease and chronic gastritis. Previous studies suggest that the prevalence of H.pylori infection is high in developing countries including China. An overall 60-70 percent prevalence rate of H. pylori infection was reported [76]. Within China, the infection rate in rural areas is higher than that in cities. A more recent systematic review reported that the mean prevalence of H pylori infection was 66 percent for rural Chinese populations and 47 percent for urban populations [77]. This is determined by the propagation route of H. Pylori. Previous studies have shown that several factors might be positively related to the spread of H.pylori, such as living conditions. Crowded living conditions, particularly a number of children in the household share a bed with others in childhood, assist the spread of H.pylori [78]. In addition, the prevalence of H. pylori infection tends to be higher in the subjects who did not have indoor toilet or running water [79, 80]. The source of drinking water is another important influencing factor of H.pylori infection [81]. All these factors mentioned above are recognized as common problems in rural area, which directly leads to a relatively higher infection rate of H. pylori.

Another significant difference is that the incidence of chronic respiratory diseases (CRDs) of Chinese elderly is higher than that of German elderly. Based on the statistics of WHO, more than one third of all newly diagnosed lung cancer cases occurred in China [73]. Many determinants have been identified for CRDs. The direct and indirect exposure to tobacco smoke is the principal risk factor. Other factors include heavy exposure to indoor and outdoor air pollution , occupational agents, allergens, and multiple early lung infections [82]. The air pollution levels in Chinese cities are among the highest observed in the world. Because of the rapid economic growth and urbanization in the past decades, the air pollution in many cities in China is extensive [83, 84] and way above health basic standards. Air pollution-associated health impacts have become a growing concern. There are many risk factors for air pollution. In China, coal has been the major energy source and the leading culprit of air pollution. According to the China Energy Statistical Yearbook, China consumed over 3.82 billion metric tons of coal in 2017, half of which was burned by the power sector. Coal burning leads to high emissions of fine particulates matter (PM2.5) to the atmosphere, which serves as the main source of air pollution [85]. Previous studies have discovered that the range of exposure throughout PM is positive associated with lung cancer [86].

MAIN CAREGIVERS OF THE ELDERLY

In Germany, the largest group of the main caregivers are the daughters with a percentage of 29. Almost as often are the wives with 26 percent and the husbands represented with about 22 percent. One in ten caregivers is the son. And sons-in-law have taken 1 percent, which means they rarely provide care assistance to their parents-in-law. Even daughters-in-law, at around 5 percent, are rarely responsible for care. If the main caregivers are grouped together, caring for the relatives is mainly done in the context of spouses (48 percent) or their own children (39 percent). Other relatives or friends and acquaintances (3 percent) are seldom to be main caregivers for those in need of care [87].

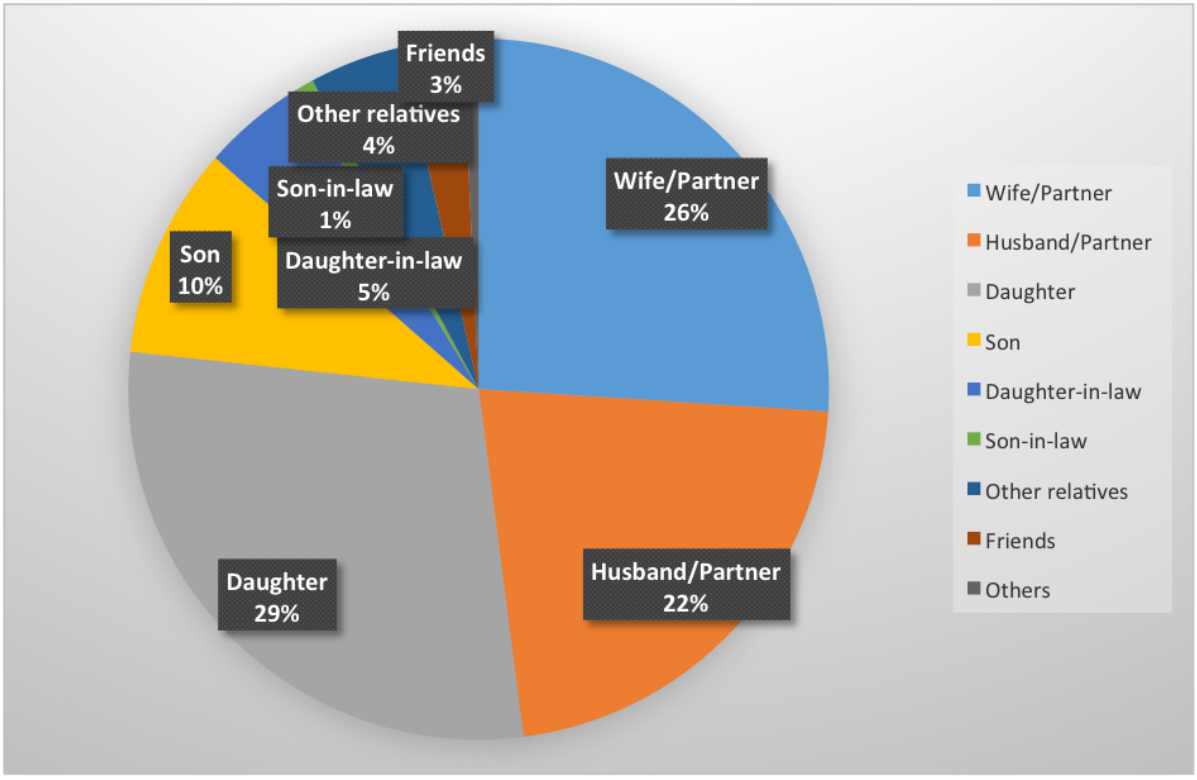

Figure 2.26: The statistics of caregivers of the elderly people in Germany.

Similar to the situation in Germany, although the need for nursing care from the elderly people in China is obvious, most of the people with such demand are taken care by their family members. Child and spouse play the most important role in home care. About 45 percent of the elderly people get help from their children with daily activities including dressing, bathing or showering, eating, getting into or out of bed and using the toilet. About 47 percent are helped by their spouse. Only 2 percent get assistance from the spouse of their children. Other caregivers such as nanny, volunteer or other relatives take only small portion in China.

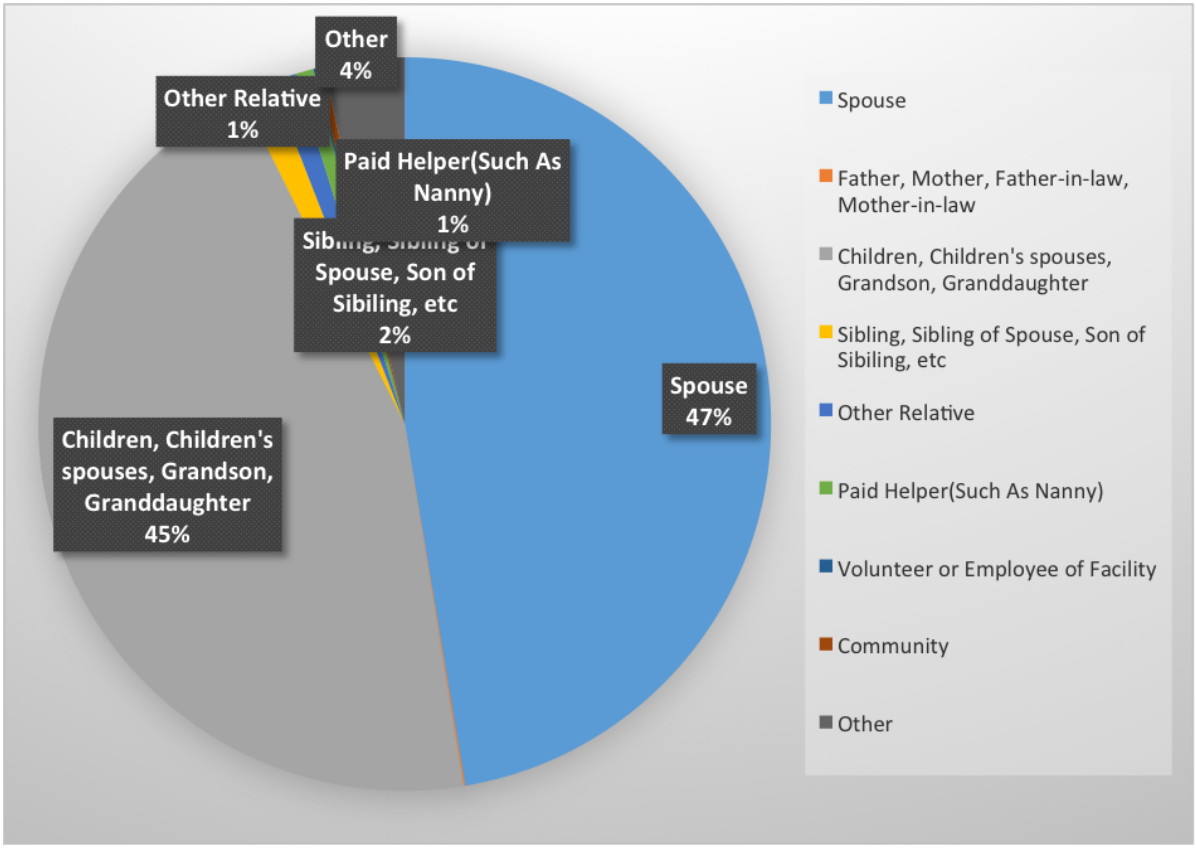

Figure 2.27: The statistics of caregivers of the elderly people in China.

OTHER LIVING CONDITIONS

Besides the difference lying in chronic diseases and main caregivers of the elderly people, the comparison of living conditions between German and Chinese elderly is summarized and depicted in Table 2.1.

	Germany	China
Living with children	26% live with children*	35.4% live with children*
Life expectancy	81.09 years old ***	75.99 years old***
Smoking rate	12.4% of men, 6.5% of women smoke [86]	total smoking rate in 2010 22.7% [87] 58.1% of men,12.8% of women smoke [88]
Weight	50.4% of men, 37.6 % of women are overweight; 0.5% of men, 2.2% of women underweight [89]	22.7% of men, 30% of women overweight; 10.3% of men, 9.6% of women underweight**
Disability	About 25% of the elderly [71]	45.26% of the elderly [90]
Need of nursing care	2.9 million people have need of nursing care within the meaning of SGB XI [91]	21.57 million people have need of nursing care [92]
Participation of pension insurance	80% of the elderly people participate in public old age pension (Statutory pension insurance)*	13,4% of the elderly people participate in pension program of the government and institutions or basic pension of the firms** 53% of the elderly people participate in new rural social pension insurance** 2,2% of the elderly people participate in urban residents pension **
Pension received per month	36% of the elderly receiving pension monthly 1000-2000 euros, 33% 500-1000 euros,14% >2000euros*	2,400 Yuan monthly (348.5 U.S. dollars) in 2016 (those who are involved in the basic pension program) [93]

*SHARE survey
**CHARLS survey
***World bank

Table 2.1: A comparison of living and health situation of the elderly people age over 65 years old in Germany and China[72, 88–95]

Regarding the pension insurance of China that mentioned in the table above, it is necessary to introduce the Chinese household registration system, that is what so called "HuKou". Hukou is the household registration system based on household as a unit [96–98]. Household registration verifies the legitimacy of a natural person living in a certain place. Since the 1950s, the formulation and implementation of the population management policy in China has been based on this system. In the 1950s and 1980s, China implemented a planned economic policy, whereby the personal materials were delivered by the universal distribution system, which relied on the household registration management system [99, 100]. At that time, individuals, attempting to move from rural to urban areas for non-agricultural work, must apply to the relevant authorities, and the approval limit for such kind of applications is strictly controlled. There are six types of permits required to work outside the province [101]. People who leave their place of residence do not have food quotas, unit housing, or public medical care [102]. Science, education, health, medical care, employment, marriage, etc. are also managed and controlled according to the household registration. At the end of the 1990s, China's household registration management system was loosened, but Hukou remained directly linked to welfare, schooling and employment opportunities [103, 104].

Since the establishment of the pension policy, it has also been influenced by the household registration system, which means it is impossible to implement a national unified pension insurance similar to Germany. At present, the development trend of China's household registration management is to completely eliminate the difference between urban and rural Hukou [105]. The reform of the pension system has also been adjusted accordingly. The new rural social pension and urban residents pension insurance have been fully implemented since 2012. The new pension systems are the results of adapting to this trend [106]. Pension programs of the government and institutions or basic pension of the firms are formulated for administrative agencies, institutions, employees, and urban flexible employees. Urban residents pension is configured for the urban non-employed people above 16 years old (excluding students), who do not comply with the pension programs of the government And institutions or basic pension of the firms. These residents can be voluntarily insured in the places where their households are registered. New rural social pension insurance is dedicated to the people above 16 years old (excluding students) in the rural

area, who are not participating the pension program of the government and institutions or basic pension of the firms. Again these people may voluntarily participate in the places where their households are registered. In 2014, the pension system was further developed by merging the new rural social pension insurance and urban residents pension system into Residents' Pension, which covers all the rural and urban residents above 16 years old (excluding students), who are non-Staffing of government affiliated institutions and are not part of pension insurance of the firms [107–111]. According to the Ministry of Human Resources and Social Security of China, by the end of 2017, the total number of people participating in basic pension insurance was 915 million. Among them, the number of employees participating in the pension insurance of the firms was 402 million, and the number of people who are secured by the basic pension insurance for urban and rural residents was 513 million.

To provide a schematic overview of all the statistical comparison analysis which have been elaborated in previous sections, all compared items are summarized again and listed in the following tables (see Table 2.2).

	Comparison items	Germany	China
Population development analysis	Current birth rate	9	12
	Current fertility rate in 2015	1.50	1.62
	Current proportion of elderly people	21.1%	10.8%
	Proportion of elderly people in 2050	55.8%	25%
	Current proportion of people under 15 years	12.7%	17.2%
	Current median age	45.9	37
	Median age in 2050	50.3	46
	Current old-age dependency ratio	32	14
	Old-age dependency ratio in 2050	55	37.2
Marriage status	Married and living with spouse present	71.68%	72.73%
	Widowed	15.59%	22.75%
	Married, living separated from spouse	1.72%	2.72%
	Never married	3.54%	0.93%
	Divorced	6.94%	0.46%
	Separated		0.32%
	Cohabitated	0.18%	0.09%
Number of children	0	9.6%	5.22%
	1	22.43%	6.13%
	2	39.69%	20.38%
	3	18.78%	25.11%
	4	5.84%	20.64%
	5	2.23%	12.94%
	>5	1.43%	9.58%
Meeting frequency with children	Alost everyday	23%	20%
	Several times a week	28.2%	8%
	Once a week	24%	9%
	Every two weeks	8.5%	8%
	Once a month	7%	11%

	Comparison items	Germany	China
Meeting frequency with children	Almost never	2.9%	4%
	Other(refusal, don't know)	0.08%	4%
Self assessment of health condition	Excellent	4%	5%
	Very good	12%	9%
	Good	40%	30%
	Fair	34%	37%
	Poor	10%	18%
Chronic diseases	Hypertension	48%	39%
	Dyslipidemia	21%	15%
	Diabetes or high blood sugar	17%	11%
	Cancer or malignant tumor	7%	1%
	Chronic lung diseases	9%	15%
	Heart problems	13%	20%
	Stroke	5%	4%
	Kidney disease	3%	8%
	Stomach or other digestive disease	2%	25%
	Emotional, nervous, or psychiatric problems	6%	2%
	Memory-related disease	2%	4%
	Arthritis or rheumatism	13%	40%
	Liver diseases	-	4%
	Asthma	-	7%
	Parkinson disease	1%	-
	Cataracts	12%	-
	Fractures	8%	-
Type of disabilities	Physical disabilities	8%	11%
	Brain damage/mental retardation	3%	9%
	Vision problem	2%	19%
	Hearing problem	0.01%	28%
	Speech impediment	0.01%	2%

	Comparison items	Germany	China
Main caregiver	Spouse	Wife 26%, Husband 22%	47%
	Children, Children's spouses, Grandson, Granddaughter	Daughter 29% Son 10% Daughter-in-law 5% Son-in-law 1%	45%
	Other Relative	4%	1.1%
	Sibling, Sibling of Spouse, Son of Sibiling, etc.	-	1.43%
	Paid Helper(Such As Nanny)	-	0.7%
	Volunteer or Employee of Facility	-	0.1%
	Nursing Home	-	0.4%
	Community	-	0.4%
	Others	4%	4%
Available beds in nursing institutions (in thousand)	1991	-	900
	1995	-	990
	1999	645	-
	2000	-	1200
	2001	674	-
	2003	713	-
	2005	757	1560
	2006	-	1780
	2007	799	2410
	2008	-	2660
	2009	845	2890
	2010	-	3150
	2011	876	3530
	2012	-	4170
	2013	903	4940
	2014	-	5510

	Germany	China
Causes of death (female)	Chronic ischemic heart disease (8%)	Chronic ischemic heart disease (21%)
	Heart failure (6%)	Stroke(20%)
	Unspecified dementia (5%)	Malignant neoplasms(17%)
	Heart attack(5%)	Chronic obstructive pulmonary disease(9%)
	Malignant neoplasm of the breast (4%)	Alzheimer disease and other dementias(8%)
	Hypertensive heart disease(4%)	Injuries(6%)
	Malignant neoplasm of the bronchi and lungs (3%)	Hypertensive heart disease(3%)
	Other chronic obstructive pulmonary disease (3%)	Kidney diseases(2%)
	Atrial flutter and atrial fibrillation (3%)	Diabetes mellitus(2)
	Stroke (2%)	Other circulatory diseases(2%)
Causes of death (male)	Chronic ischemic heart disease(9%)	Malignant neoplasms(28%)
	Malignant neoplasm of the bronchi and lungs(7%)	Stroke(19%)
	Heart attack(6%)	Ischaemic heart disease(17%)
	Heart failure (4%)	Chronic obstructive pulmonary disease(9%)
	Other chronic obstructive pulmonary disease(4%)	Injuries(8%)
	Malignant neoplasm of the prostate(3%)	Alzheimer disease and other dementias(3%)
	Unspecified dementia(2%)	Hypertensive heart disease(2%)
	Pneumonia(2%)	Cirrhosis of the liver(2%)
	Other inaccurate or unspecified cause of death(2%)	Kidney disease(2%)
	Malignant neoplasm of the large intestine(2%)	Infectious and parastitic disease(1%)

Table 2.2: Summarised overview of all compared items.

3

LONG-TERM CARE INSURANCE

3.1. LONG-TERM CARE INSURANCE IN GERMANY

Before the introduction of long-term care insurance (LTCI) in Germany, elderly care was treated in a traditional way, which was characterized by the fact that family and local authority were taking the dominance. Nursing homes were organized by religion institution, and nursing services were performed by citizens with limited nursing education background [112]. At that time, care services were still paid from the pension system. Moreover, the people that concerned relied on social assistance to an increasing large extent, especially in the inpatient area [113].

More than two thirds of the residents living in nursing homes were financed by social welfare, which requires a huge amount of the government budget [114]. The growing number of social welfare recipients became an unsustainable burden for a welfare state. In particular, the increasing risk of poverty has been criticized. Finally, the cost reduction of the communities turned to be a major incentive for introduction of statutory LTCI. Another problem was the instability resulting from the separation of medical treatment and nursing care services, including the associated organizational separation in health structures and financing conditions. Specifically, there was no precise definition for the term "need of nursing care" in the social code. Thus, it was for the self-management of health insurance

and the social courts to determine when and whether the persons should be assumed to have “need of nursing care”. Rothgang named it as a problem formulation phase before LTCI is finally introduced.

In 1989, Health Reform Law (Gesundheitsreformgesetz, GRG) decided to work out a solution, in which statutory health insurance would cover short term care service in substantial cases. However, the implementation of LTCI is still in dispute. The main point of contention is whether care insurance should be operated as private or social insurance. As an initiative, the State of Baden-Württemberg finally introduced a draft bill as a precaution against the financial risk of the elderly care in the federal council [115].

On 1. January 1995, LTCI was implemented as a compulsory insurance at length by adopting of the German Social Security Code XI (Sozial Gesetzbuch XI,SGB XI). Following the statutory health insurance, pension insurance, accident insurance and unemployment insurance, the last major gap in social care system in Germany has been closed. Since then, LTCI became the fifth column of social security as an independent new branch. This means: everybody who is eligible for statutory health insurance is automatically insured in the LTCI; moreover, any private health insurance must take out private nursing insurance [116, 117]. The service of LTCI was carried out in two phases.

- Introduction phase 1: service for ambulant care. People with need of nursing care, who are cared for at home, are entitled to benefit from LTCI since 01.04.1995.
- Introduction phase 2: service for inpatient care. For patients in residential care, services were first provided since 01.07.1996 by LTCI.

The aim of LTCI is to provide support for the elderly people to ensure the independence of their lives (§2 SGB XI). Care services that provided by LTCI should maintain their existing capabilities and recover their lost abilities if possible (§28 Abs.4 SGB XI). As a basic social insurance, the role of LTCI is to support the family members and the community, rather than replace them. One important principle is” LTCI follows health insurance.” Within this principle, statutory insured groups are:

1. All the statutory health insurance members are enrolled in LTCI automatically (§ 20 Abs.1 SGB XI).

2. Statutory health insurance members, who are unemployed or under 18 years old (students still in education or vocational training who are under 25 years old) are enrolled in LTCI automatically and exempt from contribution (§25 SGB XI).

3. People who participate in statutory health insurance voluntarily are obligated to join LTCI (§20 Abs.3 SGB XI).

4. People who participate in private health insurance are obligated to join private care insurance (§23 SGB XI).

By the end of 2016, totally 71.95 million people are insured by statutory LTCI, and 9.32 million are in private care insurance.

3.1.1. NEED OF ELDERLY CARE (PFLEGEBEDÜRFTIGKEIT)

According to the definition of SGB XI, the concept of "Need of elderly care" covers the following people.

- The persons who have health related impairments of independence or skills and therefore require assistance from others.

- The persons who can not independently compensate or manage physical, cognitive or psychological impairments or health-related burdens or demands.

- The persons whose need of elderly care must last for at least six months and consist of at least the difficulties specified in § 15 SGB XI.

Ultimately, the nursing insurance fund decides whether the insured person in the sense of social care insurance is in need of care. It is based on the assessment of the experts of Medical Service of Health Insurance (Medizinischen Dienst der Krankenversicherung, MDK) for publicly insured persons, or the experts of the company MEDICPROOF GmbH for privately insured persons. On the basis of their assessment guidelines, these experts assess in personal discussions with the insured persons, whether and to what extent they are in need of care in the sense of the Social Care Insurance Law(SGB XI). In December 2015, around 2.86 million people in Germany were in need of long-term care according to the SGB XI. Eighty-three percent of those in need of care were 65 and older, and more than

a third (37%) were at least 85 years old. The majority of those in need of care were female, who have taken 64 percent. In 2016, among totally 10.5 million of applicants, about 7.5 million (71.2 %) are approved by the assessment. (Statistisches Bundesamt,StBA)

3.1.2. LEVEL OF CARE SERVICES

The help that provided by care services and financed by the LTCI is to support the persons in need by taking over their daily activities partially or totally, or just supervising or guiding in order to accomplish those activities by themselves (§14 Abs.3 SGB XI). According to SGB XI, care services are divided into basic care and treatment care.

Basic care refers commonly to the supports during daily living activities, which are not bound to a certain medical treatment or directly relative to a person. The contents of basic care include:

- Personal hygiene care: help by washing, bath, tooth brushing, hair combing, shaving, urinating and defecating.
- Nutrition care: meal preparation or feeding.
- Mobility: getting up/falling asleep, dressing/undressing, walking, standing, taking stairs, finding their way home.
- Housework: shopping, cooking, room cleaning, dish washing, laundry, operate heating device.

Treatment care can be carried out for insured elderly people in their own household or in the household of their family in the context of health care. This is always the case if the doctor considers it is necessary, and a medical order exists. The treatment care measures are provided for the insured person to heal the illness, prevent its exacerbation, alleviate illness complaints. Treatment care service includes:

- Medical treatment care based on the prescription: This can happen, for example, when a patient is discharged from the hospital after an operation, he has to continue to be cared for in bed and his wound should be treated properly.

- Hospital care prevention: Sometimes a physician prescribes the treatment care if the medical care at home prevents or shortens hospitalization (hospital avoidance care).

- Backup care (Sicherungspflege): Often, a therapy is only possible if it is ensured that the patient is treated at home to the same extent as in the hospital. For instance, infusions, injections, blood pressure measurement or changing bandage should be given. In such cases, the doctor prescribes the so-called backup care.

The standardization of the level of care services is of great importance to ensure the service quality and optimize the resource allocation of the elderly care system. Before 2017, MDK has classified the care services into three different levels (§18 SGB XI). The standards to evaluate if a person fulfills the prerequisites of a specific level are defined systemically by considering many aspects, including the need for personal care, nutrition care, mobility and housework. The time that has to be spent on each activity is calculated. For example, tooth brushing is orientated to 5 minutes, and hair combing accounts for 1-3 minutes based on the guideline of the central associations of the nursing insurance fund (Spitzenverbände der Pflegekassen) for examination of "need of nursing care" on the basis of SGB XI (Begutachtungsrichtlinien- BRI) from 21.03.1997, version 08.06.2009. According to the SGB XI, the three levels of care services are defined as below in Table 3.1:

Care level	Description
Care level I	People with considerable need of care require assistance for at least two daily activities from one or more areas of basic care (personal hygiene, nutrition or mobility) at least once a day. In addition, multiple times of assistance for household in a week are necessary. The weekly time that spent for care services must be at least 90 minutes on average per day, of which more than 45 minutes have to be account for basic care.
Care level II	People with substantial need of care require assistance in the field of basic care at different time points at least three times a day. In addition, multiple times of assistance for household in a week are necessary. The weekly time that spent for care services must be at least 3 hours on average per day, of which more than 2 hours have to be account for basic care.
Care level III	People have the most substantial need for care when their need for assistance is around the clock. In addition, multiple times of assistance for household in a week are necessary. The weekly time that spent for care services must be at least 5 hours on average per day, of which more than 4 hours have to be account for basic care.
Hardship case	Under the circumstances that an exceptionally high demand of care exists, if the requirements of level III have been met, then it comes to the regulation of hardship case. In this case the benefits are higher than in other care levels. The prerequisites for determination of an exceptionally high demand of care are: • The necessary help in basic care is at least six hours a day, of which at least three times are at night. For people in residential care institutions, existing medical treatment care is also taken consideration. • Services of basic care could be provided only by several care staffs at the same time also at night. Besides professional care staffs, at least one additional caregiver is needed to assist one of the daily activities for the whole day and the night, who does not have to be an employee in the institution, e.g. the relatives. In addition, continuous help with household is required. Each of the two features already meets the requirement for the usual measurement of the basic requirements in level I to level III.

Table 3.1: Three levels of care services according to SGB XI before 2017

During the identification of care levels, it is important to note that, the type of disease one person is suffering or the extent of the illness are not the factors to decide if one really has “need of nursing care”. Only the loss and constraint in their daily abilities are considered to be relevant in assessing and judging the need for nursing care. In other words,

treatment care is not concerned in the classification of care service levels.

The verification of the care services level of an applicant submitted by nursing insurance fund is proceeded by MDK (§18 SGB XI). After the MDK reviewer accomplishes the first assessment in the applicant's home, nursing insurance fund will make a final decision about whether the conditions of need for nursing care are fulfilled, and in which level the applicant should be assigned. Different care level is associated with different benefit options. In Table 3.2, detailed benefits provided by LTCI corresponding to each care levels are listed.

Benefits (monthly)		"Level 0"	Level I	Level II	Level III (hardship case)
Home Care (Ambulant)	Cash	-	244	458	728
	Professional Service	-	468	1144	1612 (1995)
Home Care (Ambulant) with Dementia	Cash	123	316	545	728
	Professional Service	231	689	1298	1612
	Professional Service	-	468	1144	1612 (1995)
Day/Night Care		-	468	1144	1612
Temporary Care		1612	1612	1612	1612
Additional care benefits and caregiver relief services*		104/208	104/208	104/208	104/208
Inpatient Care		-	1064	1330	1612 (1995)

Table 3.2: Benefits of the three-level care services according to SGB XI before 2017[118]. *Additional care benefits and caregiver relief service (zusätzliche Betreuungs-und Entlastungsleistung)

People with significantly limited daily abilities, such as people who are mentally ill or handicapped, or suffering from dementia, receive an extra care and relief service. A basic

or an increased amount will be granted depending on the extent and severity of the existing damages or loss of functions that result in considerable reduction of daily abilities permanently. The care and relief benefit is up to 104 Euros per month (basic amount) or up to 208 Euros per month (increased amount). The total amount of benefit is constrained up to 1612 Euros per year in term of total amount, and for up to four weeks per calendar year in term of total time period.

However, the discussion and debate about the definition of “need of nursing care” has never stopped. To improve the concept of nursing care, the second nursing care enhancement act (Pflegestärkungsgesetz II,PSG II) has introduced a new and much wider system [119, 120] in 2017. In the context of the new concept, the different treatment of physical and mental/psychological impairments was removed. Before this new act, the long-term care has primarily been related to physically impaired persons. Now, mental and psychological impairments are also taken into greater consideration. In other words, physical activities are not the only criteria to determine one’s nursing care need, what really matters are the individual person and to which extent he can handle his everyday life alone [121]. Instead of three care levels and the additional determination of limited everyday competence (so-called "care level 0") that is caused for instance by dementia, the five-degree system has been implemented since 1 January 2017. Under this new system, people with dementia could get more benefits from their nursing insurance fund. Not only the benefits, but also awareness of need for long-term care for dementia would be increased. Individual extent of impairment is crucial in the future, no matter physically, mentally or psychologically.

Specifically, the three-level classification is going to be transited into a five-degree of care system: degree of care 1 to 5. People who already have a recognized care level in 2016 and a recognized limited everyday competence will not be reassessed. Approved nursing levels are then automatically converted, and the degree of care is determined according to the following nursing grade (See Table 3.3).

Care level in 2016	Degree of care from 2017
Not considered yet	Degree of care 1
Care level 0 Care level I	Degree of care 2
Care level I with reduced daily ability Care level II	Degree of care 3
Care level II with reduced daily ability Care level III	Degree of care 4
Care level III with reduced daily ability Hardship case	Degree of care 5

Table 3.3: Transfer of three-level care services to five-degree of care system[122]

People, who are applying for long-term care services at the nursing insurance fund for the first time in 2017, will be personally assessed in accordance to the new NBA (Neues Begutachtungsassessment) assessment procedure. At the same time, assessors of the MDK for statutory insured persons or the MEDICPROOF GmbH for privately insured persons would determine the degree of their still existing independence and, if necessary, recommend a degree of care in which the insured person should be classified. Ultimately, the applicant's nursing insurance fund decides on the approval of a degree of care and the related care benefits. With the new NBA assessment procedure, examiners commissioned by the long-term care insurance would record all important aspects of need of nursing care due to physical, psychological and cognitive impairments. The key factor is how much independence they still have in six essential areas of their daily lives:

- Mobility: Physical mobility, moving inside the apartment, the living area or climbing stairs.
- Cognitive and communicative skills: Understanding and speaking, orientation to place and time, understanding of facts, recognizing risks, understanding other people in conversation.
- Behaviour and mental problems: For example, restlessness at night, defence of nursing measures, fears and aggression, which are distressing for the person concerned and others.

- Self-sufficiency: For example, independent washing and dressing, eating and drinking, independent use of the toilet.
- Dealing with illness and therapy-related stress: For example, the ability to take medications, to be able to carry out and interpret blood glucose measurements, to cope well with a prosthesis or rollator; independent doctor visits.
- Design of everyday life and social contacts: For example, be able to design the daily routine independently, to be in direct contact with other people or to seek out discussion groups without outside help.

Besides the applicant's existing physical and cognitive resources, the assessors also take into account the following evidences.

- The medical diagnoses available for mental or physical illnesses, mental or physical disabilities.
- The discharge reports of hospitals.
- Documentation or reports from care services and other providers.

The assessment thus leads to a more individual classification, because the impairments and abilities of elderly people have been taken into account more accurately and comprehensively than before. For example, this mainly benefits people who suffers dementia to fulfill their special care and support needs. Five degrees of care need make it possible to tailor the type and scope of long-term care services based on the abilities and needs of each individual, regardless of physical, mental or psychological impairments.

At the same time, the entitlement of benefits was extended. The support from the LTCI now starts much earlier. In the medium term, about half a million people with the new degree of care 1 can take advantage of the long-term care benefits for the first time. In the degree of care 1, people will be classified as having need of nursing care in the future who are not yet severely impaired, but already to some extent mostly physically restricted. In this situation, care consultation and the adjustment of the living environment (for example, age-appropriate shower) as well as the so-called discharge amount of up to 125 euros per month could be entitled.

	Degree of care	*Cash ambulant*	*Professional service ambulant*	*Partial inpatient*	*Inpatient care*
No care level	Degree of care 1	125	0	0	125
Care level 0+I	Degree of care 2	316	689	689	770
Care level II+ I with reduced daily ability	Degree of care 3	545	1298	1298	1262
Care level III+ II with reduced daily ability	Degree of care 4	728	1612	1612	1775
Care level III with reduced daily ability+ hardship case	Degree of care 5	901	1995	1995	2005

Table 3.4: Detailed benefits in the 5 degree of care system[123]

Major innovations are as following.

- Since dementia patients with the "care level 0" was awarded the degree of care 2, their monthly care allowance was increased considerably in 2017, from the previous 123 euros to 316 euros.

- In addition, the very few hardship cases with care level 3 (now degree of care 5), which are being cared for by relatives at home, received for the first time a cash allowance of 901 euros.

	Earlier term of "need of nursing care" (valid until 31.12.2016)	**New term of "need of nursing care" (valid since 01.01.2017)**
Classification	Care level 0,1,2,3 and "reduced daily ability" in case of cognitive restriction(e.g. dementia)	Degree of care 1,2,3,4,5
Evaluation Criteria	Requirement of physically support in four areas: • personal hygiene • mobility • nutrition • housework	Degree of independency in six areas of activities: • mobility • cognitive and communicative skills • behaviour and mental problems • self-sufficiency • dealing with illness and therapy-related stress • design of everyday life and social contacts
Consideration of cognitive restriction	The focus of evaluation of physical restriction, cognitive restriction would be only partially considered.	Integral evaluation for the applicants: both physical as well as psychological/mental restrictions and the remaining degree of independency are decisive .
Basis for calculation of the need for care	The amount of time(in minutes) that required for daily support.	The total number of points of independency according to defined rating scale by the evaluation.

Table 3.5: Comparison of the earlier and new terms of "need of nursing care" [124, 125]

3.1.3. IMPORTANT REFORMS OF LTCI

The three-level system, as well as the classification of care levels has developed in the past years and was widely operated until 2017. The reform executed in 2017 had already been announced for several years. In 2006, the Federal Government had a new term for evaluating the need for long-term care by experts. After a two-years process, implementation started in 2009 with model projects and individual analysis. A second commission of experts has devoted itself to the results and calculation of the financial requirements since

2012 in order to introduce the new term.

Besides the latest reform by the PSGII, several modification of concept of "need of nursing care" has been carried out in the history. In 2002, Nursing service supplementary act (Pflegeleistungs-Ergänzungsgesetz, PflEG) first provided improvements in the concept of "need of nursing care". Besides the assistance needs in daily life, significant need for general supervision and general care are also considered in this concept. However, as it doesn't meet the prerequisites defined in § 14 SGB XI, no improvement or development are seen in the assessment of levels of nursing services. According to the further development acts of nursing care (Pflege-Weiterentwicklungsgesetz, PfWG), the groups which could take additional care services are extended. The concept of nursing level 0 has come up, which refers to those who could not achieve level I, but do have needs of nursing care. For example, the people with dementia have care needs indeed. As the concept of "need of nursing care" and the three-level system at first has taken only very little consideration for people with permanently reduced daily ability, but do not reach the requirements of level I according to the classification standard, especially for people with dementia. The emergence of the concept of "care level 0" was a start to pay more attention on people with reduced daily ability. In order to meet such need for care, they could receive special support from LTCI from 1st July, 2008, so-called additional care services. The amount is 1200 Euros or 2400 Euros per year, depending on the extent and severity of their loss or interference abilities. Besides professional care services, an alternative form of "low-threshold care service (Niedrigschwelliges Betreuungsangebot)" is also supported by LTCI, as well as by federal, state and local authorities. Low-threshold care service system has been built since the 1st July, 2008 (§§45c, 45d SGB XI). The volunteers take care for people with need of nursing care for general supervision in patient groups or at home. To assure service quality, the volunteers have to be guided and supported by professionals. According to the care realignment law (Pflege-Neuausrichtungsgesetz) released in January 2013, people with "level 0" also receive additional cash benefits or professional service benefits for home care.

In January 2015, another comprehensive reform in LTCI was implemented. The first nursing care enhancement act (Erstes Pflegestärkungsgesetz,PSGI) was taken into performance. Based on this new act, most care insurance benefits have increased in accordance with inflation. Furthermore, combination of various types of care services has been facili-

tated.

Almost at the same time, the third nursing care enhancement act (Drittes Pflegestärkungsgesetz, PSG III) was adopted by the Federal Cabinet(Bundeskabinett) on 28 June 2016 and thereafter on 2 December 2016 adopted by the Bundestag. The PSG III then came into force as planned on January 1, 2017. The PSG III implements agreed recommendations to strengthen the role of municipalities in the federal-state working group between federal, state and municipal associations. Since then, the municipalities have managed and coordinated the counseling services in their city or county area and have been given the right to found new care support centers for those seeking help. On the other hand, the PSG III contains a package of measures to improve the prevention, detection and control of billing fraud. Health insurance receive more examination rights for suspected cases in long-term care services. The draft stipulates regulations for both statutory health insurance (SGB V) and LTCI (SGB XI) [126, 127].

3.1.4. FINANCING OF LTCI

FUND RAISING

The most important form of fund raising in the LTCI is the contribution premium of the insured people. Different from pension insurance and unemployment insurance in Germany, benefits of LTCI are paid directly from current insured person's contribution, which is also known as Pay-as-you-go (Umlageverfahren). Contribution is paid half by employer and the other half by employee. The contribution rate was 1.7% of employee's gross income as it was first set before June 30, 2008. Since July 1 of 2008, this rate has increased to 1.95% (§ 55 Abs.1 SGB XI). From 2005, people without child have to pay 0.25% more than those who have their own children, which is 2.2% in total (Federal Constitutional Court-Bundesverfassungsgericht ,BVerfG). Currant contribution rate is 3.05% of the employee's gross income. For those over 23-year-old and childless employees, the contribution rate is 3.3%. An overview of the current contribution policies is given in Table 3.6.

Overview of current contribution policies
Employee share: 1.525%; Employer's share: 1.525%
Employees in the Free State of Saxony: share of employees: 2.025%; Employer's share: 1.025%
Pensioners: 3.05%
Voluntarily insured, such as self-employed: 3.05%
Supplement for childless children: 0.25%

Table 3.6: Overview of current contribution policies in LTCI

LTCI is built in the frame of statutory health insurance. However, benefits that paid for the people with need of care are based on care level assessment in form of the flat rate. In other words, only part of the expense on care services that are demanded will be covered. Secondly, the contribution rate is a fix number which is defined by the law. However, in the system of statutory health insurance, different health insurance companies can decide the proportion of the contribution that will be booked from one's salary. Although in the context of the health reform in Germany, a general uniform contribution rate was introduced for the health insurance system and implemented since 2009, each health insurance company still have the right and space for collecting additional contribution (Zusatzbeitrag).

Besides the contribution to the nursing insurance fund, state governments also have a responsibility to establish an efficient and adequate care structure (§9 SGB XI). The details of the planning and promotion is determined by the state law, whether or to what extent the state law should provide care-oriented financial support. But in fact, state governments started rather late [128, 129].

EXPENDITURE OF LTCI

The most important expenditure of LTCI is the payment of benefits. By the end of 2016, about 2.75 million beneficiaries receive their benefits from statutory LTCI. Among these beneficiaries, a total of 1.97 million received ambulant care services, and about 7.75 million are living in nursing institutions. The statistics of the number of beneficiaries who are covered by both statutory and private insurance companies is depicted in Table 3.7.

	Statutory long-term care insurance	Private long-term care insurance
Ambulant	1,974,197	136,724
Inpatient	775,004	51,843
Total	2,749,201	188,567
Total amount	2,937,768	

Table 3.7: Total number of benefit recipients of statutory and private LTCI

Degrees of care	Ambulant		Inpatient		Total	
	absolute	in %	absolute	in %	absolute	in %
1	75,607	3.2	3,027	0.4	78,634	2.5
2	1,211,569	52.0	191,811	24.7	1,403,380	45.2
3	651,122	28.0	231,233	29.8	882,355	28.4
4	280,731	12.1	222,075	28.6	502,806	16.2
5	108,770	4.7	127,894	16.5	236,664	7.6
Total	2,327,799	100.0	776,040	100.0	3,103,839	100.0
Pass-over cases among them*	1,835,427	78.8	706,166	91.0	2,541,593	

Table 3.8: Number of benefit recipients of the statutory LTCI categorized by degrees of care on June 30, 2017 [130]. *this includes all those in need of care who were transferred from three care levels to five degrees of care at the turn of the year 2016/2017 and still receive benefits to the deadline.

Total expenditure of statutory LTCI amounted to € 31 billion in 2016 (Federal Ministry of Health-Bundesministerium für Gesundheit,BMG), of which € 28.29 billion was the expenditure for paying benefits. Compared with 1997, when first-time ambulant and inpatient services were financed all year round, total expenditure thus was increased by 15.86 billion euros, more than twice as much. In terms of gross domestic product (GDP), the proportion of expenditure on social LTCI increased only slightly: it was 0.77 percent in 1997, 0.86 percent in 2010 and 0.99 percent in 2016 of the GDP (own calculations according to BMG and StBA). In 2016, about 36.1 percent of social nursing care expenses went to inpatient care. In addition, cash benefits in ambulant care were particularly important (22.1%). Together, these two areas accounted for 58.2 percent of all spending. The share of administrative expenses remains in the low level at 3.3 percent.

Since 2015, a new form of expenditure in LTCI system is added, which is the nursing insurance fund. In order to finance the service improvements under the PSG I, the contribution rate for LTCI was increased by 0.3 percent since January 1, 2015. Annually the income of 0.2 percentage points, which is amounted to be 2.4 billion euros, flow into the additional benefits. The remaining income of 0.1 percentage points, around 1.2 billion euros per year, will be transferred to a newly established nursing insurance fund in the form of a special fund managed by the Bundesbank. The nursing insurance fund should contribute to the reliable financing of LTCI in the future and help to stabilize the contribution rate from 2035 onwards. Thus, the care service remains affordable even if the baby boomers come into an age in which they may need care. Table 1 and 2 in appendix chapter have summarized the financial development of the stattutory LTCI from 1995 to 2006 and from 2007 to 2016, respectively.

After the PSG II, in the first half of 2017, the expenditures of the nursing insurance fund grew by around 5.5 billion euros and reached 20.8 billion euros. To compare with the entire past year, the LTCI expenditure was 29.7 billion euros. According to a long-standing estimate, the nursing insurance fund leading association (Kassen-Spitzenverband) expects rising expenditure of over 37 billion euros in 2017, which means the LTCI reform in 2017 has improved the care services for those who concerned. Despite the increase in contribution, this is only the offset by estimated income of around 34 billion euros. The deficit is to be balanced out with the existing reserves of LTCI of around 9.4 billion euros[131].

Compared with statutory long-term care insurance, the benefit of private care insurance is basically the same. But contributions in private care insurance is not relative to one's income, but vary from provider to provider. Privately insured persons are usually civil servants or self-employed persons. There is no employer's share in this case. For "regular employees", who are privately insured, the employer's share is usually 1.525%. It does not differ from the contribution for socially insured employees. If the employer's share is different, it does not exceed at least half the total contribution of the privately insured person.

The financing system of private care insurance is funded (Kapitaldeckungsverfahren) similarly to private health insurance [132, 133]. Health situation assessment is demanded in contribution planning for the people who join the private care insurance after 1995, but no difference between male and female [134]. It is regulated that, the contribution should

not exceed the highest contribution amount in statutory long-term care insurance after 5 years being insured in private care insurance. Persons should not be refused due to certain pre-existing conditions, and persons already in need of care should not be rejected. As with social care insurance, children of insured persons are also insured by free of charge [135, 136].

3.2. LONG-TERM CARE INSURANCE IN CHINA

3.2.1. NEED OF ELDERLY CARE

The huge amount of elderly people in China leads to remarkable need of nursing care in the population. The statistics from the National Bureau of Statistics of China shows that, at the end of 2017, people aged over 65 constituted about 11.4% of China's total population. According to the United Nations, by 2050 those 65 and older will represent 23% of the total 1.46 billion people. Furthermore, China is aging even faster than other developed countries, due to the strong decline in birth rates by one child policy since 1979 and the increasing life expectancy by improvement of life quality [137, 138]. Therefore, the need of elderly care is going to rise dramatically in the future.

As the concept of "need of nursing care" is clearly defined in the law of Germany, corresponding statistical information is also well calculated and published for either research or social development purposes. Therefore the need of nursing care of the elderly in Germany could be assessed more directly and effectively. However the assessment standard in China is not consisting. Several literature and reports mentioned about need of nursing care in China, obviously most of the data are not credible without a national assessment model.

In 1994, the National Bureau of Statistics of China conducted a survey on the self-care ability of the elderly in the country for the first time. The total number of people surveyed exceeded 120,000 [139, 140]. Ten years later, when the National Bureau of Statistics conducted a national population sampling survey, it also specifically investigated the self-care ability of the elderly, and randomly selected more than 150,000 elderly subjects. In the past ten years, the proportion of the elderly who cannot take care of themselves in the country has increased by 1.4 percent, and the proportion of women who cannot take care of themselves is significantly higher than that of men [141]. This to some extent indicates a trend

of living situations for the elderly in China in the future. Table 3.9 illustrates the developing statistics of self-care ability of the elderly from 1994 to 2004.

Item	2004			1994		
	Sum	Male	Female	Sum	Male	Female
Sum	100	100	100	100	100	100
With self-care ability	91.1	92.3	89.8	92.5	93.9	91.2
Without self-care ability	8.9	7.7	10.2	7.5	6.1	8.8

Table 3.9: Changing development of self-care ability of the elderly in China from 1994 to 2004[142]. (Unit: %)

In the literature that gives quantitative analysis of the developing trend of nursing needs, Jintao Liu's calculation model is relatively more definite [94]. Based on the data of the population development trend classified by age groups in China, he calculated the basic growth rate of the elderly who could not take care of themselves every five years. Based on that, The needs and development trend of long-term care for the elderly in the future can be estimated.

Care demanding	2010	2015	2020	2025	2030	2035	2040	2045	2050
Care demanding amount per 10000 people	1600	2157	2661	3516	4587	5574	6256	6980	7977
Growth rate of total amount (%)	100	134.8	166.3	219.8	286.7	348.4	391.0	436.3	498.6

Table 3.10: The estimating amount of long-term care demanding of Chinese elderly people from 2015 to 2050.

The results of the calculations based on Liu's model is listed in this article (see Table 3.10). The estimation results show that the needs of the elderly for long-term care in China is increasing at a fixed rate every five years, and the growth rate is relatively significant. In order to understand the long-term care needs of Chinese elderly people more intuitively, in this work, the need of nursing care is described by analyzing their daily activities and

the loss of daily activities. Firstly, the difficulties that people may have when performing various activities are assessed by different scales of accomplishing basic physical activities, from jogging about 1 km, climbing stairs, sitting to lifting 5 kg groceries and picking up a small coin. This is set as a basic filtering to reflect their physical ability. The results of the assessment is based on CHARLS survey and shown in Fig. 3.1.

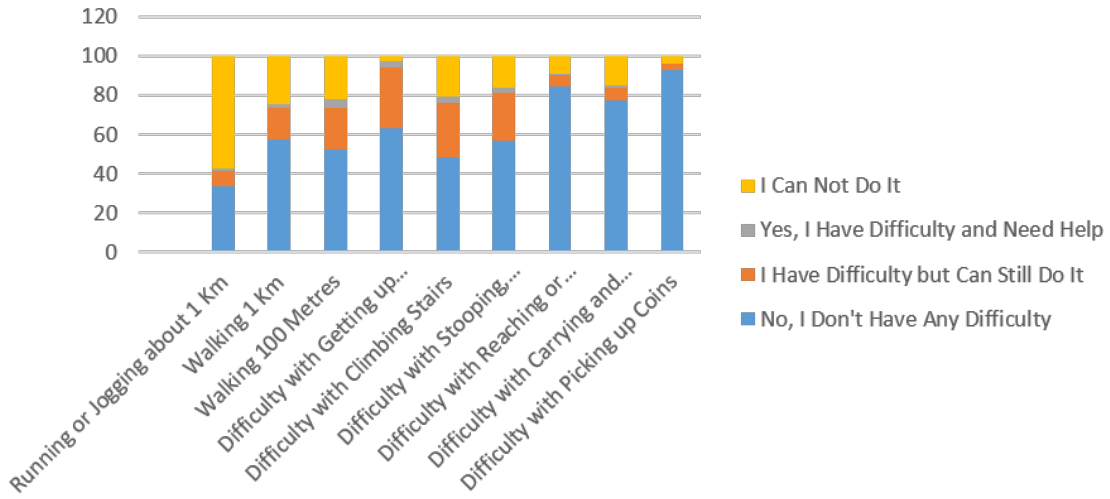

Figure 3.1: Assessment of the accomplishment ability of basic physical activities (Data source: CHARLS survey)

For those who have any difficulties in any basic physical activities, further assessment is applied to evaluate the difficulties with dressing, bathing or showering, eating, using toilet and controlling urination and defecation. Based on the data acquired from CHARLS, about 5.9 percent of the elderly needs help with bathing or showering, and 4.2 percent have demand of assistance in using the toilet (see Fig. 3.2).

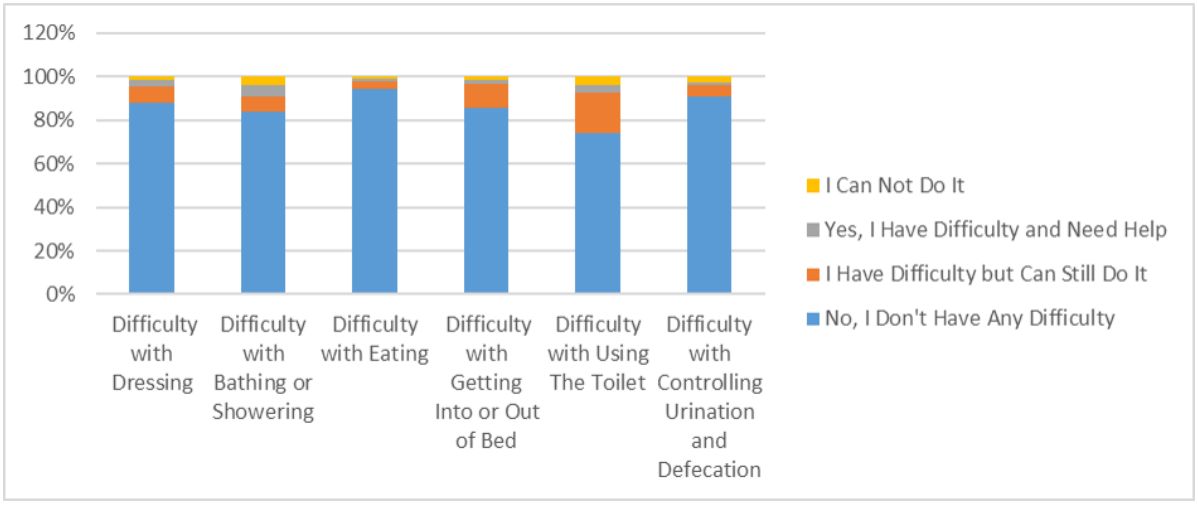

Figure 3.2: Assessment of accomplishment of further activities (Data source: CHARLS 2016)

Although the elderly, who don't have difficulties in doing basic physical activities, are considered to be able to finish most of the daily activities, many of them are still facing difficulties in advanced activities like household chores, preparing hot meals, shopping for groceries or taking medications. Doing household chores is the most prominent needs. About 4.71 percent of those with better physical capabilities could not finish household chores, even if they had help from other persons. CHARLS survey also assesses the ability of accomplishing daily activities of the elderly, which is shown in Fig. 2.3

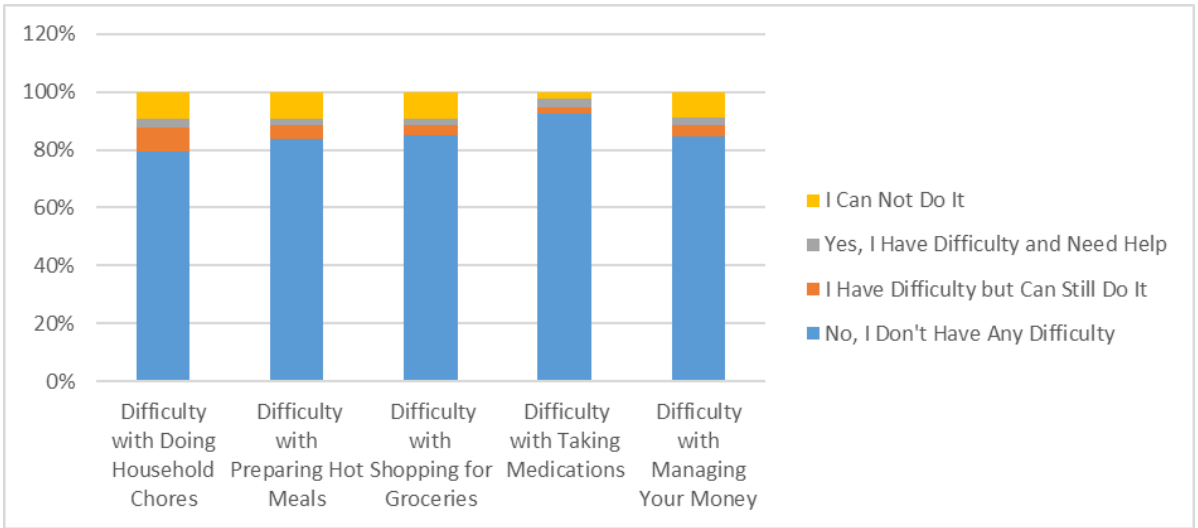

Figure 3.3: Assessment of accomplishment of daily activities (Data source: CHARLS 2016)

It can be found through the charts and tables above, that a huge amount of elderly people age over 60 years old are in the status of having "need for nursing care", especially in the

field of daily activities.

3.2.2. DEVELOPMENT OF LTCI

Compared with Germany, China has no statutory insurance for long-term elderly care. Since 2005, several private LTCIs are introduced in the background of increasingly higher demand of the elderly people. However, most of these insurances have implemented as additional items for other types of health insurance, and there is a big gap compared with the international LTCI for the elderly. The first private LTCI appeared in the market is "Kang Ning" program created by Cathay Life Insurance Company [143]. "Kang Ning" was first introduced in Jan. 2005 in Shanghai. People aged from 18-55 years are potential applicants. After 15 or 20 years of premium payment, beneficiaries would receive annual benefits if they need long-term nursing care. In this case, single benefit in amount of 12,000 Yuan for rehabilitation is also possible. By death or disability of the applicant, the insurance would pay a single benefit in amount of 100,000 Yuan. Beneficiaries aged over 88 years old would receive 100,000 Yuan as expiration benefits. After 88 years old, no benefits are available. Cathay Life Insurance would make assessment for each situation [144].

"Quan Wu You" of the People's Insurance Company of China is the first national wide LTCI with comprehensive coverage. It was released in 2006. Target clients of "Quan Wu You" program are the people aged from 18 to 59 years old. Applicants could choose to pay premium among 5, 10 or 20 years contribution plans. If the applicants lose their daily abilities before 60 years old, they would receive an annual benefit for long-term care services for maximum 25 years. For applicants over 60 years old, annual benefits are provided for maximum 25 years as well, regardless of their health status. In case of death, diagnose of cancer or other stated geriatric diseases (e.g. acute myocardial infarction, stroke, chronic respiratory inefficiency, dementia, Parkinson's disease), single benifit would be provided [145–148].

Another private LTCI program is called „Rui Fu De ", which is provided by the Reward Health Insurance Company. Different from other private insurances in the market, "Rui Fu De" focuses only on long-term nursing care. After 5, 10 or 20 years payment of premium, clients are supposed to get annual benefit either in the event of long-term nursing care, or if they are over 60 years old and were healthy before they reach this age standard [143]. Some

of the main features of several private LTCIs are listed in Table 3.11.

Insurance Company	Product	Time of Introduction	Applicants	Payment of Premium	Form of Benefits	Payment of Benefits	Insurance Coverage
Cathay Life Insurance Co., Ltd.	Kang Ning	2005	18-55 years old	15/20 years	Cash	Until 88 years old	1.Annual benefits for long-term nursing care 2.Single benefits for rehabilitation 3.Single benefits in the event of death or disability 4.Single benefits by expiration of the contract 5. Exempt from premium if living in long-term care status
THE PEOPLE'S INSURANCE COMPANY(GROUP) OF CHINA	Quan Wu You	2006	18-59 years old	5/10/20 years or single premium	Cash	Until 100 years old	1.Annual benefits for long-term nursing care 2.Annual benefits for applicants over 60 years' old 3.Single benefits in the event of death 4.Single benefits for cancer 5. Single benefits for certain chronic diseases 6. Exempt from premium in case of losing daily ability
Reward Health Insurance Company Ltd.	Rui Fu De	2006	18-59 years old	5/10/20 years or single premium	Cash	Max. 30 years	Either annual benefits for long-term nursing care, or annual benefits for applicants over 60 years old Exempt from premium if living in long-term care status
China Life Insurance(Group) Company	Kang Xin	2009	18-60 years old	10/20 years or single premium	Cash	Until 80 years old	1.Monthly benefits for long-term nursing care 2.Single benefits in the event of death or illness 3. Single benefits by expiration of the contract 4. Exempt from premium if living in long-term care status

Table 3.11: Main private LTCIs in China

These private LTCIs are triggered by the circumstance of aging situation and increasingly higher market requirement in China. They are designed to fulfill the need of the elderly people. However, these products still have many problems and are not well developed

compared with the LTCI in Germany.

Firstly, good health condition of the applicants is considered as an important prerequisite to sign the insurance contract. The clients are required to make examination to prove they are physically and mentally healthy. The insurance would reject the clients with healthy problem or make higher standard of premium payment for the applicants who are unhealthy or potentially ill.

Secondly, as there is no national standard for the assessment of “need for nursing care”, most of the insurance company have their own standard [149]. They cooperate with a third institution to verify if their clients really need nursing care. Usually large hospitals are the cooperate partners to help them diagnosing, whether the applicants already lost daily abilities or have cognitive abnormalities. For example, Cathay life and People’s Insurance Company of China (PICC) have adopted hospitals as third-party organizations at present to identity the status of long-term care. Based on the regulations of Cathay, the reimbursement will be paid for long-term care and rehabilitation, as long as the insured person is diagnosed by a hospital ranked above the third-class and is proved to be eligible for at least one of the following two situations: loss of mobility or abnormalities in cognitive ability. The insurance product of "Quan Wu You" released by PICC uses the "6 standards of daily living activities" to judge whether insured persons have lost their ability to daily life. If an insured person is diagnosed by a second-class hospital or above that the person has lost at least three abilities out of 6 independent activities (including eating, bathing, changing clothes, moving, walking, and visiting toilet), benefits will be paid by the insurance. Furthermore, payment of benefits is mostly restricted to a relative short period of time. Influence of inflation would not be taken into consideration.

Third, the technical skill of the commercial companies with LTCI is limited. Moreover, the insurance companies lack the experience in the operation and management.

- The health insurance management team is immature, and the management ability is insufficient [150].
- On the issue of insurance validation and reimbursement, their skills and experience need to be further strengthened.
- With respect to the acquisition of fundamental data and the establishment of actuar-

ial methods, the amount of data that can be used as reference in China is very limited. This leads to the fact that the price of a LTCI product is normally set to be relatively higher by the insurance company with the consideration of risk reduction and stable operation [151, 152].

Other comparisons between the private care insurance of China and the popular care insurance of Germany are shown in Table 3.12.

	China	Germany
Age constrains	Maximum 60 or 65 years old	Maximum 99 years old
Forms of benefits	Cash payment of fix amount	Cash or professional nursing services
Criteria of insurance evaluation	Mainly evaluated by internal validation, assisted by the evaluation of third-party organizations. No national standards, the regulations are determined by the companies.	Evaluated by experts of MDK (in the case of legally insured persons) or of experts of the company MEDICPROOF (privately insured persons) in accordance with the NBA assessment procedure.
With terms related to inflammation	No	Yes

Table 3.12: Features of LTCI in Germany and China

4

FORMS OF ELDERLY CARE

4.1. FORMS OF ELDERLY CARE IN GERMANY

4.1.1. CARE SERVICES

Based on different care need and individual family background, various forms of care service and even combinations between different forms are available for the elderly people in Germany.

DIFFERENT FORMS OF ELDERLY CARE IN GERMANY

- **Ambulant care services** The basic principle of ambulant care is to support elderly people and their relatives at home, so that caregivers could better organize their work and nursing care. People with needs of nursing care should make a decision about the form of benefit and service. They could choose between two possibilities: professional service or cash. Professional service (Pflegesachleistung): people with need of nursing care are taken care of at home by professional caregivers. In this case, caregivers have contract with nursing insurance fund and nursing homes (§36 Abs.1 SGB XI) [153]. Professional services are provided in accordance with different degree of care. The other form of benefit of home care is cash (Pflegegeld) (§37 Abs.1 SGB XI). The prerequisite for the receipt of cash is that people are taken care of at home by

their relatives or other caregivers voluntarily. The allowance is paid to the caregiver regularly as acknowledgement by the nursing insurance fund and could be used basically free. To adjust to the individual needs of care, it is also possible to combine the receipt of cash and professional service [154]. If the caregiver could not provide care service because of holiday or illness, LTCI would take over the costs of substitute care for maximum six weeks per calendar year (§39 SGB XI) as replacement during vacation (Urlaubsvertretung).

- **Inpatient care** Inpatient care is granted if an ambulant or partial inpatient care is not possible, or can not consider the particularity of the individual care situation (§43 Abs.1 SGB XI). MDK would verify the necessity of inpatient care for the nursing insurance fund [155]. However, such verification is not required for the people in degree of care 4 and 5, since their need of care services already meet the standard of inpatient care. The benefits are provided in form of flat rate by nursing insurance fund. For each individual nursing residence, the number of residents in care level "hardship case" is required to be less than 5 percent of the total residents (§43 Abs. 3 SGB XI).

- **Partial inpatient care (Semi stationary care)** Partial inpatient care is provided if the need of nursing care could not be fulfilled completely by home care, or the caregiver could only do a part of the nursing work, but inpatient care is still not necessary (§40 SGB XI). Partial inpatient care admits a patient for less than 24 hours, mostly during the day for a specific time frame. Usually 8 hours daily is taken in accordance with the number of hours of working day. The treatment at weekend is regulated differently. The highest benefit for partial inpatient care is 1612 Euros per month, including social care, necessary services of medical treatment. The combination of partial inpatient care and home care is recommended to reduce the number of people who live in nursing residence. An important principle is "ambulant prior to stationary care".

- **Short-term stationary care** Many people with need of care rely only on residential care for a limited time. Short time stationary care is such a temporary form of care service that looks after them in nursing homes for a certain period of time. The benefits of LTCI for short-term stationary care is irrelevant of the classification of care level. The same amount of benefit is granted for all care levels. Short-term stationary

care allows the caregivers to relieve for a limited time period. It could also be utilized to deal with emergency situation happened during home care or as a transition following hospitalization for return to one's home.

AMBULANT PRIOR TO STATIONARY CARE

The most important principle for choosing a form of care service is "ambulant prior to stationary care". (or "home care in first place"), which is also normalized by the law (§ 43 Abs. 1 SGB XI). Under this principle, all the possibilities of ambulat care should be exhausted before one elderly people is fully hospitalized, or accepted by nursing home and rehabilitation facilities.

The first advantage of home care is that it allows the elderly people to remain in more familiar surroundings. This is an important prerequisite because they could get all their daily activities to stay physically and mentally activate, and socially integrated. Secondly, ambulatory care is in most cases significantly cheaper than inpatient care because relatives and volunteer assistance may be more involved in home care. Finally, home care has even medical advantages, because the risk of infectious disease is clearly lower at home than that in medical or nursing facilities [156]. MDK would check regularly in the assessment, whether inpatient care is necessary for each elderly with this needs.

According to the report of "Nursing statistics 2015 - Nursing care in the context of nursing insurance in Germany results" conducted by the Federal Office of Statistics, totally 2,9 million people are in need of nursing care by the end of 2015. Almost three quarters (73 percent or 2.08 million) of those in need of nursing care were cared for at home. Of these, about 1,385,000 people received exclusively cash as benefits, which means they were usually cared for at home by relatives alone. Another 692,000 people in need of nursing care also lived in private households. However, the care was taken for them together with or completely by ambulant care services. About 27 percent (783,000 people in need of care) were cared for full-time in nursing homes. Among the 2.9 million people in need of nursing care, one third (1,202,000 or 42 percent) also had a considerably reduced level of everyday competence. For a portion of 180,000 people, there was no need for long-term care or care according to the definitions of the LTCI law, but they had been found to have a significantly reduced level of everyday competence. The distribution of the German elderly who are in need of nursing care categorized by the types of care services is given in Table 4.1.

People in need of nursing care by type of care services (2015)

2.9 million total in need of care		
taken care at home: 2.08 million (73%)		inpatient care: 783,000 (27 %)
1.38 million are taken care by their relatives	together with/by ambulant care services: 692,000	
	by 13,300 ambulant care service providers with 355,600 employees	in 13,600 nursing homes with 730,000 employees

Table 4.1: German elderly people in need of nursing care by type of care services (2015) [93]

ALTERNATIVE FORMS OF LIVING

As mentioned above, German social code advocates ambulant prior to inpatient care (§3 SGB XI). The people with nursing needs should stay at home as long as possible, because in the context of population development and aging, ambulant care costs less than inpatient care [157, 158]. The limited financial support from the social system, shortage of nursing staffs and many other factors determine that every effort should be made to avoid inpatient care. For the same reason, partial inpatient care and short-time care take precedence over inpatient care as well. This principle is also consistent with the wishes of most elderly people and their families [159]. People with nursing needs prefer to obtain care services at home when they are old, not only to support and promote the responsibility of the relatives, but also to increase the responsibilities of the community by developing and promoting volunteer organizations.

In addition to the basic home care, in which the elderly live in their own home and are cared by their relatives or others, in order to meet people's desire to live in a familiar environment, more alternative special forms of living are also developed (Each state has different legal regulations). Table 4.2 has listed several alternative forms of living and their major descriptions, such as assisted living at home, assisted living, neighborhood concept, ambulatory household and ambulatory care group.

Forms of living	Description
Assisted living at home	The elderly people are living at home; there is no need for care for the time being, but there are agreements with ambulant care institutions, providing basic services (consulting, contact, weekly visits, etc.) and optional services (garden work, snow sweeping, emergency call system, etc.)
Assisted living:	Have a housing or rent in a residential community specialized for the elderly people with care needs, get a care service package by purchasing a house or rent equipped with a central emergency call and consulting service, and the care service is provided if it is needed.
Neighborhood concept	A local base arranges and coordinates assistance free of charge and is available around the clock as a point of contact for emergencies. In some cases, it may also be an assistance provided by a neighborhood in a community.
Ambulatory household	Each resident has a separate apartment and share the public living space with other residents. The residents help each other. There are two types of inhabitation: the elderly people live together in senior household communities; or multigenerational live in intergenerational household communities.
Ambulatory care group	Multiple residents live together, usually up to 12 people; the kitchen and living room are shared; Looking for professional care services to take care of the residents. Externally provided care services is provided for a fee.

Table 4.2: Special forms of living in Germany

4.1.2. NURSING INSTITUTIONS

In Germany, the nursing organizations can be subdivided into ambulant and inpatient institutions (§71 SGB XI). Ambulant nursing care institutions are the facilities that care for the elderly in their home and provide household care (§71 Abs.1 SB XI). Inpatient care institutions (nursing homes) are the facilities where people in need of care received services on sites. In such institutions, elderly people can be accommodated and catered for all day long or only during the day or only at night, which is called semi-stationary (§71 Abs.2 SB XI). Both ambulant and inpatient care institutions are economically independent, under the constant responsibility of a trained nursing expert (§71 Abs.1 und 2 SGB XI). According to the Federal Statistical Office, there are in total 13,596 inpatient institutions in Germany

in 2015, including 11,164 with full stationary nursing care. The total number of ambulant institutions in Germany is 13,323 in 2015. Table 4.3 shows the amount development of ambulant and inpatient institutions in Germany from 2001 to 2015.

	Ambulant institution	Inpatient institution	Available beds in inpatient institution
2001	10,594	9,165	674,292
2003	10,619	9,743	713,195
2005	10,977	10,424	757,186
2007	11,529	11,029	799,059
2009	12,026	11,634	845,007
2011	12,349	12,354	875,549
2013	12 745	13 030	902 882
2015	13 323	13 596	928 939

Table 4.3: Development of nursing institutions in Germany from 2001 to 2015[93].

For both ambulant or inpatient institutions, German nursing organizations can be classified into three types of carries (Träger): private, non-profit and public. The public carriers only take a very small portion. At the end of 2015, among the total 13,300 approved ambulant care institutions, the majority were privately sponsored (8,700 or 65 percent). The proportion of non-profit carriers (e.g. DIAKONIE or CARITAS) was 33 percent. According to the priority of the other carriers according to the SGB XI, public providers had a share of only 1 percent. Meanwhile, national wide there were around 13,600 fully or partially inpatient nursing homes approved by SGB XI. The majority of nursing homes (53 percent and 7,200, respectively) were in non-profit sponsorship (e.g. DIAKONIE or CARITAS). The proportion of private nursing homes was 42 percent, which is lower than in the ambulant area. Public agencies, as in the ambulant sector, have the lowest proportion, which is 5 percent [93]. Compared with 2013 [160], the amount of inpatient care institutions showed overall growth. The number of nursing homes increased by 4.3 percent or around 600 institutions.

The number of nursing homes with inpatient permanent care increased by 2.0 percent or around 200 facilities. The total number of beds approved increased by 2.9 percent corresponds to 26,000 beds. The beds for inpatient permanent care increased by 2.2 percent associated with 18,600 beds. For day care, 7,800 beds were added with a growth rate of 18.0 percent. The number of 1-bed rooms is continuously gaining importance and increased by 5.6 percent or 29,500 beds for permanent care. In Table 4.4, the development of nursing homes and available beds from 1999 to 2015 is revealed.

Year	All carriers in total		Private carrier		Non-profit carrier		Public carrier	
	Number of institutions	Number of beds	Number of institutions	Number of beds	Number of institutions	Number of beds	Number of institutions	Number of beds
2015	13,596	928,939	5,737	363,532	7,200	508,883	659	56,524
2013	13,030	902,882	5,349	342,348	7,063	507,718	618	52,816
2011	12,354	875,549	4,998	323,976	6,721	498,410	635	53,163
2009	11,634	845,007	4,637	301,867	6,373	488,146	624	54,994
2007	11,029	799,059	4,322	275,257	6,072	469,574	635	54,228
2005	10,424	757,186	3,974	245,972	5,748	448,888	702	62,326
2003	9,743	713,195	3,610	215,901	5,405	431,743	728	65,551
2001	9,165	674,292	3,286	188,025	5,130	415,725	749	70,542
1999	8,859	645,456	3,092	166,637	5,017	406,705	750	72,114

Table 4.4: Nursing homes and available beds in nursing homes in Germany from 1999 to 2015, data source: Health report of the Federal Government (Gesundheitsberichterstattung,GBE)

The cost of care services in the nursing institutions is covered partially with a flat rate payment by nursing insurance fund based on the identified care levels. The uncovered cost have to be paid by the residents themselves. Usually, the cost for general nursing service, social care and medical treatment care are covered by LTCI. The residents have to pay for the accommodation and foods on their own [161]. This regulation is determined at the time of the construction of corresponding laws and is aiming to make the living cost of the people receiving care service at home and at stations fair and balanced, in order to avoid incorrectly motivating the people who need nursing care to make decisions of choosing nursing stations.

SUPERVISION AND EVALUATION OF NURSING INSTITUTIONS

The nursing institutions are monitored and controlled in a proper way in Germany to keep the market transparent and open. It is regulated by Bundestag, to prevent a closed market for authorized nursing institutions, to keep access to the care market open to new, innovative service providers and, thus to promote competition among care institutions [162, 163]. The pricing standards of nursing institutions are not determined by supply and demand but by a joint decision of LTCI, health insurance, welfare agency and carriers of nursing homes based on the care rate negotiation (Pflegesatzverhandlungen) (§ 82 SGB XI), because it is believed that the market and competition can not bring ideal solutions to the nursing services [164].

In Germany, the elderly can evaluate and select a nursing institution through the following public ways or channels:

- **Nursing notes of the annual quality inspection according to §114 SGB XI (national wide).** Since 2009, the quality of care service in all ambulant institutions and all nursing homes would be checked (regular check). Once a year, the quality of ambulant and inpatient care institutions in the form of grades between "very good" and "poor" rated. On this basis, the nursing insurance fund create a transparency report for each nursing home institution and publish it on the Internet.

- **Reports of the home inspection authorities (state wide)**. It is published by the higher national inspection departments supervising these nursing institutions. The insights gained by inspection department must be summarized in a standardized report and published in the authority's internet portal. The inspection department go to nursing homes in certain time interval e.g. every two years; In addition, they can respond to complaints of the elderly people. Home-based supervision not only prepares reports on the home situation, but may also close deficient facilities.

- **Non-profit project heimverzeichnis.de**. Heimverzeichnis.de is a project of the society for the promotion of the quality of life for elderly people and those with disability. Around 60 carefully trained honorary experts are traveling nationwide for the home directory. They check institutions that voluntarily register for an assessment according to the criteria of self-determination, participation and human dignity. The

inspections are consistently carried out from the consumer's point of view, meaning that the appraisers only consider the interests of the people who live in a nursing home or senior residence.

4.2. FORMS OF ELDERLY CARE IN CHINA

Home care, social institution care and community care at home are the three basic forms of elderly care in China. Home care is a traditional elderly care model. Social institution care such as nursing homes is the socialized elderly care model. Community care at home is a new social elderly care model that combines the advantages of home care and social care.

4.2.1. HOME CARE

Similar to Germany, home care is one of the most important elderly care forms in China. However, its role compared to other various forms of elderly care models in China is even extremely crucial, and the significance of home care is far more than that of Germany. Here we must first introduce the concept of filial piety. It is a central value in traditional Chinese culture. Its importance goes far beyond that of the biblical commandment "honor thy mother and thy father". Filial piety was and still is a value based on strict principles of hierarchy, obligation and obedience. It is no exaggeration to say that it was the very foundation of the hierarchical structure of the Chinese family and thus of the Chinese society as a whole.

We can also understand the meaning of filial piety from the perspective of the creation of this Chinese word. In Chinese language, filial piety is expressed by the character 孝(pinyin: xiào). The character xiao is made up of an upper and a lower part. The first part is derived from the character lao (老, pinyin: lǎo), which means 'old'. The second part is the character 子(pinyin: zi), which means 'son'. There are different interpretations of the meaning of the character xiao:

- the old are supported by the young generation;
- the young are burdened and oppressed by the old;

- the purpose of the family is the continuation of the family line [165, 166].

Confucius cited specific examples of what a filial son should do for his parents. Among them, children should never offend their parents, never speak badly of them, not travel far away without purpose, always be conscious of their parents age, and protect them whenever necessary [167]. The concept underlying the principle of filial piety is simple. Parents gave life to children, gave them food and clothes, education etc. For all the things that children received from parents, children have an eternal obligation towards them. They have a debt towards their parents, a debt that can never be fully repaid. The only thing that children can do in order to repay at least a small part of this debt, is to take care of their parents in their old age, to make them proud and happy, to obey and serve them [168].

This is also an important reason why home care plays such an important role in China. Many elderly people or their children think that it is unacceptable to support and care the elderly in a nursing home or a similar institution, because it violates the traditional concept that children should be filial. At the same time, there is also a prejudice against the elderly care institutions. It is considered that the elderly care institutions are the places where the elderly people, either living alone or having particular difficulties, are adopted. Thus, there is a natural resistance and rejection to the elderly care institutions. The negative reports of some media have also affected the development and the social acceptance of the elderly care institutions. Under the support of this traditional Chinese family ethics and social moral culture, home care still has a very strong vitality for thousands of years. Most families still use this model as the main elderly care method, especially in rural areas.

However, with the development of Chinese economy, people's thought about the elderly care has also changed to some extent [169]. Other reasons that lead to this change include:

- the keep increasing pressure to support the elderly by the single child as a result of the birth control policy.
- the intensified social competition.
- the fast pace of life style.

In addition, there are some shortcomings of home care model. Generally, it is difficult for the elderly to receive professional and meticulous care in home care, and medical care

can not be applied on time. Because of these challenges encountered by home care, it becomes increasingly difficult for traditional home care model to maintain and play their social functions and roles [170]. Thus, many families start to accept and try out institutional care or other forms of care systems.

4.2.2. INSTITUTIONAL CARE

Since China was a society with lower average age, the needs for elderly services was not significant. Before 2000, the number of Chinese elderly care institutions remained at a low level, and there was no significant increase or decrease in the total number over the years. In 2000, the Ministry of Civil Affairs and other eleven ministries and commissions jointly issued a socialization policy about social welfare, and the elderly care institutions began to develop rapidly. By 2016, a total of 140,000 various types of elderly care services and facilities were established nationwide, including twenty-nine thousands elderly care service institutions which had been registered; thirty-five thousands community elderly care facilities; and seventy-six thousands community mutual-support elderly care facilities, which offer a total of 7.3 million beds for elderly care (meaning 31.6 beds per thousand elderly people). The number of the beds that are specially prepared for community accommodation and daytime care reached to be 3.2 million [171]. In Fig. 4.1, the development of the bed number in China's nursing institutions from 1991 to 2016 is shown.

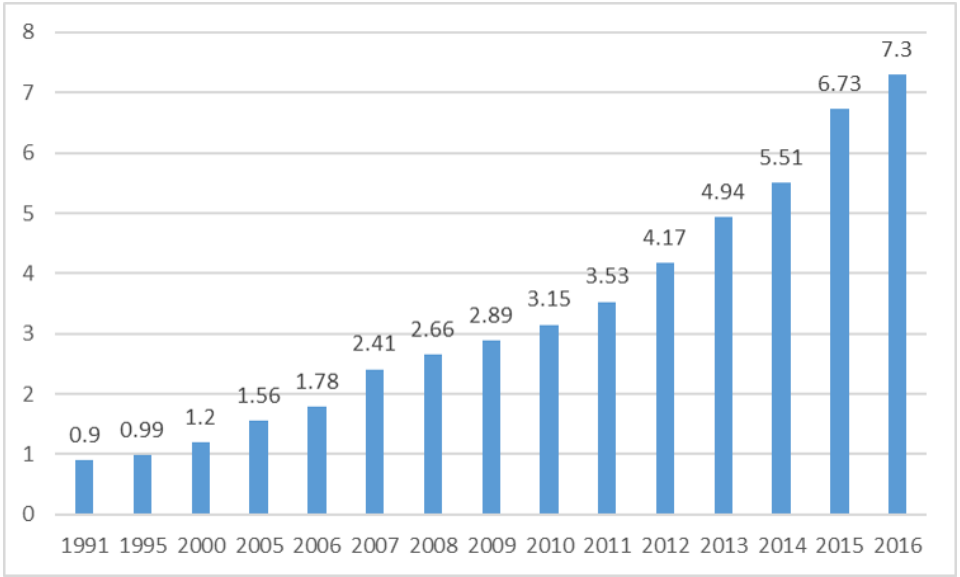

Figure 4.1: Number of beds in nursing institutions in China from 1991 to 2016 (in million)

In general, the construction and operation of the elderly care institutions in China can be divided into the following categories [172].

- The first type is called "public ownership and public running", referring to the operation mode in which the government owns the elderly care institution and exercises the right of operation.

- The second type is called "public ownership and private running", referring to the operation mode in which the government transfers the operating right of the elderly care institutions to enterprises, social organizations or individuals. The governments possess the ownership of these institutions that have been fully functional. The ways of transferring the operation right include contracting, delegating, or joint operating, etc.

- The third type is called "public construction and private running", referring to the operation mode in which the government transfers the operating right of the elderly care institutions to enterprises, social organizations or individuals. The governments possess the ownership of these institutions that have been newly constructed but not functional yet. The ways of transferring the operation right include contracting, delegating, or joint operating, etc.

- The fourth type is called "private ownership and public supporting", referring to the operation mode in which the civil organizations or institutions, including enterprises or non-profit organizations such as charitable foundations, purchase the land by themselves, build or rent the property, operate the elderly care service, and receive certain subsidies supported by the governments. This model is generally called as "public and private joint construction" or "public and private joint investment[173]"

- The fifth type is called "private ownership and private operating" referring to the operation mode in which private enterprises invest in the construction of nursing homes, and operate and manage the private institutions by themselves.

Regarding the service price of the old-age care institution, the deposit, bed fee, meal fee, and nursing fee are the main charges. According to the research report on the development

of China's old-age care institutions [174], the fees charged by private nursing institutions are significantly higher than those of public care institutions. Among them, the public institutions charge on average of 1,919 Yuan per month, and the privately-run profit-seeking institutions charge on average 2,133 Yuan per month. At present, China's ordinary elderly care institutions charge less than 5,000 Yuan per month, while those with high-end nursing homes equipped with medical services and other elderly care facilities have a monthly fee of more than 10,000 Yuan and many use prepayments. A statistics regarding the fee charged in different institutions is carried out, and the results are shown in Table 4.5.

	General cost	Public institutions	Non-profit private institutions	Private commercial institutions
Bed fee	833	731	939	846
Nursing fee	743	766	722	711
Meal fee	510	467	524	537
Average total cost	2,134	1,919	2,201	2,133

Table 4.5: The statistics of the fee charged for different service items of the surveyed institutions (Unit: Chinese Yuan per month) [174]

The services provided by the elderly care institutions can be mainly categorized into four types.

- daily living care services.
- nursing and rehabilitation services.
- hospice care services.
- integrated services.

The contents of these services mainly include living care, catering services, medical care, rehabilitation care, and cultural and recreational activities, etc [175]. According to the "national research on the status of disabled elderly people in urban and rural areas", about

half of the elderly care institutions are equipped with medical centers but without doctors, and less than 20 percent of the institutions are equipped with rehabilitation treatment centers. The number of such rehabilitation centers presents higher in private institutions than governmental ones. Nearly half of the elderly care institutions only accept the elderly who can take care of themselves [176]. Based on the investigation report on the development of Chinese elderly care institutions “Twelve Cities”, the main services provided by the investigated elderly care institutions are mainly focusing on basic living services, and very fewer services about the personal development are delivered. Among the private elderly care institutions, about 87 percent concentrate on daily living care service, about 10 percent focus on the nursing and rehabilitation services, and about 3 percent provide mainly providing hospice care [174].

From the perspective of geographical distribution, a large amount of elderly care institutions are distributed in the central and eastern regions, and the private elderly care institutions show a higher geographical distribution in the east than the west. In terms of urban and rural distribution, the elderly care institutions are generally distributed in the rural areas, which reveals a pattern of "less in urban and more in rural". However, the private elderly care institutions are distributed mainly in urban areas, which has a pattern of "more in urban and less in rural". According to the "National Survey on the Private Elderly Care Institutions" published by the Chinese National Commission on Aging, about 76 percent of the private elderly care institutions are located in cities, and only 24 percent of them are located in rural areas [177].

4.2.3. COMMUNITY CARE

Compared with the elderly care services of concentrated residential institutions, it is more in line with the psychological and service needs of the elderly to obtain continuous and integrated services in the familiar communities [178]. The community care is a new elderly care model that has emerged in recent years. Community care can effectively save social resources and reduce the pressure of elderly care institutions. It is also characterized as lower investment, lower cost, lower fees, broader services and better benefits. This elderly care model has a great potential for a promising future and is highly favored by the elderly in urban areas. In the future, with the rapid development of Chinese elderly care services

and the continuous establishment and improvement of the elderly care service network, the integrated development of institution, community and home care will be an inevitable trend.

The basic practice of community care is to establish an elderly care service center in various urban communities, and the elderly care professionals of the community care center provide services for the elderly living in the communities [179], including the home care services (such as on-site cooking, care and nursing), medical care service and psychological counseling services, as well as community day care, short-term care and other services. Due to the continuous development of urbanization, the aging problem of urban population is more severe. The community is the main place of living and daily activities for the urban elderly. As a new type of elderly care model,community home care retains the traditional form of home care and utilizes the power and resources of individuals, families, communities and society to provide proximity and convenient service to the elderly. This convenient service meets the psychological and material needs of the elderly, enables the elderly to have a stable and good living condition, reduces the daily care burden of their children, makes up for the deficiencies of the social elderly care institutions, better solves the practical problems of the elderly residents, and complies with the objective needs of an aging population.

On the basis of different sources of construction funds and operational management models, China's current community care models are mainly divided into three types [180]. Regarding the first type, the service infrastructures of community elderly care are mainly invested and built by the government. The social welfare positions are set up, and relevant personnel to provide services are employed. At present, most of the community day care centers for the elderly built in many locations belong to this model. The second type is the community care facilities that rely on the government subsidies and are mainly built and operated by the private capital. The third type of community care facilities are either small-scaled or home-based elderly care institutions, which appear in various places based on the needs of the market and the ability of the elderly to pay. It is also a kind of community elderly care model that provides care services mainly in the community or neighboring communities.

In order to better promote community care, the Chinese government has also issued a

series of policies and measures. It is clarified that by 2020 an elderly care system will be completely built, which is based on home residence, relying on the community and supported by institutions. It will be a system with comprehensive functions, appropriate scale, and the coverage of urban and rural areas. According to the "9073" distribution pattern of elderly care [181], about 90 percent of the elderly will be cared at home with the assistance of social services, about 7 percent of the elderly will be cared through the personal purchase service, and 3 percent of the elderly stay in the care institutions, to achieve the goal of the majority of the elderly can receive care services in community and home.

In recent years, guided by the governmental policies, community care has developed rapidly in China. It combines the advantages of family care and institutional care. Meanwhile, it enables the elderly to receive professional nursing services at home or in the community, and solves many elderly care issues. But at the same time, there are many problems existing in China's community care system.

TOO MUCH FORMALITY IN ELDERLY SERVICE.

At present, there is a shortage of facilities and services for the elderly in many communities [182, 183]. Indeed, some facilities for the elderly have been established. For instance, a place that is vacated in the community as the activity center for the elderly has been arranged, and a sign similar to the "community entertainment center for the elderly" has been hung up. However, these facilities are too simple , and the service content is not diverse. Many community service centers for the elderly have failed to play their role as expected, and there is too much formality. What is more extraordinary is that "elderly activity centers" have become "young people's activity places" in some communities. Some of them have become the halls for singing and dancing, game rooms, and some have become shopping malls and storerooms. Therefore, it is very urgent and important to establish a meaningful and targeted service system for the elderly.

UNQUALIFIED PRACTITIONERS

The quality of practitioners in the industry of elderly care is low, and professional training is insufficient. [184, 185]. The elderly care institutions established in recent years lack professional standards for the job requirements of their employees. They generally employ contract or temporary workers with low educational quality, or the workers who have been

laid-off from other industries. These practitioners think conceptually that elderly care jobs do not require much knowledge or skills, let alone professional training. For instance, in 2007, about 28,000 people in Shanghai were engaged in home care service for the elderly, of which 79% were laid-off and migrant workers. The qualification of nursing workers was not high. Due to high mobility, the supply of nursing labor force was unstable. In fact, the elderly possess more individual varieties both physically and psychologically compared with infants and other age groups. They desire more professional nursing service and are more eager to considerate care. Taking care for the elderly is far more than solving their problems of accommodation, clothing and food. It is more important to solve their mental and psychological problems. Thus, only nursing professionals can be better qualified to suit for the job and meet the needs of the elderly.

INSUFFICIENT MEDICAL AND HEALTH CARE FACILITIES AND UNPROFESSIONAL SERVICES

Another issue needs to be addressed is that the current community care institutions normally have insufficient medical and health care facilities with unprofessional services [186, 187]. With the increase of the elderly, especially the increasing of very old population, the demand for medical care, home care and life care of the elderly population increase dramatically. The reasons behind the needs includes for instances, the prevalence rate of diseases rises up, organ functions deteriorate rapidly, and self-care ability decreases dramatically. However, the facilities related to these needs of many communities are very primitive. There is only a simple infirmary room, where no elderly care specialists set on duty, and no relevant department is set up. The ability to provide medical first aid and professional care does not exist.

POOR SPIRITUAL AND CULTURAL LIFE WITH INADEQUATE SOCIAL ENTERTAINMENT

The spiritual and cultural life and social entertainment of the elderly are not rich enough in community care [188]. After retirement, the life time structure of the elderly has undergone a massive change. It is necessary to adjust and bridge their physical, mental and environmental incompatibility caused by the separation and retirement. For most elderly people, in addition to have better material conditions, they also need a higher level of cultural and spiritual life. What they pursue is an enjoyable and healthy life with rich and personalized spiritual connotations, which are relatively lacking in most of the elderly community ser-

vices. Except for some simple games such as Majiang and cards, there are few high-quality cultural services, such as humanities, arts, flowers, birds, insects, fish, learning exchange. As a result, many elderly people, especially "empty nesters", generally have feelings of loneliness and helplessness, which is not conducive to the health of the elderly.

In order to further develop China's community care for the elderly, It is necessary to improve organizational management, fiscal support and media propaganda. Then, the community care, which is appreciated by the elderly and able to satisfy their actual needs of care, can truly develop well on a large scale in China.

1. **Improve the organization and management system of community care.** The sustainable development of community care relies on scientific management system and perfect organizational forms. Therefore, relevant departments should provide effective guarantee for the healthy life according to the needs of the community and the residents, recognize the importance of developing community care, and establish a solid management and supervision system of community care organizations. Then, it is possible to ensure that there are rules to follow in the implementation of community care system, which will be constantly standardized and scientifically operated.

2. **Enhance the propaganda of community care.** To effectively improve residents' health awareness and expand the influence of community care service, it is necessary to enhance the propaganda in the entire society, spread health care knowledge through various medias. These activities will allow the residents realizing the importance of community care, fully understanding the characteristics and functions of nursing institutions, and even actively participating in nursing services.

3. **Increase financial investment in community nursing.** As an important part of community service and social security system, community care is of positive significance to social progress and an important part of building a harmonious society. Therefore, the state should put great priority to community care, not only to pay attention to the progress in making policies, but also to enhance financial support. Only by increasing the financial investment, enlarging the supply of human resources and material resources to community care, can the conditions of community care be improved

qualitatively. In a word, the development of community care can not be separated from the active fiscal investment of the state.

4. **Promote community care education.** There are about 1.4 billion population in China. With the development of society, the demand for community care professionals will continue to increase in the future. Therefore, from now on, the state should focus on community care education, attach more importance to the cultivation of professional quality of nurses, at the same time, increase the quantity of community care talents.

Regarding the community care, the scholar Weidong Dai has also depicted his concepts. The community care has not only exploited the human resources of the community and the technical resources of the community hospitals, but also greatly reduced the pressure on medical treatment in large hospitals. The specific services and contents that the community care service can provide are elaborated in Table 4.6.

Service item	Service content
Service center for elderly	Focus on demented and disabled elderly people, provides daily care services, assist disabled elderly to accomplish rehabilitation training.
Elderly canteen	Mainly serve for the elderly living alone and provide catering service for three meals.
Day care center	Mainly for the elderly with high age who are not well cared during the day, or for the people with lower age whose health condition is poor. The services include basic care services, catering service, transportation service and so on.
Short-term care service center	Receive the elderly whose family caregivers are unable to provide care service due to the illness or other reasons. Appropriate care services are provided based on the self-care ability of the elderly, including professional care services.
Daily hospital	Mainly for the patients who need follow-up care after leaving the hospitals, or the patients with chronic diseases that require long-term care. Provide daily living services, professional care services, and basic rehabilitation training, etc.

Table 4.6: The items and contents of Chinese community care services[189]

5

NURSING EDUCATION

5.1. NURSING EDUCATION IN GERMANY

5.1.1. VOCATIONAL TRAINING (AUSBILDUNG)

In Germany, the act on nursing professions (Pflegeberufegesetz,PflBG) was applied in November 2000. From this point, the nursing and pediatric nursing courses were regulated by the federal government, but not for the elderly care training. The elderly care law (Altenpflegegesetz–AltPflG) came into force on August 1, 2003. For the first time, elderly care training was regulated nationwide by the AltPflG, and the professional title was protected, which ensures a uniform level of education [190]. Under this law, the condition of the admission to elderly care training is a completion of ten years' general education or completion from a secondary school plus a recognized nursing assistant or geriatric care assistant training. The detailed entry requirements of elderly care training in shown in Fig. 5.1.

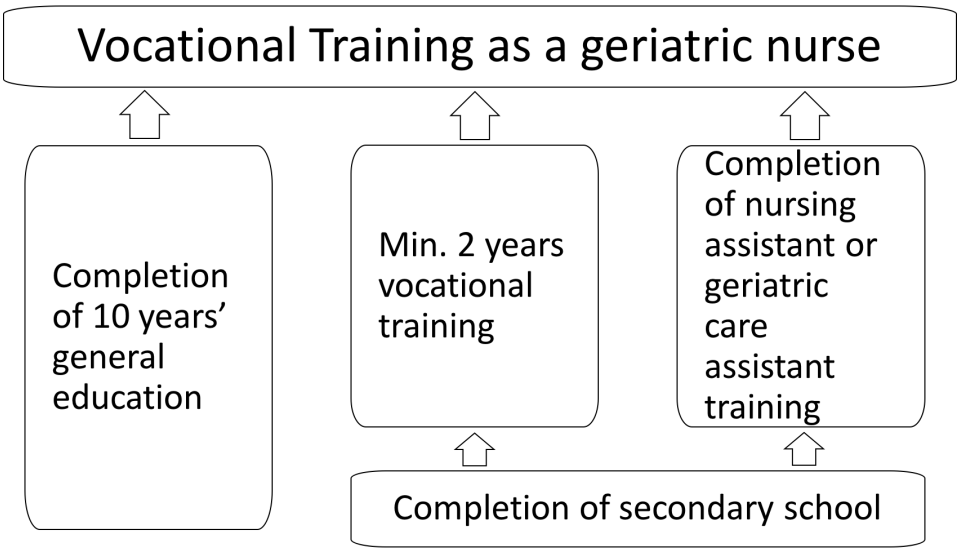

Figure 5.1: Entry requirements of elderly care training in Germany [191]

The duration of the elderly care training is three years, sometimes up to 5 years if the trainee are participated in a part-time manner. The knowledge and skills from other completed training, especially in nursing, can be credited. The duration of the training for elderly care can be shortened upon request. The composition of the training includes at least 2,100 hours of lectures and at least 2,500 hours of practice. Usually the lectures and practice are given in nationally recognized schools [191–193]. The lectures are divided into four major learning areas, which are depicted in Table 5.1.

Learning area 1: Tasks and concepts in elderly care (1,200 hours)	Learning fields:
	Theoretical foundations in aged care
	To plan, carry out, document and evaluate the care of elderly people
	Caring for the elderly on a personal and situational basis
	Guiding, to give advise and to lead discussions
	Participate in medical diagnostics and therapy
Learning area 2: Supporting elderly people in their lives (300 hours)	Learning fields:
	To take into consideration of the life and social networks of elderly people in the care process
	Supporting elderly people in house and living environment design
	Supporting elderly people in their daily activities and self-organized activities
Learning area 3: Legal and institutional framework of aged care (160 hours)	Learning fields:
	To take into consideration of institutional and legal framework conditions in elderly care
	Participate in quality assurance activities in the care of the elderly
Learning area 4: Care of the elderly as a profession (240 hours)	Learning fields:
	Develop a professional identity
	Learning to learn
	Deal with crises and difficult social situations
	To maintain and promote one's own health

Table 5.1: Learning areas in vocational training of the elderly care in Germany [191]

Besides the lectures, practical training can be given in a nursing home, a stationary or an ambulant nursing institution. The lectures and practical training usually alternate in blocks which lasts for several weeks, whereby the proportion of practical training predominates. The following table shows an exemplary division of theoretical lectures and practical parts of the entire elderly care training (see Table 5.2).

The first year of training: about 700 hours of theoretical and practice training courses and 800 hours of practice				
Theory introduction block	Practice	Theory	Practice	Theory
The second year of training: about 700 hours of theoretical and practice training course and 900 hours of practice				
Practice	Theory	Practice	Theory	Practice
The third year of training: about 700 hours of theoretical and practice training courses and 800 hours of practice				
Theory	Practice	Theory	Practice including practical final exams	The last theory block including oral and written exams

Table 5.2: Structure of of theoretical lectures and practical parts of the elderly care training [191]

If the training takes place in the institutions of civil service or the institutions of training providers, which are based on the regulations of the public service, the following training allowances are available [191]:

- 1st year of training: 1,040.69 EUR
- 2nd year of training: 1,102.07 EUR
- 3rd year of training: 1,203.38 EUR

The aims of the training are for the trainees to master the knowledge, skills and abilities necessary for self-reliant and self-responsible elderly care, and to accomplish independent nursing process including counselling, supporting and nursing care for the elderly people.

5.1.2. REFORM OF NURSING EDUCATION

There are currently three separate vocational training programs in the education sector of nursing care: geriatric nursing, health-care nursing and pediatric nursing. So far, they are trained separately. The federal government has adopted after a long struggle, the reform of nursing education. The "Nursing Care Reform Act" (Pflegeberufereformgesetz,PflBRefG) is

to come into force from January 1, 2020, one year later than previously planned [194]. The new rules of nursing education as following [195]:

1. **A new generalist vocational training with a uniform vocational qualification.** According to the law, the vocational training in all nursing schools will begin in the future with a two-year general nursing education. All apprentices receive two years of joint training with lectures at nursing schools and practical training with a training provider or other institutions. After two years, they can decide whether to continue their generalist training in the third year or to specialize and make a separate professional qualification in elderly care or pediatric care. Those who continue the generalist training in the third year, will be granted with the professional qualification "nursing professional ("Pflegefachfrau"/" Pflegefachmann") [196]. With the generalist degree they are open to all working areas. Apprentices who focus on nursing care for the elderly or for children and adolescents can obtain a separate degree in elderly care or pediatric care.

2. **A uniform financing with school fees and training compensation.** The vocational training will be free of charge nationwide in the future. So far, school fees are still charged in some federal states, which will be then canceled. Instead there is a "proper training compensation".

3. **The first introduction of academic nursing education as a supplement to vocational nursing training.** The academic nursing education will start first from 2020, which will be introduced in details in the next paragraph.

The aim of the reform is to build a sustainable nursing education to improve the quality of care and increase the attractiveness of the nursing profession. Quote from Federal Senate Minister Manuela Schwesig: "Nurses in nursing homes have to care for patients with multiple and chronically diseases increasingly. And a nurse in the hospital needs knowledge in caring for dementia patients. With the new vocational training, we are making our nurses fit for these changed needs of nursing care."

5.1.3. ACADEMIC NURSING EDUCATION

As mentioned above, based on the reform of nursing education in 2018, there will be an academic nursing study for the first time in addition to vocational training. The professionalization and "academization" of nursing education in Germany was pushed later than many other countries. However, corresponding model projects have been running for years before the reform [197].

Of outstanding importance was the memorandum "Nursing need elites (Pflege braucht Eliten 1992) [198]", which gained political importance in nursing field by pleading for the establishment of academic nursing courses in Germany. However, the course and consequences of the academization were full of surprise, like a storm swept across the country [199]. The aim of the memorandum was to establish one academic nursing course in each of the sixteen federal states. Ten years after its publication, there were already about 50 academic nursing courses at colleges and universities in Germany. As a consequence, in addition to the traditional vocational training in nursing, currently there are very different types of academic courses with different qualification targets and different entry requirements in the universities.

Prerequisite for the admission of a study is usually the university entrance qualification. If the (technical) higher education entrance qualification has not been obtained by means of a corresponding graduation, the entrance of a university can also be obtained at some geriatric nursing schools with a vocational qualification in elderly care [200]. In many federal states, a qualified vocational training, for example in geriatric care, along with several years of professional experience, is sufficient to start an academic course. The examination of whether the vocational qualification is recognized as a prerequisite for the intended study is the responsibility of the respective university offering this study program. In addition to the full-time study, there are also offers for part-time study. Anyone who already has a university entrance qualification can link the geriatric care training directly to a degree program. Studies and courses take place at the University of Applied Sciences, partly in cooperation with geriatric nursing schools, and the practical training in inpatient and outpatient care facilities for the elderly. At the end of this training program, both a bachelor's degree and a vocational qualification for the elderly care would be issued.

Furthermore, most of the initial academic nursing programs focused solely on nursing

management and pedagogy. This was politically wanted. The term "elite" was interpreted in the memorandum in such a way that the academization of nursing should primarily refer to the leadership and teaching functions. It means in fact in the beginning, only an academization of (special) sections was achieved, no professionalization[201]. The resulting course structure was also not internationally compatible [197, 202, 203]. A comprehensive and objective overview of the situation of the development of a academization of nursing is needed urgently to find a better way for nursing to become a scientific discipline with its own identity in Germany [204].

In the reform in 2018, the academic nursing course covers the contents of the vocational nursing education. The increasingly complex need of care is also taken into account. The whole academic nursing study will last at least three years and conclude with the award of the academic degree. The aim is to promote the transfer of ever-advancing nursing science knowledge into nursing practice and the innovative capacity of nursing based on the latest scientific and technological advances [197]. The academic nursing course should simultaneously address new target groups and open up new career opportunities. The introduction of academic nursing education that qualifies nursing care, is an important political signal for the further development of nursing as a profession and as a separate professional field.

5.2. NURSING EDUCATION IN CHINA

5.2.1. ELDERLY CARE EDUCATION

In China, the training of elderly nursing professionals is carried out through three channels: higher vocational college education, distance continuation education and non-academic certificate training. Academic or undergraduate education is considered as rare cases in the field of elderly care.

HIGHER VOCATIONAL COLLEGE EDUCATION

The major of elderly nursing was first introduced in two higher vocational colleges in 1999, which are Dalian Vocational and Technical College and Changsha Civil Affairs Vocational and Technical College. In 2007, only four higher vocational colleges have established elderly nursing major, when Beijing Social Management Vocational College enrolled the stu-

dents for the major of the elderly care service and management. In 2010, Beijing Social Security Vocational College began enrolling students. Till 2012, there were 23 vocational colleges that have opened this major. After 2013, higher vocational colleges with elderly care service and management were developing rapidly, with 65 in 2014, 112 in 2015, and 154 in 2016 [205, 206]. Although the number of higher vocational colleges with elderly care major has grown rapidly, the amount of the trained professionals is limited. According to incomplete statistics in October 2014, there are more than 60 colleges and institutions in 22 provinces (autonomous regions and municipalities) in China that offer the major of elderly care service and management. The number of the colleges distributed in each province is as following: Beijing (5), Liaoning Province (1), Heilongjiang (2, no enrollment), Tianjin (1), Hebei (1), Shanghai (1, no enrollment), Jiangsu Province (7), Shandong Province (6, 2 did not enroll), Henan Province (1, no enrollment), Hubei Province (3, 1 did not enroll), Hunan Province (1), Anhui Province (2), Fujian Province (1, no enrollment), Guangdong Province (2, 1 of them did not enroll), Guangxi (2, did not enroll), Hainan Province (1, 1 did not enroll), Chongqing City (2), Sichuan Province (2), Shaanxi Province (4, 2 of them did not enroll), Qinghai Province (1), Gansu Province (1), Xinjiang (1). In these 30 colleges that offer elderly care service and management majors and enroll the students, only more than one thousand professionals were trained each year. Most of them usually work in the area of management instead of clinical nursing after graduation. The supply of the professionals can totally not meet the developing needs of aging services and elderly care business [207, 208]. The distribution of departments in Chinese colleges and the enrollment situation are statistically analyzed in Fig. 5.2.

Figure 5.2: Distribution of departments of elderly care and management in universities/colleges in mainland China and situation of enrollment [208].

NON-ACADEMIC CERTIFICATE TRAINING

Elderly care students trained through non-academic certificate program are called elderly nursing practitioners. On November 14, 2011, the Ministry of Human Resources and Social

Security (MHRSS) issued a document (MHRSS Office issued [2011] No. 104) [209], which registered the elderly nursing practitioners in the standard national vocational skills catalogue. The elderly nursing practitioner is a person who provides nursing care for the life of the elderly. There are four occupational grades of primary, intermediate, advanced and technician, from which the technician level is the highest within the national occupational standards for the elderly nursing practitioners. Education and training for elderly nursing practitioners requires full-time education by vocational schools, based on their training objectives and teaching plans. The duration of promotional training is planned as follows:

- no less than 180 standard class hours for primary level.
- no less than 150 standard hours for intermediate level.
- no less than 120 standard hours for advanced level.
- no less than 90 standard hours for technician level.

The national vocational skills standards for elderly nursing practitioners is elaborated in Table 3 attached in the appendix section.

UNDERGRADUATE EDUCATION FOR ELDERLY CARE

In China, the development of the elderly care discipline is very slow in undergraduate institutions. In 1994, community nursing was added to the undergraduate courses of nursing teaching, which involved some aspects of elderly health care and chronic disease management. After 1998, the course about elderly care was opened in several universities and colleges in China, but it had not yet been popularized. Generally, colleges and universities only offer dozens of hours of "elderly nursing" courses in the major of clinical nursing. A national survey conducted by the "Nursing Professional Teaching Steering Committee of the Ministry of Education" shows that a total of 73 institutions (54.5 percent) out of 110 undergraduate institutions with the major of elderly care have opened corresponding courses. The amount of class hours on average is 30, including 26 hours of theoretical lessons and 4 hours of practical lessons [210].

Due to the limited time of study, students can only understand the basic knowledge about elderly care, and there is a lack of targeted training of practical skills. The development of the elderly care discipline can not meet the nursing needs of the elderly. Moreover,

nursing is not considered equal to other health-care disciplines in China. According to the Academic Degrees Committee of the State Council (ADCSC), nursing is a sub-discipline of medicine. Nursing education must follow the same standard and requirements as that of clinical medicine and, as mentioned earlier, nursing students are awarded degrees in medicine instead of nursing.

In February 2011, the Academic Degrees Committee of the State Council officially approved the nursing major to be recognized as a level-1 subject [211], which also provided the possibility for the elderly nursing to apply for a level-2 subject. Some higher educational colleges and universities have used this opportunity to explore the establishment of professional education related to elderly care. Chengdu Medical College established an integrated system with postgraduate study including master and doctor students, undergraduate, post-secondary, secondary and vocational education. On the basis of geriatrics, the undergraduate major of elderly business management plus the undergraduate and postgraduate majors in elderly care are newly established.

Binzhou Medical College has newly established a medical school of gerontology, and has applied for a new major in elderly care and nursing. Other undergraduate institutions offering the majors related to the elderly are mostly limited to the field of sociology. In 2003, Renmin University of China officially established the department of gerontology. The nature of the discipline is sociology in law, and more than 100 people have received the educational training about elderly care, and more than 100 people have been trained in distance education. In 2004, Huazhong Normal University opened the elderly care major and delivered a total of nearly 100 professionals to the society. Northeast Normal University founded the Department of Social Welfare in 2010. It enrolled the undergraduate students in the direction of social welfare and awarded a bachelor's degree in law. In 2014, it totally enrolled 55 students, and 44 people graduated. It currently has 185 students[206].

5.2.2. ACADEMIC NURSING EDUCATION

In China there is no national wide education system specialized in the field of elderly care, but only the general nursing education. The way leading to the Registered Nurse (RN) is post-secondary education, which is divided into three levels: zhuanke, baccalaureate and graduate. Zhuanke nursing education appeared first in China when Nanjing Medical Uni-

versity established the first program of university diploma in 1979. It enrolls high school graduates and has a 3-year curriculum. In reality, there is not much difference between a zhuanke and a baccalaureate program in terms of the curriculum structure, except that the total hours for each component of the curriculum are fewer in the zhuanke program [212–214].

Baccalaureate nursing education started from Tianjin Medical University in 1983. It has a 5-year curriculum and admits high school graduates through highly competitive National University Admission Examinations. Graduates are granted RN certificate automatically after their study. During the first 2.5 years, nursing students take the same basic courses as medical students. Nursing students and medical students do not separate until the last 2.5 years of their professional study. The physicians rather than nurse educators teach most of the fundamental courses (i.e. pathophysiology, pharmacology) and the professional courses (i.e. pediatric nursing and surgical nursing) [215–217]. The contents of the curricula are featured with medical characteristics of Chinese nursing education. Medical topics such as surgical care with 206 lessons, medical care with 216 lessons or gynecological care with 104 lessons are the largest. In contrast, geriatric care such as fall, polypharmacy, or dementia is only configured with 16 lessons in length, and the topics such as communication and psychology are only discussed with 18 lessons. There was also a lack of reference to the humanities and social sciences [216, 218, 219]. In addition to educating expert nurse clinicians, another goal of baccalaureate programs is to train nurse managers and administrators [220].

Master's programs in China began in 1992 when Beijing Medical University initiated the first master of nursing program. Graduate nursing education takes three years and enrolls baccalaureate-nursing graduates. According to the ADCSC, two types of master programs exist including the research program, which focuses on research training, and the clinical program, which emphasizes advanced clinical practice. The aim of the master's program is to cultivate clinical nursing experts [221–223].

Doctoral nursing program started in 2003, which is a relatively new phenomenon in China. The overall aim of the doctoral nursing program is to train nurse educators and nursing leaders in research, administration, and policy-making. Graduates can be awarded with a Doctor of Philosophy (research-based) or Doctor of Medicine (clinically based) [224,

225].

In fact, virtually every approved nursing program in China, no matter at what level, leads to eligibility for licensure as an RN. The difference between these programs lies in that only graduates of zhuanke program are required to take the National Nursing Licensure Examination (NNLE) in order to be licensed as RNs, while graduates of baccalaureate programs are granted with the RN license automatically [212, 226]. The details of licensing RN in China is shown in Fig. 5.3.

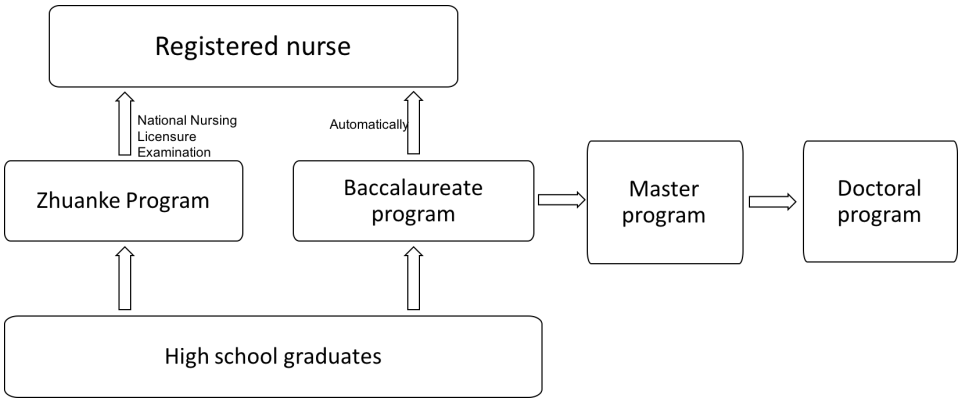

Figure 5.3: Grant of RN in China

6

KNOWLEDGE TRANSFER: WHAT COULD CHINA LEARN FROM GERMANY

6.1. CONSTRUCTION OF LTCI IN CHINA

As mentioned earlier, currently China does not have statutory and public LTCI. However, with the increasing demand for nursing service, how to deal with the challenges brought by aging population has become an urgent topic in the academic community. There are two different solutions under discussions: continue developing commercial care insurance, or introducing the mature system of care insurance that has been applied in developed countries like Germany to China.

Among the scholars who advocated the establishment of commercial nursing insurance, Yuan Ren and Lianmin Ma believed that the market insurance mechanism should be used to solve the problem of long-term care for the elderly under the background of population aging, and this market countermeasures should be incorporated into the overall social welfare system as an institutional arrangement [227–231]. After analyzing the demand and supply of LTCI for the elderly in Shanghai, Wenwei Tang put forward a multi-level security system that there should be two parallel ways to develop the LTCI market. One is that the public sector should encourage and promote the development of commercial insurance; the other is that commercial insurance companies should strengthen their own

construction. Hongyan Yang and others believe that commercial elderly care insurance has huge market in China. Lei Geng analyzed the feasibility and urgency of developing elderly care insurance in China's life insurance companies based on the current situation in Shanghai. Xiaoan Chen believed that only by introducing commercial operation of insurance companies, establishing nursing institutions covering urban and rural areas, and continuing to consolidate the role of families in elderly care, can the sustainable development of LTCI system be realized in China. The numerous scholars with the prospective literature on the establishment of commercial care insurance system are mostly engaged in commercial insurance, financial and economic research, and they study this issue more from the perspective of economic rather than social development.

Nevertheless, another group advocates the establishment of social care insurance. Linguang He and Tao Chen believe that the income of Chinese people is low, and the ability to purchase commercial LTCI is limited. Therefore, LTCI should be included in China's social security system, and the low-level, wide-coverage and economic strategy should be implemented. Jun Zhang and Shizhong Li believe that the socialized LTCI system should be established from the city. In addition, some scholars believe that in order to change the concept of elderly care and move from family care to social care, it is important to study and promulgate relevant legal provisions on nursing services before implementing care insurance in China [232]. Huiyuan Xue and Cuiqin Wang theoretically analyzed the necessity of implementing socialized care insurance. From the perspective of pathway selection, China should adhere to progressive advancement.. Huimin Kang proposed to establish a multidimensional service system of elderly care, including social care insurance, to provide a variety of choices for different groups of people. Some economically developed areas can consider the use of social security to provide care insurance, while commercial care insurance is built on a voluntary basis. Scholars believe that compulsory social LTCI should be the main choice of the institutional model in China. At the same time, the development of commercial care insurance should be encouraged and supported [233–238].

Under the background that China is not rich before it is getting old as a whole, it is obviously impossible to solve the elderly care problem of the majority of the elderly by solely relying on commercial insurance. Therefore, how to learn from Germany and introduce a social LTCI system adapted to China's specific situation is worth considering. Based on

literature and expert views, the implement of social LTCI in China is systemically described in the following section by summarizing and analyzing the major perspectives.

6.1.1. HOW TO CONSTRUCT AND IMPLEMENT SOCIAL LTCI IN CHINA

In the classic theory of social welfare policy, Gilbert and Terrell asserted that the policy formation should involve choices. Policy analysis should look at the dimensions of choice or range of alternatives available when forming and implementing policy. The basic components or "dimensions of choice" are designated by the following four questions [239]:

1. What are the bases of social allocations?
2. What are the types of social provisions to be allocated?
3. What are the strategies for the delivery of these provisions?
4. What are the ways to finance these provisions?

The first dimension, the basis of social allocation, addresses who benefits from the policy and the nature of entitlement. The nature of social provisions focuses on the form of benefit, whether it is cash, in-kind, or an alternative form such as vouchers or power. The third dimension, the design of the delivery system, deals with the organization of the service providers and consumers. The mode of finance is separated into two sections: the sources of funds and the systems of transfer.

Gilbert and Terrell did not simply illuminate essential elements of the policy, but further emphasized the role of values, theories, and assumptions in policy analysis. The purpose of social policy components and the entire policy can be understood by looking at the values, theories, and assumptions. Values help to explore the distributive justice aim of the social policies by observing the adequacy, equity, and equality in addition to looking at the value of the individual versus the collective [239]. Thus, this framework examines the range of alternatives available within each dimension of social policy, the social values that support them, and the theories or assumptions that underlie them.

Based on that, Gilbert's theory about social welfare policy is supplemented and adapted to China's national conditions. However, it must be implemented step by step instead of a one-step manner. In this regard, inherited from the experience of other countries, a system

of "seven-dimensional and three-tier" from several dimensions is designed[189]: social selection, distribution object, distribution content, service delivery, fund raising, risk control and implementation steps. Nevertheless, the best social LTCI system of China , which can solve the problem of long-term care issues for the elderly in China, should not be a direct copy of other countries, as shown in Fig. 6.1.

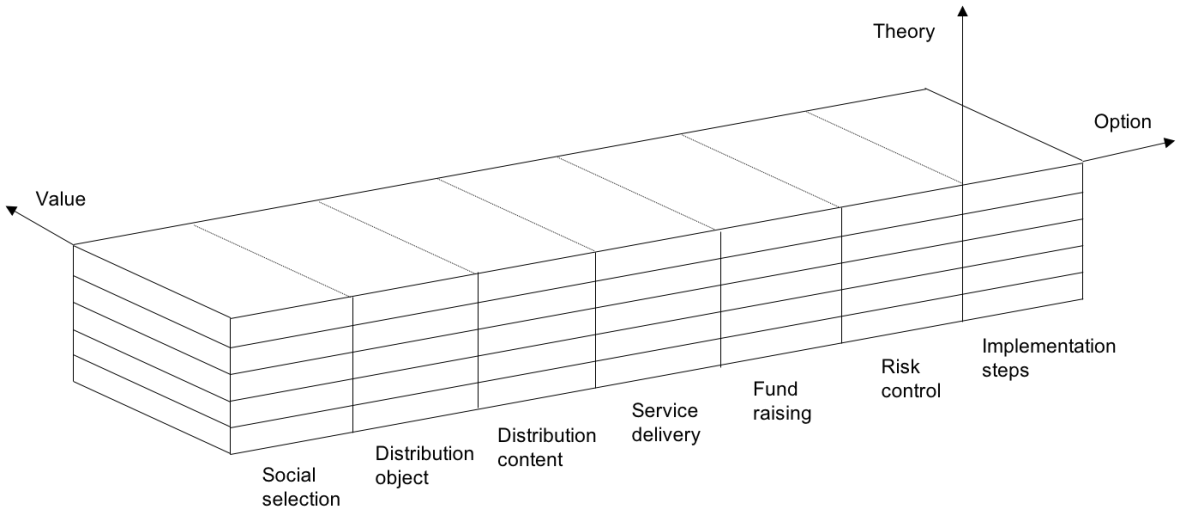

Figure 6.1: Supplement of analysis framework of Gilbert's theory about social welfare policy [189]

6.1.2. SOCIAL CHOICE

Social choice is the foundation for the formulation of LTCI, including the choice of insurance types and the construction of legal system. Social insurance should be the main form of LTCI in China, not commercial insurance. In the construction of the legal system, Germany formally established the SGB XI on January 1, 1995. In China, the problem of long-term care is also an irresistible obstacle under the background of aging population. The government should put this issue on the agenda as soon as possible, intensify related research, thoroughly prove the feasibility, and add a chapter of "Social Care Insurance Law" to the future revision of the social insurance law, to lay a legal foundation for the formulation of social LTCI system and related regulations.

6.1.3. DISTRIBUTION OBJECT AND DISTRIBUTION CONTENT

Distribution object refers to the beneficiaries of the social LTCI system. On the basis of Gilbert's universal selection theory, an analysis is made from the perspectives of demand,

protection of rights and interests, and living conditions of the elderly. Inspired by the design of care insurance in Germany, China should follow the principle of "care insurance adheres to medical insurance". However, China as the world's most populous country, is in an underdeveloped stage of economy. The Germany's LTCI model should not be directly copied. Considering the situations such as low level of economic development, huge urban-rural disparities, regional disparities and wide income disparities among staffs in different industries, it is impossible for everyone to enjoy social LTCI at the first stage.

Meanwhile, distribution content is the core challenge of LTCI. As a final target, China's social LTCI should mainly provide basic care services, which aim to compensating the heavy loss of daily living abilities, including short-term care after discharge, life care for those with heavy chronic diseases, etc., correlating to the basic care in Germany. However, similar to the situation of distribution object, this should be implemented step by step starting from medical care services as compensation. Otherwise there may be consequences of haste. The establishment of a social LTCI model suitable for China should be carried out in three steps [240].

THE FIRST STEP: STARTING FROM COMMERCIAL LTCI

The first step is to adopt a commercial LTCI model. In the developed urban areas in China, commercial insurance can be initialized and applied for high-income industries and urban workers to reduce the risk of their long-term elderly care. As for rural areas, apart from poor economic conditions, since the families from villages usually have more than two children, the task of elderly care seems less urgent than in urban areas. Secondly, because of the large base number of the elderly population and the rich customer groups, coupled with the rising medical and nursing costs for the elderly with chronic diseases, it poses an economic threat to the lives of the elderly and increases their desire to buy commercial LTCI. In addition, because of the lower foundation of China's economy, the situation of "getting old before rich" has imposed great economic pressure on the Chinese government, which can not be totally relied on to solve the problem of long-term care challenges for the elderly. Moreover, the demand for long-term care for the elderly is complex, and the difference of people's income level also determines that the content of care insurance should be diversified. The flexible policy design of commercial LTCI can better meet this requirement. Under the current economic situation in China, developing commercial LTCI should be the

best choice.

Specifically, commercial LTCI should be developed for middle-class families and above in economically developed urban areas. However, it must be noted that adopting this model may result in many low-income families not being secured. Individual consumers, who are in disadvantage position of information asymmetry, usually prefer to choose non-profit insurance providers because they think that the non-profit insurance providers, namely the government, will earn less profit than the profitable insurance providers [241]. Therefore, after a period of time, commercial LTCI should gradually transit to the combination of commercial and basic social LTCI. Commercial LTCI acts as a supplementary mode of basic social LTCI.

THE SECOND STEP: COMBINATION OF SOCIAL LTCI AND COMMERCIAL LTCI

The second step is to combine social basic LTCI with commercial LTCI, which mainly focuses on medical care compensation. At this stage, the existing basic medical insurance conditions can be used to establish a social LTCI system, which mainly focuses on medical care compensation. It is only responsible for the compensation of medical cost of long-term care, excluding the cost of daily care. The cost of daily care and the uncovered part of basic long-term care can be compensated by purchasing commercial insurance. The specific coverage of commercial insurance should include all the insured persons who participate in the basic medical insurance, as well as the elderly people who have no source of livelihood and no support, the low-income people and the families who have lost their children.

Through this step, not only the needs of long-term medical care insurance of most people can be guaranteed, but also the needs of rich people for high-level long-term care services can be met by purchasing commercial insurance, and the burden of government will not be excessive. At the same time, as the first phase of commercial LTCI has been fully developed, it has given the necessary and favorable conditions for its rapid and full integration with basic long-term medical care insurance.

THE THIRD STEP: SOCIAL LTCI IN CHINA

Third, the government implements a compulsory national LTCI model, including long-term medical care insurance and daily care insurance. Residents participating in medical

insurance should take part in LTCI. The policy of remission and exemption shall be implemented for those who meet the requirements and can not afford to pay insurance premiums. Participants under 65 years old can only be compensated by LTCI if they either have severe disabilities, or suffer from specific diseases, when the cost of long-term care arises.

Meanwhile, in developed areas such as the east, care services should be provided as a major role, and cash payments should be prohibited, because the income level of the elderly is relatively high there. In the west and other less developed areas, cash payment should be the mainstay. In addition, learning from the principle in prioritizing rehabilitation of Germany should be advocated and more importance to prevention and rehabilitation should be attached, to thoroughly change the current situation of China's medical and health system, which emphasizes treatment rather than prevention.

6.1.4. SERVICE DELIVERY

Service delivery refers to the management of service institutions and service delivery in LTCI. The specific models are as followed: public service institutions including community care service stations (under the dual supervision of the care management center and the sub-district care service office), community hospitals and professional care service institutions. The community care service station and the community hospital can provide long-term care service to the community residents through the cooperation of technology and personnel. Non-governmental care organizations, including privately profitable and non-profit institutions, can play an important role in institutional care, home care and community care. In addition, there are mutual-aid organizations of care and volunteers involved in elderly care services. Figure 6.2 lists the details of the structure of care service delivery.

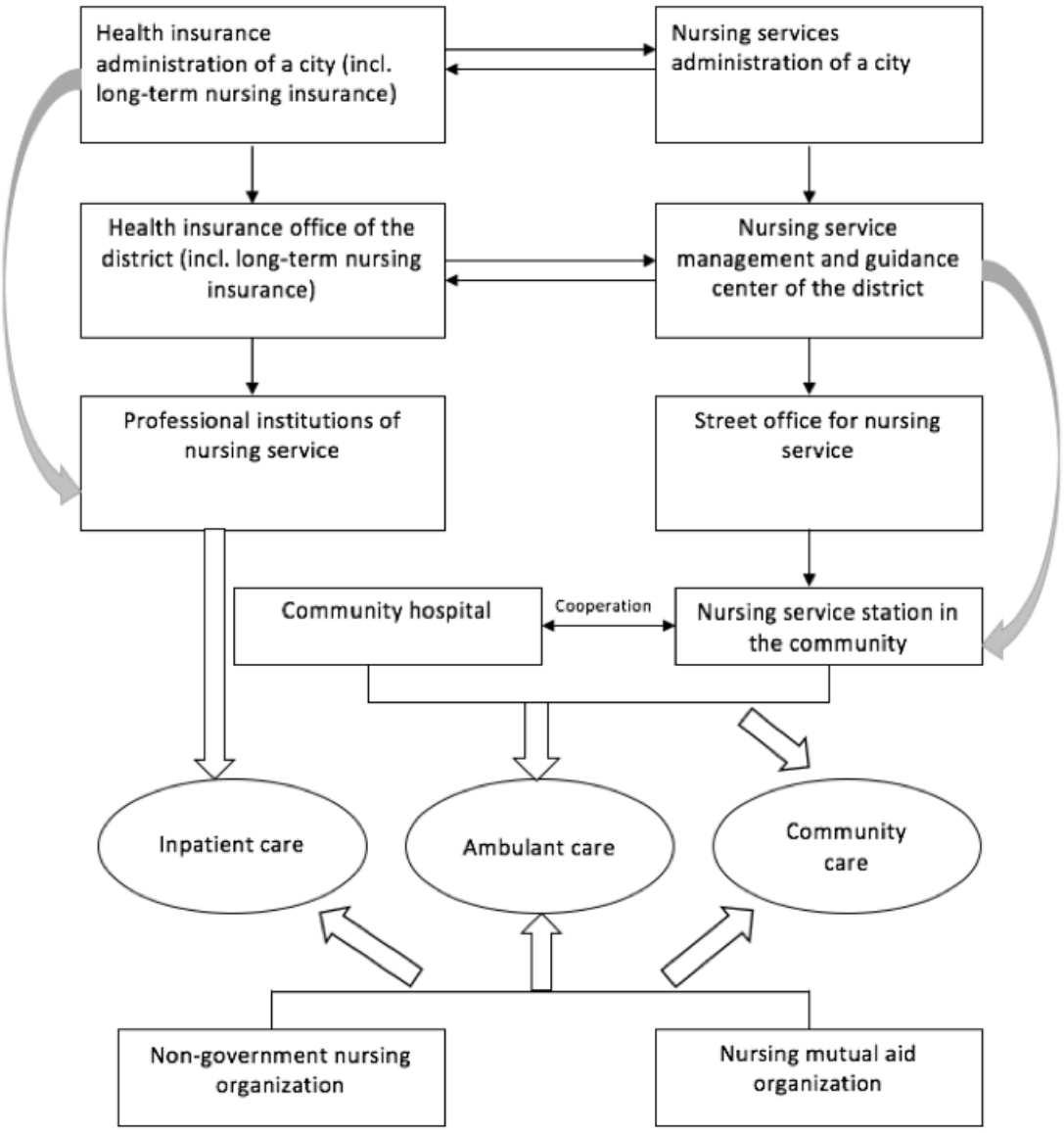

Figure 6.2: Structure of service delivery in "Seven-dimensional and three-tier" method[189]

Additionally, the principle of ambulant prior to stationary care advocated in Germany is applicable in China as well. Traditional Chinese culture has led to the fact that most elderly people are reluctant to live in institutional nursing homes and are more willing to obtain home care. Home care services can cover the following contents.

- Personal life care including daily life activities.
- Home care for elderly people with poor self-care ability.
- Home care for patients who need continuing care after discharge and patients with

chronic diseases requiring long-term care.

LTCI should also reimburse the cost of home care for the elderly. Institutional nursing is complementary to home and community care in this model.

6.1.5. FINANCING OF THE SOCIAL LTCI IN CHINA

Fund raising and payment serve as the fifth dimension of the analytic framework of China's social LTCI system. The fund raising of social LTCI for the elderly should be adapted to China's national conditions. China should follow five principles in fund raising and payment of social LTCI.

- According to the national economical situations, the first principle is the tripartite responsibility system. That is to say, the government, provincial and municipal local governments contribute a portion of the funds, and enterprises contributes a portion of the funds, while the citizens pay a small portion of the funds. Rural residents below a certain income threshold will receive social assistance to incorporate all citizens in the social compulsory LTCI system. Furthermore, regarding the sharing of nursing service costs, the government should play a regulatory role in coordinating the rate gap between eastern and western provinces.
- Second, the fund applies a rule called "pay as you go", because the premium rate of social LTCI in China is too low to be decomposed into individual account.
- Third, learning from Germany, a nursing registration system should be established.
- Fourth, the mode combining community nursing and home nursing should be promoted, to reduce the burden of social LTCI expenditure from the perspective of the location where nursing services are received.
- The fifth principle is to subsidize people who are not working because they have to care for their elderly parents.

6.1.6. RISK CONTROL AND REGULATION OF SOCIAL LTCI IN CHINA

In terms of risk control, China should implement a health review system based on the Social Care Insurance Law. A special nursing review committee should be founded to conduct

health review for each applicant, whether care is needed or which degree of care is needed. Additionally, the applicants should be periodically reviewed and followed up. In terms of risk management, professional nurses in China are in extremely shortage. Now it is time to start using the idle human resources of the community, and train a large number of nurses who know basic nursing knowledge. Otherwise, it will be difficult to achieve the expected effectiveness of LTCI, which will bring suspicion about the system.

A detailed description of the systematic design of regulating China's social LTCI for the elderly is as followed, which mainly involves three primary regulations: the operation regulation, the supervision regulation and the service delivery regulation.

1. The main contents of the operation regulation are the formulation of insurance policy, the selection of insured objects, the financing channels, the determination of fund-raising modes and the division of nursing grades, etc.

2. The supervision regulation includes the contents of formulating relevant management policies, auditing the allocation of nursing institutions and fulfilling the duties of supervision and law enforcement, etc.

3. The long-term care service delivery regulation is mainly to establish multi-level nursing institutions to provide diversified nursing services for the elderly in need.

These three main regulations are executed by three major institutions specialized in social LTCI, namely, the corresponding professional operating agencies, the regulatory agencies and the nursing service providers. These three types of institutions undertake the responsibilities of professional management and service, share risks together, effectively integrate resources from all aspects, and ensure the efficient operation and service quality of social LTCI for the elderly. The details of the structure of social LTCI system based on this theory is depicted in Fig. 6.3.

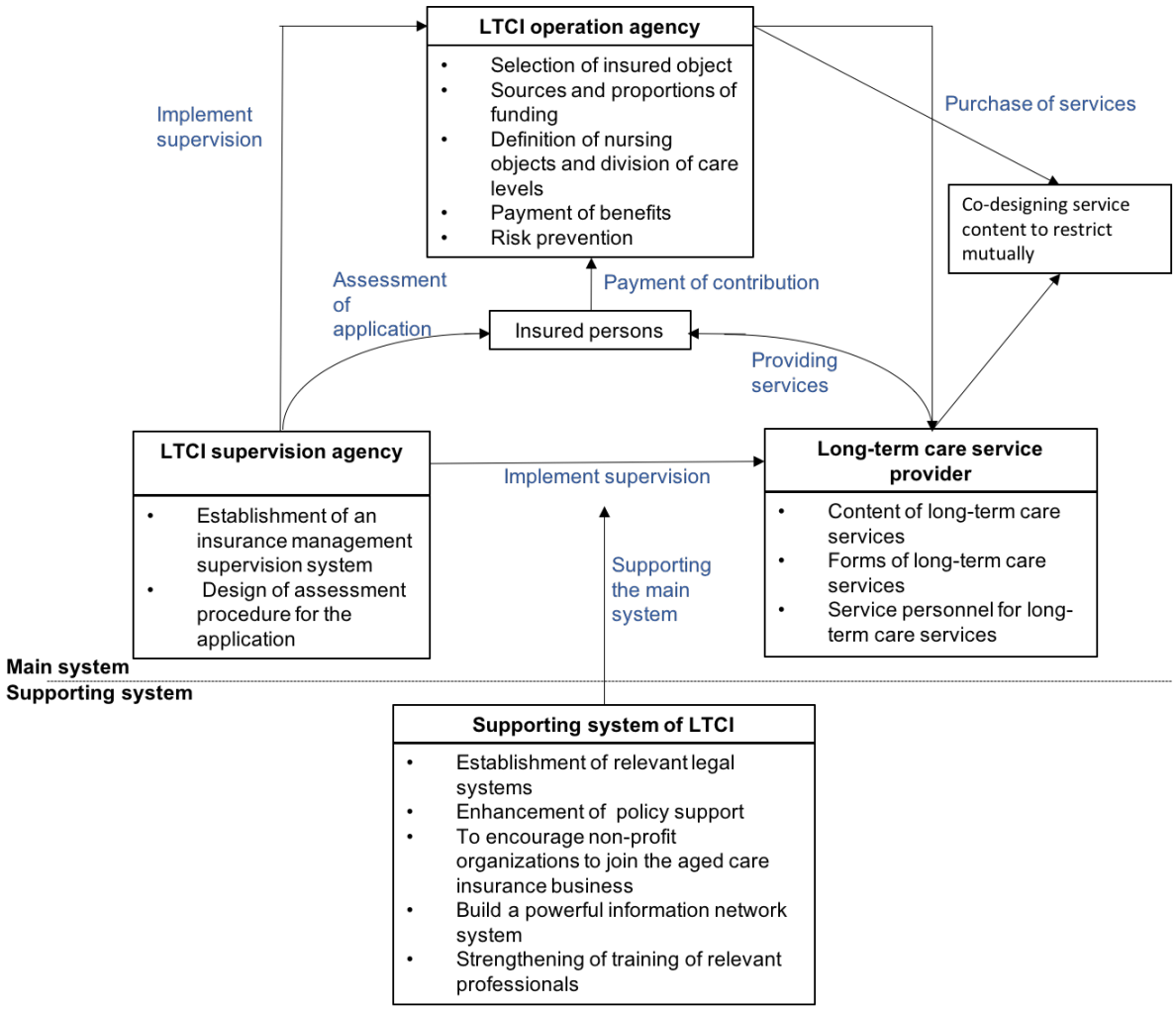

Figure 6.3: Structure of LTCI system in China [94]

6.2. CONSTRUCTION OF NURSING INSTITUTIONS IN CHINA

According to the study on the development of China's elderly care institutions in 2015 [174], about 320 nursing homes have in total 69,202 elderly care beds, resulting in an average around 216 per nursing home. The statistics of the service facilities investigated in this study is shown in Fig. 6.4. A total of 45,221 people live in the nursing homes, resulting in an average of 160 people living in each nursing home. The occupancy rate of elderly care beds is 65.35%, which means that the vacancy rate is 34.65%. In another word, more than one third of the elderly care beds are actually vacant. Moreover, the proportion of health care allocation in nursing institutions is low. Only 54.7% of the nursing institutions have medical facilities, and 46.6% of the nursing institutions have rehabilitation facilities. Nearly half

of the institutions do not have medical and rehabilitation facilities, which directly causes some of them to be vacant. The reason is that some of the disabled elderly who need medical care can not be admitted.

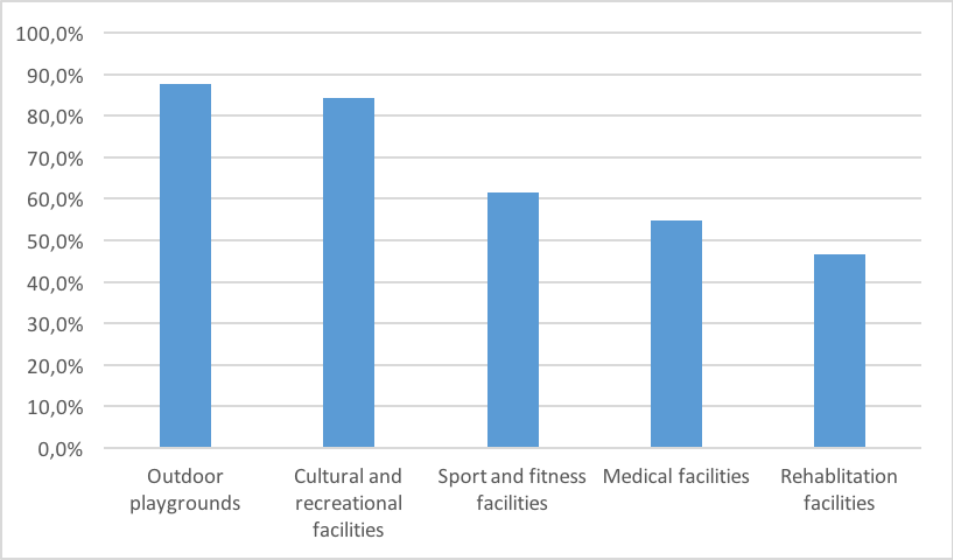

Figure 6.4: Service facilities of the investigated nursing institutions [174]

The most significant problem about the service is that the service concept is outdated and lacks considering the needs of the elderly. Most nursing institutions only provide life care services for the elderly, and very few of them provide services to meet the high-level needs of the elderly, such as psychological comfort, leisure and health, cultural and entertainment, social participation and so on. In addition, the existing nursing institutions generally lack marketing research and the awareness of market segmentation. They are more inclined to homogenize the needs of the elderly, and the phenomenon of mismatching supply and demand is critical. It is urgent to establish the normalization on the construction and management of China's elderly care institutions.

6.2.1. ESTABLISH AND IMPROVE THE CLASSIFICATION STANDARDS AND EVALUATION MECHANISM OF NURSING INSTITUTIONS

Compared with Germany, there is no a clear classification management system for China's elderly care institutions and the subjects who receive nursing services, which is one of the main reasons attributed to the loose management of China's elderly care institutions. It is not difficult to realize from German experience that classified management based on

the service targets and corresponding service functions of elderly care institutions is an effective way to manage them. The Law of the People's Republic of China on the protection of the rights and interests of the elderly clearly demands "establishing and improving the classification management system of the elderly care institutions". But up to now, there is still a lack of corresponding system in China, which has affected the supervision of elderly care institutions to a certain extent.

To establish and improve the classification management system of the elderly care institutions, firstly, the positioning of the elderly care institutions and target evaluation standards should be clarified as soon as possible. The standards, for which elderly people can enjoy the services of the elderly care institutions supported by the government, should be clearly set. It is recommended that a unified national evaluation standards for the elderly living in nursing institutions should be established, including the health assessment standards, the economic assessment standards and the governmental procurement standards of elderly care services. The criteria to select the targets receiving the services supported by government should be defined based on health and economic conditions. Meanwhile, the different functional orientations and serving targets of public and private elderly care institutions should be identified, so as to speed up the reform process of public elderly care institutions and promote the rapid development of the market for elderly care service [242, 243]. Secondly, it is important to establish and improve the classification criteria and the third-party evaluation mechanism for the elderly care institutions as soon as possible. Based on the needs of the occupants and service contents, different types of elderly care institutions should be classified into three categories: self-care institutions, supportive care institutions and nursing care institutions. According to the service scope of different elderly care institutions, different supervision standards should be determined as well [244].

6.2.2. NORMATIVE CONSTRUCTION, SUPERVISION AND MANAGEMENT

Germany has clear standards and strict supervision system for the construction of elderly care institutions. China should also learn from Germany and enhance supervision, management and safety precautions of elderly care institutions. In terms of system construction, it is necessary to improve the mechanism of industry access and exit plus the supervision of elderly care institutions. Additionally, it is also critical to implement the system of

administrative permission, grade assessment and annual assessment, in order to promote the standardization of elderly care institutions. In particular, China should establish and improve the system of social appraisal and publicity. Moreover, the personnel, facilities, services, management and reputation of elderly care institutions should be evaluated regularly and irregularly. Finally, the results of inspection and evaluation to the society should be published, so as to ensure that the functions of elderly care institutions are fulfilled in practice [172, 245, 246].

In terms of safety supervision, the first principle is to enhance the supervision within the industry. Civil affairs department, as the administrative authority, has the responsibility to strengthen the supervision and inspection of elderly care institutions in accordance with the granted permits. At the same time, irregular inspections should be organized jointly with other departments such as health, public security, fire protection and social work. The second principle is to establish a third-party evaluation mechanism and boost external evaluation. It is necessary to organize a third-party evaluation team composed of experts, social workers, volunteers, etc., to conduct inspection and evaluation of elderly care institutions, and to publish the evaluation results to the society. At the same time, managers of elderly care institutions should improve their awareness of risk prevention, especially focusing on preventing fire accidents. At present, in the configuration of facilities and equipment of elderly care institutions, especially in some private ones, facilities are primitive and inadequate. There are great underlying fire and safety hazards. Elderly care institutions should pass fire control inspection in strict accordance with standards, equip with necessary fire control equipment, and enhance fire safety education and drilling for employees [247].

6.2.3. INTEGRATED ELDERLY CARE AND MEDICAL SERVICES

As mentioned earlier, nearly half of the elderly care institutions do not have medical and rehabilitation facilities, and some disabled elderly people who need medical care cannot be admitted. The "integrated medical and elderly care" service should be the main direction of the development of elderly care institutions. The so-called "integrated medical and elderly care" is to integrate "prevention, treatment, rehabilitation and nursing" services, nursing care and medical care assist, which complement each other. The "integrated medical and

elderly care" service can not only meet the care needs, but also meet the basic medical needs of the elderly for chronic disease management, rehabilitation, and medication [248].

However, there is a big difference between the "medical care" in the elderly care institutions and that in the hospitals. The main goal of the "medical care" in the hospitals is to cure, and the main goal of that in the elderly care institutions is health management and long-term care. In order to maintain the stability of the physical functions of the disabled and semi-disabled elderly, their long-term care has the characteristics of "non-medical". Therefore, one can not simply recognize the "integrated medical and care" as "nursing home plus hospital". The "medical care" of a hospital refers to the medical care service of the entire process, while the "medical care" of an elderly care institution is meant to be the service in the partial process, which mainly focus on two components. The first component is the health management, especially disease management (mainly chronic disease management, diet, lifestyle management, medication guidance, etc.) [249, 250]. The second component is long-term care and rehabilitation, which is the key component of "medical care" in nursing homes.

Considering the rapidly deteriorating situation of elderly care in China, there was a time when the Chinese government issued a series of policies to support private capital to participate in the construction and operation of elderly care institutions. Due to the incorrect understanding of the integrated medicine and elderly care, many large-scale elderly care institutions, complemented with general hospitals, have been built in the whole country. The original intention is to fill the gap of professional medical nursing services in the elderly care institutions. However, a lot of resources have been wasted due to insufficient understanding. The common features of these super large elderly care institutions are equipped with enormous beds and normally located in suburbs. For example, a company from Suining, Sichuan Province, Longxin Orchid Industry Development Co., Ltd., invested 600 million Yuan to build a comprehensive large-scale elderly care institution, Lamboyuan Healthy Elderly Care City, which integrates medical care, rehabilitation, leisure, entertainment, nursing and trusteeship. The project covers a total area of 1 million square meters and invests in the construction of 2,000 elderly care beds and peripheral hardware facilities. Xingyang Senior Apartment in Aixin, Henan Province has a floor area of 35,000 square meters and 1,400 beds. In addition, Aixin Sunshine City is also a large-scale comprehensive

elderly care service community under construction in Henan Province, which integrates elderly care residency, medical rehabilitation, leisure and entertainment, education and learning, with a total scale of nearly 330,000 square meters. The floor area of Jiurucheng Elderly Care Integration in Wuxi is about 100,000 square meters and is configured with nearly 1,000 beds. Oriental Comprehensive Elderly Care Home in Chaoyang District, Beijing, was built with an area of 35,000 square meters. It now has 1,000 beds which have been occupied and 1,500 unused beds that have been constructed.

However, after several years of operation, these super-large elderly care institutions have not received the results as expected. The treatment of diseases in elderly care institutions depends more on social medical institutions than those comprehensive and general medical institutions established in elderly care institutions. The "medical care" of nursing institutions should focus on disease prevention and long-term rehabilitation management. Although there is no legislation built for LTCI in China, some adjustments can be made in making supportive policies when managing the elderly care institutions, such as the establishment of health rooms and medical clinics in elderly care institutions. The health administrative department should introduce special policies to reduce the entry threshold, simplify procedures, encourage and support elderly care institutions to attach importance to prevention and rehabilitation. Nursing intervention should not be carried out only when healthy problems of the elderly arise.

Prevention and rehabilitation are very important concepts in the field of elderly care in Germany. SGB XI clearly describes and stipulates “Rehabilitation vor Pflege” [251–254]. This principle deserves comprehensive learning from China. Its meaning includes:

- the nursing insurance fund validates individual cases which services are suitable and reasonable for medical rehabilitation and supplementary care, in order to overcome or reduce the need for nursing care or to prevent aggravation.
- nursing insurance fund must cooperate closely with the providers of rehabilitation in initiating and executing nursing service and providing advice, information and education in order to prevent, overcome or mitigate their need for care.

If the nursing insurance fund determines by the expert of MDK (§ 18 Abs. 6) or by other resources that the services of medical rehabilitation are indicated for an individual case, the

insured person and corresponding physician will be informed immediately. The nursing insurance fund will forward the consent of the insured person to the responsible rehabilitation fund. At the same time, the nursing insurance fund informs the insured person of its own responsibility and obligation to cooperate. As the insured person has consented, the notification to the rehabilitation institution acts as an application for the procedure according to § 14 of Social Code IX. The nursing insurance fund must be informed immediately about the benefit decision of the responsible rehabilitation agency. It checks at appropriate intervals whether appropriate measures have been taken. If necessary, it has to provide provisional services for medical rehabilitation according to § 32 Para.1

6.3. THE DEVELOPMENT TREND OF NURSING EDUCATION IN CHINA

In China, as mentioned in previous sections, elderly care education started a little bit late. Some vocational colleges have offered geriatric nursing discipline, but the actual number of trained talents is very limited. Undergraduate colleges generally only offer less than hundred hours of elderly care course in clinical nursing discipline. Students can only have a superficial understanding of the basic knowledge of elderly care, and there is a lack of targeted practical training. At present, most of the nurses engaged in community care and nursing homes have low educational level and have little systematic education in related knowledge of elderly care with little or no practical training, which leads to the fact that many nurses do not understand the needs of the elderly. The care service provided for the elderly is limited to general life care and medical care, but is not able to provide complete care and support for the elderly.

The status of the elderly care professionals was surveyed by the Social Welfare and Philanthropy Promotion Division in 2013. The survey had shown the statistics about the training and skills of the elderly care professionals [255] as shown in Fig. 6.5:

- about 73.5% of them had received formal skill training, about 26.5% did not receive any training;
- about 39.8% of them did not have professional qualification certificates, 41.9% of them had primary certificate, 13.3% of them had intermediate certificate, 4.1% of them had an advanced certificate.

The statistics of elderly nursing practitioners was given as follows

- 83.5% are female elderly care workers;
- 51.0% are between 40 and 49 years old, and 28.1% are older than 50 years old;
- 21.7% have received elementary and junior education, 45.2% received junior high school education
- 55.8% have rural Hukou.

The occupational statistics of the elderly care practitioners was as follows:

- 14.8% have working experience less than 1 year, 25.9% have worked 1 or 2 years, and 30.6% worked for 3 to 5 years.
- 25.9% are given official posts and 74.1% are employed informally.
- The labor contract was signed for 64.9% of them, and 27.8% do not have any contracts.

The statistics about the average monthly income of elderly nursing practitioners was as follows:

- 42.9% had an average of monthly income between 1,000 and 1,499 Yuan,
- 34.8% earned monthly from 1,500 to 1,999 Yuan,
- 27.6% were not satisfied with the income.

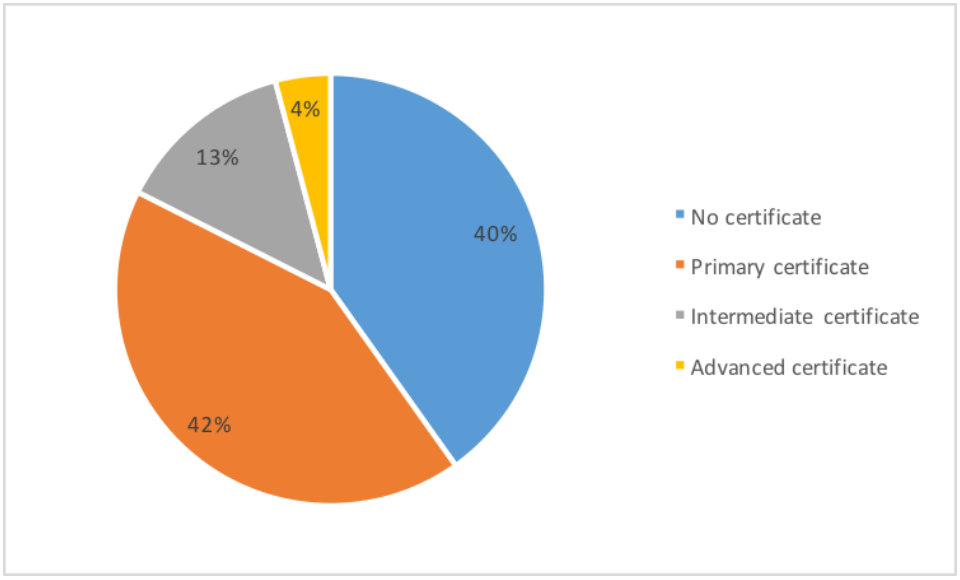

Figure 6.5: Statistics of training and skills of elderly care practitioners [255].

Basically, elderly care education in China is in the initial stage. China urgently needs to develop and regulate specialized elderly care education. In Germany, the vocational education in elderly care is worth learning for China. Although in Germany, the limited discipline set-up has hindered the employment possibility of professional nurses to some extent, for which the reform of nursing education is now in the pipeline as mentioned above. China's elderly care education also desires an urgent reform. In recent years, experts and scholars in various fields of nursing care have launched an intensive discussion. As a result of the discussion, China's elderly care education can be developed in the following potential areas.

1. **Promote the change of elderly care concept.** Because the specialized education of China's elderly care system started a little bit late, there are some misunderstandings about elderly care by both nursing professionals and the public. They consider the elderly care as the care of elderly patients. They think the elderly care is mainly regarding the living care, without the requirement of specialized knowledge and skills. They also have the false impression that the elderly care should not be considered as a truly nursing work. All these phenomena indicate the importance and necessity of updating the ideas about elderly care, and supporting the elderly caregivers and other social groups to change the concept. They should truly understand that elderly care is to provide physical, mental, social and spiritual care and support for the elderly,

which requires scientific knowledge and skilled nursing capabilities.

In 1990, WHO proposed the "healthy aging" strategy. Healthy aging should not only be reflected with the extension of life span, but also with the improvement of life quality. The 46th UN General Assembly in 1991 also suggested four principles of "independence, care, self-fulfillment and dignity" for the elderly. The introduction of these concepts has led to a significant change in the connotation of elderly care. The content of nursing should be extended from clinical nursing to physical health, mental health, social function, self-care ability and preventive health care of the elderly. The scope of service locations should also be extended from hospitals to families, communities and related social institutions.

2. **Increase the qualification of elderly care professionals.** Firstly, the elderly care professionals should have a solid knowledge about the theory and practice of disease nursing. Since various organ functions of the elderly decline along with age, and the elderly often suffer from multiple diseases at the same time. It takes longer for the elderly to recover, and they have more problems and demands of health. All of these facts increase the complexity and difficulty of elderly care. In addition, based on the EU concept, elderly care professionals should concern the physical, mental, social and cultural needs of the elderly and consider their health problems and corresponding nursing measures, to satisfy these actual needs. This complexity makes it necessary for care professionals to have knowledge and skills in psychology, ethics, laws and regulations related to the elderly, the theory and skills of health education, and communication skills with the elderly. At present, there is no professional admission examination for elderly care specialists in China. Therefore, the National Medical Examination Center could think of adding the questions about the knowledge related to elderly care in the qualification examination of nurses, so as to increase the quality of elderly care practitioners from the perspective of profession admission.

3. **Formulate feasible training objectives and curriculum plan for elderly care professionals.** In February 2011, the Degree Committee of the State Council officially approved nursing as a level I discipline, which also provided the possibility for the application of elderly care as a secondary discipline in China. Colleges and universi-

ties should fully use this opportunity to speed up the application and construction of undergraduate, master and doctoral education programs for China's elderly care. The national education administration and relevant institutions should organize experts to discuss and formulate feasible, nationally unified and multi-layered training objectives and capacity requirements for elderly nurses. The curriculum of elderly care should be configured on the basis of training objectives and capacity requirements, referring to the experience of elderly care education in developed countries such as Germany.

In terms of curriculum design, it should include the basic courses of elderly care, and also add appropriate courses of related subjects, such as elderly care psychology and ethics, health education and communication skills, associated policies and regulations. These courses will enable students to have a comprehensive understanding of geriatric nursing, such that they can consciously carry out comprehensive application in nursing practice. Moreover, the curriculum of elderly care should include theoretical, novices and practical courses. The locations for novice and practice should not be limited to clinics, but also involve more places closely related to elderly care, such as communities, families, nursing homes and so on. Only in this way can the theory and practice of elderly care be better lined.

4. **Accelerate the construction of teaching staff of elderly care.** The qualification of teaching is directly correlated to the development of elderly care education. At present, most of the teachers in elderly care education are nursing teachers, who are mainly engaged in teaching clinical nursing. Although some teachers have got in touch with some elderly patients in clinical environment, they still lack practical experience, which will inevitably limit the improvement of the teaching quality of geriatric nursing. In order to establish a high-level professional teaching rank of geriatric nursing as quickly as possible, geriatric nursing teachers should actively participate in all practical activities, enrich their own practical experience, and consciously integrate all resources in teaching, such as inviting nursing home and community caregivers with rich nursing experience, and the nurses in clinical geriatrics.

5. **Provide various continuing education activities for elderly care practitioners.** In

the light of inadequate elderly care education and the care staff shortage in China, one way to make up for the shortage of talents is through regular nursing education in colleges and universities. Another way is to carry out various forms of continuing education and training for the elderly care professionals who are incumbent. The teaching contents should be formulated to meet the needs of the elderly, such as the fundamental theory of aging, basic skills of elderly care, the contents and measures of elderly health assessment, the health care and the common diseases nursing for the elderly, the commonly used rehabilitation methods for the elderly, the psychological changes in the elderly and the basic psychological nursing measures, and the nursing for the dying elderly. Through continuing education, carers can be equipped with the ability to make individualized nursing and health education plans for the elderly, and can effectively implement these interventions using the skills of communication and nursing operation.

Continuing education should be carried out in various forms, such as collective teaching, group discussion, online learning. Relevant certificates should be issued after training, which can be used as credit approval for continuing education, or as one of the admission criteria for nurses to work in elderly care institutions. In the process of teaching, various teaching methods should be combined. In addition to traditional teaching methods, new teaching methods should be bravely tried out, such as case analysis, role playing, multimedia simulation, inviting the elderly to participate in teaching process, so that carers can understand the characteristics and basic methods of elderly care from real and common cases. It is recommend to fully use the advantages of network teaching and upload course-wares, multimedia and discussion cases to the network, so that nurses can arrange learning plans according to their own schedule and complete online testing in the end. Qualified persons can print out corresponding certificates from the network. Online teaching can avoid the problem that nurses can not participate in training systematically because of their intensive working schedule. In network teaching, distance teaching platform and virtual discussion room can be established. Teachers and nurses can communicate online on the discussion platform. Questions and answers raised can also be shared by more nurses who participate in.

6. **Enhance scientific research for elderly care.** The development of professional elderly care relies on the promotion of scientific research. Active scientific research activities in the field of elderly care can be used to guide nursing practice. In addition, evidence-based nursing research should be carried out. Guiding nursing practice with scientific results is important to improve the quality of elderly care. Since geriatric nursing education in China started late, it is necessary to broaden the scope and improve the quality of elderly care research, to explore more research methods that are suitable for the elderly and improve the ability of elderly care researchers. Nursing researchers can make research efforts in teaching, clinical practice, community practice and family care, hospice care, as well as relevant laws and regulations, ethics and nursing economics. Particularly, elderly nurses should make full use of the platforms organized by professional committees or various scientific conferences organized by advanced research institutions to conduct extensive scientific research exchanges. Nursing researchers should consciously appeal to universities, hospitals, health management institutions, the Ministry of Civil Affairs and other departments to increase investment in scientific research of geriatric nursing. The platform for nurses to exchange scientific results should be built, to vigorously promote the transformation of research into practice, and ultimately to improve the quality of elderly care.

7

KNOWLEDGE TRANSFER: WHAT COULD GERMANY LEARN FROM CHINA

7.1. REFORM OF ACADEMIC NURSING EDUCATION IN GERMANY

Since recommended by the European Nursing Conference in Vienna in 1988 and the WHO in 2000, the undergraduate nursing education has already been of great importance for the quality of care. Nursing and medicine should act as equal partners in the field of health science. Internationally, the structure of three-level study programs is common, which provides primary qualifying generalist courses at the (entrance) bachelor level. They are followed by specialized master's degree programs, which focus on specific tasks and roles of nursing, for instance, clinical nurse specialist and nurse practitioner [256]. Additionally, structured doctoral programs are offered as the third building block [257].

In Europe, professional nursing education takes place predominantly at universities, universities of applied science with bachelor's degree, or in secondary level. Germany and Luxembourg are the two countries which provide nursing education only in secondary level exclusively. Anyone who wants to participate vocational training in Germany as a general nurse must have a middle level education, which means at least 10 years of school education. Alternatively, it is also possible to apply with the completion of a one-year vocational training as a nursing assistant. So that Germany has the lowest entry requirement for train-

ing in nursing next to Luxembourg and Austria, which is the minimum requirement under the EU Directive 2005/36 at the level of 1977. Germany has been for a long time in the last place since academic nursing education is required in Europe [257]. Meanwhile, the skills of German nurses seem much more limited than those in other European countries, where qualified nurses take over services in the emergency room, new psychiatric tasks, functional diagnostics and surgical services to relieve the doctors and being treated equally at doctor's level. According to Michael Isfort and other experts, the German care system is not competitive and not very attractive by international standards. Therefore, the German Nurses Association(Deutsche Berufsverband der Pflegeberufe,DBfK) hopes for a long time of a reform with breakthrough in quality of nursing to be in line with other EU countries [196].

Professionalization of nursing education has been a topic in policy discourses of nursing for a long time. With the establishment of academic nursing courses at universities in the early 1990s, this debate has gained plenty of attention. Undoubtedly, the emergence of an independent discipline for nursing entailed a spirit of optimism, which raised numerous hopes and expectations. Hopes and expectations did not only refer to new insights to accomplish professional work, but also to opportunities for revaluation, improved social recognition, autonomous organization and autonomy of the professional executant [202]. However, the labor-intensive and time-consuming detour via partial academization makes it difficult to implement in nursing science. Bachelor's degree programs are created but still struggling with a difficult legal situation, because they have to follow not only scientific training criteria, but also the Nursing Act (or the subsequent Education and Examination Ordinance), which until today are not sufficiently adapted to the development.

Unlike in other countries, there was no independent discipline for the generation of professional knowledge in nursing in Germany for a long time. Declarations of nursing were based on knowledge from different fields. Medical, hygienic, legal, sociological and other knowledge which are offered in the training, should help to ensure "proper action" [203]. There has been a lot of discussion in Germany for several years about how to academize nursing education. In some federal states, nursing degree programs have been developed, most of which are based at a university of applied sciences. However, nurses with an academic degree are a rarity until now.

The planned Nursing Care Reform Act (Pflegeberufereformgesetz) intends to merge the previously separate three training courses in geriatric nursing, health-care nursing as well as pediatric nursing from 2020 to a new and generalist vocational training with a uniform qualification. In addition to the vocational nursing education, there will be a qualified nursing study. All the existed academic model program should be regulated by this law after 2020. The academic study will take at least three years and conclude with the award of the academic degree. The access to academic nursing study is determined according to the state law regulations for university entrance. Equivalent achievements can be credited to the academic nursing study. A successfully completed vocational nursing education should shorten the academic nursing study by half. A state examination to obtain the professional admission becomes part of the higher education examination. The job title "nursing professional" (“Pflegefachfrau”/” Pflegefachmann”) is associated with the academic degree. The academic nursing study opens up new career opportunities and appeals to new target groups. In addition, the nursing course allows the steadily developing knowledge of the nursing science to be incorporated even better into practice.

7.2. DIGITAL LIFE OF CHINESE ELDERLY PEOPLE

The digital life, particularly cyber life of Chinese elderly people, has massively developed, which could also be an enrichment of life for German elderly people. According to the data released by the China Internet Network Information Center, from 2000 to June 2017, the number of netizens (people with frequent online activities) over the age of 50 in China is expanding. In 2017, the proportion of netizens aged over 50 years old is 10.6% of total netizens. More and more middle-aged and elderly people are integrated into the internet. The difference in accessing the internet in terms of equipment, infrastructure, and skills between elderly and younger people is gradually shrinking.

The joint research group of the Institute of Sociology of the Chinese Academy of Social Sciences and the Tencent Social Research Center takes the people aged 50 and over as research objects. Through data analysis, the cyber life of middle-aged and elderly people is portrayed. Research shows that the smartphones are accessible to middle-aged and elderly people as the important hardware of the internet. About 76% of the middle-aged and elderly people could read online news information independently. More than half of

the middle-aged and elderly people (56.6 percent) are able to use search engine by themselves. Instead of entertainment news, the news of middle-aged and elderly people prefer to browse information mainly about national and social news. The main search content includes recipes, travel, and vacation related information. Some convenient functions that seem to be exclusive to young people are beginning to integrate into the lives of middle-aged and elderly people, such as watching videos, mobile payment, mobile navigation, and taxi services. About 40 percent of middle-aged and elderly people are able to pay mobile phone fees online. About 30 percent of them could use online shopping and mobile navigation. About a quarter of middle-aged and elderly people could use taxi software or pay for living expenses such as water, electricity and gas. The proportion of middle-aged and elderly people who book train tickets and hotels online is relative low [258, 259].

7.2.1. WECHAT: THE MOST POPULAR APP THROUGHOUT CHINA

WeChat is a messaging and calling app that allows to easily connect with family and friends across countries. It's the all-in-one communications app for chats, voice and video calls, moments, photo sharing, and games. A survey by market research company on device shows that WeChat's market penetration rate in China mainland is as high as 93 percent. Since March 2018, WeChat has more than 1 billion active users worldwide.

The main features of WeChat are summarized as follows:

- Multimedia Messaging: Send video, pictures, text, and voice messages.
- Group chats and calls: Create group chats of up to 500 people and group video chats of up to 9 people.
- Free voice and video chat: High-quality calls to anywhere in the world
- Moments: Share the best moments on personal photo stream.
- Privacy protection: strictly protect users' privacy and security, is the only real-time communication application certified by TRUSTe
- Meet new friends: Use "Friend Radar", "People Nearby" and "Shake" to meet others.
- Real-time location sharing: share location with friends instead of telling them.

- Multi-language: Localized in 20 different languages and can translate messages to any language.

- Access HealthKit data and challenge friends to beat their scores via the "WeRun-WeChat" Official Account.

- Official Accounts: Users could subscribe to their favorite Official Accounts or search for articles. Wechat provides a good self-media platform. Each user could apply for a personal subscription account to post personal articles, etc..

WeChat is one of the most commonly used social network applications for mobile phones in China. According to the survey, in addition to contacting relatives and friends, WeChat is the main communication channel in the organization of vacation, sports and fitness and open-air fitness dancing activities that are most commonly used by middle-aged and elderly people. WeChat is the most adopted contact method for the activities such as open-air fitness dancing, singing and sports and fitness, which are more organized with relatively fixed members and location. About 69.4 percent of the middle-aged and elderly people would choose Wechat to contact in the organization of open-air fitness dancing, and 61.9 percent and 59.5 percent of the middle-aged and elderly people would use Wechat to communicate and organize singing and sports. Telephone contact and face-to-face communication also take a certain proportion. In community-based group activities and exchanges such as calligraphy and painting , reading and writing, the proportion of telephone contact is slightly higher than WeChat. Vacation contact and organization mainly rely on WeChat, with a proportion of 67.2 percent [258]. Further details of the statistical results is shown in Fig. 7.1.

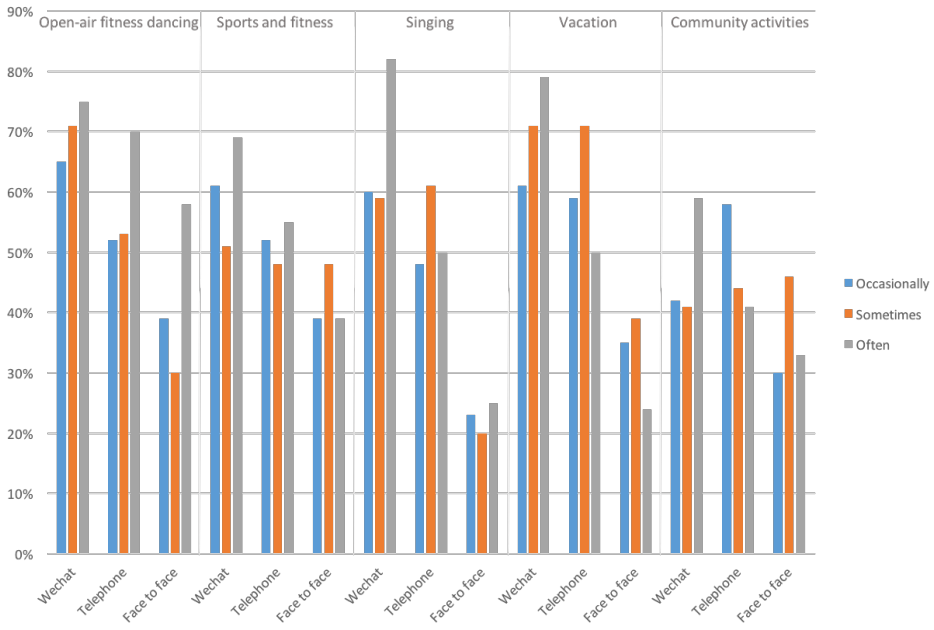

Figure 7.1: The relationship between the frequency of social participation of the elderly and the use of contact methods [258]

One of the WeChat's functions is called Official Accounts. WeChat supports users who register as Official Accounts to push information, provide service and interact with their subscribers. At present, the Official Accounts are divided into three types: service account, subscription account, and enterprise account. As of the end of 2014, the Official Accounts users has reached 8 million. The favourite articles from Official Accounts for elderly people are mainly about spreading positive energy, health care, sports and fitness and life tips. The top of the topics that middle-aged and elderly people browse are related to comforting the mind and regulating emotions, which represent 76.51% and 72.02% of the middle-aged and elderly users; followed by the current news which are browsed by 67% of them. About 66.85% and 60.7% of middle-aged users prefer medical health topics and emotional themes as the main content, respectively. Most respondents indicated that they would forward after reading the article, and would selectively forward to the people in different social circles based on the content of the article, turning the forwarding articles into a socializing method [258].

The self-shooted videos that the middle-aged people share are mainly about vacation, fitness and grandchildren. The online videos they forwarded are mainly humorous videos. This shows to a certain extent that the use of WeChat by middle-aged and elderly people

is not limited as an instant communication tool, but also as an interactive platform for expressing emotions and maintaining social engagement.

7.2.2. USAGE OF MOBILE PAYMENT AMONG CHINESE ELDERLY PEOPLE

China's consumption pattern has been rapidly escalated in recent years, especially since the emergence of WeChat, mobile payment has entered the Chinese people's life. Scanning code payment has become the first choice for many people to pay. Tencent has exploited the advantage of 1 billion WeChat users to start a comprehensive attack on mobile payment market in 2016. With the "WeChat payment" as the main force, till the end of September 2016, it has received 830 million payment users.

In addition to online shopping, consumers can also use mobile payment methods when paying in retail stores. Half of Chinese netizens use mobile payment when shopping in retail stores. At present, there are more than 80 offline industry categories support WeChat payment services. It covers almost every industry in the large and small cities and even the villages. Starting from the second half of 2016, life in China can basically be free of cash. China's mobile payment volume has expanded to be 50 times than that in the United States in 2016, surpassing Japan's gross domestic product [260]. WeChat's average daily transaction volume has reached 300 million Yuan (about 37.5 million Euro). According to the latest survey, in the third quarter of 2017, the transaction volume of China's third-party payment mobile payment market reached 294,492 billion Yuan (about 3,687 billion Euro) with an increase of 28.02 percent [261]. The mobile payment penetration rate in 2018 exceeded 80 percent.

In the context of this national WeChat payment, the lives of the elderly have also changed. According to the survey, about 46.3% of middle-aged and elderly people said that they have never used mobile payment, 36.4% used occasionally, and 17.4% used it frequently. Whether the middle-aged and old people use mobile phones to pay is closely related to whether they have bound bank cards. Among the middle-aged and old people who bind bank cards, up to 92.4 percent of them pay by mobile phones, of which 41.5 percent use mobile payment often and 50.9 percent use occasionally. Among the middle-aged and elderly people without binding bank cards, about 28.5 percent use mobile phones to pay, of which only 1.7 percent use them frequently, and 26.9 percent use them occasionally. For

the middle-aged and old people who bind bank cards, about 91.8 percent bind their own bank cards, 6.6 percent bind their children's bank cards, and 1.6 percent bind their spouse's bank cards. More than half (55.7 percent) of the old and middle-aged people bind bank cards with deposits or credit limit of less than 5,000 Yuan, mainly concentrated in the two ranges of 500-1,000 Yuan and 1,000-5,000 Yuan. The number of bank cards with deposits of more than 10,000 Yuan (7.9 percent) is less [258].

There is a significant relationship between the perception of the security of mobile payment and the use of mobile payment by middle-aged and elderly people, as shown in Fig. 7.2. Among those who think that mobile payment is highly secured, 97.6% will use mobile phones to pay in daily life, of which nearly 70% use frequently, and nearly 30% use occasionally. Among the middle-aged and elderly people who think that mobile payment is secured, 80.9% choose to pay by mobile phone, and nearly 30% of them use frequently, more than half of them use it occasionally. Among those who think that mobile payment is not secured, 74.8% never use mobile payment, and 25.2% of them use occasionally. Middle-aged and elderly people who think that mobile payment is very risky, no one chooses to pay by mobile phone [258].

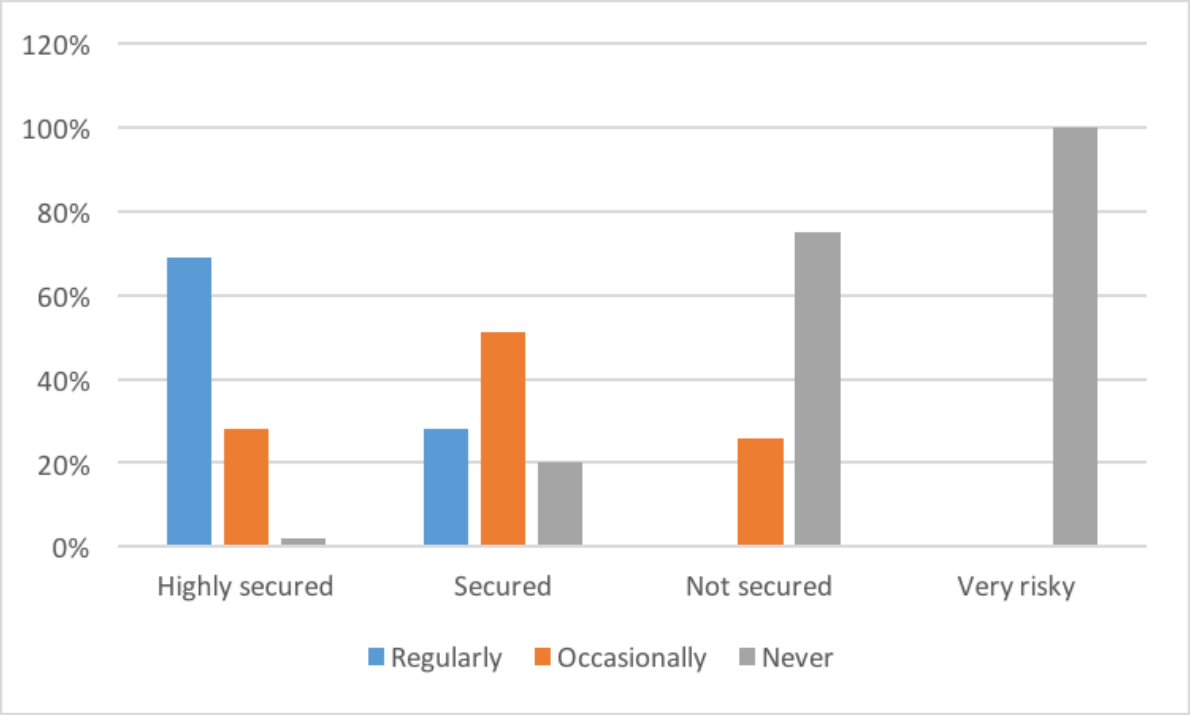

Figure 7.2: The relationship between the security perception of the elderly and the use of mobile payment [258]

Alipay, another big player in China's payment industry, has further developed its internationalization compared to WeChat. As of 2017, it has 700 million users worldwide. For a more intuitive comparison, the famous international payment Paypal has 210 million users in 2016, and Apple Pay has 87 million. Nowadays there is Alipay in Germany as well. For example, many cities' Rossmann stores have begun to accept Alipay payment.

In June 2016, Alipay launched the industry's first dedicated PIN pad reading function on the Android app, allowing visually impaired people to enter their passwords and enjoy the convenience of mobile payment. The so-called "read screen" means that when the visually impaired user's finger touches the screen, the screen reading software will read the corresponding text, and the visually impaired user can input the password according to the voice prompt. In February 2017, Alipay published the "Alipay entry manual for parents" for the elderly in China. It teaches the elderly to use the Alipay function by designing exquisite patterns and large colored fonts.

Mobile payment has developed so rapidly in China that it is so widespread, there are many reasons for it. For merchants, mobile payment will provide a convenient payment system with no space and time barriers for the development of its own business, and mobile payment is cheaper and more efficient than traditional payment methods (cash, credit card), so users are willing to switch to mobile payment. At the same time, mobile payment also lowers the threshold of the target user group, which helps to further build a diversified marketing model and further enhance the overall marketing effect. From the perspective of service providers, it has completed large-scale promotion and combination of traditional and mobile internet, the unique advantages and broad development prospects of mobile payment will bring huge economic benefits to service providers. For many consumers, mobile payment makes it more convenient because it avoids taking big amount of cash, and the consumption process is more simple. After eliminating the payment barrier, many new consumption modes could be tried better. If appropriate management mechanisms and technical control are provided, the security of payment funds will be further improved [262].

For the elderly people, mobile payment is a new thing. More and more Chinese elderly people are gradually adapting to the consumption of mobile internet and enjoying the convenience brought by technology. This is not only an affirmation of the learning

ability of the elderly, but also an important way to maintain vitality and good social integration. Most of the elderly have left their jobs, their living areas have become smaller, their original knowledge structure has not kept up with social development. A generation gap is apt to form with young people. Therefore, the elderly people are more likely to feel lonley and more afraid of loneliness. With the increase of age, the emotional need of the elderly people is also stronger, and the group belonging need is the core components [263]. Group needs are also called community belongings, which are emotional expressions feeling that they belong to a group and care for each other. Lack of community affiliation can make people feel depressed, frustrated and alienated. But learning to use new skills represented by mobile payments and using the internet can make more positive impacts on elderly people, including enhancing self-efficacy, increasing optimism, and improving life satisfaction. Quoting a comment from the Beijing Youth Daily, "when a lot of old people laugh at the changes in the world and accept the challenges calmly, they are still children."

No matter the usage of the internet or mobile payments, it can enhance the psychological well-being of the elderly, to reduce loneliness by increasing communication with family and friends through the internet, or to maintain positive emotions by learning and entertainment from the internet. Many studies have proved that internet use can improve the happiness of the elderly. For example, the higher the frequency of internet access, the more confident the elderly are. The more satisfied with the online social circle, the less the perceived pressure of life [264], the higher the life satisfaction [265]. At the same time, cognitive ability declines with age, which directly affects the quality of life of the elderly. Alzheimer's disease manifests as a decline in cognitive function, which leads to behavioral disorders and decreased daily living ability. The use of the internet requires a certain degree of cognitive ability. The more complex the network service problems encountered, the higher the requirements for cognitive ability. A certain degree of internet use can improve the cognitive ability of the elderly [266].

7.2.3. OTHER COMMON APPS FOR ELDERLY PEOPLE

Nowadays, many mobile applications are developed for the convenience of the elderly. Most of these applications have the following common characteristics:

- The font is big enough and the picture is clear enough.

- Function as single as possible, easy to operate and use
- The expression is intuitive with not too many professional vocabulary

Here are a few of the common apps for the elderly in China.

OLD AGE CLUB

The Old Age Club aims to build an all-round network media and interactive platform for middle-aged and elderly people. The application provides popular information about health, life encyclopedia, pension policy consultation and open-air fitness dance teaching. Marriage and dating platform for tens of millions of single elderly people is also found in Old Age Club. Middle-aged and elderly people could share valuable life experience and health-preserving methods in order to meet their multi-level and comprehensive social needs, so as to get a happy and meaningful new internet experience.

ICARE

It is a small application designed to help remind users or their relatives and friends to take medicine on time. It helps to find the pharmacy and hospital around as quickly as possible. Besides taking medicine, it could also be used to remind to take vitamin tablets and fruits. Main features include:

- Reminder: Multi-time reminder every day, custom reminder cycle, pills cycle, to meet all medication needs
- Notification attachment: record the history of taking medicine quickly in the notification Center
- Reminder for relatives and friends: Remeind relatives and friends to take medicine via Wechat, SMS and telephone
- Household drugs: Notes for recording and a list of validity periods
- Location Search: Help user find all the pharmacies and hospitals around as quickly as possible

MOBILE PHONES DEDICATED TO THE ELDERLY

The desktop application for the elderly under Android system can change ordinary smart phones into mobile phones suitable for the elderly. Based on some characteristics of the elderly, it has many features which are simple and easy to use, such as large fonts, big contact profile photos, anti-mistake dialing, location identification, anti-fraud phone call, anti-harassment phone call, voice dialing and customization, simplifying mobile desktop. It supports customizing commonly used applications, such as photo shooting, albums, music, videos, Wechat and so on. Applications, which are not commonly used and can not be deleted, can be hidden to simplify the mobile desktop.

THE APPLICATION "I LOVE THE ELDERLY"

"I love the elderly" is an application dedicated to caring for the elderly. Its main functions include health housekeeper, health data management, emergency rescue and so on. Emergency help function is supported with intelligent positioning system to prevent the elderly from getting lost. The smart phone book function can intelligently identify the family's phone call and facilitate the family's regular contact. It also supports reading news by artificial human voice. The overall interface of the application is simple and beautiful with large fonts and icons and it is very suitable for the elderly to use.

7.3. TRADITIONAL CHINESE MEDICINE(TCM): AN ALTERNATIVE FOR BETTER ELDERLY CARE

7.3.1. TCM TECHNIQUES

TCM nursing is an important part of traditional Chinese medicine. It has a unique theoretical system and operation techniques. TCM nursing is to apply traditional Chinese medicine therapy in nursing work, which includes acupuncture, cupping, scraping, acupoint massage and so on. These techniques play a very important role in alleviating patients' pain and promoting rehabilitation. The Outline for the Development of Nursing Career in China (2005-2010) clearly puts forward that the main strategy is to improve and exploit the advantages of TCM nursing techniques. The application of TCM techniques in nursing work should be attached with more weighting factors, especially in the nursing

applications such as prevention and treatment of geriatric diseases, chronic diseases and health rehabilitation. The guidance for rehabilitation and health characterized with TCM should be formulated. Although it is still controversial and debatable regarding the safety and effectiveness of TCM, which requires more scientific evidences [267–269], several classical TCM nursing techniques that have been used for many decades and adopted by huge amount of population, might have a good potential to complement elderly care services under proper control and supervision.

ACUPUNCTURE

Acupuncture is a TCM treatment that seeks to achieve a therapeutic effect through pin-pricks at certain points of the body. The traditional form of acupuncture is based on a "life energy of the body" (Qi), which should circulate on defined channels and have a controlling influence on all body functions. A disturbed flow of energy is said to cause disease, and stitches in acupuncture points on the meridians (the flow of non-material energy through hypothetical channels called) are designed to correct the disturbance in the flow of Qi [270–272]. WHO published an indication list for acupuncture in 2002, which recommends it in 28 clinical pictures [273]. Many of them are directly related to the health of the elderly, and can be used for reference in the field of daily care for the elderly, such as:

- Neurological disorders (e.g. after strokes)
- Sleep disorders
- Chronic pain, if there is no physical evidence and pregnancy symptoms (such as low back pain, neck pain, headache)
- Essential hypertension
- Bronchial asthma
- Musculoskeletal disorders (such as peri-arthritis of the shoulder)
- Rheumatoid arthritis
- Gastrointestinal disorders (such as chronic gastritis and chronic gastric ulcers)

Taking stroke as an example, the sequelae of stroke often include linguistic disorders, limb hemiplegia, paralysis limb swelling, fatigue and so on, heavily affecting the life quality and rehabilitation of patients. It is a common situation where nursing care is required for looking after these elderly. On the basis of routine life care, observation of illness, dietary care, emotional care and rehabilitation nursing, a Chinese physician Fei Shen [274] treats the patients with sequelae of stroke with acupuncture once a day. After one month of treatment, according to the criteria for evaluating the diagnostic and therapeutic effectiveness of stroke, it was confirmed that acupuncture had obvious curative effect on the rehabilitation of stroke sequelae. The patients' satisfaction with nursing was very high. After a period of such kind of nursing care, the harm of sequelae could be reduced, and some patients could recover completely. Among the acupoints he selected, Baihui acupoint can promote local blood circulation, increase cerebral blood flow and promote the functional recovery of brain nerve cells; Dicang combined with Hegu acupoints can rectify the deviation of mouth and eye; Huantiao acupoint can strengthen the waist and knee; Yamen, Lianquan, Kaiyin acupoints can promote language recovery; Weizhong, Chize, Quchi acupoints can promote the functional recovery of limbs. The distribution of main acuppuncture points for the treatment of stroke sequelae is depicted in Fig. 7.3.

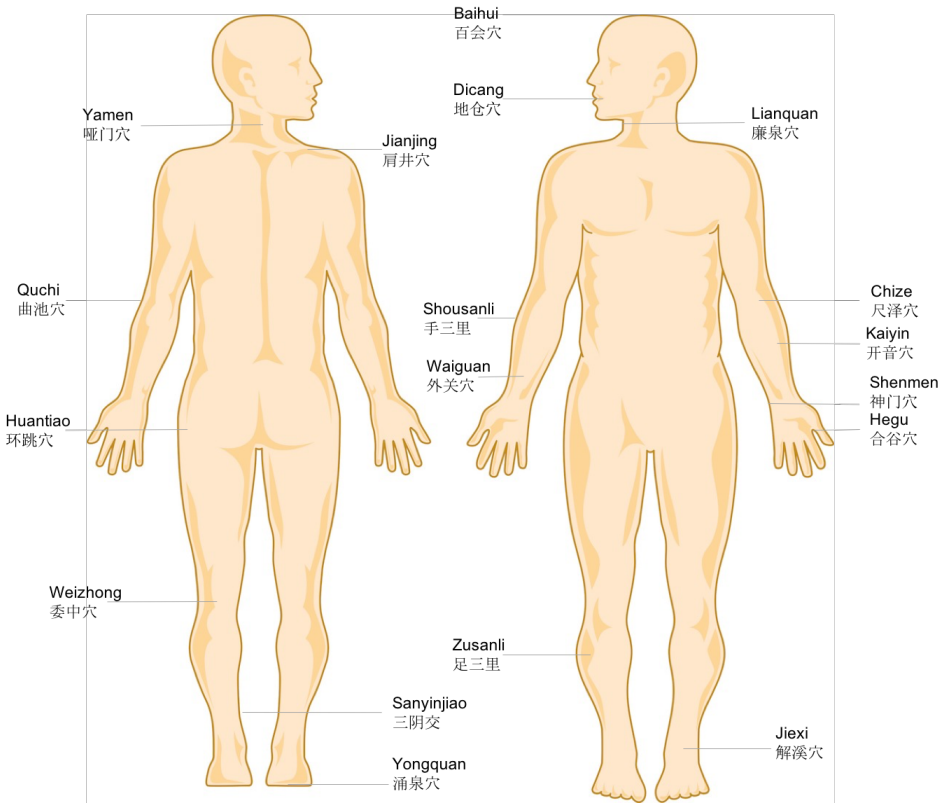

Figure 7.3: Main acupuncture points for the treatment of stroke sequelae

CUPPING THERAPY

Cupping therapy is a form of alternative medicine in which a local suction is created on the skin. Cupping has been characterized as pseudoscience [275–277] During cupping therapy, a negative pressure is generated in so-called cupping glass. These glasses are placed directly on the skin. The negative pressure is usually achieved by heating the air in the glass and placing it immediately on the skin of the patient. The heating is done by a cotton swab dipped in alcohol or a piece of cotton fabric, each of which are lightened [278, 279]. Alternatively, the negative pressure can be generated by a suction device in the cupping glass. The position of the cupping points is based on the palpation, which means it is operated in the area of myofascial trigger point (muscular hardening) [275] . Depending on the position of the cupping points, an internal organ is to be influenced via the cutaneous reflex. The assignment of the organs to the skin areas is known through the head zones, allowing conclusions to be drawn about strained internal organs [275, 280].

At present, cupping utensils are usually small bottleneck glass or plastic cans, the edge of which should be turned outward. Its volume is about 30-60 ml, which can be a little

larger. In the history of cupping, horn, pottery, bronze and bamboo cups were used as the main tools. According to the way of vacuation, cupping can be divided into:

- Fire cupping uses the heat of fire to expand the air in the tank and make it flowing out of the tank. When the tank is cooled on the skin surface, it produces negative pressure in the tank.
- Wet cupping uses the heat of boiling water to expand the air in the tank and make it flowing out of the tank. When the tank is cooled on the skin surface, it produces negative pressure.
- Dry cupping uses the instrument to drain the air from the tank and produce negative pressure.

Cupping therapy has certain effects on shoulder-neck syndrome, proliferative knee arthritis, bronchial asthma and COPD [281–283].

AURICULOTHERAPY

Auriculotherapy is a health care procedure in which stimulation of the auricle(the outer portion of the ear) of the external ear is utilized to treat pain and medical conditions at other part of the body [284, 285]. Because auriculotherapy is based on the idea that the ear is a micro system, every point on the auricle corresponds to a well defined part of the body.

Regarding the origin of auriculotherapy, it should actually be traced back to Europe. Paul Nogier, a French physician, was considering the father of modern ear acupuncture. In 1957, he published in a german acupuncture journal titled with "An inverted fetus map on the external ear", which formally established ear acupuncture therapy [286]. It rapidly spread out in the field of acupuncture in Germany. He later published another monography "Treatise of Auriculotherapy" [284]. In the 1970s, Yingqing Zhang published bio holographic diagnostic therapy in China, using the concept of Nogier's reflex system as the basis for the scientificalization of traditional Chinese medicine. Ear acupuncture is considered to be a part of bio holographic therapy and introduced into the field of TCM. Based on Nogier's foundation, Chinese TCM scholars soon found many acupoints in the ear (see Fig. 7.4), and also found their TCM basis in ancient medical books. Thus, auriculotherapy has been absorbed and identified as part of traditional acupuncture therapy.

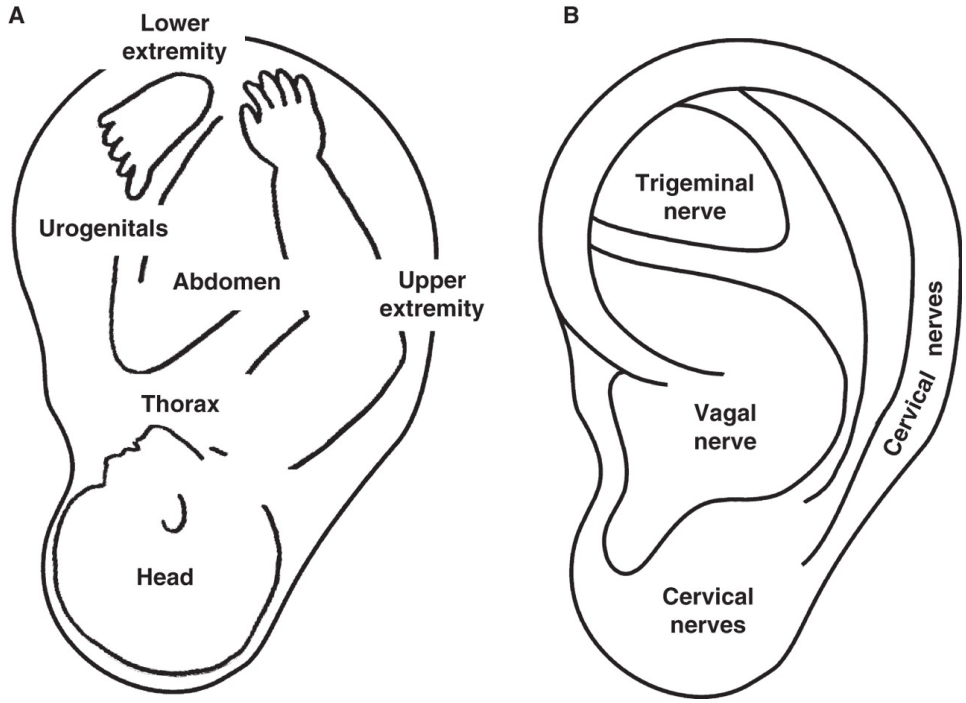

Figure 7.4: An inverted fetus map on the external ear (A) The empirical conjecture of auricular acupuncture claims that the entire human body is represented on the auricle in the form of an inverted fetus. (B) Innervation pattern of external auricle [287].

According to statistics, the auriculotherapy is widely used in the prevention, treatment and health care of more than 150 diseases. The most commonly reported uses of auriculotherapy have been for chronic pain, functional disorders like hypertension, nausea, arrhythmia and neurasthenia. Auriculotherapy has also been cited as beneficial to endocrine and metabolic disorders such as diabetes, obesity, menopausal syndrome, etc. [288, 289].

GUASHA(SCRAPING)

From the Ming Dynasty to the present, scraping therapy has developed to a natural therapy that can be applied to treat many diseases. Gua sha is a treatment in which the skin is scraped to improve the circulation. As mentioned in other TCM treatment, Qi is energy that flows through the body which must be balanced and flowing freely to ensure health and wellbeing. If Qi become blocked, inflammation in the muscles and joints would be caused which is the underlying cause of several conditions associated with chronic pain [290, 291]. Practitioners believe that Guasha moves this blocked energy and relieve unhealthy bodily matter from blood stasis to stimulate new oxygenated blood flow to the areas, thus promotes healing and recovery. In this method, a rounded edge of a porcelain spoon, a coin

scraped several times over an area of the skin until a distinct discoloration and bleeding under the skin occur [292].

Scraping therapy is widely used in clinic. It is worth mentioning that scraping therapy has certain effect on insomnia from which the elderly often suffer. Modern medicine indicates that insomnia is related to the disturbance of excitation and inhibition caused by mental factors and nervous system dysfunction, which explains the effectiveness of scraping, because it can alleviate mental stress and tension. Modern medicine has proved that scraping can stimulate the central nervous system by nerve reflex or body fluid transmission. Through the analysis and synthesis of the central nervous system, scraping can adjust the autonomic nervous system, prevent the vicious cycle of insomnia, coordinate the functions of various parts of the body and achieve a new balance. Many successful applications were reported. For instance, Zijun Zhang used scraping therapy to improve the sleep quality of diabetic patients. Guoxiu Li used scraping on a dialectical selection of acupoints combined with emotional nursing, and Tang Hongzhen used massage scraping therapy to treat chronic insomnia, all of which achieved good treatment outcomes [293].

Besides, Guasha is usually used in rehabilitation of bone and joint degenerative diseases such as cervical spondylosis and frozen shoulder, migraine headaches, neck pain and premenopausal syndrome [294, 295].

7.3.2. CONCEPT OF YANGSHENG

Besides those professional TCM techniques, another important health concept in TCM is Yangsheng, to preserve one‘s health and longevity by many possible self-cultivation practices. The Chinese word “Yang” means to nurture, take care of, and nourish; “Sheng” means life, birth, and vitality. People cultivate health and harmony through various means and methods in daily activities, and maintain balance, both physically and mentally, by concentrating on well-being rather than treating sickness. The focus is on maintaining balance through an awareness of our connection to nature, to our own bodies, and to the spirit [296]. The second philosophy of "Yang Sheng" is the self-cultivation, which means broadening our horizons, trying to be open-minded and optimistic, and enjoying learning extensive knowledge. Through the cultivation and improvement of our morality and quality, we can let our body and mind getting inner-peace and self-cultivation, so as to achieve

the goal of spiritual cultivation.

According to the TCM system, good health is the result of harmony with the heaven, earth and humanity. To be harmonious with the heaven, we need to change clothing and adjust to the environment to synchronize with different climates or seasons; to be harmonious with the earth, we need have a balanced diet; to be harmonious with our fellow humans, we need to adjust or constrain the negative emotions [296]. By adapting ourselves to different time, place and people, following the law of time and space, coordinating with appropriate diet therapy, nourishing and regulating the whole body, we can achieve the goal of preventing disease and prolonging life.

The academic philosophy of Taoism has a certain influence on the development of health preservation of TCM. Taoism advocates the loftiness of nature and despises narrow utilitarianism. In dealing with anything, people should "follow the nature of time and place and follow one's heart". Here are some classical Taoist ideas and the their correspondence with health preservation of TCM:

- **Less selfishness and less desire.** The idea of "Less selfishness and less desire" as mentioned in the "Tao Te Ching" is an idea of longevity and spirituality. It has been attached great importance to by health preservers in past dynasties, and it has been permeated into all aspects of health preservation, such as cultivating spirit, adjusting emotion, Qigong guidance, fitness skills and so on.

- **Return to simplicity.** Lao Tzu observed in real life that newborn things are weak, but full of vitality. Things become aging when they get strong. In "Tao Te Ching", he pointed out that the rigid and stark are disciples of death, while the supple and weak are disciples of life. If people are often in a supple and weak position, they can avoid premature aging. Therefore, Lao Tzu advocated the idea of "no desire, ignorance and inaction", and one should return to the original simple state of life, so-called "return to simplicity".

- **Nourish both body and spirit.** Another representitive ideologist Chuang Tzu's idea of health preservation advocates eliminating material desire to nourish the spirit, and it also has a certain impact on nourishing the body. He has introduced and advocated the ancient guiding technique, which aimed for fitness, disease treatment and

disease prevention from the beginning of its emergence.

In terms of diet, TCM pays attention to health preservation in four seasons. A simple description is that diet should be adjusted according to different seasons. Spring, as the season for all things to recover, is the best time for health preservation. In spring, the focus is to supplement liver, and one should eat more low fat, high vitamins, high minerals food. In summer, hot weather makes the human body sweat a lot, which consumes a lot of body fluids and a variety of nutrients. Therefore, it is easy to feel weak and thirsty. One should eat light nourishing food such as fresh melons and fruits. Ancient physicians believe that in autumn all plants are withered, and the air is clear and cold. The human body is susceptible to disease. One should eat more fresh food with less oil and rich in vitamins and proteins, especially those containing vitamin A, B, vitamin C and vitamin E nutrients, so as to improve resistance. At the same time, the emphasis in autumn is to nourish the lungs. TCM believes that lilies, tremella, yam and pears are food for moistening the lungs. Winter is the coldest season in a year. Everything is in a sealed state. Timely diet adjustment can improve the immune function of the human body, promote metabolism, and lay a good foundation for the next year's health. The focus in winter is on kidney. Diet in winter should pay attention to avoid cold and spicy food. Eggs, seafood, fresh vegetables, fruits and other foods rich in protein, vitamins and trace elements anr recommanded.

To summarize, health preservation is a comprehensive science involving many disciplines, including TCM, rehabilitation, nutrition, aesthetics, psychology, art, cooking, kinematics, Taoism, Confucianism, etc.

8

NURSING SHORTAGE AND COLLABORATIONS

In this chapter, the situation of shortage of nursing staff and existed collaboration programs in Germany and China will be discussed.

8.1. NURSING SHORTAGE IN CHINA

According to the data provided by the National Health Commission, there are more than 3.8 million registered nurses in China. The proportion of nurses per 1,000 population (2.74) and doctor-to-nurse ratio (1:1.1) is increasing year by year, but they are still far below the world average. According to WHO statistics, Norway has the largest average number of nurses in the world, with 17.27 nurses per 1,000 people. The basic standard by the European Union is more than 8, compared with 9.8 in the United States and 11.49 in Japan. Although the degree of population aging, the responsibilities and services of nurses vary in different countries, there is still a huge gap between China and developed countries. In rural and western China, the average number of nurses per 1,000 is even smaller [297–301].

8.1.1. REASONS OF NURSING STAFF SHORTAGE IN CHINA

At present, the shortage of nurses, especially well trained nurses, is a common problem in China. The direct consequence is that the workload of nurses is heavy, and the working hours have to be extended. This will not only affect the health of nurses, but also affect the quality of nursing work. According to the survey, about 37 percent of the respondents indicated that they did not want to continue working as nurses. This percentage increased to be 44% in second tier hospitals. The main reasons include relatively low income, high occupational risk, high work intensity and low social appreciation. A nurses'growth cycle (junior level) is about 3 years. Many nurses in hospitals quit the job, after they have just finished training or gained a little work experience, because of low salary and high working pressure etc. There are several reasons behind the shortage of nursing staff [302, 303].

1. Low income is one of the main reasons why nurses leave their jobs. The charge of nursing service in China is only about 10 percent of nursing cost, without considering human cost. The charge standard has not been adjusted for a long time. As a result, doctors can directly create economic benefits, but nurses will only increase the cost of hospital investment. Especially with the reform of medical and health system, hospitals are pushed to the market with independent economic accountability. Many hospitals prefer to let nurses work in overload condition, rather than employ more nurses. A survey showed that more than half of the departments in 88.5 percent of the hospitals are in shortage of nurses. The long-term shortage of nursing staff will affect the development of medical service, increase the workload of on-duty nurses, and reduce the quality of nursing service [304].

2. The number of official budgeted post for nurses in hospitals is small. The current allocation of nurses in China is still based on the provisions of the former Ministry of Health in 1978, requiring a doctor-to-nurse ratio of 1:1 and bed-to-nurse ratio as 1:0.4. The standard created several decades ago has obviously not adapted to the development of hospitals and the needs of patients. The nurse staffing can not be increased arbitrarily, because it is regulated by number of official budgeted posts. However, nurses have a wide range of serving applications, such as auxiliary departments, outpatient clinics, laboratories and so on. These nurses have taken many budgeted posts. As a results, the budgeted posts allocated to patient ward is less. Some hos-

pitals also employ contracting nurses, who have been treated differently compared to nurses with budgeted posts. The salary of nurses employed under budgeted posts consists of basic salary, grade salary, salary of serving time, performance salary and so on. However, the salary of contracting nurses only have two components: basic and performance wage, which directly leads to higher turnover rate of contracting nurses.

3. Poor management of nursing results in the waste of human resources. Nursing management is a subsystem of hospital management and an important component to ensure the medical quality. Human resource management is one of the most important topics in nursing management. At present, nursing management in China is still based on empirical knowledge and lacks scientific concept, leading to the waste of nursing human resources [305]. Nowadays, there are more patients, more treatments and more high-precision instruments in hospitals. The scope of nursing work keeps expanding. Writing a large number of documents have taken plenty of working time of a nurse. In addition, a large number of doctor's orders need to be managed by nurses, which increases the workload of nurses. However, in clinical routine, nurses also additionally undertake some non-nursing work, such as taking patients for examination, sending laboratory specimens and so on, resulting in the waste of nursing human resources. According to the survey, nurses have to do 104 work assignments a day, but a quarter of them are non-nursing tasks [306]. This fact further aggravates the situation of insufficient clinical nurses.

4. The social appreciation of nursing occupation is low. The social status of nurses is not as good as that of doctors because of the influence of the traditional concept that nurses are only for simple tasks like injection and care of patient's daily life. The loss rate of nurses in some hospitals is as high as 10%. Moreover, due to the high intensity of work, high occupational risk, insufficient family support, physical and psychological fatigue, many nurses consider leaving their posts [307].

Under the background of nursing staff shortage and rapid population aging in China, the shortage of elderly care professionals is as severe as the situation of nurses. Besides the reasons discussed above, such as poor working condition, low income and social class,

the development of the elderly care practitioners is less motivated and insufficient [308]. Meanwhile, there are some unique factors that result in staff shortage of elderly caregivers. Medical care is paid much more attention in China's health system, while less attention is paid to preventive health care and rehabilitation care services, which further leads to a lack of nurse staffing in preventive health and rehabilitation care for the elderly. In the nursing institutions of some regions, there is only one health technician per nursing home. Community care institutions currently have a doctor to nurse ratio of 1:0.3 to 1:0.6. In urban areas, there are only one or three nurses in a community care institution, and the number of people that it serves is between 3,000 and 5,000. The shortage of medical and nursing staff in rural areas is even more severe [302, 309].

8.1.2. COUNTERMEASURES TO RESOLVE NURSING SHORTAGE IN CHINA

On one hand, there is a shortage of nurses in China's hospitals, and the increase of nurses is lower than that of the residents. On the other hand, due to the aging population and the desire on high-quality nursing services, the demand for nurses will be further increased in the future. The shortage of nursing human resources will be further aggravated, which is one of the most urgent problems that needs to be solved [302]. Therefore, feasible countermeasures should be implemented as soon as possible.

1. **Change conventional concept and improve the social status of nurses.** Nursing is an indispensable and important component in all medical procedures. Thus, nurses play an important role in health care. However, in order to change the outdated concept of "attaching importance to medical treatment but neglecting nursing care" and improve the social status of nurses, it needs the joint efforts of the entire society. Firstly, nursing legislation should be improved at the government level, and the status, role, rights and obligations of nurses should be clarified in law. Secondly, the financial and social interest of nurses should be guaranteed by law. Protecting the legitimate rights and interests of nurses is an important way to resolve the shortage of nurses in China [310].

2. **Increase nursing posts.** First of all, the corresponding laws should be completed to ensure the realization of increasing nursing posts by standardizing the proportion

between doctors and nurses and the ratio between beds and nurses. The number of nursing posts and the percentage of official budgeted posts in hospitals should be increased appropriately. To improve the nursing service quality in all-level hospitals, the minimum bed-to-nurse ratio and medical-to-nurse Ratio should be updated and standardized. Additionally, the allocation of nurses should be linked to bed turnover and utilization rate.

3. **Adjust nursing service prices.** Associated policies should be adjusted to increase the nursing service prices, such that nursing work can be rewarded properly. Supplementary subsidies should be granted for low-paid junior nurses, and senior nurses should have more specialized learning channels and career development space [311]. It is desired to formulate relevant policies to increase the proportion of expense on nursing manpower, i.e. to regulate the minimum proportion of hospital nurses' manpower expense in total human cost. The nursing manpower expenditure must not exceed the minimum standard, and the implementation of this regulation should be supervised. Through this regulation plus the relevant provisions of enlarging doctor-to-nurse ratio, the hospitals will be urged to ensure a certain number of nurses.

4. **Implement hierarchical system for nurses.** With the improvement of medical technology and the development of clinical specialization, the nursing education should be characterized with different hierarchical levels (secondary school, higher vocational college, undergraduate and postgraduate). Correspondingly, nurses should be assigned to different levels according to their educational background, working experience, professional and technical ability, so that they can better match the posts, and their talent can be fully used [305]. First of all, it is necessary to know which jobs should be done and which ones should not be done by nurses. The Ministry of Health clearly stipulates that nurses' responsibilities include: observation of illness, correct execution of doctor's orders, preventive health care, rehabilitation guidance, health education and so on. Therefore, nurses should be allocated according to their occupational scope, to fully motivate their work enthusiasm. At the same time, some low-level and non-technical work can be assigned to other workers, to optimize the usage of nursing human resources. Establishing a hierarchical system for nurses and

implementing hierarchical management can optimize the employment of nurses, reduce the waste of nursing resources, and differentiate their professional titles and incomes. On the one hand, the advantages of high-level and specialized nurses can be fully exploited to maximize the effective use of nursing resources (instead of all nurses carrying out life care), and to improve the quality of clinical nursing. Additionally, it also helps to improve nurses' sense of professional achievement and social identity.

5. **Promoting the concept of specialized nurses.** Nowadays, the nursing of critically ill patients in hospitals is under the process of specialization. Specialized nurses have been trained in the fields of diabetes mellitus, emergency treatment, operation room and pain. For example, the nurse dedicated to wound stoma is a specialized nurse. Nowadays, more and more nurses with professional training begin to work with special certificates to provide high quality nursing services for patients. Shang Shaomei, dean of the School of Nursing in Peking University, pointed out that with the development of economy and society, low-level and low-tech nursing supplies can not fulfill the needs of social development. The emergence of specialized nurses has met the needs for high-qualified talents. However, the training and usage of specialized nurses in China is still in its infancy, lacking unified entry standards and training content. In the future, China can draw lessons from the developed experience of training specialized nurses in other countries, and further clarify the entry conditions, training standards and norms, so that more people can enjoy professional and high-quality nursing services.

8.2. NURSING SHORTAGE IN GERMANY

According to the numbers of BMG, around 2.5 million people have need of care in 2011. By the year 2030, this number is likely to rise to 3.2 million. By 2050, about 4.21 million people in need of care in Germany are expected. Accordingly, the demand for professional care and support in daily life is growing due to the increasing demands. Even though about two-thirds of people are cared for at home and frequently by relatives, in the future still more nursing professionals will be required than the currently available 952,000 practitioners.

Normally demographic change affects care in two ways. With the aging of the population, the demand for professional care is increasing. At the same time, the potential labor supply from which the need for care can be met is decreasing. In the period from 2013 to 2015, the number of employees in ambulant care services and nursing institutions increased with approximately 8 percent. Almost 1.1 million people are currently employed in ambulant care services and nursing institutions. More than 85 percent of them are women. The majority of the staff, about 72 percent, working part-time. If converted to full-time equivalents, there are a total of 764,000 full-time working places (source: StBA). At presence, according to the statistics from the Federal Employment Agency (Bundesagentur für Arbeit, BA), almost 36,000 working places in the general nursing and elderly care are not filled.

Afentakis and Maier have predicted the prospective shortage of Germany's nursing staff in the study by the StBA and the Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, BiBB) in 2010 [312]. Assuming that the probable nursing cases and need for nursing professionals remain the same and depend only on demographic change, the demographic change alone could lead to a rise in need for nursing professionals (both qualified professionals and nursing assistants) of around 27 percent by 2025 compared to 2005. Assuming that with constant update of the employment structure, this could lead to a gap of approximately 200,000 qualified nursing professionals by 2025. If, on the other hand, the probable nursing cases shift to later life age because of the increasing life expectancy, the need for nursing professionals could increase by around 20 percent by 2025. In this case, a smaller gap of about 140,000 nurses would be expected.

8.2.1. CAUSES AND COUNTERMEASURES OF NURSING SHORTAGE

Similar to China's nursing professionals, the nursing job is not easier in Germany. The physical stress is often very high, and the work can be emotionally stressful, especially when working with seriously ill people. In addition, there are often irregular working hours or shift work [313–315]. The burden on the nursing staffs further increases since not every working position can be filled, and nursing time for elderly people has to be often strictly limited. In addition, chronic overwork causes many nurses to take a different career, which leads to a further deterioration of the situation.

Nursing professionals in Germany expect good teamwork, noticeable recognition of their competence and performance, extensive autonomy, participation, a balance between workload and available time resources, better career development opportunities and, above all, a good work-life balance [316]. Since today's working conditions in the field of nursing are often unattractive for young people, various political measures should contribute to improve the job profile. However, the small-scale measures of the grand coalition in recent years remain ineffective, and the job market for nurses is swept empty. Much measures should be taken to introduce young people to the nursing career and to improve the working conditions for nursing staffs , such that more people would work longer in the field of nursing. In the future, optimal nursing care is ought to be provided for both elderly people and people with disabilities who are in need of care.

One of the main factors that can not be ignored is the low income of nursing staff. According to the numbers of the Ministry of Health nationwide, qualified geriatric nurses receive full-time 2,621 euros gross per month on average. The differences of salary are largely depending on the region. A geriatric nurse in Saxony-Anhalt earns 1,985 gross, whereas in Baden-Württemberg the salary will be 2,937 euros gross per month. The nursing staffs continue to be regarded as mostly poorly paid. Currently, the minimum wage for nurses is 10.55 euros per hour in west Germany and 10.05 euros in the East. By the beginning of 2020, the minimum wage for nurses will increase to 11.35 euros per hour in the west and 10.85 euros in the east.

The types of the care institutions, which can be classified as private, non-profit or public carriers, play an important role for the salary of geriatric nurse. In public institutions, employees are paid according to the tariff for the civil service TvöD (Tarifvertrag für den öffentlichen Dienst, TvöD). For nursing employees, there is a specific form of this collective agreement, the TVöD-Pflege. Tariff payment have the advantage for employees that the wage is fixed accordingly, and the employer must comply with the agreement. Non-profit institutions are strongly geared to the salaries of the civil service. In private nursing institutions, on the other hand, there may be a home-based tariff or sometimes even no requirements. Private carriers aim to make profit, and as a result, these institutions try to keep their salaries as low as possible, which is the main reason that average salaries in elderly care are the lowest in the private enterprises. Working salary provided by private

carriers is up to 30 percent below the public tariff payment. In fact, almost half of the institutions are running by private carriers. The key for better working conditions in elderly care is a tariff agreement applicable to all employees, which ensures better payment and at the same time increases the attractiveness of the profession to attracts new staff [317].

Besides more attractive salary, a greater wage dispersion which allows better reward for the nurses with more responsibility is also necessary. The current tariff agreement for the civil service is diametrically opposed. Qualified nurses clustered in the higher salary groups will receive the bonuses between 2.5 to 3 percent in the next three years, while in the lower wage groups the increase will be three times as 7.4 percent [318].

Recently, one of the most important national reforms for nursing professionals is the act to enhance the nursing staffs (Pflegepersonal-Stärkungsgesetz - PpSG), which aims to achieving noticeable improvements in the daily lives of nursing professionals through better staffing and better working conditions in general and geriatric nursing. The draft is an important step to further improve the care service and support of patients in need of care. According to PpSG, general health care nursing has been improved as following: additional nursing staffs will be funded; tariff increases will be fully refinanced; allowances for the trainees of pediatric nursing, general nursing and nursing assistance in the first year of training will be fully refinanced since 2019. The main improvement policies of geriatric nursing are as follows:

- 13,000 more nurses are supported for inpatient care facilities. At presence, instead of legally mandatory staffing in elderly care, there is an indirect system that regulates the staff management in nursing institutions. The demand of nursing professionals is calculated by the care degrees of the residents, which differs from one federal state to another. For example, for the highest degree of care 5 in Bavaria, there is currently a guideline staffing number of 1.79 nurses per resident. On this basis, the institutions then get money from the LTCI. This system works in theory, but is also structurally leading to a staff shortage in practice.

  After the reform, all the nursing institutions in Germany should benefit from the immediate program (Sofortprogramm). The facilities with up to 40 residents receive half working position, facilities with 41 to 80 residents obtain one working position, facilities with 81 to 120 residents get one and a half position, and facilities with more

than 120 residents are allocated with two working positions in addition. The aim is to partially cover the expenses of the treatment care in elderly care nursing institutions. Based on the demand, the nursing institutions have the opportunity to finance these additional jobs quickly and without bureaucracy.

- Relief of working intensity through investments in digitization. Digitization has considerable potential for relieving the nursing staff in ambulant and inpatient care. The options of digitization include labor-saving innovations, robotics assistance and telemedicine. These digital innovations can streamline and accelerate the work processes, relieve nursing and physicians, and thus increase labor productivity.

  Experience has shown digital services can extremely relieve the workload of nurses, especially in the areas of nursing documentation, billing for care services, collaboration between the medical profession and nursing homes, as well as service and tour planning. Meanwhile, digitization can also help to ease the burden on nurses with the following tasks, such as internal quality management, the collection of quality indicators, education and training.

- Better cooperation with general practitioners relieves the work of nursing. Both in the medical and dental fields, a large number of cooperation agreements has been concluded in recent years, which leads to improved remuneration arrangements under the framework of cooperation. In order to speed up the development of the cooperation, the obligation of nursing institutions and cooperation agreements with suitable contracting (dental) medical service providers are made configured binding. The previous "target regulation" has been replaced by a "mandatory regulation".

- New system of quality inspection for inpatient care. The course for the replacement of the previous stamping of Technical Inspection Association (TÜV) is now provided. The new system of quality inspection and presentation developed by the self-government with a procedure for the measurement and representation of result quality will be obligatory starting from the 1. October 2019 in the stationary nursing. In addition, consultations and case conferences via video as a telemedicine service are made possible for a better cooperation of general practitioners and nursing homes.

Last but not least, other improvements in PpSG also include less bureaucracy for the caregivers and care receivers and better reconciliation of family and work life for nursing staffs [319]. Moreover, measures to improve the nursing career include, for example, the expansion of supervision and opening up of the career to male professional staffs. Academization or the creation of new professions such as medical assistant and clinical nurse can make the job more attractive. Thus, the reform of nursing education that mentioned in chapter 5 is to be launched. It will combine the AltPflG and Act on Nursing Care (Krankenpflegegesetz, KrPflG) to create larger flexibility within the nursing profession. The junior staff in particular will have more various career opportunities in the future. For example, they no longer have to decide between general nursing or geriatric nursing, but instead acquire the necessary skills for both areas during their training.

8.3. PERSONAL EXCHANGE PROGRAM

Thomas Greiner, the president of the Employers' Association for Nursing (Arbeitgeberverband Pflege e.V., AGVP), calls for tackling the problem: "The most important thing is to train nursing assistants to become skilled staffs in Germany in a timely manner." These assistants should have many years of professional experience and expertise, and identified with the profession. But this will not be enough to meet the demand. The same applies to the training of junior staff in Germany. Although all apprenticeships in the field are filled, this is also not enough to cover the demand.

Under this background, German and China collaborate together to conduct exchange programs of caregivers. The pilot project "Altenpflegefachkräfte aus China" is largely initiated by the AGVP, the Central Foreign and Specialized Placement Service (Zentrale Auslands- und Fachvermittlung , ZAV) of the Federal Employment Agency and the China International Contractors Association (CHINCA). The aim of this program is to identify new ways to ensure the care of the elderly people in Germany.

From the China's perspectives, even though it also faces the issue of nursing staff shortage, there are still many nurses would like to join the exchange program, due to the worse working conditions and lower income compared to German nursing professional. Additionally, the expectation of further qualification also motivates them to serve abroad, which promotes the development of the exchange program between China and Germany.

- Due to the lower working conditions, many educated and trained nurses prefer not working in care industry. For example, in Shandong province, there are 60,000 skilled caregivers are not working in their chosen field. A large number of new nursing graduates struggle to find jobs even at a salary level as low as 3,000 dollars per year [320].
- Many of these caregivers see a foreign assignment as a great opportunity and invest their own money for the further qualification in other countries [321].
- In addition to the benefit for the personal and labor-market-related situation of the nursing staff, the state also sees the benefit that, after the nurses return to China, the acquired know-how can be used for the further development of nursing care locally.

At the same time, the regulations for specialist immigration to Germany have been significantly improved and simplified. In order to promote and support the smooth operation of the project, on July 13, 2013, the German government officially opened a visa for nursing staff in Germany. Specific procedures of the program are depicted as follows.

1. **A domestic German language training in China**. The training lasts for 8 months and includes training of German language from zero basis to B1-level (according to the language requirements of the EU framework), plus the training of German culture and nursing professional, for which the costs are covered by the German employer.
2. **Issue visa admission**. ZAV reviews the applicant's employment contract and other access conditions, collects the relevant fees from the employer, issues the "Zulssung" to the qualified applicant, and issues the "admission certificate" together with the employment contract to the applicants to assist them in getting the visa.
3. **Internship and training in Germany**. Funded by the employer for a period of 12-18 months, the applicants must pass the qualification of German nursing professional and obtain the certificate (Gesundheits- und Krankenpfleger). For the German language, the applicants must pass the language proficiency test of B2-level and obtain a certificate of conformity. Then, a two-years working visa can be applied.
4. **Long-term employment**. After three years of work, a long-term visa can be applied in the German Foreigner Registration Office, which allows for a long time working in a German medical care institution.

Since the first group of applicants coming and working in Germany in 2014, Chinese nursing staff have been recognized and accepted by the entire German society, and relevant news have been extensively reported by large and small medias in Germany.

Chinese caregivers are convincing with their theoretical qualifications and extensive practical knowledge and experience. For Chinese, it is an honor to take care of old and needy people and to support them in everyday life. Values such as respect, above all for parents and seniors, as well as patience, generosity, gratitude and kindness are passed on. These are not only prerequisites, but also an essential quality for dealing with the elderly people [322]. Nevertheless, whether this kind of talents exchange program can really mitigate the shortage of nursing professionals in Germany is still questionable, and more discussion is required.

8.4. JOINT EDUCATION PROGRAM

As mentioned in Chapter 5, nursing education in China is currently reflected in three levels: zhuanke(vocational), baccalaureate and graduate. Compared with Germany, there is almost no classical further education with a high proportion of practice. Nursing curriculum in China mainly includes the traditional "disciplined model" of frontal education, with a focus on subject orientation and clinical disease (biomedical model). The students take on the standardized designs and specifications by "writing down and passive consumption" [323, 324]. Theory and practice are still separate. Areas outside the acute inpatient care are given little consideration in the training. The predominant form of performance control is written tests [325, 326]. Recognition and prestige are often achieved by summing up special qualifications and the publications in medical technology-oriented research areas.

Despite the existing disadvantages of nursing education, great progress is under developing in China. As a fundamental component of China's health care reform, nursing education is actively supported and promoted politically. Now the transformation from the biomedical to a nursing process-oriented model with an independent existence is needed urgently [298, 327]. Meanwhile, the education landscape needs an educational model based on problem-solving and role-centric learning to enable outcome and competence-oriented curriculum and to meet the challenges of China's health system [328, 329].

Since the beginning of 2017, there is a China-German Joint Training Program (Sanming) between Medizinische Hochschule Hannover and Southern Medical University – Shenzhen Hospital (SMU-SHZ). The program introduces the mature training standards of Germany's nursing specialists into China and combines the local situation of China. It sets up a specialized nursing education curriculum and teaching evaluation system to train nursing specialist at master level. Specifically, the program develops and implements four advanced specialist nursing practice courses including midwifery, intensive care, operations care and anesthetic care. The duration of the project is expected to be five years, and it will be funded by the Chinese government. The plan is to train 200 nursing specialists during the period of five-years collaboration.

A special feature is the joint design of the curriculum with comparable European guidelines and the joint implementation of theoretical content with modern teaching methods and concepts. This includes the linking of theory and practice. The prospective students are nurses with many years of professional experience and academic degrees. The objective is the continuous expansion of needs-based and future-oriented nursing expertise to improve quality in clinical practice, comparable to the areas of application of ANP (Advanced Nursing Practice) known in Germany.

8.5. GERMAN NURSING CURRICULUM EXPORT

ChinaCare is a joint initiative of the Research Institute for Innovative Work Design and Prevention (Forschungsinstituts für innovative Arbeitsgestaltung und Prävention, FIAP e.V.) in Gelsenkirchen, the Academy of Health Professions (die Akademie für Gesundheitsberufe) of St. Kamillus GmbH in Mönchengladbach, MA & T Sell & Partner GmbH in Aachen, and medien education policy advice of gaus gmbh in Dortmund. Associated partners in the project are the representation of the city Fushun in Gelsenkirchen as well as the medical school Fushun. The project started in June 2013 and took place in three phases, each occupying the same size of space.

In China, Germany is considered as a country that could provide support in development of elderly care through its extensive experience. Chinese nursing schools are also interested in developing education and training opportunities in this area. From the perspective of the German partners, the aim was to design an educational service for Chi-

nese vocational schools, which allows Chinese lecturers to design and implement training courses with German support in order to improve the qualification level in elderly care significantly. In addition, transfer options for German know-how in the field of elderly care should be identified.

Nursing education in China and Germany are vastly different. In China, a traditional disease-oriented concept of nursing is established, as it was implemented in Germany in the 1990s. In this concept, elderly care is not independent, but a part of the nursing system. The curricula are structured according to the subjects and medical specialties and thus show a disease orientation. Nursing in Germany is more than just medical or sanitary care for elderly people. In addition to professional and social skills, the elderly care curriculum in Germany also addresses personal and methodological skills, Which include self-employment, the assumption of responsibility and nursing prevention as well as further development in research, health policy and education. The intended competence and personality development should enable students to meet the complex, diverse situations and personalities in their profession with a combination of expertise and human attitude.

In the project, the curriculum is addressed to different target groups with and without previous experience in the field of nursing or health. The dual system is therefore suitable for training students, but also for further education of medically trained personnel. The proportion between theory and practice, however, should be adapted to the respective target group. For instance, the theoretical proportion is reduced for the persons with medical knowledge. The curriculum was initially implemented in practice at the Fushun Medical School.

The project has been successfully implemented as planned, and at the end of the project, the book "Kooperative Entwicklung von Altenpflegeausbildung für China - ein Modell für den Bildungsexport" was published, which comprehensively analyzed and evaluated the implementation background and specific process of the project [218]. Based on the assessment of the coauthor Anja Weckop, from a pedagogical perspective, the ChinaCare project has managed to build bridges between cultures. Especially the discussions, which related to the implementation of vocational education, have made tremendous progress in developing a joint educational service. Through lived openness and culture-sensitive attitude, all actors of the joint project ChinaCare have helped to create a product within the frame-

work of educational export. This represents a marketability and offers the necessary innovation and flexibility in a changing society. Another coauthor Claudia Sack believes that dealing with education export issues is worthwhile for medium-sized care institutions, and further lucrative business areas are opened up. Even though the topic of elderly care is closely related to the culture, due to the huge cultural difference between Germany and China, the development of education offers is worthwhile for the Chinese market. By dealing with occupational and educational questions of elderly care in the Chinese context, a reflection of their own cultural character and thus of the structures in their own institutions takes place. This extends the transcultural competence of their own institutions and the associated employees. Ultimately, such a joint project also helps to expand the portfolio of its own facility and thus get a better position in the regional market.

9

CONCLUSION AND DISCUSSION

In China, with the development of economy and health care quality, the increased life expectancy and declined birth rate alters the population pyramid and demographic distribution. According to the statistics, China is one of the most rapidly aging countries in the world. People over the age of 60 already account for 16.7 percent of the total population [330]. It is predicted that by 2050, it will rise to one in three or 480 million. This burgeoning group of senior citizens is generating tremendous demand on better elderly care services and policies, and putting immense strain on not only the country's publicly funded elderly care system, but also their offspring. The soaring demand on elderly care service and underdeveloped nursing facilities pose a great challenge for contemporary China. Therefore,governments, non-profit organizations and enterprises have to collaborate together and find ways to circumvent the inevitable clash.

Generally speaking, China's elderly care system is quite rudimentary, which is predominately by family care. Public model of long-term care for the elderly has not been established. Entrenched Confucian culture has for centuries influenced the thinking that looking after senior relatives and parents was simply the duty of everyone, while sending them off to nursing care facilities which specialized in providing nursing service was a violation of their dignity. However, the declined family size and intensive working load and pressure of the family member and kinship make the family care more and more stressful and even

unfeasible for many households, especially the ones living in first-tier cities. Therefore, the traditional family care model has to be supplemented by a large amount of public or private owned nursing facilities, equipped with professional caregivers, advanced elderly care infrastructures and medical clinics.

Germany, as one of the most important developed countries, the demographic transition to an aging society was reached much earlier, which gives the country a little more time to think of proper trials and solutions. Basically, Germany has built a statutory LTCI system with the association of the idea of social welfare model. The major principle of the statutory LTCI system is to cover the majority of the German population but is not intended to bear fully responsibility for those in need of care. It encourages the involvement of all care services of families, households, non-profit organizations, and enterprises to accomplish the task of long term care. The role of the state is to regulate the care service suppliers by making corresponding laws, benchmarking, monitoring and evaluating the performance and quality of the service. Compared to the other insurance systems, such as health and injury, LTCI in Germany does not apply full coverage of the cost raised by long term care. Based on the statistics, nearly half of the cost will be covered, and the rest half has to be fulfilled by those in need of care themselves [331].

However, the present situation in Germany is that the proportion of elderly people who need long term care keep increasing, which poses many challenges and pressure to the nursing care system. These people who are in urgent need of nursing care are not willing to leave their familiar home environment and enter nursing care facilities, such as nursing home or hospitals. Hence, the elderly care system itself needs to be evolved and adapted to the current situation. New reforms and policies are on under discussion. Some of them have been stipulated and executed. In the framework of Germany's LTCI, the needs of long term care is classified into 3 levels. Based on the latest reform, the stratification will be fine tuned to 5 levels. Reform on nursing education and training is also strongly suggested. Among these reform and policy changes, the most fundamental one is how to elevate the social and financial status to fill the shortage of nursing caregivers and attract young people to develop their careers in nursing care.

In the following sections, the elderly care systems in both countries are summarized briefly and major conclusions are proposed, by analyzing and comparing the main aspects

related, such as the population and living conditions, long-term care insurance, forms of elderly care, and nursing education, which have been elaborated in previous chapters.

9.1. POPULATION DEVELOPMENT AND LIVING SITUATIONS

As the most populous country in the world, the population development process in China is not as stable as in Germany, due to heavy governmental control policies, natural disasters, unstable political and economical environment in the history. There were periods when the population dramatically increased and suddenly decreased. Nonetheless, in the last three decades, due to the unbalanced growth of population and economy, China has entered the era of "aging before getting rich", and the corresponding population pyramids reflect the transition process from young dominated type to mid-age or old dominated type. On the other hand, the total population of Germany has steadily grown in the last several decades. However, after the birth rate has undergone a steep growth after the second world war, it kept decreasing which leads the aging situation is even more severe than that of China. The old-age dependency ratio of Germany is still much higher than the one of China. Generally, in both countries, there exist vast conflicts between the elderly care demanding and social fulfillment abilities, which serves as one of the most urgent issues that needs to be addressed.

Regarding the living situations, many aspects share great consistence for the elderly in both countries. For instance, the marital and family status shows that most of the elderly are living together with their spouses and their children all visit them as frequently as they could. The spouse and children are recognized as the main caregivers for the elderly when they require care services. The major disparities comes from the health conditions, such as the major chronic disease and status of disabilities. The incidence of stomach or digestive diseases and chronic respiratory diseases among Chinese elderly is higher than that in Germany. The potential reasons behind might lie in the lack of diverse food supply due to the poor economic conditions in the history and environmental pollution.

9.2. LONG-TERM CARE INSURANCE

Germany has established the statutory LTCI system since 1995 as a part of its fundamental social security system. It has covered all the participants who have joined the medical insurance system. The compulsory LTCI has delivered a basic security for elderly care service. Besides, the LTCI system kept evolving with the assistance of national policy supports. The classification criteria for the elderly who needs care were well defined to guarantee an efficient execution strategy to guarantee the right service is delivered to the right person. The most recently reforms that were stipulated focuses on the individual-specific needs for elderly care service, such as the people suffering dementia. On the other hand in contemporary China, there is not yet a statutory LTCI system established. The main insurance providers are commercial suppliers, who concentrated on profit as the highest objective rather than social service. Besides, the lack of administration experience in such commercial companies is a big issue for them running the business.

9.3. FORM OF ELDERLY CARE

In China, the major forms of elderly care consist of home care (or ambulant care), institutional care and community care, while Germany builds its elderly care system with the major forms of institutional care and ambulant care. Similar to Germany, home care is one of the most important elderly care forms in China. The main care givers for home care are identical for both countries: family members. However, the significance of home care is far more than that of Germany, due to the concept of filial piety. A special form of elderly care form which doesn't exist in Germany is the community care. Community care at home is a new social elderly care model that combines the advantages of home care and social care. The community care is a new elderly care model that has emerged in recent years, which can effectively save social resources and reduce the pressure of elderly care institutions. It is also characterized as lower investment, lower cost, lower fees, broader services and better benefits. This elderly care model has a great potential for a promising future and is highly favored by the elderly in urban areas. In the future, with the rapid development of Chinese elderly care services and the continuous establishment and improvement of the elderly care service network, the integrated development of institution, community

and home elderly care will be an inevitable trend.

9.4. NURSING EDUCATION

In China, the training and education system of nurses dedicated to elderly care is not yet established. The contemporary nursing education in China is intended to educate and train general nurses who will most work in hospitals to look after patients after graduation. Unlike Germany, where there exists a special training course particularly for elderly care, China's nursing education is in urgent demand to improve its volume and quality.

Among the European Union countries, only Germany and Luxembourg still mainly rely on the old elderly care vocational training system to cultivate nursing care professionals. All other EU countries have promoted the nursing care education system to an international standard bachelor or master programs affiliate to universities. Although academic nursing disciplines have opened in many universities, these majors and institutes are purely initialized by the universities and not enlisted in the national category of university majors.

It is clear to see that only with a constant supply of well-trained and dedicated elderly care specialists, it is then possible to extend the elderly care service from hospital to community and family. Therefore, it is necessary to keep developing the nursing team and enhancing their specialism.

10

OUTLOOK

Through the in-depth analysis and comparison studies on the elderly care system in Germany and China, it is clear to see that there are still many challenges that both countries are trying to resolve. Strategic counter-measures are under intensive discussions. Basically, in this chapter, two questions needs to be addressed: how to improve the common deficiencies that exist in both countries and what can be learned and inherited as the best experience from each other.

10.1. HOW TO IMPROVE ELDERLY CARE SYSTEMS OF CHINA AND GERMANY

By analyzing and comparing the contemporary situations of the elderly care systems in both countries, the following strategies are proposed to improve the systems, increase the service qualities and better fulfill the demands of the elderly.

10.1.1. ELEVATE SOCIAL POSITION OF NURSING PROFESSIONALS

In contemporary China and Germany, there is still a tremendous conflict between increasing needs for elderly care and lack of professional nursing practitioners. The amount of reg-

istered nursing professionals are extremely under supplied compared to the huge number of the elderly in need of nursing care. There are multiple reasons attributed to this gap. The nursing profession is conventionally not appreciated by the public due to the concerns of lower payment, heavy working load, and lower social ranking. The lack of sufficient nursing caregivers has directly made elderly care facilities and institutions understaffed. To enlarge the group of elderly care professionals, the government of both nations need to stipulate the policies that encourage more people choosing nursing care as their profession or voluntary job. The basic financial status and working environment needs to be improved, such as elevating the minimum standard of wage or increasing allowance for the caregivers by the central of municipal governments. Besides, the social appreciation of nursing occupation should be promoted though national wide propagation of the value and sense of nursing profession, to avoid loss of nursing talents.

10.1.2. ENHANCE EDUCATION AND TRAINING OF NURSING PROFESSIONALS

As mentioned in previous chapter, the training and education system of nurses dedicated to elderly care is not yet established in China. Elderly care education discipline should be established in more colleges and universities. It makes enormous sense to add dedicated elderly care education and develop corresponding theoretical teaching and practical training. The related courses should be configured to be comprehensive and rational. Nursing theories and practice should be bounded tightly to create a synergy of learning and practising. The students or trainee should shape the ability to think independently, and be able to cope with the issues and challenges encountered in reality. It is optimistic to see that according to the thirteenth Five-Year Plan of nursing issued by central state, by the end of 2020, the total amount of registered nurses will reach 4.45 million [332]. Among the European Union countries, only Germany and Luxembourg still mainly rely on the old elderly care vocational training system to cultivate nursing care professionals. Without official promotion and support, nursing education in Germany was recognized as a low-ranking major. Upgrading the training system to a bachelor or master degree in universities will have positive impacts on enlarging elderly care candidates. Besides, with an international standard degree, more chances will be given to the Germany nursing care professionals to work in other EU countries. It is clear to see that only with a constant supply of well-trained and

dedicated elderly care specialists, it is then possible to extend the elderly care service from hospital to community and family. Therefore, it is necessary to keep developing the nursing team and enhancing their specialism.

10.1.3. RESOLVE STAFF SHORTAGE OF ELDERLY CARE PROFESSIONALS

At present, as Germany's elderly population continues to grow, its old under-staffed elderly care system keeps struggling to catch up the vast care needs. The national wide shortage of professional caregivers is one of the most urgent issue challenging the current federal government. With an aging population and a lack of carers for the elderly, Germany is fast approaching a care crisis. According to the latest report, 36,000 vacancies are currently unfilled, among of which 15,000 are in elderly care alone. The number of the elderly in need of care will increase from current 3 million to 4.5 million by 2060. However, it is very difficult for elderly care facilities to search for care workers, which can be revealed by the study "Deutsches Pflegethermometer 2018". On average, it takes 171 days to fill a vacancy in elderly care facilities. For every 100 job positions, there are only 21 applicants. The understaffed situation is even worse in east parts of the country. The main reasons behind this immense staff shortage are lower payment, poor working conditions and high working load. According to StBA, carers with three years of training earn, on average, €18 ($21) per hour (gross, full-time). On average, workers in Germany earn €22 per hour. The regional differences are also big. The enormous complains from both the caregivers and elderly care receivers urge the reform of the old care system.

In response to the growing concerns over elderly care, the potential solutions can be summarized as follows.

- increase the average payment not only for employed carers but also for the trainee under during training program.
- improve working conditions and social appreciation of nursing care. The working load of carers should be mitigated, and more rehabilitative holidays should be rewarded and guarantied. The health condition of carers themselves should be also monitored regularly.
- recruit elderly care practitioners abroad, especially the countries with high-quality

nursing education.

- appreciate the value of nursing care workers and set up a better image of this profession in the public.
- utilize advanced technologies to improve the working efficiency. For instance, elderly care robots empowered by artificial intelligence technology might take over some basic nursing tasks of the elderly.
- improve the nursing education system.

10.2. WHAT CAN BE LEARNED BETWEEN CHINA AND GERMANY

10.2.1. ESTABLISH STATUTORY LTCI SYSTEM IN CHINA

Germany's concept of nursing care, its working process and professionalism are worth learning by other countries like China. Compared to family care and private nursing care model, the Germany's statutory long term care model has a lot of potential to improve China's nursing care system. Regarding the health insurance, China has adopted the German model of social insurance system and introduced an urban health insurance and new rural cooperative medical system in 1990s. Besides, the injury insurance system also took Germany's model as a reference. The benefit of a statutory elderly care system is obvious. It will be mandatory for all the employee and employers to participate the insurance program. There are more than 800 million people in working status, which provides a solid condition to satisfy the need of care for the 35 million elderly persons. Moreover, as the second largest economic entity, Chinese government has the financial ability to undertake the risk of transition failure, and the lower unemployment rate will guaranty the fund collection for elderly care.

In China, currently only privatized LTCI options are available, and nursing care services are offered according to market prices. There are several drawbacks of commercial LTCI system. To avoid the potential loss, ironically, the commercial insurance companies have a natural intention to exclude the high risk group who needs long term care service urgently. Additionally, the lack of normalized definition of nursing service content, standardization of service quality and classification of nursing care levels makes the service

delivered by private insurance companies quite inhomogeneous. Moreover, the absence of governmental involvement and surveillance has made the private LTCI a pure commercial product without any features of social welfare. To cope with these problems, the government needs to take more impact on the solutions. One example is the nursing care system of Germany which is inherited from continental welfare state model. Germany has implemented a statutory LTCI aimed at integrating multiple actors, such as the family, intermediary organizations, non-profit organizations and private providers into a supply structure within a mandatory social care insurance system, where the welfare state acts as lawmaker and regulator for public nursing care[333]. The construction of such a statutory nursing care system will be a huge improvement for the social welfare framework. It will maximum cover and benefit the elderly people in needs of nursing care. It is optimistic to see that China is experimenting the implementation of LTCI in several cities, aiming to mitigate the heavy burden of the cost of long term care. On the other hand, as a significant supplement, commercial LTCI should be under the guidance and supervision by official authorities to promote commercial insurance companies developing better long term care products and services.

10.2.2. REINFORCE NATIONAL SUPPORT AND REGULATION FOR ELDERLY CARE SYSTEM IN CHINA

Unlike Germany, the contemporary elderly care system in China is predominated by family care and private institutional care. Besides building more public funded nursing homes which receive fiscal subsidiaries from the central and regional governments, the central state should take more responsibilities to assist, steer and regulate the elderly care system and markets. A lack of sufficient support from the governments makes it a difficult environment to operate and provide steady and high-quality services.

- Firstly, the state should push forward the process of normalization and regulation of elderly care system. Firstly, a clear definition of the elderly care contents needs to be created. Based on the self-care ability and financial situation, the elderly in need of care should be classified into different levels of demands. The level categorization will much help the non-family actors, such as communities, non-profit organi-

zation, public and private funded nursing institutions, to stratify the target serving objects, optimize their services, develop distinctive service products and ultimately better satisfy the needs of different groups.

- Secondly, the state should clearly define the extent and standards of the elderly care service. The transparency of such kind of information helps a lot both for the care service recipients and the suppliers. The recipients can be able to better select the most suitable care models and evaluate the cost efficiency of care institutions. The standardization of service contents is critical for enforcing the care suppliers to improve the service quality. Meanwhile, it is easy to set up the benchmark and evaluate the service quality of different institutions.

- Thirdly, the supportive policies for care institutions, especially those privately operated, should be planned and came into force. China's huge market for senior care blessed with opportunities and challenges. In China, the care of the elderly is still the responsibility of the family, but demand for institutional care is on the rise. Some well-off pensioners are more than willing to pay a premium to live comfortably in elderly care residence rather than live with their children to avoid resentment and blaming them for not taking care of them. It has been decade since the Chinese real estate developers such as Vanke and Poly to explore and invest in the elderly care business by constructing nursing home with large bed capacity. Even with high occupancy, most private facilities are still struggling with heavy upfront investment and surging labour cost, while retirees complain of high fees. However, demand is weaker in smaller cities, and costs more affordable in smaller cities. But demand is also weaker there, particularly for the upscale apartments that are more lucrative. That dilemma has pushed up the prices of the facilities to unaffordable levels for many ordinary pensioners[334]. Investors and operators also complain that as much as 70 percent of these commercial projects are unprofitable. To motivate more private investors get in this business, preferential policies such as reducing land acquisition cost, reimburse tax payment, and directly financial support will be worth of considering. Moreover, the government should also guide and steer the private care suppliers to put focus on building operational expertise in long term care.

10.2.3. DEVELOP COMMUNITY CARE IN GERMANY

Community care has been proven to be an elderly care model that satisfies the needs of the elderly for flexible and comfort living environment and the demands of professional medical and nursing care service. The major problem of contemporary community care in China is that the services and facilities provided are relatively superficial. Inadequate configuration of elderly care center and understaffed infirmary rooms are not able to fulfill the nursing care needs of the elderly in communities. In order to cope with these issues, the development of community care should be enhanced and regulated. The goal is to deliver nursing care service with high quality to the elderly in needs without leaving communities. To achieve that, many efforts, including efficient allocation of nursing care professionals, diverse fund raising channels, and motivation of voluntary individuals and non-profit organizations, etc., are requested to be taken. A well-developed community care system has much potential to resolve the challenges brought by family care and institutional care. Despite the difficult development of community care in China, it still could be a promising option for Germany to add complementary value to its existing ambulant and institutional care. Considering the issue of nursing stuff shortage can not be resolved in a short time, promoting the community concept and leveraging the resource in the community can definitely be a feasible solution.

10.2.4. IMPROVE ELDERLY LIFE QUALITIES WITH ADVANCED TECHNOLOGIES IN GERMANY

In the revolutionized era of information and technology, the lives of all individuals have been changed. With the popularization of intelligent mobile phones, more and more advanced technologies have been embedded into everyone's daily life. New technologies have permeated into every aspects and changed the way of socialization, shopping and payment, communication, travelling, accommodation, etc. Certainly, as a large portion of population, the elderly should be also the beneficiaries of innovative technologies. The central needs of the elderly are have a life with health, independence, comfort and dignity, which could be assisted in many aspects with innovative technologies. For instance, with the help of new information technologies, communication have never been so easier than

today. The loneliness feeling of the elderly can be largely relieved by more frequent contact with their family members and friends. The socialization methods have been much diversified to engage more elderly people into the communities.

In contemporary China, innovation has been upgraded to be a national strategy for its social and economic development. Driven by this state-level promotion policy, tremendous innovative technologies have been invented to ease people's lives, many of which focus on improving life quality and health management of the elderly. For examples, the Chinese elderly can instantly communicate with their family member with dedicated mobile application, and their children can keep monitoring the health conditions of them with dedicated smart wearing devices. The elderly themselves in China can easily purchase basic living goods online and pay cashless within a second. The powerful logistic system will deliver the goods in a very short time. The socializing needs of the elderly are fulfilled with many tools.

The digital life of Germany's elderly people is not developing as quickly as in China. Many service tools, concepts and business models, which succeeded in China' elderly care market, can be transferred to Germany.

10.2.5. PROMOTE TCM IN GERMANY

TCM such as the techniques of acupuncture, cupping therapy, and concept of Yangsheng has gained more and more attention in the world, especially for the life and health maintenance of the elderly people who suffered chronic diseases. Although it is still controversial and debatable regarding the safety and effectiveness of TCM, which requires more scientific evidences, several classical TCM nursing techniques that have been used for many decades and adopted by huge amount of population, might be complementary in elderly care services. Adopting and promoting TCM in Germany may have good potential contributing to a better elderly care environment under proper control and supervision.

In summary, under the background of rapid process of aging population, both China and Germany are confronting many challenges to better fulfill the demands of increasing elderly care services with solid quality and efficiency. Even though there are still existing common issues that need to be addressed, such as incomplete regulatory guidelines, the low social recognition of caregivers, inadequate training and education for care profession-

als and nursing stuff shortage etc., with the joint efforts contributed by states, social organizations, scientific communities, enterprises, and active individuals, it would be feasible to tackle these issues with proper solutions. On the other hand, the joint collaboration between the two countries in term of knowledge transfer and experience sharing will definitely be mutual beneficial. Nonetheless, the differences in terms of population structure, living conditions and economical development etc. can not be ignored, and the solutions should be tailored and adapted for each country to better match its own situation.

LIST OF ABBREVIATIONS

ADCSC	Academic Degrees Committee of the State Council
AGVP	Employers' Association for Nursing -Arbeitgeberverband Pflege e.V.,
AltPflG	Elderly care law-Altenpflegegesetz
BA	Federal Employment Agency-Bundesagentur für Arbeit
BiBB	Federal Institute for Vocational Education and Training-Bundesinstitut für Berufsbildung
BMG	Federal Ministry of Health-Bundesministerium für Gesundheit
BRI	Assessment Guidelines-Begutachtungsrichtlinien
BVerfG	Federal Constitutional Court-Bundesverfassungsgericht ,
CHINCA	China International Contractors Association
CRDs	Chronic respiratory diseases
DBfK	The German Nurses Association-Deutsche Berufsverband der Pflegeberufe
FIAP e.V.	Institute for innovative and preventive job design-Forschungsinstituts für innovative Arbeitsgestaltung und Prävention,
GBE	Health report of the Federal Government-Gesundheitsberichterstattung
GRG	Health Reform Law-Gesundheitsreformgesetz
KrPflG	Act on nursing care -Krankenpflegegesetz
LTCI	Long term care insurance
MDK	Medical service of the health insurance-Medizinischen Dienst der Krankenversicherung
MHRSS	Ministry of Human Resources and Social Security
NBA	Neues Begutachtungsassessment
NNLE	National Nursing Licensure Examination
PflBG	Act on nursing professions -Pflegeberufegesetz
PflBRefG	Nursing Care Reform Act -Pflegeberufereformgesetz
PflEG	Nursing service supplementary act -Pflegeleistungs-Ergänzungsgesetz
PfWG	Further development act of nursing care-Pflege-Weiterentwicklungsgesetz
PICC	People's Insurance Company of China
PNG	Care realignment law-Pflege Neuausrichtungsgesetz
PpSG	Act to strengthen the nursing staffs-Pflegepersonal Stärkungsgesetz
PSG I	The first nursing care enhancement act-Erstes Pflegestärkungsgesetz
PSG II	The second nursing care enhancement act-Zweites Pflegestärkungsgesetz
PSG III	The third nursing care enhancement act-Drittes Pflegestärkungsgesetz
RN	Registered Nurse
SGB XI	German Social Security Code XI-Sozial Gesetzbuch XI
StBA	Federal Statistical Office (Destatis)-Statistisches Bundesamt
TCM	Traditional Chinese Medicine
TvöD	Collective agreement for the civil service-Tarifvertrag für den öffentlichen Dienst
TÜV	Technical Inspection Association-Technischer Überwachungsverein
ZAV	Central Foreign and Specialized Placement Service-Zentrale Auslands- und Fachvermittlung

APPENDIX

Table 1: The financial development of statutory LTCI (1995-2006) Data source:BMG

Designation	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	in Mrd. € *)											
Income												
Contribution	8,31	11,90	15,77	15,80	16,13	16,31	16,56	16,76	16,61	16,64	17,38	18,36
of that												
Contributions for dependent employees	4,70	6,67	8,78	8,76	8,97	9,10	9,21	9,18	9,32	9,50	9,67	10,56
Contributions for voluntarily insured in the statutory health insurance	1,34	1,98	2,65	2,69	2,84	3,03	3,09	2,89	2,41	2,41	2,47	2,57
Contributions from pensions	1,46	2,05	2,70	2,75	2,79	2,85	2,89	3,19	3,31	3,36	3,37	3,39
Contributions for insured unemployment benefit-I	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,54	0,45
Contributions for insured unemployment benefit-II recipient	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,53	0,58
other contributions	0,31	0,43	0,58	0,61	0,60	0,60	0,63	0,69	0,71	0,76	0,78	0,80
Other income	0,09	0,14	0,17	0,20	0,19	0,23	0,25	0,22	0,25	0,23	0,12	0,13
Total income	**8,40**	**12,04**	**15,94**	**16,00**	**16,32**	**16,54**	**16,80**	**16,98**	**16,86**	**16,87**	**17,49**	**18,49**
Expenditure												
Expenditure for benefits	4,42	10,25	14,34	15,07	15,55	15,86	16,03	16,47	16,64	16,77	16,98	17,14
of that												
Cash	3,04	4,44	4,32	4,29	4,24	4,18	4,11	4,18	4,11	4,08	4,05	4,02
Professional services	0,69	1,54	1,77	1,99	2,13	2,23	2,29	2,37	2,38	2,37	2,40	2,42
Care for prevention	0,13	0,13	0,05	0,06	0,07	0,10	0,11	0,13	0,16	0,17	0,19	0,21
Day/night care	0,01	0,03	0,04	0,04	0,05	0,06	0,07	0,08	0,08	0,08	0,08	0,09
Additional care benefits and caregiver relief services	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,02	0,02	0,03
Short time care	0,05	0,09	0,10	0,11	0,12	0,14	0,15	0,16	0,16	0,20	0,21	0,23
Social welfare for the care givers	0,31	0,93	1,18	1,15	1,13	1,07	0,98	0,96	0,95	0,93	0,90	0,86
Aiding equipment / neighborhood improvement	0,19	0,39	0,32	0,36	0,40	0,36	0,31	0,33	0,31	0,30	0,32	0,33
Inpatient care	0,00	2,69	6,41	6,84	7,18	7,47	7,75	8,00	8,20	8,35	8,52	8,67
Inpatient care in institutions for the disabled	0,00	0,00	0,13	0,22	0,20	0,21	0,21	0,21	0,23	0,23	0,23	0,24
Stationary compensation surcharges	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Nursing consultation	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other expenditure for benefits	0,00	0,01	0,01	0,01	0,02	0,04	0,04	0,04	0,04	0,05	0,05	0,05
Half the cost of the medical service	0,23	0,24	0,23	0,24	0,24	0,24	0,25	0,26	0,26	0,27	0,28	0,27
Administrative expenditure	0,32	0,36	0,56	0,56	0,55	0,56	0,57	0,58	0,59	0,58	0,59	0,62
Supplying to the long-term care fund	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other expenditure	0,00	0,00	0,01	0,01	0,01	0,01	0,02	0,06	0,06	0,07	0,00	0,00
Total expenditure	**4,97**	**10,86**	**15,14**	**15,88**	**16,35**	**16,67**	**16,87**	**17,36**	**17,56**	**17,69**	**17,86**	**18,03**
Liquidity												
Excess of income	**3,44**	**1,18**	**0,81**	**0,13**	---	---	---	---	---	---	---	**0,45**
Excess of expenditure	---	---	---	---	**0,03**	**0,13**	**0,06**	**0,38**	**0,69**	**0,82**	**0,36**	---
Investment loans to the federal government	**-0,56**	---	---	---	---	---	---	**+0,56**	---	---	---	---
Middle balance at the end of the year	**2,87**	**4,05**	**4,86**	**4,99**	**4,95**	**4,82**	**4,76**	**4,93**	**4,24**	**3,42**	**3,05**	**3,50**
In monthly expenditure according to budgets of the care fund	**3,93**	**2,96**	**3,77**	**3,70**	**3,61**	**3,37**	**3,27**	**3,34**	**2,82**	**2,27**	**2,01**	**2,29**

Table 2: The financial development of statutory LTCI(2007-2016) Data source:BMG

Designation	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	in billions of €									
Income										
Contribution	17,86	19,61	21,19	21,64	22,13	22,92	24,86	25,83	30,61	31,96
of that										
Contributions for dependent employees	10,38	11,69	12,47	12,78	12,83	13,25	14,37	15,02	17,75	18,58
Contributions for voluntarily insured in the statutory health insurance	2,35	2,45	2,65	2,70	3,19	3,45	3,82	3,98	4,75	5,01
Contributions from pensions	3,40	3,68	4,01	4,07	4,08	4,14	4,41	4,52	5,38	5,61
Contributions for insured unemployment benefit-I recipients	0,33	0,29	0,40	0,38	0,31	0,31	0,37	0,37	0,41	0,41
Contributions for insured unemployment benefit-II recipients	0,57	0,59	0,64	0,65	0,61	0,61	0,66	0,67	0,79	0,77
other contributions	0,83	0,91	1,01	1,06	1,10	1,16	1,25	1,26	1,53	1,57
Other income	0,16	0,16	0,12	0,14	0,11	0,13	0,09	0,08	0,08	0,07
Total income	**18,02**	**19,77**	**21,31**	**21,78**	**22,24**	**23,05**	**24,96**	**25,91**	**30,69**	**32,03**
Expenditure										
Expenditure forbenefits	17,45	18,20	19,33	20,43	20,89	21,86	23,17	24,24	26,64	28,29
of that										
Cash	4,03	4,24	4,47	4,67	4,74	5,08	5,69	5,94	6,46	6,84
Professional services	2,47	2,60	2,75	2,91	2,98	3,11	3,37	3,56	3,70	3,83
Care for prevention	0,24	0,29	0,34	0,40	0,44	0,50	0,59	0,68	0,88	1,05
Day/night care	0,09	0,11	0,15	0,18	0,21	0,25	0,28	0,31	0,41	0,52
Additional care benefits and caregiver relief services	0,03	0,06	0,19	0,28	0,33	0,38	0,44	0,48	0,68	1,01
Short time care	0,24	0,27	0,31	0,34	0,35	0,38	0,41	0,43	0,50	0,57
Social welfare for the caregivers	0,86	0,87	0,88	0,88	0,87	0,89	0,88	0,94	0,96	0,99
Aiding equipment /neighborhood improvement	0,36	0,40	0,38	0,38	0,34	0,36	0,44	0,53	0,76	0,81
Inpatient care	8,83	9,05	9,29	9,56	9,71	9,96	10,06	10,26	10,74	10,91
Inpatient care in institutions for the disabled	0,24	0,24	0,25	0,26	0,26	0,26	0,26	0,27	0,28	0,29
Stationary compensation surcharges	0,00	0,00	0,21	0,45	0,50	0,54	0,58	0,63	1,03	1,23
Nursing consultation	0,00	0,01	0,04	0,07	0,08	0,07	0,07	0,08	0,09	0,09
Other expenditure for benefits	0,05	0,05	0,06	0,06	0,06	0,08	0,11	0,12	0,14	0,16
Half the cost of the medical service	0,27	0,28	0,31	0,30	0,32	0,34	0,36	0,37	0,37	0,39
Administrative expenditure	0,62	0,65	0,68	0,71	0,71	0,75	0,79	0,84	0,89	1,02
Supplying to the long-term carefund	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,10	1,29
Other expenditure	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total expenditure	**18,34**	**19,14**	**20,33**	**21,45**	**21,93**	**22,94**	**24,33**	**25,45**	**29,01**	**31,00**
Liquidity										
Excess of income	---	**0,63**	**0,99**	**0,34**	**0,31**	**0,10**	**0,63**	**0,46**	**1,68**	**1,03**
Excess of expenditure	**0,32**	---	---	---	---	---	---	---	-----	-----
Investment loans to the federal government	---	---	---	---	---	---	---	---	-----	-----
Middle balance at the end of theyear	**3,18**	**3,81**	**4,80**	**5,13**	**5,45**	**5,55**	**6,17**	**6,63**	**8,31**	**9,34**
In monthly expenditure according to budgets of the care fund	**2,06**	**2,33**	**2,78**	**2,87**	**2,93**	**2,86**	**3,00**	**3,12**	**3,51**	**3,8**
For information: Middle balance of the long-term care fund									**1,09**	**2,44**

Professional function	Content of nursing work	Professional skill requirement			
		Primary elderly nursing practitioner	Intermediate elderly nursing practitioner	Advanced elderly nursing practitioner	Technician
Daily living care	Clean and hygiene	Morning and evening care for the elderly	Helping to clean the mouth for elderly with special diseases		
		Helping the elderly clean the mouth	eliminating head lice for the elderly		
		Helping the elderly trim the nails	Taking care of elderly with bedsore		
		Washing hairs, taking bath and finishing appearance for the elderly			
		Dressing up the elderly, changing sheets, cleaning the wheelchair; Organizing personal items such as clothing bed linen and shoes			
		Prevention of bedsore			
	Sleeping care	Helping the elderly to sleep normally	Helping the elderly to sleep normally		
		Analyzing the general causes of abnormal sleep and resolve them	Analyzing the general causes of abnormal sleep and resolve them		
	Dietary care	Assisting the elderly to complete normal meals	Assisting medical staff to complete the feeding of high protein and other therapeutic diets		
		Assisting the elderly to complete normal drinking	Assisting medical staff to complete catheter feeding		
	Excretion care	Assisting the elderly to use the toilet normally			
		Collecting of routine defecation specimens of the elderly			
		Care for the elderly with vomiting			
		Cooperating with nurses to take care of elderly with abnormal defecation			
	Safety protection	Assisting the elderly to use wheelchairs, crutches and other walkers correctly			
		Carrying and moving the elderly			
		To use other protective equipment for the elderly correctly			

Professional function	Content of nursing work	Professional skill requirement			
		Primary elderly nursing practitioner	Intermediate elderly nursing practitioner	Advanced elderly nursing practitioner	Technician
		Prevention of accidents such as loss, falls, burns, mutually injuries, choking, electric shock and fire among the elderly			
Treatment care	Medication	Cooperating with medical staff to assist the elderly in oral administration	Cooperating with medical staff to change dressings for elderly with bedsore		
		Cooperating with medical staff to assist in keeping oral medication properly for the elderly	Cooperating with medical staff to complete inhalation administration		
	Observation	Measuring liquid intake and output for the elderly	Measurement of the temperature, pulse, blood pressure and breathing for the elderly		
		Observation of the changes in the skin, hair and nails of the elderly	Observation of vomit of the elderly		
		Observation of uncomfortable elderly people	Assisting medical staff to complete observation after administration of various drugs		
			Observation of the signs of dying elderly		
	Disinfection	Disinfection of common articles such as urinals by routine disinfection methods	Disinfection with commonly used physical disinfection methods		
		Natural disinfection and simple isolation	Disinfection with commonly used chemical disinfection methods		
			Isolation of infectious diseases		
	Hot/cold treatment	Applying hot water bottle and ice bag	Warm water bath and hot compress for the elderly		
	Nursing protocol	Ability to read general nursing documents	To write nursing protocol for the elderly correctly		
		Ability to finish simple nursing records	To write nursing protocol for the elderly with special diseases		

Professional function	Content of nursing work	Professional skill requirement			
		Primary elderly nursing practitioner	Intermediate elderly nursing practitioner	Advanced elderly nursing practitioner	Technician
Treatment care	Nursing protocol		To keep the nursing documents correctly		
	Hospice care	Assist in resolving the physical needs of dying elderly			
		Complete corpse preparation and final disinfection			
	First aid		Timely report and preliminary emergency treatment of accidents such as bleeding, scald, choking, fall, etc.	Carrying out cardiac massage and artificial respiration	
				Hemostasis, bandaging, fixation and handling after an accident	
	Nursing care of common diseases		Cooperate with medical staff to complete nursing care for common diseases such as hypertension, coronary heart disease, stroke, Parkinson's disease, diabetes mellitus, degenerative arthritis, gout, constipation, senile dementia and so on	Assisting medical staff in observation and care for critically ill elderly people	
				Assisting medical staff in nursing comatose elderly	
	Health education			Counseling and prevention of common diseases, frequently-occurring diseases and infectious diseases in the elderly	
				Health guidance on the living habits of the elderly	
	Design of nursing environment				Design of nursing environment for the elderly
					Formulating a plan to improve the nursing environment for the elderly
	Nursing planning				Formulating a nursing plan for the elderly
					Checking the implementation of nursing plan

Professional function	Content of nursing work	Professional skill requirement			
		Primary elderly nursing practitioner	Intermediate elderly nursing practitioner	Advanced elderly nursing practitioner	Technician
Treatment care	Technical innovation				Innovation in nursing technology for the elderly
					Selection, demonstration and declaration of scientific research topics of aged care
					Participation in the appraisal and promotion of scientific research achievements in aged care
Rehabilitation care	Physical rehabilitation		Cooperate with medical staff to assist special elderly people in passive limb movement	Assessment of the general rehabilitation effect of the elderly	
			Cooperate with medical staff to carry out common professional therapy	Implement of a group rehabilitation program	
			Guiding the elderly to use all kinds of fitness equipment	Implement of individual rehabilitation program	
	Leisure activities		Organizing the elderly to carry out small leisure activities	Organizing the elderly to carry out various activities of interest	
				Participation in organizing large-scale cultural and sports activities	
Psychological care	Communication and coordination		Observing the emotional changes of the elderly and communicating with them psychologically	To alleviate the worries, fears, anxieties and other negative emotions of the elderly	
			Analysis and guidance of disharmonious phenomena and contradictions in the interpersonal communication of the elderly	Emotional communication and psychological support for the elderly	
	Mental health care		Assist in solving the psychological and social needs of the elderly at the end of life		
				Promoting knowledge of mental health care to the elderly	

Table 3: National vocational skills standards for elderly nursing practitioners [209]

Professional function	Content of nursing work	Professional skill requirement			
		Primary elderly nursing practitioner	Intermediate elderly nursing practitioner	Advanced elderly nursing practitioner	Technician
Training and guidance	Training			Basic training for junior elderly nursing practitioner	Developing training plan for elderly nursing practitioner
	Guidance of operation			Guidance of practical operation for junior elderly nursing practitioner	Demonstration and guidance of various difficult problems in the operation of nursing for the aged
Nursing management	Organization management				Formulating responsibilities and working procedures of elderly nursing practitioner
					Implement and control of the aged care management scheme
	Quality management				Establishment of nursing quality control program for nursing institutions
					Management of the implementation of nursing technical operation rules in nursing institutions
					Management of the implementation of nursing quality in nursing institutions
					Management by using modern office equipment
					Writing research papers on nursing and management for the elderly

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STATUTORY DECLARATION

I, Jingyan Li, hereby declare that I have written this PhD thesis independently without unauthorized aid, unless where clearly stated otherwise. I have used only the sources, the data and the support that I have clearly mentioned. This PhD thesis has not been submitted for conferral of degree elsewhere.

Jingyan Li

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