

Investigation on the willingness of undergraduate nursing students in vocational colleges to work in elderly care institutions

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Abstract. To understand the current status of the willingness of undergraduate nursing students in vocational colleges to work in elderly care institutions under the integrated medical and elderly care model, and to analyze the influencing factors, providing a reference for the training of suitable talents for this model in China's vocational nursing education. A cluster sampling method was used to select three classes of first-year nursing students at the vocational college level, and 116 valid questionnaires were collected. The investigation included a general information questionnaire, a questionnaire on the willingness to work in elderly care institutions under the integrated medical and elderly care model, an elderly knowledge questionnaire (FAQ), and an elderly attitude scale (KAOP). Among the 116 first-year nursing students, 60 (51.7%) expressed willingness to work in elderly care institutions under the integrated model, 9 (7.8%) were unwilling, and 47 (40.5%) were uncertain. The average score on the elderly knowledge scale was 13.24 ± 3.12 , and the average score on the elderly attitude scale was 132.68 ± 20.56 . Factors influencing nursing students' willingness to work in elderly care institutions included gender, whether they had obtained a 1+X elderly care certificate, whether they understood the integrated medical and elderly care model, whether they had experience interacting with the elderly, FAQ scores, and KAOP scores. The willingness of first-year nursing students in vocational colleges to work in elderly care institutions under the integrated medical and elderly care model is moderate. Schools should actively promote school-enterprise cooperation, strengthen students' understanding of the industry status of integrated elderly care institutions, and provide active guidance and education to encourage students to engage with elderly care content.

Keywords: vocational college students, nursing, integrated medical and elderly care institutions, willingness to work

1. Introduction

China is the world's largest developing country with the highest number of elderly people, and the aging population is rapidly intensifying, making it a typical "super-aged society" [1]. By 2050, the elderly population in China is expected to reach 480 million, with a prominent trend of elderly people living with diseases. The release of the "National Medium- and Long-term Plan for Actively Responding to Population Aging" marks the elevation of actively addressing population aging to a national strategy [2]. The connotation of the nursing profession is continuously expanding, and the State Council has proposed new requirements in the "Healthy China 2030" Planning Outline [3] for strengthening the construction of continuity medical institutions such as rehabilitation, geriatric care, long-term care, chronic disease management, and palliative care. As the aging process deepens, there is an urgent demand for elderly care services. Effectively increasing the supply of elderly care services is a guiding principle for vocational colleges. The "Notice on Issuing the Service Guidelines for Integrated Medical and Elderly Care Institutions (Trial)" [4] (National Health Commission Office Aging No. 24, 2019) states, "Based on the characteristics of the service recipients, medical staff and related service personnel should provide medical and health services as well as elderly care services, ensuring the quality of services." In the "Guiding Opinions on Further Promoting the Development of Integrated Medical and Elderly Care" jointly issued by the National Health Commission and 11 other departments [5], the importance of strengthening talent training is clearly emphasized, as well as encouraging general universities and vocational colleges to add health and elderly care-related majors and courses to meet industry demands, expand enrollment, and accelerate the cultivation of urgently needed talents in healthcare and elderly services. To attract nursing students to work in integrated medical and elderly care institutions and cultivate the critical talents needed by the country, starting in 2023, our college has enrolled 3+2 transition nursing students from medium and higher vocational colleges. These students start with a junior high school diploma, receive three years of vocational education and two years of higher vocational education in nursing, and obtain a college diploma. This study aims to understand the current situation

of 3+2 transition nursing students' willingness to work in integrated medical and elderly care institutions, analyze the reasons influencing their willingness to work, and contribute to the cultivation of elderly care talents in China.

2. Objects and methods

2.1. Research subjects

The research subjects were nursing students enrolled in the 3+2 transition program at a university in Beijing. Inclusion criteria: 1) Informed consent and voluntary participation in this study; 2) First-year students in the higher vocational phase. Exclusion criteria: 1) Graduated higher vocational nursing students; 2) Nursing students who have suspended their studies, repeated a year, are on leave, or are not on campus due to poor health; 3) Students who are unwilling to participate in this study. Cluster sampling was used to select three first-year classes of nursing students, with a total of 118 participants.

2.2. Research methods

This study used a survey questionnaire, distributed through Wenjuanxing (a survey platform) after the semester concluded. The questionnaire was accompanied by a standard set of instructions regarding how to complete the survey and points to pay attention to. The questionnaire was anonymous, and nursing students were asked to complete it independently. A total of 118 questionnaires were distributed, with 116 valid responses collected, resulting in a recovery rate of 98.3%.

2.3. Survey tools

2.3.1. General information questionnaire

Based on a review of literature and consultations with industry and education experts, a general information questionnaire was designed. The questionnaire included the following items: gender, age, household registration, whether the student has obtained a nurse practitioner license, whether the student holds a 1+X elderly care certificate, whether the student understands the types of integrated medical and elderly care institutions, whether the student is aware of the work content at integrated medical and elderly care institutions, whether the student has cared for the elderly, whether the student has participated in elderly service volunteer activities, and whether the student has experience interacting with the elderly.

2.3.2. Willingness to work in integrated medical and elderly care institutions questionnaire

Based on the survey by Yang [6], a nursing students' willingness to work in integrated medical and elderly care institutions questionnaire was self-designed. After two rounds of expert evaluations, the questionnaire items were refined and modified to form the final version. The questionnaire consisted of 12 items, mainly addressing the students' willingness to work in elderly care and their understanding of elderly care roles. Examples of the questions include:

Q1: Are you willing to engage in elderly care work after graduation?

Q2: Are you willing to work in integrated medical and elderly care institutions?

Q3: Are you willing to work in community elderly care?

Q4: Are you willing to provide home care services for the elderly?

Q5: Elderly people often have multiple underlying diseases, and the conditions are complex. It requires great responsibility and patience to engage in nursing. Are you willing to do this?

Q6: Many elderly people suffer from chronic diseases, and the basic nursing tasks are relatively heavy. Are you willing to care for them?

Q7: The main duties in elderly care involve basic care, rehabilitation care, and daily living support. Are you willing to engage in these tasks?

Q8: In the process of elderly care, you may encounter "difficult" elderly people who require psychological support. Are you willing to provide such care?

Q9: Would you be willing to provide end-of-life or palliative care for the elderly when necessary?

Q10: The salary for elderly care work in integrated medical and elderly care institutions is generally modest. Are you willing to engage in this work?

Q11: Working in integrated medical and elderly care institutions, your career path would differ from that of a nurse in a healthcare institution. Are you willing to do this?

Q12: If you are already working in an integrated medical and elderly care institution and a general hospital offers you a position, would you still be willing to engage in elderly care work?

Students were asked to choose from three options: Yes, No, or Uncertain.

2.3.3. Facts on Aging Quiz Scale (FAQ)

This scale was developed by Palmore et al. [7] and later adapted into Chinese by Liu et al. [8]. The scale contains 25 items, with each item offering three options: Yes, No, or Don't Know. Odd-numbered items score 1 point for "No," and even-numbered items score 1 point for "Yes." Other responses score 0. The total score ranges from 0 to 25, with a higher score indicating a better understanding of aging-related knowledge. In this study, the Cronbach's α coefficient of the scale was 0.72, indicating good reliability and validity.

2.3.4. Kogan's Attitudes towards Old People Scale (KAOP)

This scale measures nursing students' and nurses' attitudes toward the elderly. It was translated into Chinese by Lao et al. [9]. The scale includes 34 items and uses a Likert 7-point scoring system. The total score ranges from 34 to 238, with a higher score indicating more positive attitudes toward the elderly. In this study, the Cronbach's α coefficient was 0.69.

2.4. Statistical analysis

Data were processed using SPSS 22.0 software, and a database was established and verified by two people. Count data were presented as frequency or percentage (%) and analyzed using the χ^2 test. Measurement data were expressed as mean \pm standard deviation ($\pm s$) and analyzed using the t-test. A p-value of <0.05 was considered statistically significant.

3. Results

3.1. Willingness of 3+2 transition nursing students in secondary and higher vocational colleges to work in integrated medical and elderly care institutions

Among the 116 nursing students, 60 (51.7%) expressed a willingness to work in integrated medical and elderly care institutions, 9 (7.8%) did not express willingness, and 47 (40.5%) were uncertain. The items on willingness to work in integrated medical and elderly care institutions for nursing students in the 3+2 transition program, listed from the lowest to highest willingness, were as follows: Q10, Q11, Q9, Q8, Q3, Q1, Q6, Q12, Q4, Q7, Q2, Q5. See Table 1.

Table 1. Professional willingness of 3+2 junior college students in secondary and higher vocational colleges to work in medical and nursing institutions

Item	Yes	Uncertain	No
Q10	34 (29.3)	61 (52.6)	21 (18.1)
Q11	38 (32.8)	63 (54.3)	15 (12.9)
Q9	40 (34.4)	59 (50.9)	17 (14.7)
Q8	47 (40.5)	55 (47.4)	14 (12.1)
Q3	49 (42.2)	56 (48.3)	11 (9.5)
Q1	50 (43.1)	56 (48.3)	10 (8.6)
Q6	53 (45.7)	54 (46.5)	9 (7.8)
Q12	54 (46.6)	52 (44.8)	10 (8.6)
Q4	55 (47.4)	47 (40.5)	14 (12.1)
Q7	56 (48.3)	48 (41.4)	12 (10.3)
Q2	60 (51.7)	47 (40.5)	9 (7.8)
Q5	62 (53.4)	46 (39.7)	8 (6.9)

3.2. FAQ and KAOP scores for 3+2 transition nursing students in secondary and higher vocational colleges

The mean score for the FAQ (Facts on Aging quiz scale) among the 116 students was 13.24 ± 3.12 points. The FAQ scores were divided into high and low groups, using a cutoff of 15 points. Of the 116 students, 94 (81.0%) were in the low score group, and 22 (19.0%) were in the high score group. The mean score for the KAOP (Kogan's Attitudes towards Old People Scale) was 132.68 ± 20.56 points. KAOP scores were divided into high and low groups using a cutoff of 119 points. Of the 116 students, 85 (73.3%) were in the low score group, and 31 (26.7%) were in the high score group.

3.3. Analysis of factors influencing the willingness of 3+2 transition nursing students to work in integrated medical and elderly care institutions

Factor analysis revealed that gender, whether the student had obtained a 1+X elderly care certificate, whether the student understood the work content of integrated medical and elderly care institutions, whether the student had experience interacting with the elderly, FAQ score, and KAOP score were significant factors influencing the willingness of 3+2 transition nursing students to work in integrated medical and elderly care institutions. As shown in Table 2.

Table 2. Analysis of factors influencing the willingness of 3+2 transitional college students from secondary to higher vocational education to work in medical-nursing integrated institutions

Item	Gender	Number	Yes	Uncertain	No	χ^2	P
Gender	Male	35	22	10	3	13.322	0.012
	Female	81	38	37	6		
Whether the student is an only child	Yes	96	55	37	4	4.121	0.115
	No	20	5	10	5		
Whether the student has obtained a 1+X elderly care certificate	Yes	89	51	30	8	12.343	0.023
	No	27	9	17	1		
Whether the student understands the work content of integrated medical and elderly care institutions	Yes	69	40	24	5	16.233	0.018
	No	47	20	23	4		
Whether the student has experience interacting with the elderly	Yes	106	56	43	7	14.356	0.025
	No	10	4	4	2		
FAQ score	High Group	22	20	1	1	22.282	<0.001
	Low Group	94	40	46	8		
KAOP score	High Group	31	25	3	3	23.333	<0.001
	Low Group	85	35	44	6		

4. Discussion

4.1. Overall willingness of nursing students to work in integrated medical and elderly care institutions

Among the 116 students surveyed, 60 (51.7%) expressed a willingness to work in integrated medical and elderly care institutions. This proportion indicates a relatively high willingness rate among the surveyed nursing students from mid-to-high vocational 3+2 transition programs to work in such institutions. Compared to the research findings of Mu [10] and Ji [11], this study's willingness rate is higher, whereas it differs from Wen's [12] study, which found stronger willingness among nursing students to engage in elderly care work. Meanwhile, this proportion is similar to the 59.9% of nursing undergraduates reported by Zhou Xiaoli [13], who were willing to work in elderly care institutions. This may suggest that nursing students in five-year higher vocational programs are relatively more willing to pursue elderly care work. The reasons for this may relate to the longer education cycle in transition classes, the younger overall age of the students, and their previous internships at tertiary general hospitals during the secondary vocational stage. Teachers should provide proper guidance as these students are expected to become an important reserve force for elderly care work.

Additionally, only 9 students (7.8%) clearly expressed an unwillingness to work in integrated medical and elderly care institutions, while nearly half of the students held a wait-and-see attitude, remaining uncertain. Given that nursing students are generally younger, more in-depth research is needed to better motivate and guide them. In the survey of nursing students' willingness, the two lowest-scoring items were Q10 and Q11, which involved salary and career development, suggesting that

career development and compensation are major factors influencing nursing students' decisions about whether to work in integrated medical and elderly care institutions. Therefore, it is recommended that the government implement relevant policies to standardize the promotion criteria for nursing positions in integrated medical and elderly care institutions and optimize their management systems [14]. Furthermore, nursing students' willingness to work in these institutions, where "career development directions no longer align with those of nurses in medical institutions," was also relatively low, possibly due to their lack of understanding of nursing positions in integrated medical and elderly care institutions.

4.2. Factors influencing nursing Students' willingness to work in integrated medical and elderly care institutions

4.2.1. Demographic factors

This study reveals the impact of gender on the willingness of nursing students in higher vocational programs to work in integrated medical and elderly care institutions. The results show significant differences between male and female nursing students in their attitudes toward the elderly, consistent with the findings of Tian [15]. This difference may stem from societal stereotypes regarding gender roles in nursing, which lead female students to be more inclined to work in medical institutions. Nevertheless, there were no significant differences between male and female students in their scores for aging knowledge and attitudes toward the elderly, which may be attributed to the similar family environments in which both male and female nursing students were raised in modern society. Additionally, whether the students were only children did not affect their willingness to work in integrated medical and elderly care institutions. These findings suggest that despite the persistence of traditional gender role concepts, there is no essential difference between male and female nursing students in their understanding and attitudes toward elderly care, providing a basis for breaking gender stereotypes. It also implies that educational and career guidance should focus more on the students' professional interests and personal development, rather than simply on predetermined gender roles.

4.2.2. Whether obtaining relevant certificates

This study also found that obtaining a 1+X elderly care-related certificate significantly affects students' willingness to work in elderly care institutions. Here, "X" represents a vocational skill level certification, which not only recognizes students' professional skills but also affirms their expertise. Students actively seeking elderly care-related certificates demonstrate their proactive pursuit of professional knowledge, which not only supports their future integration into the workplace but also lays a solid foundation for their long-term development in elderly care. However, the study also indicates that whether students obtained a nursing qualification certificate at the secondary vocational stage did not significantly influence their willingness to work in integrated medical and elderly care institutions. This may suggest that although professional certification is an indicator of competence for nursing students, other factors may play a more crucial role in their decision to work in such institutions.

4.2.3. Whether understanding integrated medical and elderly care institutions

The survey results reveal a significant positive correlation between students' understanding of integrated medical and elderly care institutions and their willingness to work in such institutions. Specifically, nursing students who participated in business expansion activities during the secondary vocational stage, or who had visited integrated medical and elderly care institutions and attended related promotional events, showed a stronger willingness to work in these institutions. This finding is consistent with Mu's [10] research, which suggested that nursing students who were exposed to elderly care-related knowledge and immersive environments earlier had a deeper understanding of integrated medical and elderly care institutions. Moreover, nursing students in the survey had already undergone 8 months of clinical nursing internships during the secondary vocational stage, which likely gave them some understanding of the employment environment, work intensity, and job requirements in medical institutions. For students who self-assess as unable to meet the employment requirements of a tertiary hospital, they are more likely to choose integrated medical and elderly care institutions as their career direction. Therefore, teachers should provide proper guidance to help these students become an important reserve force for elderly care work.

At the same time, the survey also found that only 9 nursing students (7.8%) clearly expressed unwillingness to work in integrated medical and elderly care institutions, while nearly half were undecided. Furthermore, the two lowest-rated items by the students were related to salary and career development, highlighting that career development and compensation are the main factors influencing nursing students' decisions about whether to work in integrated medical and elderly care institutions. It is recommended that the government implement policies to standardize promotion criteria for nursing positions and optimize relevant management systems. Additionally, nursing students' relatively low willingness to work in positions where "career development directions no longer align with those of nurses in medical institutions" may be related to their lack of understanding of nursing roles in integrated medical and elderly care institutions.

4.2.4. *Whether having experience interacting with the elderly*

Analysis shows that nursing students who have cared for the elderly, participated in volunteer activities for the elderly, or had experience interacting with the elderly, have significantly higher willingness to work in integrated medical and elderly care institutions than those without such experiences. Specifically, the longer the nursing students had cared for the elderly, the more positive their attitude toward the elderly, and this difference was statistically significant. This finding aligns with Wu's research [16], which indicated that nursing students who were cared for by elderly people in their childhood developed trust and emotional dependence on the elderly, thus gaining a better understanding of the elderly's physiological, psychological, and social needs, which helped form a positive attitude toward the elderly and reduce bias.

Nursing students who participated in volunteer activities for the elderly stated that, as service providers and organizers, they were more likely to proactively engage with elderly individuals. This direct contact allowed students to observe the real-life conditions of the elderly, aiding in the establishment of correct and objective evaluations of the elderly. These experiences not only enhanced students' empathy but also provided valuable interpersonal communication skills for their future elderly care work. Therefore, encouraging nursing students to participate in volunteer activities for the elderly can not only improve their professional skills but also cultivate positive attitudes and values toward elderly care work.

4.2.5. *Nursing Students' knowledge of the elderly and attitudes toward the elderly*

This study further explored nursing students' attitudes toward the elderly, their level of knowledge about aging, and how these factors influence their willingness to work in integrated medical and elderly care institutions. The results showed that nursing students who scored higher on the FAQ (Elderly Attitudes Scale) and KAOP (Aging Knowledge Questionnaire) were more likely to express a willingness to work in integrated medical and elderly care institutions. This indicates that the more positively nursing students view the elderly and the better their knowledge of aging, the stronger their willingness to work in these institutions.

Specifically, nursing students with positive attitudes toward the elderly are more likely to actively seek out knowledge related to aging, which not only enhances their understanding of elderly care work but also strengthens their willingness to provide services to the elderly. This finding aligns with Wu et al.'s research, which suggests that clinical experiences in elderly care nursing can enhance knowledge and improve students' willingness to care for the elderly.

Additionally, the study indicates that nursing students' attitudes toward elderly care, professional values, gender, formal positions, public nursing homes, and career development perceptions also influence their willingness to work in elderly care. For instance, nursing students who believe that elderly care has good career prospects are more willing to engage in elderly care work. These factors collectively influence nursing students' career choices, showing that, in addition to knowledge and attitudes, career identity, professional interest, and a positive outlook on career prospects are also key drivers in motivating nursing students to pursue elderly care work.

5. Discussion

5.1. Enhancing knowledge in geriatric nursing

Students who have experience interacting with the elderly, have actively participated in 1+X elderly care programs, and have studied gerontology-related knowledge show a stronger willingness to work in integrated medical and nursing institutions in the future. First, higher vocational colleges should offer nursing courses related to elderly care to meet the industry's demand for professional talent. Through curriculum reform, systematically incorporating education on geriatric nursing and integrated medical and nursing care will not only equip students with basic knowledge and skills in elderly care but also enhance their professional competency and willingness to work in this field. By reforming education, a more comprehensive knowledge system in geriatric care can be provided to better align with the future needs of the workforce. Secondly, institutions should emphasize the advantages of integrating industry and education in vocational education, highlighting the importance of practical teaching systems in geriatric nursing, and ensuring effective collaboration between nursing education and the elderly care service industry. By conducting practical training, students' interest and enthusiasm for studying geriatric nursing can be enhanced, subsequently increasing their willingness to engage in elderly care work.

5.2. Actively creating age-friendly teaching activities

Practical teaching not only deepens students' understanding of theoretical knowledge but also improves their clinical skills through hands-on practice, which is essential for training practical and skilled professionals in geriatric nursing. Higher vocational colleges should establish close partnerships with integrated medical and nursing institutions to jointly build internship and training bases, allowing students to participate in actual positions at these institutions during their vocational studies. Regular organization of career experience days, inviting industry experts to campus for lectures to share their work experience and industry insights, can spark students' career interests and enhance their willingness to work in this field. Additionally, students should be encouraged to

participate in industry research, deeply exploring the operation and services of integrated medical and nursing institutions, as well as the industry's development trends. It is also advisable to establish an industry mentor system, where experienced staff from integrated institutions provide personalized career guidance and help students clarify their future career direction.

It is recommended that schools organize students to participate in at least one week of practical learning each semester at hospital geriatrics departments and nursing homes to improve their practical skills and communication with the elderly. Regular practical learning allows students to directly participate in daily elderly care tasks, thus enhancing their operational skills. Schools should also set up simulated teaching environments replicating integrated medical and nursing institutions, where role-playing and scenario simulations can be conducted to improve communication and nursing skills. Furthermore, external practical teaching should be provided with one-on-one or small group guidance, ensuring students receive professional practical instruction. After the practical training, students should be organized to reflect and summarize their experiences, discussing problems and challenges encountered during practice and how to apply learned knowledge to real work, which will deepen their understanding of geriatric care.

5.3. Improving Nurses' treatment in integrated medical and nursing institutions

The current status of nursing talent cultivation in elderly care institutions in China is severely lagging behind the demands posed by the aging population, directly restricting the development of elderly care and health services. The generally low willingness of nursing students to work in elderly care institutions is a widespread issue. The suggestions proposed in this study aim to increase nurses' willingness to engage in geriatric care through national-level intervention. The National Health Commission's "National Nursing Career Development Plan (2021-2025)" clearly states that efforts should be made to continually increase the number of nurses, particularly those specializing in geriatric care and other scarce nursing fields. To this end, the study suggests that relevant government departments introduce policies to protect the interests of elderly care staff and provide institutional guarantees in areas such as career development, incentive mechanisms, and salary and welfare. The implementation of these measures will help create a more stable and attractive professional environment for geriatric care. Additionally, it is recommended to establish a nurse training system based on job demand, focusing on the training of geriatric care and other specialized nursing professionals. This approach can improve nurses' professional skills and service quality while enhancing their understanding and interest in geriatric care work. Professional training not only boosts nurses' confidence and job satisfaction but also provides more career development opportunities.

Through these research findings, reasonable suggestions can be provided for the implementation of educational reforms that effectively combine theory and practice, improving students' professional skills and career willingness, and laying a solid foundation for their future professional careers. These measures will not only enhance students' professional knowledge but also strengthen their enthusiasm and commitment to geriatric care, thus cultivating more skilled and competent professionals for the integrated medical and nursing field.

The sample size of this study was relatively small, and the survey data sources were limited. Further research should continuously expand the survey data and extend the scope of future investigations.

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