

# Willingness and Associated Factors of Engaging in Aged Care Among Undergraduate Nursing Students in China: A Cross-Sectional Study

Yujie Guo (✉ [hoylpe@163.com](mailto:hoylpe@163.com))

Lei Yang

Nantong University

Lingli Zhu

Nantong university

Yu Wan

Nantong university

Shujun Zhang

Nantong University

Jie Zhang

Nantong University

---

## Research article

**Keywords:** older adult, employment willingness, motivation, undergraduate

**Posted Date:** July 16th, 2020

**DOI:** <https://doi.org/10.21203/rs.3.rs-41563/v1>

**License:**  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

# Abstract

**Background:** There is an increasing demand for nurses to work with older adults with the increase of life expectancy. However, the willingness of nursing students to work with older adults is at a low level.

**Methods:** This study aimed to further explore the willingness and associated factors of undergraduate nursing students to engage in aged care. A convenience sampling method was employed from May to July 2017 in China.

**Results:** Of the 853 students surveyed, 38.1% were willing to engage in aged care after graduation. Expectancy, interest, attainment value, cost, prejudice, whether they like nursing profession and whether they participated in elderly-related activities were the most significant predictors of the students' willingness to engage in aged care.

**Conclusions:** This suggests that nursing educators have an important part in challenging students' stereotype of older adults and enhance their interest in caring for older adults through both well-designed curriculum and elderly-related activities, so as to improve their confidence and willingness to engage in aged care.

## Background

An aging population has raised the public concern in the world, and has become a serious challenge for China. It is estimated that the number of people aged 65 or above in China has reached 158.31 million, which accounts for 11.4% of the total population[1]. With the increase of life expectancy, a concurrent of functional limitations and immunity decline accompanies, and older adults are easily suffering from various chronic diseases. It is estimated that the incidence rate of chronic diseases among older adults in China is 75.1% and the number of disabled and semi-disabled older adults will continue to grow[2]. Therefore, as a key health care provider, there will be more possibilities for nurses, to care for older adults in hospitals or communities, and meet the increasing demands placed on the health care system by an aging society. However, only 20,000 registered nurses have professional qualifications for gerontological nursing, while the demand is at least 150,000[3]. It's worth noting that gerontological care is no longer just a life care or disease care, but a comprehensive care integrating disease prevention, health care, physical therapy, rehabilitation and education, which requires nurses to possess certain knowledge and skills. Thus, a growing number of registered nurses who are knowledgeable and committed to working with older adults in different clinical settings are needed. Nursing students are the reserve force of nursing team for older adults in the future. It is imperative to explore the willingness and influencing factors of nursing students engaging in aged care.

In recent years, some scholars have carried out research on the willingness of nursing students to engage in aged care. Rathnayake et al reported in their study with a purposive sample of 98 that only 5.1% of the respondents ranked older adults as the first preferred group for their future career[4]. In the study of

Mattos, only 1.6% of the students indicated interest in pursuing geriatric nursing and students' willingness to engage in geriatric nursing may be affected by their past experience of caring for older adults or voluntary service[5]. Carlson and Idvall found that 44% of students were reluctant to engage in aged care, indicating this work was slow-paced, depressing, boring and stressful, making people feel helpless[6]. A study conducted by Dobrowolska et al showed that those who were not willing to engage in aged care were mainly due to the lack of aging knowledge, the bias against older adults and inability to communicate with older adults[7]. And in Chi's study, students' positive attitudes about older adults, paying attention to elderly-related issues, and having been a volunteer that served older adults were predictors of their willingness to care for older adults[8]. However, some studies reported although students had positive attitudes, they lacked interest in working with older adults after graduation[9, 10]. And in Li's study, although some students have a negative attitude towards older adults, they are still willing to choose careers related to older adults under their own internal motivation[11]. Thus it can be assumed that career motivation has a great influence on students' willingness to choose their careers.

In the current study, students' willingness to engage in aged care is influenced by various factors such as the experience of caring for older adults, the relationship with older adults, aging knowledge and attitudes towards older adults. Career motivation as a potential influencing factor has not been effectively addressed. Therefore, this study aimed to further explore the willingness and associated factors of undergraduate nursing students to engage in aged care.

## **Methods**

### **Study Design, Setting and Sample**

A convenience sampling method was employed from May to July 2017 among undergraduate nursing students from a nursing school in Nantong China. The study was approved by the ethics committees of the university. Students from the first to fourth year enrolled in the undergraduate degree program were included in this study. First, it was made clear that participation was to be voluntary, participants' names would not be used and confidentiality would be maintained by the researchers. Informed consent was obtained when they were willing to participate in the study. Finally, the questionnaire was distributed to 875 students and 853 questionnaires were successfully completed, giving a response rate of 97.37%.

### **Data collection tool**

#### **Demographic data**

Demographic data contain the following: age, gender, grade, place of residence, economic status, whether they were the only child at home, whether they lived with older family members, parents' attitudes toward older adults, whether they were cared by grandparents in childhood, relationships with grandparents, experience of taking care of older adults, whether they like nursing profession, whether they participated in elderly-related activities.

## **The Chinese version of the Kogan's Old Person's Scale (KAOP)**

KAOP was a 34-item scale developed by Kogan consisted of 17 positive and 17 negative statements to evaluate the attitude towards older adults[12]. It has two dimensions named KAOP+ (appreciation) and KAOP- (prejudice). Students were asked to respond on a 7-point likert scale ranging from "strongly disagree to strongly agree". Total scale scores range from 34 to 238. Taking 136 as the median value, a higher average score indicated a more positive attitude toward older adults. The scale has been shown a great validity and reliability and widely used to evaluate the attitude towards older adults, and in Yen's study the Cronbach's  $\alpha$  was tested .82 for the total scale (.81 for Appreciation, .83 for Prejudice)[13].

## **The Chinese version of the Facts of Aging Quiz 1(FAQ1)**

FAQ 1 was used to assess student nurses' knowledge about older adults [14]. It consisted of 25 statements including physical, mental, and social aspects of older people with possible answers of "true", "false" or "don't know". The total score ranged from 0 to 25, with higher scores reflecting greater knowledge about aging. The score calculated only correct answer and the option as "false" and "don't know" were not scored. If the number of correct questions was more than 60% of the total number of questions, it was a pass and the passing score was indicated 15. The Cronbach's alpha value was .68 and the content validity was .82[15].

## **Gerontological Nursing Career Motivation questionnaire**

The motivation questionnaire based on the expectancy-value theory was developed by Cheng and it was used to measure students' motivation to choose gerontological nursing as a career[16]. This 20-item questionnaire was divided into an expectancy subscale and a value subscale. The expectancy subscale contained 6 items. The value subscale consisted of four dimensions (14 items), including interest (3 items), utility (3 items), importance (5 items) and cost (3 items). Each item is rated on a 5-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate students possess higher expectancy and value in gerontological nursing. The Cronbach's alpha value for two sub-scales was .83 and .87.

## **Statistical Analysis**

Data were analyzed using IBM SPSS version 20.0. Descriptive statistical methods (percentage distributions, means and standard deviations) were used for data analysis. Mann-Whitney U test and Kruskal-Wallis H test were used to examine the group differences among participants. The Spearman correlation test was employed to evaluate the relationship between willingness and other rank variables. Ordinal Logistic Regression analysis was conducted to identify the factors influencing the willingness of nursing students to engage in aged care.

# **Results**

## **Demographic Characteristics**

Table 1 indicates the demographic characteristics of the participants. The average age was  $21.41 \pm 1.55$  years. The sample consisted of 4.57% males and 95.43% females. The majority of the participants was the only child at home, had a general economic status, lived with older family members and had a good relationship with grandparents.

Table 1  
Demographic characteristics of the nursing students (N = 853)

Characteristic	N(%)	Characteristic	N(%)
Gender		Parents' attitudes toward older adults	
Male	39(4.57)	Good	731(85.70)
Female	814(95.43)	General	120(14.07)
Grade		Worse	2(.23)
Year 1	230(26.96)	Being cared by grandparents in childhood	
Year 2	198(23.21)	Yes	571(66.94)
Year 3	219(25.68)	No	282(33.06)
Year 4	206(24.15)	Relationship with grandparents	
Place of residence		Good	732(85.82)
Rural	502(58.85)	General	119(13.95)
Urban	351(41.15)	Worse	2(.23)
Economic status		Experience of taking care of older adults	
Good	25(2.93)	Yes	414(48.53)
General	634(74.33)	No	439(51.47)
Bad	194(22.74)	Like nursing profession	
Only child at home		Yes	393(46.07)
Yes	503(58.97)	No	460(53.93)
No	350(41.03)	Participated in elderly-related activities	
Live with older family members		Yes	493(57.80)
Yes	787(92.26)	No	360(42.20)
No	66(7.74)		

### Preferences for Care of the Elderly

Of the 853 students surveyed, 325 (38.1%) were willing to engage in aged care after graduation, 411 (48.2%) were unsure whether they would like to engage in aged care, and 117(13.7%) were unwilling to engage in aged care.

### **Attitudes of Aging**

The total score of KAOP scale of nursing students ranged from 93 to 238 and the mean score was (159.18±21.61), which was 23.18 points above the median value of 136 confirming relatively positive attitudes toward older adults among the nursing students. The mean score of KAOP positive scale and negative scale were (75.04±15.67) and (51.86±13.99), respectively.

### **Knowledge of Aging**

The score of FAQ1 scale of nursing students ranged from 0 to 22 and the mean score was (11.22±3.34). The number of passers was 122 and the pass rate was 14.3%, which was at a lower level in this part. Each item is sorted according to the correct rate. The top five items were “The five senses (sight, hearing, taste, touch, and smell) all tend to weaken in old age”, “Lung vital capacity tends to decline in old age”, “Physical strength tends to decline in old age”, “Old people usually take longer to learn something new” and “Old people tend to react slower than younger people”. The bottom five items were “The majority of old people say they are seldom bored”, “Aged drivers have fewer accidents per driver than those under age 60”, “At least one-tenth of the aged are living in a long-stay institutions”, “Old people tend to become more religious as they age” and “Over 20% of the population are now age 65 or over”.

### **Motivation to Choose Gerontological Nursing as a Career**

The mean scores for nursing students’ expectancy and value aspects of gerontological nursing career motivation were (18.00±3.63) and (42.79±6.48), respectively. Scores of the four subscales of value were interest (3.28±0.62), utility (3.01±0.61), attainment value (2.93±0.62) and cost (2.91±0.68) in the descending order.

### **Univariate Analysis of Nursing Students’ Willingness to Engage in Aged Care**

As shown in Table 2, gender, whether they lived with older family members, whether they were cared by grandparents in childhood, experience of taking care of older adults, whether they like nursing profession, whether they participated in elderly-related activities, attitudes of aging, knowledge of aging and career motivation toward gerontological nursing had a significant difference on students’ willingness to engage in aged care ( $P<0.05$ ), and it was positively correlated with their parents' attitudes toward older adults and relationship with grandparents, as indicated in Table 3.

Table 2

Comparisons of nursing students' demographic variables and willingness to engage in aged care

Variables	Career Yes (n = 325)	Career Undecided (n = 411)	Career No (n = 117)	H-test/Z-test	P-value
Age, median (IQR)	22.00(3.00)	21.00(3.00)	21.00(3.00)	H = 4.598	.100
Gender, n (%)				Z=-3.061	.002**
Male	26(66.7)	8(20.5)	5(12.8)		
Female	299(36.7)	403(49.5)	112(13.8)		
Place of residence, n (%)				Z=-1.636	.102
Rural	205(40.8)	229(45.6)	68(13.6)		
Urban	120(34.2)	182(51.8)	49(14.0)		
Only child at home, n (%)				Z=-.238	.812
Yes	191(38.0)	241(47.9)	71(14.1)		
No	134(38.3)	170(48.6)	46(13.1)		
Live with older family members, n (%)				Z=-2.338	.019*
Yes	306(38.9)	380(48.3)	101(12.8)		
No	19(28.8)	31(47.0)	16(24.2)		
Being cared by grandparents in childhood, n (%)				Z=-2.625	.009**
Yes	230(40.3)	276(48.3)	65(11.4)		
No	95(33.7)	135(47.9)	52(18.4)		
Experience of taking care of older adults, n (%)				Z=-6.936	.000**
Yes	201(48.5)	182(44.0)	31(7.5)		
No	124(28.2)	229(52.2)	86(19.6)		
Like nursing profession, n (%)				Z=-15.996	.000**
Yes	256(65.1)	133(33.9)	4(1.0)		

IQR Interquartile range (25–75%), KAOP Kogan's Old Person's Scale, FAQ1 Facts of Aging Quiz 1, \*P < 0.05, \*\*P < 0.01

Variables	Career Yes (n = 325)	Career Undecided (n = 411)	Career No (n = 117)	H-test/Z-test	P-value
No	69(15.0)	278(60.4)	113(24.6)		
Participated in elderly-related activities, n (%)				Z=-4.716	.000**
Yes	221(44.8)	216(43.8)	56(11.4)		
No	104(28.9)	195(54.2)	61(16.9)		
Total KAOP, median (IQR)	165.00(28.50)	159.00(31.00)	151.00(34.00)	H = 35.998	.000**
Prejudice, median (IQR)	48.00(17.00)	52.00(20.00)	57.00(22.00)	H = 30.832	.000**
Appreciation, median (IQR)	80.00(21.00)	75.00(19.00)	73.00(19.00)	H = 23.032	.000**
FAQ 1, median (IQR)	12.00(4.50)	11.00(4.00)	11.00(4.00)	H = 6.325	.042*
Expectancy, median (IQR)	3.17(.67)	3.00(.50)	2.67(.92)	H = 151.285	.000**
Value, median (IQR)	3.29(.57)	3.00(.29)	2.64(.71)	H = 210.529	.000**
Interest, median (IQR)	3.67(1.00)	3.00(.33)	3.00(.33)	H = 192.421	.000**
Utility, median (IQR)	2.61(.50)	2.67(.28)	2.89(.50)	H = 106.892	.000**
Attainment value, median (IQR)	3.00(.60)	3.00(.40)	2.20(1.00)	H = 145.984	.000**
Cost, median (IQR)	3.00(1.00)	3.00(.33)	3.00(.67)	H = 33.055	.000**
IQR Interquartile range (25–75%), KAOP Kogan's Old Person's Scale, FAQ1 Facts of Aging Quiz 1, *P < 0.05, **P < 0.01					

Table 3  
Correlation between demographic variables and students' willingness to engage in aged care

Variables	Willingness to engage in aged care	
	r	P-value
Grade	-.053	.123
Economic status	-.066	.055
Parents' attitudes toward older adults	.100	.004**
Relationship with grandparents	.110	.001**
**P < 0.01		

### Factors Affecting Nursing Students' Willingness to Engage in Aged Care

We used ordinal logistic regression analysis to identify factors associated with nursing students' willingness to engage in aged care. Students' willingness to engage in aged care was entered as the dependent variable, and variables that were significant in the results of the univariate analysis were entered as independent variables. Ordinal logistic regression showed that expectancy, interest, attainment value, cost, prejudice, whether they like nursing profession, whether they participated in elderly-related activities had a significant impact on the willingness of nursing students to engage in aged care ( $P < 0.05$ ) (Table 4).

Table 4  
Ordinal regression analysis of willingness to engage in aged care in undergraduate students

Variables	B	S.E	Wald $\chi^2$	P-value	95%CI	
					Lower	Upper
Prejudice	-.015	.006	7.082	.008	-.026	-.004
Expectancy	.090	.029	9.529	.002	.033	.147
Interest	.179	.059	9.288	.002	.064	.294
Attainment value	.166	.041	16.789	.000	.087	.246
Cost	-.141	.040	12.289	.000	-.219	-.062
Participated in elderly-related activities	.326	.154	4.469	.035	.024	.628
Like nursing profession	1.923	.179	115.345	.000	1.572	2.274

## Discussion

### Preferences for Care of the Elderly

This study showed that 38.1% of nursing students were willing to engage in aged care, 48.2% were uncertain whether they were willing to engage in aged care, and 13.7% were unwilling to engage in aged care. Most students are not clear about their willingness to work with older adults, and they still hold a wait-and-see attitude. But the number of people who directly express that they are unwilling to engage in gerontological care is small, which indicates that in the context of aging, the booming aging industry had certain appeal to nursing students.

## **Attitudes of Aging**

This study showed nursing students had a positive attitude towards older adults, which was congruence with the previous study by Hammar et al[17]. Attitude expresses an individual's perception of someone, something, or a situation that may be related to an individual's experience. Older adults have richer knowledge, experience and wisdom that is worthy of our recognition. However, since the elderly patients tend to have low immunity and weakened mobility, most patients can only stay in bed and cannot take care of themselves well, this may increase the workload of the nurses. In addition, older adults are prone to various psychological unhealthy manifestations such as anxiety, depression, solitude, and emotional instability, which may affect the attitude of nursing students towards older adults to some extent.

## **Knowledge of Aging**

In this study, the FAQ1 score of nursing students was low and the pass rate was only 14.3%. It is much lower than the pass rate of 21.83% reported by Li[18], which indicated that the nursing students have poor mastery of aging knowledge and they lack the initiative and enthusiasm to learn aging knowledge. Another finding was that the top five items were all about the physiological aspects of older adults while the bottom five items were mostly about the psychological and social aspects of the elderly. This result was consistent with the results of Lambrinou[19], which showed nursing students had more knowledge in the physiological aspects of older adults than that of psychological and social aspects. This finding may suggest that the current curriculum still emphasizes the teaching of the biomedical aspects of older adults, focusing on the care of geriatric diseases rather than psycho-social aspects. On the other hand, students lack the initiative and enthusiasm to learn aging knowledge. Therefore, it is necessary for educators to explore the content and methods of geriatric nursing, so that students can systematically grasp the relevant knowledge and improve their understanding of the physiological, psychological and social problems of older adults.

## **Motivation to Choose Gerontological Nursing as a Career**

The results showed students' motivation to engage in aged care was at a moderate level, the scores of expectation and value dimension were slightly lower than that of Cheng's study[16]. Expectation reflects the confidence of the nursing students in working with older adults, including the mastery of knowledge and skills, as well as the competence of engaging in aged care. Tian et al pointed out students with higher career expectations were more confident in facing problems[20]. The value of nursing profession for older adults is personal interest, utility, attainment value and cost from strong to weak. Interest is the preference of nursing students for geriatric nursing and the fun they may get from it, reflecting the internal value of geriatric work. Utility reflects students' perceived benefits of geriatric care for their future development, such as salary and promotion opportunities. Attainment value is students' perception of the importance of working with older adults, reflecting the need for their self-fulfillment. Cost is the perceived efforts they need to make and the opportunities that they may lose[21]. Thus it could be seen interest is the highest value of geriatric work and students' choice to engage in aged care may be related to the pursuit of their personal interests to a certain extent. Besides, it could be found nursing students haven't

realized the importance of caring for older adults, and their understanding of this field is still limited. Older adults tend to suffer from chronic diseases or disability which could be controlled rather than cured so that few students hope to make achievements and realize their life ideals in this field. The final is cost, which means the nursing students are in a wait-and-see attitude for the development of aged care and also uncertain about the possible costs of engaging in aged care.

### **Factors Affecting Nursing Students' Willingness to Engage in Aged Care**

In this study, expectancy, interest, attainment value, cost, prejudice, whether they like nursing profession and whether they participated in elderly-related activities are the predictive factors of the nursing students' willingness to engage in aged care.

### **Perception of Nursing Profession**

Whether nursing students like nursing profession or not is closely related to their willingness to engage in aged care. The essence of nursing is caring, but the workload of nursing is heavy and the risks that need to be taken are large. Students who really love the nursing profession may have strong service conviction and dedication. At present, in the context of aging, the demand for nursing talents in the pension business is increasing. Therefore, students who love nursing profession are more willing to join this industry where elderly nursing talents are scarce.

### **Participation in Elderly-Related Activities**

Participation in elderly-related activities is a predictor of students' willingness to engage in aged care. Koskinen et al allowed students to communicate with older adults on different topics through the Learning with Old People Programme and found that students in the intervention group were more interested in older people nursing[22]. Dickson et al pointed out that students undertaking community practice learning were more likely to feel confident to take on community nursing roles[23]. This is because contact with older adults can correct the one-sided understanding of the nursing staff on the elderly and reverse their stereotype. Therefore, nursing educators should create more opportunities for students to contact with older adults and encourage them to communicate with older adults. Practical courses can be added in the teaching process, such as going to hospital geriatric ward, community, nursing home and other places to promote students' understanding of older adults.

### **Attitudes towards the Elderly**

The more positive attitudes that nursing students have toward older adults, the more willing they are to care for older adults, consistent with other literature[24-26], which show if nursing students perceive the geriatric field in a positive light, they will be more likely to work in geriatric care. The logistic regression suggested that nursing students' prejudice attitudes toward older adults were significantly predictive of their willingness to work in geriatric care. Shen and Xiao also asserted prejudice was negatively associated with intention to work with older adults[27]. Therefore, eliminating the negative attitude of nursing students to older adults is an important task for nursing educators.

## Career Motivation

In logistic regression, expectation, interest, attainment value, and cost were introduced into the equation, where the cost weakened the students' willingness to engage in aged care. Expectation reflects the confidence of the nursing students in caring for older adults, but the complexity of older adults may require nurses to be equipped with the ability to improve their self-care agency, correctly identify the occurrence and development of older adults' disease, provide psychological care. One study have shown that lack of confidence will affect students' willingness to engage in aged care, and the more confident the nursing students are, the more they can successfully cope with the problems that may arise in geriatric work[28].

Interest is the strongest motivation for nursing students to choose geriatric work. Pu et al reported that nursing students who are interested in older adults are more willing to engage in aged care[29]. At present, the choice of internship units in most schools is general hospital. The rehabilitation hospitals, nursing homes, and the community are rarely used as a base for internship, which makes nursing students have a one-sided understanding of older adults and geriatric care. It is also difficult for students to combine the knowledge learned in class with practice, which greatly reduces the learning enthusiasm of nursing students.

The study also found that nursing students' understanding of the importance of aged care is also an important predictor of their willingness to care for older adults. This dimension reflects the need for self-realization. One study showed students' career dreams were driven by eagerness to make a difference[30]. However, some students believe that geriatric nursing focuses on basic care and life care and they could hardly find a sense of accomplishment[31]. Therefore, educators should clarify the nurses' role in geriatric care, so that nursing students can feel they can also make some achievements in taking care of older adults.

Compared with general hospitals, there is still a huge gap in terms of techniques, medical resources and learning opportunities, which will limit nurses' career development. The possible cost of engaging in gerontological care is a consideration for nursing students. Utility failed to enter the regression equation, indicating that utility has no significant independent effect on the nursing students' willingness to engage in aged care

## Limitation

The large sample size available for this analysis of nursing students' career intention was major strengths for this study. However, there are several limitations. First, this study is a single-center research, limiting the generalizability of the results. Second, the data analyzed were cross-sectional, and thus we were unable to comment on causal relationships and we couldn't know the possible change of nursing students' willingness to engage in aged care over time.

## Limitation

The large sample size available for this analysis of nursing students' career intention was major strengths for this study. However, there are several limitations. First, this study is a single-center research, limiting the generalizability of the results. Second, the data analyzed were cross-sectional, and thus we were unable to comment on causal relationships and we couldn't know the possible change of nursing students' willingness to engage in aged care over time.

## **Conclusion**

Students expressed a low intention to engage in aged care upon graduation. Although they held positive attitudes toward older adults, there was a common lack of aging knowledge. The career motivation as an inherent force needs to be stressed. This suggests nursing educators have an important part in promoting gerontological nursing interest and challenging students' stereotype of older adults through both well-designed curriculum and elderly-related activities, so as to enhance their interest and confidence of caring for older adults, and finally improve their willingness to engage in aged care.

## **Declarations**

### **Ethics approval and consent to participate**

Ethical Approval was obtained from the ethics committee of Nantong University (2016-K142). All participants provided written informed consent showing that they have accepted to take part in the study.

### **Consent for publication**

Not Applicable.

### **Availability of data and materials**

The data that support the findings of this study are available on request by the journal. The data are not publicly available due to institution research privacy policy.

### **Competing interests**

The authors declare that they have no competing interest

### **Funding**

This work was supported by the National Social Science Foundation (15BSH124).

### **Authors' contributions**

Yujie Guo, Lei Yang and Lingli Zhu contributed to the conception and design of the study, acquisition of data, data analysis and drafting of manuscript, Yu Wan, Shujun Zhang and Jie Zhang contributed to the

acquisition of data and data analysis. All authors read and approved the final manuscript to be published.

## Acknowledgements

The Authors would like to acknowledge all the faculty who participated in this study for their valuable contributions.

## References

1. National Bureau of Statistics. Statistical Yearbook of China. 2018. <http://www.stats.gov.cn/tjsj/ndsj/2018/indexch.htm>. Accessed on 25/04/2020.
2. Li YJ. Statue and influential factors of the elderly suffering from chronic diseases. Dissertation, North China University of Science and Technology, 2015.
3. Cui HM, Sun Y, Duo R, et al. Research progress of nursing staff system abroad. *Chin J Gerontol*. 2019;39(23):5870–3.
4. Rathnayake S, Athukorala Y, Siop S. Attitudes toward and willingness to work with older people among undergraduate nursing students in a public university in Sri Lanka: A cross sectional study. *Nurs Educ Today*. 2016;36:439–44.
5. Mattos M, Jiang Y, Seaman JB, Nilsen M, Chasens ER, Novosel LM. Baccalaureate Nursing Students' Knowledge of and Attitudes toward Older Adults. *J Gerontol Nurs*. 2015;41(7):46–56.
6. Carlson E, Idvall E. Who wants to work with older people? Swedish student nurses' willingness to work in elderly care—a questionnaire study. *Nurs Educ Today*. 2015;35(7):849–53.
7. Dobrowolska B, Jędrzejkiewicz B, Pilewskakozak A, et al. Age discrimination in healthcare institutions perceived by seniors and students. *Nurs Ethics*, 2017(1): 969733017718392.
8. Chi MJ, Shyu ML, Wang SY, Chuang HC, Chuang YH. Nursing Students' Willingness to Care for Older Adults in Taiwan. *J Nurs Scholarsh*. 2016;48(2):172–8.
9. King BJ, Roberts TJ, Bowers BJ. Nursing Student Attitudes Toward and Preferences for Working with Older Adults. *GerontolGeriatr Educ*. 2013;34(3):272–91.
10. Henderson J, Xiao L, Siegloff L, Kelton M, Paterson J. 'Older people have lived their lives': first year nursing students' attitudes towards older people. *Contemp Nurse*. 2008;30(1):32–45.
11. Li X. A research on implicit attitude to elderly people from college students, career choices of elderly related occupations, and the Relationship between them. Dissertation, Tianjin Normal University, 2016.
12. Kogan N. Attitudes toward old people: the development of a scale and an examination of correlates. *J Abnorm Soc Psycholo*. 1961;62:44–54.
13. Yen C, Liao W, Chen YM, Kao MC, Lee MC, Wang CC. A Chinese version of Kogan's Attitude toward Older People Scale: Reliability and validity assessment. *Intern J Nurs Stud*. 2009;46(1):38–44.
14. Palmore E. Facts on aging. A short quiz. *Gerontologist*. 1977;17(4):315–20.

15. Wang CC, Liao WC, Kuo PC, et al. The Chinese version of the Facts on Aging Quiz scale: reliability and validity assessment. *Intern J Nurs Stud*. 2010;47(6):742–52.
16. Cheng M. Factors influencing nursing graduates' gerontological nursing career motivation. Dissertation, Shandong University, 2014.
17. Hammar LM, Holmström IK, Skoglund K, Meranius MS, Sundler AJ. The care of and communication with older people from the perspective of student nurses. A mixed method study. *Nurs Educ Today*. 2017;52:1–6.
18. Li Y. An investigation on the attitude, knowledge and willingness of nursing students to the elderly. Dissertation, Jilin University, 2014.
19. Lambrinou E, Sourtzi P, Kalokerinou A, Lemonidou C. Attitudes and knowledge of the Greek nursing students towards older people. *Nurs Educ Today*. 2009;29(6):617–22.
20. Tian Y, Cheng M, Cheng C, Fan XZ. The impact of clinical learning environment and career motivation on career adaptability of student nurses. *J Nurs Sci*. 2014;29(17):63–5.
21. Cheng C. Motivation towards gerontological caring and its associated factors among undergraduate nursing students: A longitudinal study. Dissertation, Shandong University, 2016.
22. Koskinen S, Salminen L, Puukka P, Leino-Kilpi H. Learning with older people-Outcomes of a quasi-experimental study. *Nurs Educ Today*. 2016;37:114–22.
23. Dickson CA, Morris G, Gable C. Enhancing undergraduate community placements: a critical review of current literature. *Br J Community Nurs*. 2015;20(4):184–9.
24. Nantan MB, Danino S, Freundlich N, Barda A, Yosef RM. Intention of nursing students to work in geriatrics. *Res Gerontol Nurs*. 2015;8(3):140–7.
25. Cheng M, Cheng C, Tian Y, Fan XZ. Student nurses' motivation to choose gerontological nursing as a career in China: a survey study. *Nurs Educ Today*. 2015;35(7):843–8.
26. Haron Y, Levy S, Albagli M, Rotstein R, Riba S. Why do nursing students not want to work in geriatric care? A national questionnaire survey. *Int J Nurs Stud*. 2013;50(11):1558–65.
27. Shen J, Xiao LD. Factors affecting nursing students' intention to work with older people in China. *Nurs Educ Today*. 2012;32(3):219–23.
28. Yang YJ, Li HP, Fang Q. A qualitative study on the willingness of five-year vocational nursing students to engage in elderly care. *Vocational Technical Education*. 2016;37(2):63–7.
29. Pu LH, Hu XY, Liu ZY. Investigation and analysis of attitude and knowledge towards elderly nursing among undergraduate nursing students. *Chin J Mod Nurs*. 2015;21(1):81–4.
30. Øster I, Munk KP, Henriksen J. Career Dreams among Health Care Students: I Want to Make a Difference. *Gerontol Geriatr Educ*. 2017(3):1–14.
31. Yin QL, Zhang XG, Lin L. Qualitative study on nursing students' willingness to take care of the elderly. *Chin J Pract Nurs*. 2013;29(27):1–3.