

Core competencies and perceived training needs of nurses in the background of Internet plus nursing service: a qualitative descriptive study[†]



Original article

Qiang-Hui-Zi Zhang^a, Wei-Wei Liu^{a,*}, Zhen-Zhen Cheng^b

^aSchool of Nursing, Capital Medical University, Beijing 100069, China

^bDepartment of Orthopedics, Peking University Shougang Hospital, Beijing 100043, China

Received: 3 May 2023; Accepted: 22 January 2024; Published: 20 June 2024

Abstract: **Background:** The Internet plus nursing service program is being piloted in China, which has become a new home nursing service model led by nurses. To enable safe and effective homecare service delivery, nurses working in the program need a high level of competency. However, the content of these core competencies and the training needs of nurses for Internet plus nursing services are still unknown. **Aim:** To describe nurses' perceptions of core competencies and training needs to work in the Internet plus nursing service program, thereby providing a reference for the development of training programs. **Methods:** A qualitative descriptive study using semi-structured interviews was conducted on 15 nurses with experience of working in the Internet plus nursing service program. Interviews were audio-recorded and transcribed verbatim, and the data were analyzed using thematic analysis. **Results:** Core competencies involved comprehensive assessment competence, direct care practice competence, health education and consulting competence, risk estimation and response competence, and communication competence. Training needs involved complex operational items, knowledge of chronic disease management, professional communication, risk identification and response, nursing standards, norms, and procedures, and utilization of information technology. **Conclusions:** The training system may be developed based on nurses' core competencies and their training needs to promote professional development of the Internet plus nursing service.

Keywords: core competence • Internet plus nursing service • nursing • qualitative study • training needs

© Shanxi Medical Periodical Press Co., Ltd.

1. Introduction

An aging population is a widespread global phenomenon, which is developing rapidly in China. The elderly population of 60 years and above was 264.02 million in China, accounting for 18.70% of the total population

in 2021. Among them, the population aged 65 and above was 190.64 million, accounting for 13.50%.¹ The elderly over 65 years old have a high incidence of multiple chronic diseases; about 2/3 of them have

[†]This study was supported by the undergraduate scientific research and innovation project of Capital Medical University (No. XSKY2020078).

How to cite this article: Zhang QHZ, Liu WW, Cheng ZZ. Core competencies and perceived training needs of nurses under the background of Internet plus nursing service: a qualitative descriptive study. *Front Nurs.* 2024;2:181–190.

*Corresponding author.

E-mail: lwwhlxy@ccmu.edu.cn (W. -W. Liu).

Open Access. © 2024 Zhang et al. published by Sciendo. This work is licensed under the Creative Commons Attribution 4.0 License.

comorbidities.¹ With the increasing number of the empty-nesters, and people with dementia and disabilities, there is a huge demand for home nursing services.² By the end of 2021, there were 5.01 million registered nurses in China, with only 3 nurses per 1000 population, which could not meet the increasingly diverse health needs of the people of the country.³ Therefore, the gap between the supply and demand for home nursing services becomes prominent. To actively respond to the aging population and increase the supply of home nursing services, the Chinese government has piloted the Internet plus nursing services program in 6 provinces, including Beijing and Shanghai since February 2019.^{4,5}

Internet plus nursing service refers to the home nursing service provided by registered nurses from medical institutions. It relies on the Internet platform to serve discharged patients or individuals with comorbidities and functional impairments, operating in the mode of “online application and offline service.” That is, clients choose service items to place orders through mobile applications. Registered nurses practicing in medical institutions independently receive orders through the network in their spare time and then visit clients’ homes to provide home visiting care, which includes intravenous injections, intramuscular injections, urethral catheterization, and gastric tube insertion and replacement.⁶ Home visiting has been well practiced in the United States and other developed countries, while the Internet plus nursing service is based on the development of the sharing economy in China, and it represents a new health care model that differs from the traditional home visiting practices. Nurses participating in Internet plus nursing services in China are registered nurses employed by medical institutions, who receive applications on the platform in their spare time and provide home nursing services on a part-time basis.⁷ In contrast, nurses in developed countries who provide home care services are mostly affiliated with specialized home care agencies and tend to work full-time. They establish long-term, stable nurse-patient relationships with their clients.⁸ In addition, in the context of Internet plus nursing, the way in which the nurse delivers care is different, as it involves an information and communication technology-based telehealth service. Nurses need to overcome many uncertain challenges when conducting face-to-face home visits because they have worked in medical institutions for a long time and have little experience in providing home care. Additional knowledge and skills are required.⁹ Internet plus nursing services have been proved to reduce hospitalization frequency among the elderly, improve satisfaction, promote the extension of high-quality nursing resources to communities and families, and improve nurses’ income and practice value.^{10,11}

Due to the changes in the workplace and particularly the emergence of the Internet plus nursing service, nurses need to face an uncertain, risky environment, which puts greater stress on their expertise and competencies.¹² However, it is still unclear what core competencies are required for nurses engaged in Internet plus nursing services, making their training difficult to implement.

Previous studies explored the work experience of nurses^{6,13} and implementation barriers⁷ in Internet plus nursing services. Due to the lack of professional training, most nurses generally had insufficient confidence at the beginning of the service, and showed negative emotions such as tension and worry, which seriously affected their enthusiasm to participate in the Internet plus nursing service program.¹³ According to Zhao et al.⁷ the uneven service quality of nurses was an important hindering factor for the elderly to receive Internet plus nursing services. Moreover, family caregivers similarly expressed concerns about the safety of home care services and the uncertain risk of nurses’ practices.¹⁴ Therefore, there is an urgent need to identify the core competencies and training needs of nurses and conduct training programs, so as to build the professional competence and confidence of nurses and improve the quality of Internet plus nursing services. However, little is known about core competencies and training needs of nurses engaged in Internet plus nursing services.

2. Methods

2.1. Objective

The purpose of our study was to understand the views of nurses engaged in Internet plus nursing services on their core competencies and training needs, and to provide a reference for developing reasonable training programs, so as to ensure high-quality and professional Internet plus nursing services.

2.2. Design

We employed a descriptive design, which can truly reflect the views of different nurses.¹⁵ Participants were invited to share and reflect on the competencies and training needs for engaging in Internet plus nursing services. The Consolidated criteria for reporting qualitative research (COREQ) guidelines have been used for transparency reporting.¹⁶

2.3. Participants

This study was conducted in a tertiary Grade A hospital implementing Internet plus nursing service in Beijing

from September 2020 to December 2020. Participants were purposively selected to allow for maximum variation in age, working years, and the number of home nursing services as much as possible. Inclusion criteria were as follows: nurses who have been engaged in Internet plus nursing service for more than one month, who agreed on the study plan and signed the informed consent form. Nurses who were taking a refresher course, on leave, or away from clinical duties during the interview were excluded. Recruitment stopped when no new codes and themes emerged from the data.¹⁷ A total of 15 participants were interviewed, and no participants refused to participate or withdrew during the study. Their demographic characteristics were detailed in Table 1.

2.4. Data collection

The two researchers (QZ, ZC) who were trained in qualitative research confirmed the time and place of the interview with the participants. The interview was conducted in the nurse's lounge. No one else was present except researchers and participants. The interview guide was preliminarily formulated according to the purpose of the study, and it was revised based on pre-interview with 2 participants: (1) What core competencies should be available for the nurses engaged in Internet plus nursing services? (2) What training you need before providing home nursing services? Each interview lasted 40–60 min, and the whole process was recorded. During the interview, the researchers closely observed and recorded the verbal behaviors, such as verbal pauses, facial expressions, and actions. A total of 18

face-to-face, semi-structured, and in-depth interviews were completed, including 1 supplementary interview for 3 participants.

2.5. Data analysis

The researcher (ZC) transcribed the interview, converting the recording into text within 24 h after the interview, and then returned the collated data to the participants for verification and confirmation. We used thematic analysis inspired by Brown and Clark¹⁸ to analyze the data: (1) Read the transcribed text repeatedly; (2) Extract repeated points in the data and encode them with phrases or sentences; (3) Condense codes with similar or related meanings to generate themes/sub-themes; (4) Re-review the themes/sub-themes and compare them with the original data continuously; (5) Name the themes in concise language; (6) Write the data analysis process.

2.6. Rigor

The trustworthiness of this study was estimated according to the 4 criteria of credibility, transferability, reliability, and confirmability¹⁹.

2.6.1. Credibility

The transcript of participants was appropriately quoted when reporting the results of this study. QZ and ZC reviewed the data repeatedly and independently, and discussed the results of data analysis with other

Participants	Age (year)	Working years	Professional title	Position	Department	Number of home nursing services
P1	39	15	Supervisor nurse	Nurse	Orthopedics	10
P2	30	7	Senior nurse	Nurse	Geriatrics	13
P3	37	15	Supervisor nurse	Head nurse	Pneumology	30
P4	28	7	Supervisor nurse	Nurse	Urology	2
P5	29	8	Senior nurse	Nurse	Oncology	6
P6	35	16	Supervisor nurse	Nurse	Respiratory intensive care	3
P7	31	10	Supervisor nurse	Nurse	Pneumology	10
P8	35	12	Supervisor nurse	Nurse	Cardiovasology	30
P9	30	7	Supervisor nurse	Nurse	Neurosurgery	10
P10	31	7	Supervisor nurse	Nurse	Pneumology	15
P11	32	10	Supervisor nurse	Nurse	Pneumology	20
P12	38	15	Supervisor nurse	Nurse	Gastrointestinal Surgery	3
P13	30	10	Supervisor nurse	Nurse	Pneumology	20
P14	45	23	Associate chief nurse	Head nurse	Pneumology	15
P15	35	12	Supervisor nurse	Head nurse	Geriatrics	10

Table 1. Participants characteristics ($n = 15$).

members of the research group on a regular basis regarding inconsistencies in the coding.²⁰

2.6.2. Transferability

We used the maximum variation principle to select participants with a wide range of characteristics, including age, working years, and the number of home nursing services, to facilitate the transferability of the results.²¹

2.6.3. Confirmability

Details of record design, participants, and data collection and analysis.²²

2.6.4. Reliability

Researchers maintained a neutral attitude during data collection to avoid the inducement of fear in participants. We provided all researchers with the original transcript of the interview, as well as the extracted codes and categories.²³

2.7. Ethical considerations

The study was conducted according to the Helsinki Declaration²⁴ and approved by the Ethics Committee (Reference number: Z2022SY059). Before the interview, participants were fully informed of the research purpose, significance, and necessity of recording. We promised to keep their information strictly confidential, and assured that all information collected would be for study use only. Participants were informed that they could voluntarily participate in or withdraw from the study. The study obtained both oral and written informed consent from the participants.

3. Result

In total, 2 themes and 11 subthemes were refined in this study.

3.1. Theme1 core competencies

3.1.1. Comprehensive assessment competence

Before entering the household, nurses only knew about the clients from the registration information on the Internet platform. Only by conducting a more comprehensive assessment can they collect the overall situation to clarify the nursing plan as early as possible. This includes checking the registration information of clients in the

service platform, pre-entry telephone assessment, and pre-operation assessment.

When I received the order on the Internet, I would get in touch with clients to preliminarily evaluate the situation, to determine if there is anything that needs special attention. Of course, it would have to be understood through more communication with the patient or family members. (Participant 12).

We can access client information on the platform, but it is sometimes incomplete. Before entering the home, we need to communicate with the patient in advance by telephone to make a simple assessment. (Participant 11).

3.1.2. Direct care practice competence

Participants agreed that participating in Internet plus nursing services, nurses should have the ability to directly provide nursing practice and help home-based patients solve practical health problems. They mentioned that performing services alone in the clients' home environment required them to have more solid and stable nursing practice competencies to ensure the implementation of the same quality of services.

For the items we receive orders, we must be skilled in operation, such as blood drawing. We may encounter the situation of no blood pumping. So, we must master the blood drawing to participate in home care services. It's not like in the hospital, where I can get help from my colleagues if I fail to draw blood, but I can't get any support at the clients' homes. (Participant 7).

3.1.3. Health education and consulting competence

Participants stated that most clients and their families often ask about health-related concerns beyond the scope of the provided services, which required them to have deep competence in health education and counseling to adequately address the clients' information requirements.

Although the clients applied for replacing urine tube or stomach tube, they also asked me many other questions. I should not only perform simple operations, but also educate and guide them. For example, when replacing pressure ulcer dressings, I must inform them on how to turn over, put the body in position, and supplement nutrition at home. Additionally, I assist them in determining when the wound dressing needs to be replaced and what conditions require medical treatment. (Participant 15).

3.1.4. Risk estimation and response competence

Participants emphasized risk estimation and response as an important competence. Unlike the service process in medical institutions, there were various potential risks in Internet plus nursing services. Nurses expressed the great necessity to use their risk evaluation competence to take early preventive measures in resolving challenges such as adverse drug reactions, complications, or potential emergencies.

For elderly or comatose patients, we cannot communicate with them directly before the home visit. We can only communicate with their families. After the visit, we need to conduct an on-site risk assessment to determine whether the patient is suitable for this operation. If there is a significant potential risk in the operation, it must be promptly discontinued. (Participant 15).

3.1.5. Communication competence

Participants affirmed that good communication competence could help them flexibly cope with various communication scenarios, such as initially establishing a relationship with clients, answering clients' questions, or responding to emergencies.

Before visiting, some clients may be those whom I have previously provided care for, but most will still be unfamiliar. Communication competence is important to set up good relationship quickly with clients I first meet. (Participant 6).

In the process of providing home service, we may fail to operate. But when we communicate effectively with the clients and their families, they usually understand us. (Participant 2).

3.2. Theme2 training needs

3.2.1. Complex operational items

Although the selected participants had over five years of clinical work experience and proficiency in nursing techniques, they still expected to be trained in some specific and complex operational items before implementing the Internet plus nursing services. Participants believed that it was stricter to perform nursing technology independently in the home environment and that the training might be strengthened based on the differences between nursing technology in the home and medical institutions environment, as well as the precautions taken during the home operations.

I feel that training in nursing practices is necessary because it is different from batch operation in medical

institutions. I need to pay more attention to disinfection and isolation throughout the entire nursing process when I provide home nursing services for clients alone. (Participant 8).

Home care was stricter, once I forgot to bring my operating equipment, I could fail. Moreover, the environment requires more attention to sterility. (Participant 15).

3.2.2. Knowledge of chronic disease management

Clients of Internet plus nursing services often belonged to vulnerable populations, including the elderly and those with chronic illnesses. However, nurses engaged in Internet plus nursing services in China specialize in a particular area, resulting in a relatively limited scope of knowledge. Participants asserted that their knowledge reserves directly affected the effectiveness of patient health education, and that they had a large training demand for knowledge related to chronic disease management. They hoped to constantly update their knowledge in order to maintain their professional competence and optimize the quality of service and patients' medical experience.

China has entered an aging society with the increasing number of chronic disease patients. Knowledge on the prevention, medication, and emergency treatment measures of common chronic diseases all require to be trained. Otherwise, the nurse may be very flustered when she was suddenly asked by the clients. When nurses share their knowledge to clients smoothly, it also makes them communicate more harmoniously. (Participant 6).

Most of my clients were elderly, who usually lacked knowledge in chronic disease management and required health guidance. Sometimes my tasks was only to insert the stomach tube, which might take 15 minutes, but it took about half an hour to educate clients and their families, so, some prior knowledge of common chronic diseases is desirable. (Participant 15).

3.2.3. Risk identification and prevention

Participants expressed their desire to strengthen the training in risk assessment and prevention in order to make them aware of the potential risks of Internet plus nursing services and coping strategies, especially the exercise of emergency plans.

Medical institutions should carry out some special case sharing meetings and emergency plan drills, such as how to deal with contaminated items or pipeline removal to help nurses handle these situations more skillfully. (Participant 5).

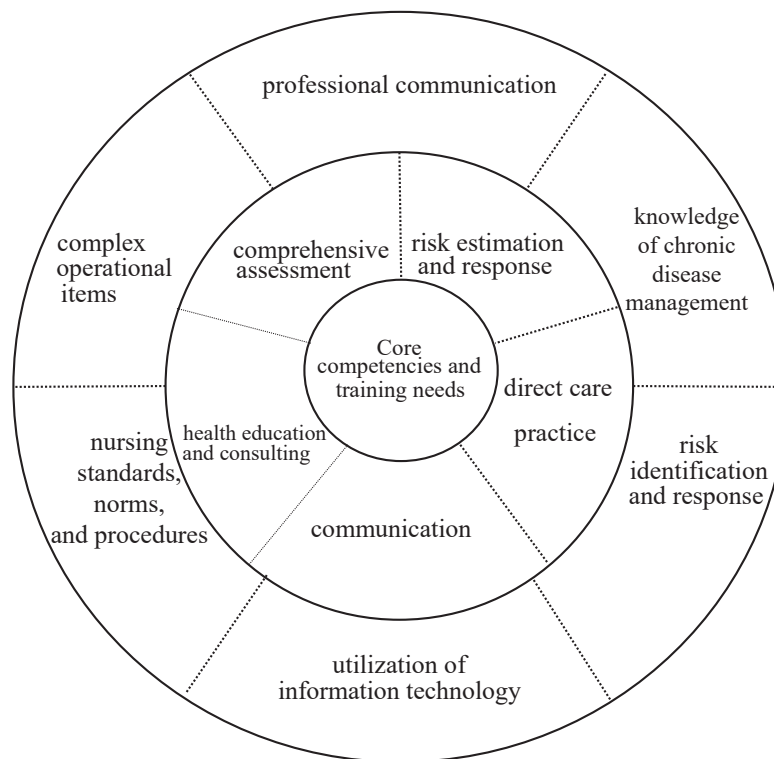


Figure 1. Conceptual framework for core competencies and training needs of nurses engaged in Internet plus nursing services.

3.2.4. Nursing standards, norms, and procedures

Participants noted that familiarity with relevant systems and standardized procedures was a prerequisite for carrying out Internet plus nursing services, which could help them provide safe and standardized care for their clients.

Before developing Internet plus nursing services, medical institutions should provide nurses with comprehensive training on the relevant systems, standards, procedures, and etiquette norms of home services. Moreover, these may be conducted in strict accordance with the training and assessment plan. (Participant 15)

3.2.5. Professional communication

Participants considered that communicating with unfamiliar families and employing communication strategies in emergencies were their weaknesses. To address these challenges, they suggested that the training content should include common professional communication skills and methods in emergencies.

I also learned some communication skills, I think how to communicate and get along with different types of patients and their families needs to be trained. (Participant 5)

In my opinion, the training content should focus on communication skills tailored for emergencies, such as how to calm patients' emotions. (Participant 15)

3.2.6. Utilization of information technology

Different from the home care services provided by community nurses, Internet plus nursing services mainly rely on the network information platform. Therefore, participants emphasized a need for practical hands-on training on the use of information technology before the implementation of Internet plus nursing services and after the software updates to get familiar with the service process and improve the work confidence.

After the software is updated, the software service provider should remind us on how to use the new version; otherwise I don't know what specific changes are made to the software. (Participant 4)

For example, how to generate insurance when the nurse left, how to start recording before the service, and how to get the patient to sign when the service ends. If insurance was not generated, the accidents cannot be covered. In addition, nurses might have to instruct patients on how to use mobile platforms, such as real-name authentication and insurance payment. (Participant 15).

3.3. A conceptual framework for core competencies and training needs of nurses engaged in Internet plus nursing services

Through continuous analysis, we finally formed a conceptual framework for core competencies and training needs of nurses engaged in Internet plus nursing services (Figure 1). Core competencies involved comprehensive assessment competence, direct care practice competence, health education and consulting competence, risk estimation and response competence, and communication competence. Training needs involved complex operational items, knowledge of chronic disease management, professional communication, risk identification and prevention, nursing standards, norms, and procedures, and utilization of information technology.

4. Discussion

This qualitative study explored the cognition of nurses engaged in Internet plus nursing services about the core competencies and their training needs. The results of this study were consistent with the core competencies of the family and community nurses.²⁵ The findings may provide a reference for managers to evaluate the ability of nurses participating in Internet plus nursing services and formulate their training plan.

Among the clients of Internet plus nursing service, a tiny percentage of them were hospitalized in the wards nurses worked, but most were completely unfamiliar with the nurses. Therefore, the comprehensive and accurate assessment of patients is the premise of mastering the patient's condition and implementing comprehensive nursing plans successfully. Previous studies have reported similar findings that the comprehensive assessment of patients with chronic diseases could predict the possible risks during home services, enabling targeted risk management.^{26,27} It is suggested that managers may design comprehensive patient assessment tools and embed them into the Internet platform to help nurses conduct comprehensive assessments and fully understand the patients' condition before entering households.

Due to changes in the working environment, lack of peer support, and increased patient expectations, nurses may face multiple pressures during the service process.²⁸ Nurses engaged in Internet plus nursing services are expected to have solid nursing practice competencies to improve work confidence, so as to ensure the stable implementation of nursing technology and flexible response to all kinds of problems that may occur in Internet plus nursing services. This is consistent with

Furaker et al.²⁹ who concluded that nurses need professional practice skills to make independent decisions and address patient concerns in the home environment. Therefore, managers could take direct nursing practice competence as the key assessment criterion when selecting nurses.

The importance of health education competence was emphasized for helping patients receive advice related to self-management, reducing the incidence of out-of-hospital adverse events, readmissions, and the burden of caregivers.^{30–32} During the process of home-based chronic disease management, patients usually encounter multiple nursing-related knowledge problems. Nurses might have remarkable knowledge, outstanding education and consultation competence, and then make health education plans to meet the clients' information needs.

The ability of nurses to communicate with clients has been recognized as a crucial factor in establishing the trustful relationship and exchanging information. Timely and effective communication could improve client satisfaction and foster their compliance with treatment to achieve better therapeutic effect.^{33,34} The Japan Visiting Nurses Association has taken communication as a core component of home care training.³⁵ In the client's home, it is more complex for nurses to build a trust relationship compared to the medical institutions. Markkanen et al.³⁶ found that compared with receiving nursing services in medical institutions, patients tend to have more initiative and a sense of empowerment when receiving nursing services at home. They also had higher expectations for the professional level of nurses and were more prone to medical disputes. Some participants expressed their significant deficiency communication competence in encountering unfamiliar patients and unexpected events. Therefore, managers may develop language and behavior norms of Internet plus nursing services, along with conducting communication training for nurses to improve their conflict management skills.

Participants mentioned that clients may experience emergency situations such as changes in medical condition and adverse drug reactions during the home service; Nurses may also face various emergencies such as operation failure and occupational exposure. The nurses' proficiency in anticipating and managing potential risks and emergencies is crucial to clients' health, which directly affected the quality of Internet plus nursing services. In addition, a previous study has shown that most nurses providing home care services were female, who were easy to worry about their own safety when faced with the uncertainty of home environment and service population.³⁷ Therefore, nurses may need to be trained in common risk identification and response to reduce their safety concerns.

With the increasing aging population, more and more elderly people with multiple chronic diseases choose long-term home nursing service.³⁸ The questions they asked involve all aspects of the treatment and nursing, while nurses engaged in Internet plus nursing usually come from a certain specialty in the medical institutions, whose knowledge field has developed vertically. The participants often felt that their store of chronic disease management knowledge was inadequate. In addition, with the shortening of hospitalization days, patients with a variety of complex health problems are more willing to accept home rehabilitation. Therefore, nurses may have to provide more professional technical services, such as ostomy care, peripherally inserted central catheter (PICC) maintenance, and peritoneal dialysis care.²⁹ Managers might formulate the operation norms of Internet plus nursing services technology, specify the precautions, and conduct unified training and assessment for nurses to ensure standardized technical operations for patients.

Establishing systems, norms, and processes is seen as essential in the safe development of Internet plus nursing services, which can enable nurses to practice within the scope of legal definition and provide homogenized services. A qualitative study by Aune and Struksnes³⁹ identified the lack of uniform norms as one of the main barriers to implement home care services. Therefore, this suggests that managers may develop systems and regulations of Internet plus nursing services, and improve standardized procedures and standards to guide nurses to practice in compliance. In addition, participants believed that they needed training in the information technology to guide patients, which was similar to the findings of Irani et al.⁴⁰ The elderly, who are the primary recipients of Internet plus nursing services, often experience poor physical functions such as memory, vision, and touch. Furthermore, the elderly know little about the Internet and mobile terminals, therefore, it is difficult for them to use intelligent technology flexibly and effectively. In the context of "Internet plus nursing," they may face difficulties in seeking nursing services and require face-to-face guidance from nurses.

5. Conclusions

The ongoing delivery of effective and efficient Internet plus nursing service is reliant upon the development of nurses' competencies, which requires nurses to make corresponding competencies preparation. This study deeply explored the perspective of nurses and managers with the work experience of practice in Internet plus nursing on the core competencies that they have developed and the training needs. The results established a

framework for core competencies and training needs for Internet plus nursing nurses based on future occupational performance, which may provide a reference for the admittance criterion, training, and assessment of nurses, so as to promote the development and promotion of Internet plus nursing services. In the future, researchers could explore the views of Internet plus nursing clients on the core competencies that nurses engaged in Internet plus nursing should have. And researchers may carry out quantitative research to form evaluation scales of core competence and build training systems based on core competencies and training needs.

Strengths and limitations

This study enhances our understanding of the nurses' opinions on the core competencies and training content that should be developed to meet Internet plus nursing work needs. We performed sampling with maximum variation, aiming to seek the different views of participants. The interviews were carefully planned and conducted in a relaxed atmosphere to enable transparency in the process.

Several limitations should be considered. The participants only included nurses engaged in Internet plus nursing, we did not discuss the views of patients as the clients of Internet plus nursing services. In addition, the sample of this study was from a hospital in Beijing, China, which piloted Internet plus nursing services, and may not represent the views of all nurses engaged in Internet plus nursing services, and the findings may not necessarily be applicable to people from other ethnic and cultural backgrounds. We were also unable to recruit any male nurses, while the vast majority of those engaged in Internet plus nursing services are still overwhelmingly female. It is important to note that different experiences between male and female nurses may produce different perceptions.

Acknowledgments

The authors would like to thank the nurses who took the time to participate in our study and shared their experiences.

Ethical approval

This study was approved by the ethics committee of Capital Medical University (IRB approval number: Z2022SY059)

Conflicts of interest

All contributing authors declare no conflicts of interest.

References

1. National Statistical Bureau of China. Communiqué of the Seventh National Population Census (No. 5); 2021. http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510_1817181.html. Accessed December 15, 2022.
2. National Health Commission of the People's Republic of China. Notice on Carrying out Elderly Care Needs Assessment and Standardizing Services; 2021. <http://www.nhc.gov.cn/zyygj/s7652/201908/4deb17fd9a3c486c8dc6462288d29c19.shtm>. Accessed December 15, 2022.
3. National Health Commission of the People's Republic of China. Statistical bulletin of China's health development in 2021. *Chin J Viral Dis*. 2022;12:321–330 (in Chinese).
4. National Health Commission of the People's Republic of China. Circular of the General Office of the NHC on the Pilot Work of "Internet plus nursing services"; 2019. http://www.gov.cn/zhengce/zhengceku/2019-10/08/content_5436955.htm. Accessed December 1, 2022.
5. National Health Commission of the People's Republic of China. Circular of the General Office of the NHC on Further Promoting the Pilot Work of "Internet plus nursing services"; 2020. http://www.gov.cn/zhengce/zhengceku/2020-12/16/content_5569982.htm. Accessed December 1, 2022.
6. Huang R, Xu M, Li X, Wang Y, Wang B, Cui N. Internet-based sharing nurse program and nurses' perceptions in China: cross-sectional survey. *J Med Internet Res*. 2020;22:e16644.
7. Zhao B, Zhang X, Huang R, Yi M, Dong X, Li Z. Barriers to accessing internet-based home care for older patients: a qualitative study. *BMC Geriatr*. 2021;21:565.
8. Tourangeau A, Patterson E, Rowe A, et al. Factors influencing home-care nurse intention to remain employed. *J Nurs Manag*. 2014;22:1015–1026.
9. Yu HY, Xu SH, Chen YL, Li YX, Yang QH. Nurses' perceptions regarding barriers to implementing the internet plus nursing service program: a qualitative study. *J Nurs Manag*. 2022;30:511–520.
10. Tan JI, Tan CI, Zou F. Construction and practice of "internet plus nursing service" platform. *Chin Health Qual Manag*. 2021;28:12–15 (in Chinese).
11. Ren AJ, Pan SI, Deng HJ, et al. Nurses' participation in "Internet plus nursing service": a survey based on the HOMEINCARE platform. *J Nurs Sci*. 2020;35:56–59 (in Chinese).
12. Zheng Y, Wang YK, Xu DY, Hou ZW, Zhu XH. Investigation and analysis of nurses' acceptance of "online appointment of nurse" and its influencing factors. *Chin Gen Pract Nurs*. 2020;18:4032–4035 (in Chinese).
13. Fang TL, Liu LH, Chen J, Wang X, Lu L, Zhang HG. Service experience of the nurses in the initial stage of "internet plus nursing service". *Chin Nurs Manag*. 2022;22:1253–1257 (in Chinese).
14. Li WR, Geng HM, Wang XL, Zhang Q, Han YY, Liu LH. Qualitative study on family caregivers' attitude, experience, and demand for internet plus nursing services. *J Nurs (China)*. 2022;29:75–78 (in Chinese).
15. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*. 2020;23:334–340.
16. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19:349–357.
17. Guest G, Bunce A, Johnson L. How many interviews are enough?: an experiment with data saturation and variability. *Field Methods*. 2006;18:59–82.
18. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3:77–101.
19. Lincoln YS, Guba EG. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *Eval Health Prof*. 1986;30:73–84.
20. Cypress BS. Rigor or reliability and validity in qualitative research: perspectives, strategies, reconceptualization, and recommendations. *Dimens Crit Care Nurs*. 2017;36:253–263.
21. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health*. 2015;42:533–544.
22. Burdine JT, Thorne S, Sandhu G. Interpretive description: a flexible qualitative methodology for medical education research. *Med Educ*. 2021;55:336–343.
23. Luciani M, Jack SM, Campbell K, et al. An introduction to qualitative health research. *Prof Inferm*. 2019;72:60–68.
24. Stang J. Ethics in action: conducting ethical research involving human subjects: a primer. *J Acad Nutr Diet*. 2015;115:2019–2022.
25. Bagnasco A, Catania G, Zanini M, et al. Core competencies for family and community nurses: a European e-Delphi study. *Nurse Educ Pract*. 2022;60:103296.
26. Sakata KN, de Almeida MC, Alvarenga Ade M, Craco PF, Pereira MJ. Conceptions of the family

- health team about home visits. *Rev Bras Enferm.* 2007;60:659–664 (in Portuguese).
27. Feinglass J, Norman G, Golden RL, Muramatsu N, Gelder M, Cornwell T. Integrating social services and home-based primary care for high-risk patients. *Popul Health Manag.* 2018;21:96–101.
 28. Lotfi Fatemi N, Karimi Moonaghi H, Heydari A. Perceived challenges faced by nurses in home health care setting: a qualitative study. *Int J Community Based Nurs Midwifery.* 2019;7:118–127.
 29. Furaker C. Registered nurses' views on competencies in home care. *Home Health Care Manag Pract.* 2012;24: 221–227.
 30. Tappenden P, Campbell F, Rawdin A, Wong R, Kalita N. The clinical effectiveness and cost-effectiveness of home-based, nurse-led, health promotion for older people: a systematic review. *Health Technol Assess.* 2012;16:1–72.
 31. Andrade AM, Silva KL, Seixas CT, Braga PP. Nursing practice in home care: an integrative literature review. *Rev Bras Enferm.* 2017;70:210–219.
 32. Day CB, Bierhals CCBK, Santos NOD, et al. Nursing home care educational intervention for family caregivers of older adults post stroke (SHARE): study protocol for a randomized trial. *Trials.* 2018;19:96.
 33. Strandås M, Bondas T. The nurse–patient relationship as a story of health enhancement in community care: a meta-ethnography. *J Adv Nurs.* 2018;74:11–22.
 34. Högländer J, Eklund JH, Spreeuwenberg P, et al. Exploring patient-centered aspects of home care communication: a cross-sectional study. *BMC Nurs.* 2020;19:91.
 35. Japan Visiting Nursing Foundation. Visiting nursing system in Japan; 2015. <http://www.jvnf.or.jp/>. Accessed December 15, 2022.
 36. Markkanen P, Quinn M, Galligan C, Chalupka S, Davis L, Laramie A. There's no place like home: a qualitative study of the working conditions of home health care providers. *J Occup Environ Med.* 2007;49:327–337.
 37. Sheng Z, Wang J, Sun K, et al. Nurses' attitudes toward internet-based home care: a survey study. *Comput Info Nurs.* 2020;39:97–104.
 38. Palesy D, Jakimowicz S, Saunders C, Lewis J. Home care in Australia: an integrative review. *Home Health Care Serv Q.* 2018;37:113–139.
 39. Aune E, Struksnes S. Home care nurses' experience of providing health-care to patients with hard-to-heal wounds. *J Wound Care.* 2019;28:178–187.
 40. Irani E, Hirschman KB, Cacchione PZ, Bowles KH. The role of social, economic, and physical environmental factors in care planning for home health care recipients. *Res Gerontol Nurs.* 2020;13:130–137.