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The Journal of Nursing Management aims to:

- *Inform practitioners and researchers in nursing management and leadership*
- *Explore and debate current issues in nursing management and leadership*
- *Assess the evidence for current practice*
- *Develop best practice in nursing management and leadership*
- *Examine the impact of policy developments*
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- *Continuing professional and practice development*
- *Organisational culture and context in the working environment*
- *Patient empowerment*, participation and safety

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Results – what were the main findings?

Conclusion(s) – what are the main conclusions and implications for practice?

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Implications for Nursing Management – What are the implications of the article for nurse managers and/or nursing management? And what does this article add to current knowledge?

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EDITORIAL

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Setting minimum standards of practice in times of crisis

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Abstract

The COVID-19 global pandemic is certainly taking a toll on all countries of the world. Health care systems are seriously challenged, and shortages both in staff and in equipment are evident even in high-income countries. Nonetheless, one cannot avoid wondering: Were these problems new or did they just exacerbate because of the terrible pandemic? Were there ways to have avoided the trauma faced by nurses (International Council of Nurses, ICN, 2021) after the overexposure to the health care crisis? Such a grim realization has specific implications for nursing. Naturally, one cannot change the world. Similarly, nurses cannot affect all aspects of health care systems that need serious reform. But nurses can affect nursing-sensitive outcomes. Most importantly, nursing-sensitive outcomes can be used to establish criteria for safe nursing practice. Health care institutions must enable health care professionals to function within the scope of their professional ethical codes. After all, systems operate thanks to the professionals comprising them. Similarly, professionals need to be facilitated by systems to function with integrity.

KEYWORDS

crisis, nursing practice, quality standards

The COVID-19 global pandemic is certainly taking a toll on all countries of the world. Health care systems are seriously challenged, and shortages both in staff and in equipment are evident even in high-income countries. Nonetheless, one cannot avoid wondering: Were these problems new or did they just exacerbate because of the terrible pandemic? Were there ways to have avoided the trauma faced by nurses (International Council of Nurses, ICN, 2021) after the overexposure to the health care crisis?

Reports by the European Federation of Nurses Associations (EFN) reveal that the Ebola crisis of 2015 did not find us prepared but left us with certain lessons (EFN, 2020). Were these lessons transformed into specific actions by regulatory bodies so that the COVID-19 pandemic could find us better equipped? Rather not. This a lesson for all countries as highlighted by the EFN report on EU Health Professionals' Perceptions of Preparedness for Ebola and Infectious Diseases of High Consequence (IDHC) 'We are not prepared unless we are all prepared' (EFN, 2015). Even worse, the same report confirms that 'nurses are still missing from discussions relating to policy both at the EU and Member State level'.

Such a grim realization has specific implications for nursing. Naturally, one cannot change the world. Similarly, nurses cannot affect all aspects of health care systems that need serious reform. But nurses can affect nursing-sensitive outcomes. Nursing-sensitive outcomes are indicators of nurses' contribution to the changes of patients' health status, experience with the health care system and cost of care (Joint Commission International, 2014). They are distinct and specific to nursing and differ from medical indicators of care quality. According to research studies that took place in the last 20 years, the most frequently investigated nursing-sensitive indicators are nursing ratios, mortality and nosocomial infections followed by pressure ulcer, patient falls, length of stay, patient satisfaction, central line infection and pulmonary embolism (Audet et al., 2018; Myers et al., 2018; Oner et al., 2020). For example, nurse staffing and the nurse–patient ratio affect the quality of nurse communication which in turn affects patients' functional independence at the time of hospital discharge (McGillis et al., 2003).

Other than their contribution to the systemization and improvement of clinical care, nursing-sensitive outcomes bear the potential to benefit nursing in multiple ways. To start with, funding can be sought

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according to specific research goals geared towards the improvement of the quality of care nurses can affect. Research agendas can be constructed based on this approach and the findings of research studies could target the quick uptake by clinical nurses. Finally, education can be guided accordingly to prepare professionals with a focus on nursing quality and nursing-sensitive outcomes. Undoubtedly, the above approach should take place in the context of multidisciplinary teams which work together to maximize patient outcomes.

Most importantly, nursing-sensitive outcomes can be used to establish criteria for safe nursing practice. Health care institutions must enable health care professionals to function within the scope of their professional ethical codes. When specific organisational standards, such as low staffing and/or poor supplies, are not met, then professionals cannot be held accountable for missed care. However, each professional is personally responsible for the care he/she provides. Therefore, as Tonnessen et al. (2020) propose, a minimum set of standards need to be guaranteed by health care institutions to allow nurses to provide safe and competent care. After all, systems operate thanks to the professionals comprising them. Similarly, professionals need to be facilitated by systems to function with integrity.

What are the criteria for setting minimum standards for nursing care? Indisputably, health and health care are considered a human right (WHO, 2017). Thus, aspects of nursing care that are thought of as humane need to be safeguarded in any work setting. Patients' fundamental needs, such as nutrition and hydration, comfort care as well as psychological and spiritual concerns need to be addressed in all occasions assuming we are practising in a safe and organised environment (International Council of Nurses, 2012). It would be noteworthy if the revisions of the Code of Ethics for Nurses, currently taking place (ICN, press release: 21 October 2020), could take into account the above concerns and provided a way to specify what constitutes minimum standards of nursing practice.

Nurses have traditionally been in the frontline of every pandemia around the world and need be, will operate again having their patients' best interest as a priority even at the expense of their own health. When the crisis is over, nurses need to participate equally in decision-making processes for the training and coordination of acute responses in future similar situations. Furthermore, instead of waiting from others to acknowledge the contribution of nurses in the care of individuals, a set of minimum standards for safe nursing care need to be established to prove when nurses are functioning within the scope of their professional moral codes or when they are being outstretched to save as many lives as possible. In these latter situations, health care authorities and systems need to take responsibility for their level of preparedness that allow or hinder health care professionals to practise for the welfare of patients.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICAL APPROVAL

Ethical approval not required as this is a discursive article that did not involve primary research or the involvement of research participants, and does not present data.

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ORIGINAL ARTICLE

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Nurses' experience of work stress related to COVID-19 regular prevention and control in China: A qualitative study

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Abstract

Aim: To explore the experiences of nurses' work stress related to COVID-19 regular epidemic prevention and control in China.

Background: The global COVID-19 epidemic is still severe, and China's ongoing regular epidemic prevention and control still cannot be relaxed, which places demands on nurses.

Methods: Thirty nurses and eight nurse managers were interviewed using semistructured in-depth interviews, and the data were analysed by the Colaizzi seven-step analysis method.

Results: Four themes were extracted as follows: environmental factors, organizational factors, personal factors and positive factors in coping with stress.

Conclusions: Nursing managers should pay attention to construction of the first-line departments of regular epidemic prevention and control. The shortage of nurses' human resources and the increase of nurse–patient conflicts are problems that need

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to be solved urgently. In addition, this research also emphasizes the importance of promoting nurses' stress-related growth and thinking about the possibility of reform.
Implications for Nursing Management: The construction of the hospital environment and increasing the resilience of nursing teams require attention. We should attach importance to the training of nurses' communication skills and provide sufficient organizational support and economic guarantees for nurses. Finally, perhaps we should also consider whether it is necessary to reform the relevant hospital systems and how to reform them.

KEYWORDS
COVID-19, nurse, qualitative research, regular epidemic prevention and control, work stress

1 | BACKGROUND

According to the information provided by the WHO, as of 13 October 2021, there were 238,521,855 confirmed cases of COVID-19 worldwide, 4,863,818 deaths and more than 300,000 newly confirmed cases per day (WHO, 2021). The prevention and control of the epidemic is far from over, and we still need to attach great importance to it. Since the outbreak of the COVID-19 epidemic, hospitals have remained on the front line of prevention and control, and all medical staff have been under great pressure. As the largest group among medical staff and the closest contact with patients, nurses deserve our attention. Murat et al. (2021) found that nurses suffered high levels of stress and burnout and moderate depression during the outbreak of the epidemic in Turkey. Shahrour and Dardas (2020) found that 64% of nurses experienced acute stress disorder, and 41% of nurses had psychological distress during the outbreak of the epidemic in Jordan. A meta-analysis of the literature on the mental health status of front-line medical staff published between December 2019 and June 2020 showed that the incidence of depression among front-line nurses who participated in caring for COVID-19 patients during the outbreak of COVID-19 was 28%, and the incidence of anxiety was 22.8% (Salari et al., 2020). Since April 2020, the epidemic in China has been well controlled, and China has entered the stage of regular prevention and control (Zheng et al., 2020). There have been many studies investigating the work stress and mental health of nurses during the outbreak period (An et al., 2020; Tu et al., 2020; Zhan et al., 2020; Zhang, Miao, et al., 2020), but there were few studies on the work stress of nurses during the regular prevention and control period. Judging from previous experience, nurses' work stress during the regular prevention and control period must be much less than that during the outbreak period. However, Wu et al. (2020) investigated the incidence of burnout of front-line nurses and nurses in general wards during the outbreak period and found that nurses in general wards were more prone to burnout. This shows, on the one hand, that we may underestimate the level of work stress that nurses bear during the regular prevention and control period. Therefore, we designed this study to explore the work stress of Chinese nurses during the regular epidemic prevention and control period. Considering that Chinese hospitals have taken a series of measures to address regular epidemic prevention and control and that the working environment of nurses has changed greatly, the previous scale for measuring work stress may not be applicable to this study. Therefore, this study adopted the phenomenological approach in qualitative research to explore the work stress experience of nurses related to regular epidemic prevention and control. The global COVID-19 epidemic is still severe, and the findings of this study may provide some references for other countries to respond to the epidemic in the future.

2 | METHODS

This study is qualitative. A phenomenological approach was used to explore the theme of nurses' work stress experience during COVID-19 epidemic regular prevention and control. And this study was conducted in January 2021.

2.1 | Theoretical framework

Robbins' occupational stress model (Fradreck, 2018; Humayon, 2018) was used as the theoretical framework of this study. The stress model identified three potential stressors: environment, organization and individual. Based on this, a semistructured interview outline of nurses' work stress experiences during regular epidemic prevention and control was compiled.

2.2 | Participants

The subjects of the study were mainly nurses and head nurses who worked in the clinic during the regular prevention and control period

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in two hospitals in East China and North China. The sampling methods were convenience sampling and snowball sampling. The inclusion criteria were as follows: (a) having a nurse qualification certificate, (b) participating in clinical work for ≥3 months during the regular epidemic prevention and control period and (c) being willing to participate in this study. Nurses and head nurses from various hospitals and multiple departments in the same hospital were selected to ensure the adequacy of the samples. The sample size was ultimately determined by information saturation.

2.3 | Data collection

The interview methods were face-to-face interviews and WeChat voice interviews. Face-to-face interviews were conducted in the nurses' free time or after work and in quiet lounges or offices. WeChat voice interviews were scheduled with the interviewees in advance and were conducted when the interviewees were resting at home or in other quiet places. Before the interview, the researcher informed the interviewees of the purpose, significance, anonymity and confidentiality of the study. The consent of the interviewee was sought for the recording, and the dissenters only took notes. The duration of each interview was approximately 20–60 min. During the interview, more in-depth questions or new related topics could be discussed according to the actual situation.

2.4 | Interview outline

Based on Robbins' occupational stress model (Fradreck, 2018; Humayon, 2018), an interview outline was developed under the guidance of experts with qualitative research experience. After the outline was initially formed, two nurses who participated in clinical work during regular epidemic prevention and control were selected for pre-interviews, and the interviewees were asked to point out unreasonable problems in the interview outline. The interview outline was modified according to the pre interview results, and the final outline was completed after being reviewed and approved by experts. The outline of the nurse (head nurse) interview is as follows: ① What stress has the regular epidemic prevention and control put on you (nurses)? ② What changes have taken place in the environment of hospitals and departments under regular epidemic prevention and control? ③ What work has regular epidemic prevention and control added to you (nurses)? ④ During regular epidemic prevention and control, which aspects of the work requirements of the leaders (you) are stricter, which make you (nurses) feel stressed? ⑤ What impact does regular epidemic prevention and control have on the interpersonal relationship of nurses (you)? ⑥ Has regular epidemic prevention and control had some impact on the nurse's (your) family? ⑦ Are you (nurses) satisfied with your current salary level? Does regular epidemic prevention and control affect the income level? ⑧ In addition to the above, do you have anything to add about regular epidemic prevention and control?

2.5 | Data analysis

The recordings were listened to repeatedly, and the recording data were transcribed verbatim. Members of the research team jointly verified the transcribed content. The transcribed text was imported into the qualitative research software NVivo 12.0 plus, and the data were encoded and refined according to Colaizzi's seven-step analysis method (Colaizzi, 1978).

3 | RESULTS

A total of 30 nurses and 8 head nurses were interviewed. The basic information of the interviewees is shown in Table 1. Five nurses were nonrecorded, represented by N1-N5, and the rest were represented by NA-NY. Ns1-Ns8 was used to represent the head nurses.

Four themes were extracted as follows: environmental factors, organizational factors, personal factors and positive factors in coping with stress. The first three themes were described under the framework of Robbins' stress model, which not only described the stressors of regular epidemic prevention and control but also described the stress experience of nurses. The last theme described the positive psychological experience of nurses in coping with the stress brought by regular epidemic prevention and control.

3.1 | Environment factors

3.1.1 | Technical factors

The detection of novel coronavirus involves nucleic acid detection technology, which takes a long time from throat swab collection to nucleic acid test results. In the process of waiting for the results of nucleic acid detection, patients may conflict with medical staff due to lack of desired treatment and resistance to isolation measures.

TABLE 1 Basic information of interviewees

Attribute	Information
Gender	4 males (10.5%) and 34 females (89.5%)
Age ($\bar{X} \pm$ SD)	22–50 years old (30.16 ± 7.20)
Length of service	3 months to 30 years
Department	Nurses: fever clinic (6), infection department (5), ICU (6), emergency department (1), paediatrics (1), internal medicine (3), surgery (2) and other departments (4)[a] Head nurses: infection department (3), emergency department (2), respiratory department (2) and ICU(1)[a]

[a]Figures in brackets indicate the number of interviewees.

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During that time, many urgent patients were admitted to the emergency department. However, as soon as they had a fever, they were transferred to the fever clinic, and the patient's family members were very anxious. At that time, the nucleic acid results took 24 h. Before December, it took 1–2 days for the patients admitted to the emergency ward to be transferred to other departments. (NF)

Fever clinics only exclude COVID-19 infection and do not perform any treatment. Nucleic acid results can now be completed sooner than before, with results said to be available within 2 h. However, it takes at least 3 or 4 h for the results to be available. Thus, patients just sit and wait, leading them to be very impatient and resulting in substantial friction. (NG)

The nucleic acid test takes too long, and the patient loses patience. (N2)

Due to the long time required for nucleic acid testing, nurses were also in a state of tension while accompanying patients waiting for results.

All patients are unknown. We do not know why he has a fever. We still have some fear. After all, the epidemic is still serious. (NC)

The results of the nucleic acid will not be known until tonight, but with this patient under our supervision all day, there must be pressure on your mind. (NI)

3.1.2 | Hospital environmental factors

As fever clinics and infection departments have undertaken the task of isolation, the resettlement site was far from the core hospital area of the hospital, and channel management was relatively strict during regular epidemic prevention and control. It often took substantial time for fever patients to find the ward. Some patients were dissatisfied with this and vented their emotions on the medical staff.

The location of the fever clinic is reasonable; that is, it is an infected building that is far away from the entire hospital area. It is unreasonable that it is too far away for patients to find. (NC)

The patient took a long time to get here from the clinic…he is not angry over there, he is just angry right here, because he is facing you now. (NG)

The hospital implemented a 'semiclosed' management mode for patients and their families. All channels of the hospital were strictly managed, and most channels in the ward were managed by the ward itself. Some wards had no access control, and the channel management depended on nurses, which increased the workload of nurses and depleted the human resources of nurses.

The management of each floor depends entirely on our medical staff. We have many other things to do; how can we take care of so many…(Ns3)

From six o'clock in the morning to nine thirty in the evening, the gate is guarded, which is equivalent to assigning three nurses to guard every day. (Ns4)

We hope it has a system or access control so that there is no need to artificially block the patient's family members, resulting in unnecessary disputes…because the labour cost of nurses is actually quite large.(Ns5)

3.2 | Organizational factors

3.2.1 | Workload increase

Regular epidemic prevention and control has added much work to nurses, and some changes have taken place in the daily work processes of nurses. This additional work includes the treatment process of fever patients and patients from high-risk areas, admission of new patients, increasing the daily work of nurses in the ward. The work content has increased, but there is no more nursing human resources, which makes nurses busier and more stressed.

For some patients who return from medium- and high-risk areas or have fever of unknown cause, the treatment procedure is much more complicated than before. Our nurse should first guide the patient to the infection department and then go back to the emergency department to give him normal treatment. If the patient cannot be checked, he has to be isolated in a single room. (NW)

After the nucleic acid results were obtained, they were admitted to the hospital. As a result, some patients can only come at night. The procedure of receiving new patients is more complex, and sometimes, the patient's condition is more complicated to address. There are only two nurses working at night, and we still have a lot of routine work to do, so we would be very busy and stressed. (NO)

Nurses should not only perform the nursing routine of the ward but also verify 'one patient, one companion' escort certificate and infection control management. The workload of clinical nurses has increased. (Ns3)

3.2.2 | Increased work difficulty

One of the key points of epidemic prevention and control is to reduce personnel gathering. Due to China's cultural habits, many patients' families and relatives and friends who come to visit patients often gather in hospitals, which increases the risk of epidemic transmission. During the regular epidemic prevention and control period, hospitals prohibited visits and took measures to limit the number of patients' family members present. For each patient, only one family member is allowed to accompany them in the ward, and the family member must also provide proof of a negative nucleic acid test result and cannot enter or exit at will. Many patients and their families cannot understand or disapprove of this. It is difficult for nurses who have the most contact with patients and their families to explain and communicate.

Now, the requirement is 'one patient one companion', and the family members also require nucleic acid testing. Sometimes some patient's family members do not understand and quarrel with us, saying that the patient's condition is serious and that the patient needs more escort…(NX)

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Regardless of how strict your management is, there will always be some family members slipping into the ward. If you want to let him go, you basically have to talk to him for a long time…For the satisfaction survey, the satisfaction with a required escort is certainly not high. (NE)

It is difficult for nurses who are on duty at the door of the ward to prevent patients' families from entering the ward.

We told him that this is an isolation ward. You cannot go out; you should wear a mask. Then, the patient said, where is the epidemic now? I watched the news, nothing happened. (Ns2)

Some patients are not very conscious and sometimes do not wear masks. We have to remind them to wear masks all the time. In addition, patients are now required not to leave, but some patients will leave or go to the cafeteria to buy food and something else. It is difficult to keep them from going out for 24 hours. (NQ)

3.2.3 | Increased role stress of nurses

Regular epidemic prevention and control has increased the workload and difficulty of work, which increases the stress of nurses' work tasks. At the same time, hospitals have also put forward higher requirements for nurses, which has also increased the stress associated with nurses' role tasks.

First, training, inspection and assessment related to regular epidemic prevention and control have increased.

There are a lot of things to learn, such as the meetings…(NJ)

More inspections…such as the inspection of hospital sense control. There are also regular training, examinations, and then irregular casual visits about your work status…(NB)

After the night shift, we have to listen to some lessons on epidemic prevention and control…several times a week. (NN)

The requirements are stricter…more inspection items…for example, if the door of your ward is not locked in time or a patient is accompanied by two family members or one family member but not the fixed one…they would check all of these things. (NP)

Second, with the implementation of regular epidemic prevention and control, hospitals overly rely on nurses. Nurses undertake most of the regular epidemic prevention and control work in the hospitals, and some nurses may feel unbalanced.

The guarding and other things are all undertaken by nurses. Nurses take on more work, doctors do not have to…may have some emotions. (NO)

Nurses are the main force in regular prevention and control. (Ns4).

3.3 | Personal factors

3.3.1 | Decrease in revenue

Due to the impact of the epidemic environment and strict prevention and control of hospitals, some patients choose not to see a doctor temporarily or not to see a doctor in hospitals with strict prevention and control. The number of patients in the hospital has decreased, the income of the hospital has been reduced and nurses have also been affected.

The patient is affected. Our hospital is a designated hospital for the epidemic situation. Patients have to register a lot of information when admitted, and some have to scan the code…(NI)

Nucleic acid testing was slow at the beginning. Some patients have to wait until the next day to be admitted to the hospital; some just do not stay in the hospital at all, some go to other hospitals and the overall flow of people in the department is reduced. (NJ)

3.3.2 | Limitation of daily life

The prevention and control of epidemics require avoiding personnel gathering as much as possible, so the hospital has required employees not to participate in gathering activities. In addition, to control the flow of personnel, it has stipulated that if employees go to other cities, they need to report such, and when they return, they need to provide a report with a negative nucleic acid test result. For reasons of epidemic prevention and control, nurses' daily lives have been partially limited.

Cannot go out, cannot have dinner or play together…always stay at home…I think it will be a little boring, and I will be in a bad mood. (NJ)

Due to the restrictions of the epidemic, it has become inconvenient for nonlocal nurses to return to their hometowns to visit their family members.

It's troublesome to go back home. (NQ)

The biggest impact is that for my relatives, I pay less, I have no time to go home, I cannot go home…I went home once last year; it's been almost one year…I did not go back last Spring Festival, and I may not be able to go back this year either. (Ns1).

3.4 | Positive factors for coping with stress

During the interview, we found some positive psychological feelings of nurses outside the framework of Robbins' stress model, which are described here as an extension.

3.4.1 | Hope

Although the outbreak of the epidemic and the current regular epidemic prevention and control have brought tremendous pressure to nurses, nurses still firmly believe that the disaster will be overcome, face reality optimistically and are full of hope in their hearts.

2020 was an unfortunate year, with a lot of disasters. But, I asked one nurse that day, I said, what did the little girl gain in 2020? The little girl said, 'I have never seen high-flow oxygen inhalation before, and now I can use it skilfully'.(Ns2).

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3.4.2 | Unity

In the difficult environment of facing the epidemic together, colleagues have become more united and have deeper feelings toward each other.

When there is no epidemic, we may go back to our own homes at lunch. Later, because of epidemic prevention and control, no one would go home at lunch. We all ate together, talked and chatted together. I think we know each other better and communicate more with each other during epidemic prevention and control. (NB)

3.4.3 | Patience

During the normalization of epidemic prevention and control, nurses need to assist hospitals in personnel control and to explain the importance and necessity of nucleic acid testing to patients and their families. The incomprehension and noncooperation of patients and their families is one of the biggest work stressors for nurses during the regular epidemic prevention and control period. In the face of this situation, nurses move patients through full patience and sincere communication so that patients can understand and support the work of the hospital.

You could give him a little more explanation…telling him not to charge him, and it is not a painful operation…if you communicate patiently, most patients can understand you. (NI)

3.4.4 | A sense of security

Although the measures taken by the hospital in response to normalized prevention and control have created some pressure, it also made nurses feel safe and secure and made nurses believe that the epidemic is preventable and controllable; thus, their hearts are more stable.

In fact, we are not as nervous at work as when the epidemic first broke out because we think it can be controlled. (NB)

Hospital infection control is stricter. I think it's good to be stricter. It's more secure. (NE)

4 | DISCUSSION

Among all COVID-19 test methods, the antibody test takes the least time, less than 20 min to obtain test results. However, antibody tests cannot provide direct diagnostic evidence and cannot detect early infection, so they are applicable only for screening and auxiliary diagnosis (Carbonell-Sahuquillo et al., 2021). The nucleic acid test is still the most commonly used COVID-19 test method and can provide direct diagnostic evidence, and the test process takes several hours (Sule & Oluwayelu, 2020; Yüce et al., 2021). Due to technical limitations, it is difficult to significantly shorten the test time of COVID-19 in the short term. The nurse–patient conflicts caused by patients waiting for nucleic acid test results can be solved only from the perspective of management. Our interviews found that such conflicts between nurses and patients mostly occur in fever clinics, and most of them are caused by a lack of desired treatment and the emotional excitement of patients. To solve such problems, fever clinics should be able to meet some needs of patients and take appropriate measures for patients' diseases. If it is impossible to deal with them, it should be carefully explained to patients and their families to make them feel at ease. As the first-line of defence of hospital departments, fever clinics play a vital role during the outbreak of the COVID-19 epidemic in China (Wang et al., 2021). Managers should also pay attention to the construction of fever clinics during regular epidemic prevention and control.

Experience during the outbreak period tells us that a reasonable hospital layout and complete hospital facilities can improve work efficiency and prevention and control effects (Chen et al., 2020; Lai et al., 2020). The problem of ward distance cannot be solved from the perspective of architecture, but patients can be guided to find the ward quickly with clear route instructions by setting up road signs and hospital layout maps. Our interviews found that many nurses held the hope that the epidemic could end soon and that the hospital could restore the previous order as soon as possible. Although nurses complained about the 'temporary' measures that required nurses to guard the ward gate due to the lack of access control of the hospital, they could understand and cooperate. What managers should consider is that perhaps we should not restore the previous order but take this opportunity to establish a new order. The prevention and control of COVID-19 has consumed a lot of our energy, which is a challenge for us, but at the same time, it is also an opportunity for us to establish a new medical management system order and comprehensively improve hospitals' abilities to respond to public health emergencies. Should these 'temporary' measures of regular epidemic prevention and control, such as the management of patients and their families and the control of hospital infections, be upgraded to 'permanent' measures? Should the hospital-related management system reform? This is a question worth pondering.

The increase in workload has made nurses' human resources more strained. Recruiting more nursing staff is the most direct solution; however, even before the outbreak, the human resources of nurses were in short supply worldwide. No more nurses could be recruited (Shaffer et al., 2020). Some scholars (Duncan, 2020) believe that means of improving the resilience of nursing teams and make limited nurse human resources play a greater role is an issue that we should seriously consider in the current epidemic. As early as the beginning of this century, nursing managers of some hospitals in China advocated a method to increase the resilience of the nursing team, that is, establishing 'mobile nurse banks', and formulated detailed methods for training and managing mobile nurses (Wang et al., 2005). According to the reports of hospitals (Han et al., 2020; Wang et al., 2005; Wu, 2021; Ye et al., 2011) that have established mobile nurse banks, 'mobile nurses' have played an important role in fighting against SARS, avian influenza A (H1N1) and the current COVID-19 epidemic and have buffed the pressure of nurse human resource shortages caused by various emergency and nonemergency

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situations for hospitals during nonepidemic periods. Unfortunately, only a few hospitals have established mobile nurse banks. Nursing managers may consider establishing mobile nurse banks to alleviate the shortage of nurse human resources.

Effective nurse–patient communication can improve patient satisfaction and avoid nurse–patient conflicts (Baldwin & Spears, 2019; Lotfi et al., 2019). Our interviews also found that nurses' patient communication can enable some patients to understand and cooperate with the hospital's prevention and control work. Patients' incomprehension and noncooperation of prevention and control measures are the main reasons for the increased difficulty of nurses' work. Therefore, managers can train nurses in targeted communication skills so that nurses can communicate more effectively with patients and can let more patients accept prevention and control measures to improve nurses' self-efficacy and reduce nurses' stress. Organizational support can improve nurses' psychological resilience and maintain nurses' mental health levels (Carmassi et al., 2020; Cooper et al., 2020; Foster et al., 2020). Income level is positively correlated with job satisfaction and negatively correlated with burnout and turnover (Ran et al., 2020; Wubetie et al., 2020; Zhang, Wei, et al., 2020). During the regular epidemic prevention and control period, while hospitals and managers put forward high standards and strict requirements for nurses, they should also pay attention to providing nurses with sufficient organizational support and economic security and pay attention to nurses' mental health.

Positive factors of nurses in coping with stress related to prevention and control that include 'hope', 'unity', 'patience' and 'sense of security' are forms of stress-related growth and are protective factors against the adverse effects of stress (Yıldırım & Arslan, 2021). Research shows that (Antebi-Gruszka et al., 2021) positive reappraisal, social support and emotional expression are all related to greater stress-related growth. Therefore, managers can promote nurses' stress-related growth by praising and encouraging nurses, giving nurses enough support and listening to nurses' emotional expressions to better deal with epidemic prevention and control.

In addition, this study found that during regular epidemic prevention and control in China, the management stress of head nurses seems to be greater than that of ordinary nurses. However, since the purpose of this study is to explore the work stress experience of ordinary nurses, there was no more in-depth exploration of the stress of head nurses, and follow-up research should pay more attention to the stress of nursing managers.

5 | CONCLUSIONS

Construction of the first-line departments such as fever clinics should be valued by hospitals and nursing managers, and sufficient financial and organizational support should be given to nurses participating in the prevention and control work. The shortage of nurses' human resources and the increase of nurse–patient conflicts are problems that need to be solved urgently. In addition, this study also emphasizes the importance of protecting and promoting nurses' stress-related growth. Finally, a question worth pondering is whether it is necessary to take this opportunity to reform the hospital-related management system and how to reform it.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

Our study describes the work stress experience of nurses related to COVID-19 regular epidemic prevention and control in China, highlighting some problems in nursing management. First, the prevention and control of the epidemic should pay attention to the construction of the hospital environment, especially for first-line departments such as fever clinics. The equipment and facilities should be fully equipped, and the work process should be optimized to improve patient satisfaction and reduce the occurrence of nurse–patient conflicts. Second, managers should consider how to increase the resilience of the nurse team to better prevent and control the epidemic and deal with other emergencies that may occur. Establishing 'mobile nurse banks' may be an effective method. Third, effective communication is very important. Effective communication could enable patients to understand and cooperate with the hospital's regular prevention and control measures and resolve most of the nurse–patient conflicts. This can be achieved through targeted communication skills training. Fourth, providing sufficient organizational support and economic security would contribute to the stability of nurses' work. Finally, for the ongoing 'temporary' prevention and control measures, is it necessary to take this opportunity to reform the relevant hospital management system and consider how to reform it? This problem is worth pondering by managers. China is the first country to control the spread of the epidemic. Sharing relevant measures of epidemic prevention and control in Chinese hospitals and nurses' work stress experience is intended to provide some reference for medical and nursing managers in other countries to formulate measures to deal with the epidemic.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

ETHICS STATEMENT

Ethical approval was granted by the Research Ethics Committee of Bengbu Medical College (2021-075).

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AUTHOR CONTRIBUTIONS

Xiumu Yang, Zhengfu Shen, Sanqing Ding, Fuzhi Wang and Xiaoyan Zhao provided research ideas, determined the research theme and designed the research. Zhaobin Jiang, Shengnan Wang, Yongxia Chen and Yan Qiao collected data. Zhaobin Jiang, Shengnan Wang and Pingping Dong analysed the data. Zhaobin Jiang and Shengnan Wang wrote the manuscript. Tao Wei and Pingping Dong translated the article. All authors approved the final version for submission.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ORIGINAL ARTICLE

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Staff structural empowerment—Observations of first-line managers and interviews with managers and staff

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Abstract

Aim: The aim was to study how first-line managers act to make structural empowerment accessible for nursing staff and furthermore to relate these observations to the manager's and their nursing staff's descriptions regarding the staff's access to empowering structures.

Background: Staff access to empowering structures has been linked to positive workplace outcomes. Managers play an important role in providing the conditions for structural empowerment.

Method: Five first-line managers were observed for two workdays. Managers and staff ($n = 13$) were thereafter interviewed. Field notes and interviews were analysed using directed content analysis.

Results: The managers displayed intentional actions that could enable their staff access to empowering structures. Managers and staff described the importance of staff's access to empowering structures.

Conclusion: Staff who perceive to have access to structural empowerment have managers who are present and available. Unanimity among managers and staff existed in regard to the importance of staff having access to structural empowerment. The managers work continually and intentionally, doing many things at the same time, to provide the staff access to empowering structures.

Implications for Nursing Management: The study shows the importance of promoting managers' awareness of staff's access to structural empowerment and maximizing managers' presence and availability to their staff.

KEYWORDS
hospital, nurse managers, nurses, observation, structural conditions, working conditions

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1 | INTRODUCTION

Ongoing organisational changes, nursing shortages and problems retaining nurses are global challenges for managers (World Health Organization, 2020). To meet these and other health care challenges, good access to empowering structures such as those described in Kanter's theory (Kanter, 1993), access to recourses, information, opportunities support and formal and informal power, has been emphasized as being central to nurses' well-being and effectiveness. First-line managers (FLMs) play a central role in providing access to these structures. Studies have shown links between the nursing staff's perceived access to empowering structures in the workplace and positive outcomes for both staff (Cicolini et al., 2014; Engström et al., 2011) and patients (Engström et al., 2021). FLMs should provide their staff access to empowering structures. However, it has been found that FLMs struggle on a daily basis to provide the staff with the sufficient prerequisites necessary to perform their work (Ericsson & Augustinsson, 2015; Labrague et al., 2018). Leadership style/how they act is also known to influence several positive nursing staff-outcomes (Boamah et al., 2018; Khan et al., 2018). The present study focuses on how FLMs actually act in their everyday work to give their staff (hence used for nursing staff) access to empowering structures and what descriptions they and their staff give regarding the staff's access to structural empowerment.

1.1 | Theoretical framework

In Kanter's theory (Kanter, 1993) of structural empowerment, the role of management is to provide employees with necessary structures that support, empower and strengthen their ability to perform their work in a meaningful way. An individual's behaviour and attitudes towards work, according to the theory, are influenced by the individual's access to structural empowerment rather than their personality or abilities. These structures are access to *resources* (materials, supplies, personnel and time), *information* (updated and relevant for work and organisation), *opportunities* (to learn and develop new knowledge, skills and career) and *support* (encouragement, feedback and help from superiors, colleagues and subordinates). Employees with access to these structures are empowered (Wong & Laschinger, 2013). Access to these structures is influenced by *formal power* (a visible work role that includes mandate[s]) and *informal power* (a network of alliances within and outside the workplace). Kanter (1993, p. 166) describes *power* as "the ability to get things done, to mobilize resources, to get and use whatever it is that a person needs for the goals he or she is attempting to meet."

1.2 | Overview of the literature

Kanter's (1993) theory of structural empowerment has been used in nursing research in different contexts and countries and from both the combined and separate views of FLMs and staff. It has been found that when FLMs' ratings of their access to structural empowerment change over time, so do their subordinates' ratings (Hagerman et al., 2017). Furthermore, the FLMs' access to structural empowerment were positively related to their staff's ratings of their FLM's leadership and management (Hagerman et al., 2017).

Studies using Kanter's theory (Kanter, 1993) have shown positive relationships between staff-rated access to structural empowerment and job satisfaction (Cicolini et al., 2014; Engström et al., 2011), well-being (Engström et al., 2011; Spence Laschinger et al., 2011) and organisational commitment (Yang et al., 2014). Furthermore, that empowering workplaces retain nurses and prevent burnout (Meng et al., 2015). Additionally, positive relationships were found between staffs' access to structural empowerment and patient satisfaction (Engström et al., 2021), staff-rated quality of care (Engström et al., 2011), professional nursing practice behaviours (Manojlovich, 2010) and evidence-based practice (Engström et al., 2015).

In an interview study, formal power was described facilitating access to empowering structures and enabling preventive work for district nurses (Eriksson & Engstrom, 2015). Another interview study that used Kanter's theory (Kanter, 1993) deductively found that internationally educated nurses described informal power acquired by networking with people both within and outside the organisation as being especially helpful (Eriksson & Engström, 2018). Skytt et al. (2015) found that FLMs expressed an awareness of the importance of their subordinates' access to empowering structures. Further they described how they in their roles as FLMs could contribute to make these structures accessible.

To sum, there are a number of quantitative studies supporting links between empowering structures and staff well-being (e.g., Engström et al., 2011; Spence Laschinger et al., 2011) and some related to care quality (e.g., Engström et al., 2011, 2021). There are a few interview studies supporting Kanter's theory of structural empowerment (e.g., Eriksson & Engström, 2015, 2018; Skytt et al., 2015). There is also research linking FLMs' structural empowerment (Hagerman et al., 2017) and leadership styles to staff structural empowerment (Boamah et al., 2018; Khan et al., 2018). However, less is known about how FLMs actually act, what they do and how they do it, to provide staff access to empowering structures. No observational studies with the perspective of structural empowerment have been found. Observations as a data collecting method is well suited for capturing specific social phenomena (Knoblauch, 2005), as the work of FLMs and interactions between them and their staff (Arman et al., 2009; Mintzberg, 1994).

1.3 | Aim

The aim was to study how first-line managers act to make structural empowerment accessible for nursing staff and furthermore to relate these observations to the manager's and their nursing staff's descriptions regarding the staff's access to empowering structures.

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2 | METHOD

2.1 | Design

The study had a qualitative descriptive design (Figure 1) that used a focused ethnographical approach (Knoblauch, 2005), collecting data with observations and interviews. This approach provides insights into a topic-oriented focus on actions, interactions and social situations (Knoblauch, 2005) where the topic in the present study is staff's access to structural empowerment. In accordance with Jerolmack and Khan (2017) and Wilson and Chadda (2009), the theory of structural empowerment (Kanter, 1993; Laschinger, 2010) was therefore used as a standpoint for the inclusion of units, data collection and data analysis. For a purposeful selection of cases, the FLMs (informants) were selected from another study (Lundin et al., 2021) focusing FLMs' and staff's working situation in Swedish acute hospitals. In that study, a randomized sample of nursing staff had answered a survey including the Condition of Work Effectiveness Questionnaire (CWEQ-II), measuring structural empowerment (Laschinger et al., 2001). A criterion sampling was made for the present study.

2.2 | Sample and settings

Initially, five FLMs at units with the highest ratings of staff's access to structural empowerment and a response rate of >50% were contacted by the first author, using telephone and email. Information was given about the study aim. Three FLMs declined due to reorganisations; one unit was being shut down, and two were leaving their positions. An additional three FLMs from units fulfilling the criteria were approached and agreed to participate. The final sample consisted of five FLMs and 13 staff members. The staff consisted of registered nurses (including one assistant manager) and nurse assistants. The participating staff had been on duty on at least one of the days their FLM was observed. For setting and sample characteristics, see Table 1.

2.3 | Data collection

Data were collected through participant observations and interviews (Hammersley & Atkinson, 2007). The FLMs suggested three continuous days for data collection at their unit. First, FLMs were observed during workdays. After the observations, interviews were conducted with the FLMs and staff in a secluded room of the participant's choice at the units, during working hours. Data were collected over a 4-month period starting in the fall of 2017 by the first author (RN, lecturer, PhD student) and the last author (RN, Senior Lecturer, PhD), both females with previous experience of working in acute hospital settings and performing qualitative research.

2.3.1 | Observations

The observations totalled 85 h, included two full working days for four FLMs and 1 day for one FLM. Written field notes of the FLMs' activities were made and resulted in 100 pages of transcribed field notes. In the beginning, at all five units, the researchers observed simultaneously, and after an hour, the notes were compared to confirm similar things had been noted. Then the researchers took turns observing, which enabled them to be focused. At some units, the staff had been previously informed of the observations, and at others, the observers were introduced on the observation day. The observers remained in the background wearing private clothing and a name tag identifying them as coming from a university. In most of the activities observed, the FLMs interacted with other persons (staff, colleagues, etc.). Observations were paused in situations involving patients or delicate staff matters. When the researchers did not understand what the FLMs were occupied with, clarifying questions were asked during the observation. During and after each observed working day, the researchers had reflexive discussions about what they had observed. These discussions led to questions being added to the interview guide (Table 2).

2.3.2 | Interviews

The audio-recorded interviews were semi-structured. Questions concerning what the researchers had observed and questions based on Kanter's theory of empowerment were asked with the aim to get descriptions and reflections on the staff's access to empowering structures (Table 2). The last author interviewed the FLMs ($n = 5$; range 62–167 min), and the first author the staff ($n = 13$, two via

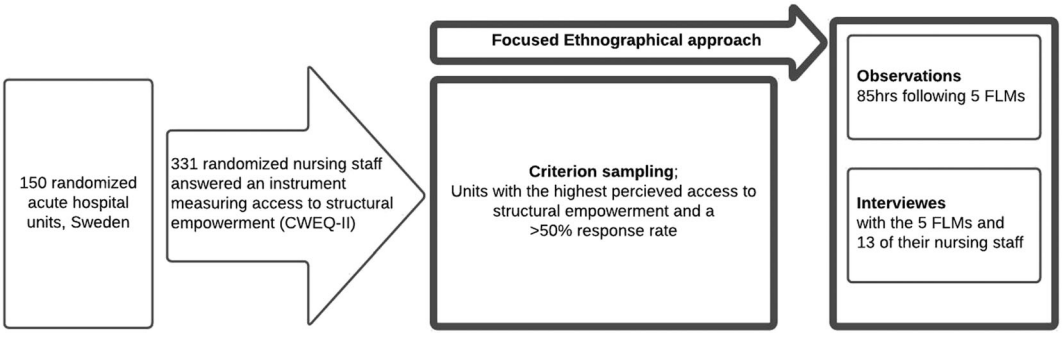

FIGURE 1 Study design

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TABLE 1 Setting and participants: number, age, gender, years as first-line manager (FLM), years at this workplace and span of control

	Number	Age, range/median	Gender	Years as FLM range/median	Years at the unit, range/median	Units with posts as assistant managers[a]	Number of employees, range/median	Hours staffed		Number of organisational sites per FLM, range/median	Hospitals Public/private	Unit specialty Medical = M Surgical = S Dialysis = D
								24 h/7	07–22			
Units	5					4	27–42/35	2	3	1–4/2	4/1	M = 1, S = 1, D = 3
FLMs	5	31–56/47	♀ 4 ♂ 1	1–11/5	1–11/5							
Registered nurses[b,c]	9	23–59/43,5	♀ 8 ♂ 1		1–27/3,5							
Nurse assistants[c]	4	47–57/54,5	♀ 4		1–28/25							

[a]At the time of the observations, there were two assistant managers on sick leave, one worked part-time and was not present, and one position was vacant.
[b]Including one assistant manager.
[c]In the text referred to as staff or staff members.

telephone; range 17–43 min). The FLM interviews differed in time from staff interviews as questions more often where addressed to the FLMs to get a deeper understanding of what had been observed. The researchers listened to the audio recordings the same day or the day after the interviews. All participants had agreed on being contacted for further questions and clarifications if needed, although that was never needed.

2.4 | Data analysis

A directed content analysis (Hsieh & Shannon, 2005) based on Kanter's theory (Kanter, 1993; Laschinger, 2010) was performed. Field notes and transcribed interviews were read through several times. Meaning units relating to the aim were identified, and when needed, condensed before being labelled with a code. Thereafter, the codes were deductively sorted into categories based on Kanter's theory of structural empowerment as described by Kanter (1993) and Laschinger (2010). For examples of the data analysis see Table 3. The first author conducted the analysis and discussed the categorization together with all four authors until a consensus was reached.

2.5 | Ethical considerations

The Regional Ethical Review Board (reg. no. 2016/107), approved the study. All participants received oral and written study information, and about voluntary participation.

3 | FINDINGS

What was seen during the observations was often confirmed and/or given a deeper understanding in the interviews. The descriptions about access to the empowering structures did not show any specific pattern related to the different staff groups, and the result text thereby represents both staff groups. The findings are presented under the deductive categories from Kanter's theory (Kanter, 1993; Laschinger, 2010) followed by a description of what characterized the FLMs' activities during the working day. Illustrative texts (identified with participant number) from field notes and interview quotations are presented to support the descriptions.

3.1 | Resources

From the start and throughout the day, the FLMs were observed as they formed an overview of how current resources and current and planned patients matched. Some gathered the staff first thing in the morning to collect information, and others walked around the unit speaking with the staff. Adjustments were made throughout the day to ensure sufficient staffing, and inquiries were made with the staff

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TABLE 2 Examples of interview questions from the interview guide and their relation to structural empowerment and examples of questions origin from the observers' reflexive discussions

Interview questions	Theoretical framework
… units that we looked at in Sweden, have made ratings … // … and here [pointing to the results] is the average from those that answered the survey … // … here with you, you are among those that have ratings at the higher end … on all this compared to most others, what do you think is the reason for this at your unit?	Opening question
How would you describe the availability of resources such as personnel, time and materials that are needed to accomplish the work here at the unit? If there is a shortage of personnel for a shift, what do you do?	Resources
We have attended some meetings that you have had at your unit and would like to know a little more about what sort of meetings you usually have and what is brought up on those occasions? How do you get access to the information you need to do your work?	Information
As a nurse, what possibilities for career development are there here?	Opportunities
The support you describe that you have, where does it come from and how is it manifested?	Support
We have observed that you nurses have different roles, could you please clarify what roles exist here, what they include and what significance they have for the unit?	Formal power
These networks that you nurses describe you have, what significance do they have in your work?	Informal power
Examples of questions origin from the observers' reflexive discussions	
I have thought of another thing, and the other observer has also said that, you do everything at once (act on a problem or question without delay). Have you thought about that?	
We have been a little curious about, uh, this division between the FLM and the assistant manager. We have not seen the assistant manager during these days, so we have not got a clear picture of how it is laid out. Can you tell a little about that from your point of view?	
Because I also thought the other day, then it was something (a question of resources/staffing), and then you just left that information in both places (to both sections/staff groups) and then you and I sat here and within two, three minutes, two people (from each section/staff group) came (offering their services) and then the problem was solved, that's how it works?	

on how to solve upcoming situations. Shortly after posing a question, we observed how staff members approached FLMs with solutions.

> A staff member comes in inquiring if the FLM had gotten enough staff for the evening and offers to stay. FLM is "very grateful". The staff member wonders at the same time about a change she wishes regarding a day off. FLM checks the schedule and says it looks OK if FLM can move someone from the evening to the day shift. FLM will ask the relevant staff. (Observation FLM 4)

Due to special competency needs, the dialysis units had to manage staffing, while the others had access to a personnel pool. The dialysis units did have the possibility to reschedule patients. The person rearranging the schedule and arranging additional staff differed, but at every unit, it was clear who had the responsibility and their mandate.

We could see and hear that staffs were very much involved with the equipment and supplies, in both planning and executing preventive maintenance strategies and evaluating and deciding on new equipment and materials. FLMs always welcomed staff's proposals, but they explained they did not always have the possibility to accommodate the staff's wishes. Depending on their preference or work needs, the FLMs dressed in private or nursing clothing. At times, the FLMs were seen taking inventory and unpacking supplies, helping with patient care and joining unit social activities. They described how important it was to take part in such activities when staffing was strained.

During the observations and interviews at the inpatient units, it became clear that their resources were often affected by other units' lack of resources. Consequently, we noticed that their planning would be upset by unpredicted admissions from other specialized units. We overheard discussions between the FLMs and staff over patient safety. The staff voiced a feeling of insecurity and uncertainty with the patient care and disappointment over administrative agreements that were not followed. The FLMs reacted strongly, for example, immediately approaching their manager and the involved departments' management as well as giving information and feedback to their staff.

3.2 | Information

The FLMs and their staff described the amount of information handled by the FLMs as massive and coming from within and outside the organisation. FLMs attended different meetings where information was shared and later communicated to staff. The FLMs described and reflected on how they choose not to communicate all information. They determined what was useful for the staff's daily work.

> Yes, I sift away quite a bit. Because it should be what interests and benefits the unit. And gives energy or that takes energy too. But otherwise, I do not bring it up. (Interview FLM 2)

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The staff members were content with the FLMs not sharing all information.

> As far as I'm concerned, it works well that way, we do not get too much information, because I feel that I could not handle it. (Interview staff 2.1)

FLMs and staff described the importance of communicating strategies and goals concerning patient care. That was perceived as important in their daily work and for reaching national goals within their specialty. Both aspects were described as important for recruiting and retaining competent colleagues. The FLMs were seen giving the same information via different channels like bulletin boards, emails and verbally. Coffee and lunch breaks were used for socialization as well as for spreading and gathering information. Some FLMs described how they used as many information channels as possible to ensure that all staff members, both regular and extra, had timely access to new information and also prevent rumours and uncertainty. Others, when asked, had not reflected over that as a strategy. FLMs and staff described verbal information to be the most effective and preferable. When staff requested information from the FLMs, either in person, via telephone or email, most often they received an answer quickly even if the FLMs had to search for the information.

3.3 | Support

When following the FLMs, we saw how they were observant of people they met, often sharing a word or two, and giving recognition to staff in many different situations. During the interviews, they expressed the importance of having good and supportive relationships with the staff, which gave the foundation for constructive support. Staff perceived having support from their FLMs, but they also stressed the importance of giving each other support as a way to retain colleagues and handle periods of heavy workload.

As a support, the FLMs were seen encouraging staff to find their own solutions or information to solve problems, and later checking to make sure it went well. During the interviews, the FLMs reflected on how they perhaps too often gave assistance instead of directions or suggestions on how to solve the problems.

The staff described how easy it was to get access to the FLMs when needed.

> … Yes, you feel she is with us. I think there is so much more FLMs run around to nowadays. There are meetings here and there, and FLMs aren't around, and they are hard to get a hold of, but our FLM manages to be here for us. (Interview staff 5.3)

We observed many examples of how the staff came by the FLMs office with practical work-related issues and matters of a more private personal character. The FLMs quickly closed the door and sat down together with the staff member for as long as needed. Afterwards, the FLMs made sure the door was opened again to signal availability.

3.4 | Opportunities

The staff said that the FLMs tried their best to provide them with opportunities to participate in developmental activities such as attending courses or performing special tasks. The individual's interests and ambitions guided the FLMs when promoting development and growth, for example, assigning staff members work tasks with greater responsibility.

> And I can easily get bored if I'm just doing my job, if it is only nursing, nursing, nursing. It's nice if you can do something new. Develop … It was really great when they came up with that idea [task shifting]. It made it, so that I feel like I can stay here a bit longer. (Interview staff 1.3)

It was important to the FLMs that the staff felt comfortable in their roles before taking on an expanded role or participating in special task groups. This strategy was not understood by everyone and could therefore, at times, be experienced as a lack of trust from the FLM.

A certain number of working days were set aside for in-service training and working with special tasks. FLMs and staff considered it important that developmental activities were scheduled on those days. Staff at one unit wore civil clothes to emphasize the day's specialness.

> … It's one thing to say that you are going to be involved, and have influence and develop your work and your unit. But if there's never any time set aside, then you cannot. And here it actually happens. (Interview staff 1.1)

3.5 | Formal and informal power

Several different work roles giving considerable responsibilities to staff were observed and described. Coordinators are examples of work roles with formal power. The staff had the mandate to place and rearrange patients, signal to the FLM if extra resources were needed and then allocate such resources. At one unit they assigned a staff member to every shift outside of office hours who was in charge of calling in staff when needed. Dialysis staff described having a very central role in planning and deciding patient care, and their knowledge was highly recognized and respected by others in the organisation.

Examples of informal power described by staff and FLMs were descriptions of benefits from good relationships with other specialties and colleagues for eventual consultation. Working in a smaller hospital was described as advantageous for establishing such contacts. Staff

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TABLE 3 Examples of meaning units, codes, categories based on Kanter's (1993) theory

Meaning units from field notes and interviews	Code	Category
Time for a staff meeting. FLM says, "Let us assemble the troops" and goes into nurses' station. FLM gets the phone. It is a conversation about a patient who needs a private room and is to be admitted right away. Discusses this and who should take care of the patient. Speaks with a new staff member about his start and introduction at the unit. FLM says "We can talk more tomorrow about how you want to do it." New staff member, "I'll go between." Gives a report to the nurse who will receive the patient who is coming and explains the reasons for the solution reached. Goes to the staff room for the meeting. (Observation FLM 1)	On the way to the staff meeting, he/she gets the staff to assemble, receives a phone call regarding a patient, discusses and plans for the patient along with informing the staff member, and then with the new staff member discusses the issue of the introduction before returning to the meeting that will start.	Information
7:30 the meeting ends, FLM speaks further with a staff member about how best to plan the day's work, FLM listens to the staff member's proposal and asks if it is possible for them to speak to the nurse in unit X, makes plans to work one staff member short in the evening. FLM summarizes where the focus should be, encourages staff members to read in the patient records. (Observation FLM 2)	Has conversations with staff members about how to plan for the day's work and staffing.	Resources
FLM asks, "Otherwise how's it going?" [referring to introduction] Nurse says, "It's going well, a bit turbulent today, but everyone is super cool." FLM tells him that they will have a follow-up meeting on this and gives him tips on who he can share his thoughts with. (Observation FLM 3)	FLM asks how it is going for the new staff member during the introduction, informs that there will be a follow-up meeting to discuss the introduction, and suggests another staff member as a source of support.	Support
"You get the feeling that our managers trust us and give us a lot of responsibility, and then you grow all the time with that responsibility. And I think it's really enjoyable of course, and so you want to have more and more responsibility and do more things. I think it will be a pretty dedicated staff." (Interview staff 1.1)	The managers trust us, give us responsibility and then a person wants more responsibility, it becomes a dedicated staff.	Opportunities
"Yes … as a coordinator you have quite a lot, you are like "the air traffic controller" that should keep track of everything. And then has a mandate to decide where patients will be placed and who should be redirected." (Interview staff 3.2)	The coordinator is "the air traffic controller," keeping track of everything and has the mandate to decide about the placement and redirection of patients.	Formal power
"I have worked a long time at the hospital and have contacts everywhere and know who to contact, which of course I make use of." (Interview staff 1.2)	I have contacts everywhere in the hospital and I make use of them.	Informal power

also said they appreciated their networks outside the organisation, for example, national meetings with colleagues or contacts with suppliers.

> For issues involving practical questions, it's often us nurses who encounter them. And our contact network extends throughout the country. (Interview staff 5.2)

3.6 | Interweaving structures

The different structures from Kanter's theory (Kanter, 1993) are described above one by one, but during the observations, they were often seen to be interwoven. The FLMs' activities had a varied content and time frame. At all units, the FLMs were seen working and handling different tasks as well as current and planned issues affecting

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the daily operations at the unit simultaneously; often on the go and in dialogue with their staff. For example, we observed that on the way to give information, the FLM stopped and discussed the need for extra staffing and then continued to give the intended information. Their workdays seemed seamless and activities, if not overlapping, followed directly one after another; often including several of the described categories. Day to day management and leadership activities ranged from a few minutes to meetings lasting more than an hour.

4 | DISCUSSION

To our knowledge, the present study is the first to observe how FLMs in hospitals act to support their staff's access to structural empowerment. The results show how the FLMs intentionally worked to enable staff access to empowering structures; often with activities and strategies overlapping each other. An unanimity between the FLMs and the staff members emerged from their descriptions regarding the importance of staffs' access to these structures in line with Kanter's theory (Kanter, 1993; Laschinger, 2010).

The FLMs allocated much of their time appropriating sufficient resources (cf. Ericsson & Augustinsson, 2015), and staff-rated access to resources has been shown linked to job satisfaction (Engström et al., 2011). The FLMs strategically chose to delegate tasks to their assistant managers or staff with other formal roles. This was done to facilitate a smooth running of the daily activities and during days of high stress. FLMs dressed in work clothes to signal themselves as a resource for the staff. Taking an active part in patient care has been described as not being an FLM role (Ericsson & Augustinsson, 2015; Skytt et al., 2008), but other studies show how it is still a part of what they do (cf. Duffield et al., 2019). In our study, it was seen as standard policy and appreciated by the staff.

The importance of the staff having access to information was described by the FLMs, which led to many activities (cf. Arman et al., 2009). The staff described their trust in the FLM to secure all the important information they needed (cf. Skytt et al., 2008, 2015). In the present, and in Hagerman et al. (2015), new information given in a timely manner was described as important for preventing rumours and causing uncertainty. Further, inadequate and unclear information has been described as a source of frustration (Ericsson & Augustinsson, 2015; Hagerman et al., 2015).

Staff and FLMs described a shared view regarding the importance of the staff's access to opportunities and the FLMs tried to enable their staff's participation in activities that the individual and the organisation could gain from (cf. Engström et al., 2011). At the dialysis units this strategy had "paid off," and both FLMs and staff expressed how the staff acquired valuable special knowledge that gave them access to formal power (cf. Kanter, 1993).

The FLMs described the importance of having a good relationship with the staff, and being present and available at the unit, which was an important foundation for giving staff direct support and feedback (cf. Skytt et al., 2015). FLMs expressed a hope that a supportive relationship, based on presence and feedback between them and the staff, would lead to supportive relationships within the staff group ensuring a supportive climate when needed. Supportive climates and empowering structures have also been described to be of great importance in previous studies (Eriksson & Engström, 2018; Yang et al., 2014). The staff in the present study described the support they give to one another to be of great importance especially in times of high stress.

How these FLMs prioritize their availability to their staff, and intentionally act to promote their staff's access to empowering structures are in line with Kanter's theory (Kanter, 1993), and can be seen as good examples. Our findings can be considered an important contribution to research concerning staff structural empowerment and the role of management for two reasons. The findings were derived from data collected from both observations and interviews, and from a sample of units with the highest ratings of staff's access to structural empowerment.

Despite changes in the FLMs' responsibilities and the health care system over the past years (Rosengren & Ottosson, 2008; Thorpe & Loo, 2003; Willmot, 1998), our findings show how the content and activities characterizing FLMs' workdays are still similar to earlier descriptions (Arman et al., 2009; Mintzberg, 1994). However, in contrast to previous studies where FLMs did not always reflect on and discuss strategies to make empowering structures accessible to their staff (Hagerman et al., 2019; Skytt et al., 2015), the FLMs in our study did express an awareness of these structures and had strategies for making them available to their staff. The FLMs' actions and reflections in our study have resemblances to transformational leadership style (Bass & Riggio, 2006), which has been positively associated with nurse-rated access to structural empowerment (Boamah et al., 2018; Khan et al., 2018).

4.1 | Methodological reflections

A strength of this study was that the findings from the observations could be confirmed with interviews. To ensure dependability, the first and last author conducted all observations and interviews. Being aware of the potential weakness of being two observers, the observers often checked in with each other on what had been observed and compared field notes, in some way, calibrating themselves as observers. The advantages of being two observers is that it enabled keeping a focused mind during the observations and capturing a more complete picture of the FLMs working days. Together they reflected on what had been observed and which questions to add to the interviews next day in the search for a deepened understanding. The main interview questions were used as a checklist for covering the same topics. Both FLMs and staff considered the days, where the observations occurred, as representative for the FLMs actions as well as for the activities at the unit. Data were collected over a limited time period, followed by the transcription of field notes and interviews to strengthen dependability. Members in the research group had various experiences from hospital settings,

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managerial positions and previous experience with observations, interviews and content analysis. The open and reflexive dialogue concerning the findings until a consensus was reached by all authors strengthened credibility. Through the detailed sample and procedure descriptions, the reader can decide whether the results can be transferred to another context or group.

5 | CONCLUSION

Staff at hospital units who perceive to have access to structural empowerment have FLMs who are present and available. Unanimity among FLMs and staff existed in regard to the importance of staff having access to structural empowerment. That the FLMs worked both continually and intentionally doing many things at the same time to provide the staff access to empowering structures contribute to the understanding of managers role in Kanter's theory.

5.1 | Implications for nursing management

FLMs can be inspired by our results showing good examples of managers recognizing and demonstrating the importance of giving staff access to empowering structures. FLMs should be given support to maximize their presence and availability to their staff. This can be achieved, for example, by developing the assistant manager's role to one that is supportive to both FLMs and staff and placing the FLM's office in close proximity to the staff.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

ETHICS STATEMENT

This study was approved by the Regional Ethical Board of Uppsala (Dnr 2016/107).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on reasonable request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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A translational research framework for nurse practitioners

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Abstract

Aims: This study aims to explore a proposed translational research continuum for nurse practitioners.

Background: Nurse practitioners are acknowledged as clinical leaders responsible for transforming health care delivery. It is important that nurse practitioners contribute to health care knowledge using scientific processes for the implementation of evidence-based practice and evaluation of outcomes of interventions for their patient groups.

Evaluation: This paper provides a review of translational research literature including implementation science to align nurse practitioner activities to a modified translational research framework.

Key Issues: A translational research framework has the potential to strengthen nursing research in the nurse practitioner role. Adapting an accepted translational research continuum for nurse practitioners places the clinical nursing leaders in an equitable research position with all health care professionals.

Implications for Nursing Management: The translational research continuum provides nursing management with a structure to benchmark nursing research. The continuum applies a modern research framework to support research engagement for the nurse practitioner role.

KEYWORDS
implementation science, nurse practitioner, nursing research, translational research

1 | INTRODUCTION

The role of the nurse practitioner has been defined by the International Council of Nurses (ICN) as an advanced practice nurse (APN) who integrates nursing and medical clinical skills, to assess, diagnose and manage patients in primary health care, acute care and chronic illness populations (ICN, 2020). The nurse practitioner role is identified as the most senior clinical nursing role across several countries and is supported with regulatory frameworks (Carney, 2016). The evidence suggests that nurse practitioners are an excellent conduit to implement evidence-based practice (EBP) in clinical situations, resulting in the corresponding positive patient outcomes (Ryder et al., 2020a). Core attributes of the nurse practitioner role include leadership and research (Ryder et al., 2020a).

The role of nurse practitioners as nursing leaders has been well defined. Recent research has acknowledged nurse practitioners as clinical leaders, facilitating change and health care transformation (Elliott, 2017; Lamb et al., 2018; Ryder et al., 2019, 2020b; Steinke et al., 2018). Part of their clinical leadership role includes accessing, assessing and implementing EBP in the clinical setting, as independent autonomous practitioners, to improve quality patient care and achieve optimal treatment for defined patient groups (Ryder et al., 2019, 2020a). The importance of leadership to the nurse practitioner role has been identified in research to date

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from Canada, Ireland and Australia (Lamb et al., 2018; Ryder et al., 2019).

The research role of nurse practitioners is less clearly defined. While there is a scarcity of literature exploring the research role, Ryder et al. (2019) reported that nurse practitioners across Ireland and Australia perceived it to be important to their role. It is reasonable to expect as change leaders in health care, nurse practitioners are researching and publishing the impact of such changes for patient populations. Despite nurse practitioners valuing research in their role, little work time for nurse practitioners is allocated to research (Chattopadhyay et al., 2015; Johnson et al., 2016; Kleinpell et al., 2018; Martin-Misener et al., 2015; Middleton et al., 2011, 2016; Ryder et al., 2020b). This lack of research is due to workload, lack of understanding of the value to the nurse practitioner role and a misunderstanding that research is limited to empirical knowledge (Ryder et al., 2019; Weiss et al., 2018).

Literature related to the integration of research into clinical nursing in Ireland and Australia is lacking. However, it is arguably an opportunity for nursing management to engage with structures and clinical roles that are ripe to embrace opportunities to lead on research and EBP implementation. Emerging evidence from the United States indicates that translational research leverages the efforts of implementing EBP for applied health care disciplines, including nursing (Weiss et al., 2018). Nursing management must understand and support nurse practitioner research, as the outcome reflects the care delivered and stimulates changes in health care delivery.

2 | AIMS

The aim of the article is to discuss the research role of nurse practitioners in the Irish and Australian context. The article will debate the traditional definition of research as perceived by nurse practitioners that includes a focus on empirical knowledge. The purpose is to discuss nurse practitioner research through the lens of the continuum of translational research (Khoury et al., 2007) and propose a modified continuum for nurse practitioner research across Ireland and Australia.

3 | BACKGROUND

Research is arguably fundamental to the nurse practitioner role to inform the health care professions and the public of the outcomes of improvement to patient care. It may be reasonable to expect nurse practitioners, as transformers of health care practices, to produce an abundance of literature related to health care improvements for defined patient groups (Masso & Thompson, 2017). However, Ryder et al. (2020a) identified a paucity of published literature over two decades despite significant changes to the management of different patient groups led by nurse practitioners.

Developing nursing research in the clinical setting has been a long-standing conundrum for the profession (Cowman, 2019). Leading research to inform clinical practice has been identified as an important outcome indicator for nurse practitioners (Elliott et al., 2014). Elliott et al. (2014) proposed that research is part of the nurse practitioner role including demonstrating an increased use and application of evidence, knowledge generation to inform clinical practice and leading evaluation of changes to patient care. Yet other authors suggest that the nurse practitioner role is related only to implementation of EBP (Lambert & Housden, 2017). The ICN (2020) guidelines on advanced practice nursing acknowledge that the four domains that characterize these roles are education, practice, research and leadership. These domains, along with professional regulation, differentiate advanced practice from generalist nursing practice. However, the guidelines provide little explanation of the role of APNs apart from requiring the ability to integrate research into practice (ICN, 2020). While this document acknowledges the work of Gardner et al. (2016) in delineation of advanced practice nursing roles and supports the affirmation that the nurse practitioner role is the highest clinical nursing role, it falls short in its recommendations of research leadership and activities for nurse practitioners, supporting their engagement in research and influencing research (ICN, 2020).

The research outcomes proposed by Elliott et al. (2014) and supported by Ryder et al. (2020a) may be considered aspirational as nurse practitioner standards internationally lack clarity in specifying the research role for nurse practitioners (American Association of Nurse Practitioners, 2019; Lambert & Housden, 2017; Nursing and Midwifery Board of Australia, 2014; Nursing and Midwifery Board of Ireland, 2017). The nurse practitioner standards and requirements in Australia are clinically focused, specifying nurse practitioners are to contribute to research that addresses and identifies gaps in care provision (Nursing and Midwifery Board of Australia, 2014). In the Irish nurse practitioner standards and requirements, the word research only receives one mention, stating that the vision for the role is developing a knowledge base through research (Nursing and Midwifery Board of Ireland, 2017). Interestingly, research appears to have been downgraded since the inception of the role in both Ireland and Australia, where the original role concept and competency practice standards identified research as a core concept, expecting nurse practitioners to lead, conduct and disseminate research (Carryer et al., 2007; National Council for the Professional Development of Nursing and Midwifery, 2008). The research role of nurse practitioners in international standards and requirements continues to vary from developing research questions, conducting research, participating in research projects, journal clubs and communities of practice, disseminating and incorporating EBP into clinical practice, to attending professional conferences (American Association of Nurse Practitioners, 2019; College of Nurses of Ontario, 2018; Nursing and Midwifery Board of Australia, 2014; Nursing and Midwifery Board of Ireland, 2017). The recent International Council of Nurses Guidelines on Advanced Practice roles provide no clarification on this matter, instead focusing on the clinical leadership activities related to the role, with no acknowledgement of the research role (ICN, 2020).

It is crucial that senior clinical nurses, recognize the importance of research in demonstrating the effectiveness of the nurse practitioner role and how it can transform the delivery of health important that the

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nursing profession, including care and benefit patient care (Carrick-Sen et al., 2015). While there is evidence of some nurse practitioner research, Smigorowsky et al. (2019) argue that research to support the role is lacking and falling behind clinical practice. There is a lack of knowledge pertaining to the outcomes of nurse practitioner health care services, and the research is often poor quality (Masso & Thompson, 2017; Smigorowsky et al., 2019). Replying on single-centre research, reporting positive outcomes for patients over a limited time, does not support transferability of evidence to different patient population groups (Masso & Thompson, 2017; Ryder et al., 2020a).

Despite the lack of clarity regarding research in the nurse practitioner role, Ryder et al. (2020b) reported that the majority of nurse practitioners across Ireland and Australia were research active and engaged with clinical outcomes research. However, this is not reflected in the number of peer-reviewed publications produced by nurse practitioners in these countries (Ryder et al., 2020a). A science-based profession, such as nursing, relies on evidence-based, peer-reviewed publication to underpin clinical practices. The absence of evidence to support nurse practitioner-implemented health care transformation does not support transferability of knowledge for larger patient populations and sustainability of the role for the future.

4 | EVALUATION

Recent research identified that nurse practitioners reported nursing management prioritized audit and quality improvement over research for their services (Ryder et al., 2019). Understanding this, it is acknowledged that nursing managers are focused on professional leadership, health care operations and quality care delivery. Many may not have been exposed to the emergence of translational research and implementation science. This paper provides a brief review of the literature on the history of translational research and implementation science and relates it to the more commonly understood quality improvement framework. The manuscript will then propose a translational research continuum that has emerged from research conducted across nurse practitioners in Ireland and Australia.

The nurse practitioner role is related to the transformation of health care and improving access to quality health care for patient populations. Nurse practitioner research should therefore be focused on the outcomes of quality improvement projects and health care transformations, both for patients and for health care. Translational research, also referred to as clinical outcomes research, is described as researching relevant knowledge and its application to real-life health care (Rubio et al., 2010). A translational research continuum captures the breadth of research and can be used to identify where individual research projects fit within the sequence.

4.1 | Translational research

Translational research is defined as the research steps to take new knowledge from the bench to the bedside and back again (Fort et al., 2017). Translational research as a framework presented in the traditional 'bench-to-bedside' model was the interface between basic science and clinical medicine (Woolf, 2008). However, Woolf (2008) believed the broader interpretation of translational research for all health care researchers, ensured that treatments and research knowledge actually reach the intended populations and were implemented correctly. In 2007, Khoury et al. presented a framework for the continuum of multidisciplinary translational research in genomic medicine (Figure 1). This continuum focused on enabling evidence-based research to be implemented into clinical practice, evaluated and disseminated, irrespective of research methods (Khoury et al., 2007). The epidemiological translational research continuum is constructed with four phases that evolve around the development of evidence-based guidelines (Khoury et al., 2007).

Translational research is not a new concept in nursing. It has been proposed as the dynamic interplay between research and practice, and the key to improve the quality of practice by rapidly translating research into widespread use in practice (Weiss et al., 2018). This differs from traditional research, whereby scholars discover new knowledge for the profession, often challenging particular assumptions (Florczak et al., 2014). Yet the two are rarely distinguished amongst the profession, or in standards and requirements, that arguably focus on research activities as opposed to research methods. Nursing management in Ireland are currently engaged with Magnet for Europe® Standards. Weiss et al. (2018) proposes that aligning the EBP activities of nursing policies with translational research activities will assist organisations toward achieving strategic Magnet objectives by increasing research capacity within organisations.

4.2 | Implementation science

Implementation science is about understanding the process and methods of successfully embedding evidence into health care practice, focusing on internal and external control factors to enhance

Translational Phase	Research Focus of Translation	Types of Research
T1	Discovery to candidate health application	Phases I and II clinical trials; observational studies
T2	Health application to evidence-based practice guidelines	Phase III clinical trials; observational studies; evidence synthesis and guidelines development
T3	Practice guidelines to health practice	Dissemination research; implementation research; diffusion research Phase IV clinical trials
T4	Practice population health impact	Outcomes research (includes many disciplines); population monitoring of morbidity, mortality, benefits and risks

FIGURE 1 Continuum of translational research in human genetics: types of research (Khoury et al., 2007, p. 666)

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reproducibility (Casey et al., 2018). This relates to one phase of translational research, Phase T3, which is linked to implementation of the research findings in clinical practice (Fort et al., 2017; Khoury et al., 2007). Implementation science is described as the scientific study of methods to support the uptake of scientific evidence and EBP into clinical practice, to improve the quality and effectiveness of health services (Demiris et al., 2014; Weiss et al., 2018).

Quality improvement and implementation science are of a complimentary nature, as they have similar approaches to implement change in practice, but challenges exists in blending the two mainly due to inconsistent terminology (Check et al., 2019). Both quality improvement and implementation science observe a systematic theoretical approach, model or framework to facilitate the application of evidence into practice (Nilsen, 2015). The purpose of a theory/model/framework is to describe/guide the process of translating basic research into practice, to understand/explain influences on the outcomes of implementation and to evaluate the implementation (Nilsen, 2015). Using a theory/model/framework also fosters interdisciplinary dialogue during the consultative phases throughout the interactive implementation process working within a context (May et al., 2016). Although quality improvement has been described as a subcategory of clinical outcomes research, some would propose that this has now evolved into what is commonly referred to as implementation science research (Peters et al., 2013). Just as quality improvement is part of clinical outcomes, implementation science research is part of the translational research continuum (Lane-Fall et al., 2019).

Implementation of evidence is a complex process as it dependent on the context in which the intervention takes place and the persons involved (Rogers et al., 2020). Context is described as an important practical problem for complex interventions as there may be specific barriers and enablers for each different environment and situation (Rogers et al., 2020). Accounting for the influence of context is imperative to explain why certain implementation outcomes are successful in different situations, and failure to address this limits the generalizability and replicability of the findings (Nilsen & Bernhardsson, 2019). Interestingly, Masso and Thompson (2017) have previously reported that the lack of clear identification of the context of study in nurse practitioner research was an impediment to replicability of the research in other health care settings. Applying an implementation science framework to nurse practitioner led EBP health care transformation projects tackles the unique context of each organisation. For managers, the context will provide an insight into the variables that influenced the adoption of EBP in other organisations (Weiss et al., 2018) to enable critical judgement of the likely success in local context.

4.3 | A translational research continuum for nurse practitioners

Clinical nurses engaged in the practice of real-world care delivery are essential to successful implementation of EBP (Zullig et al., 2020). The implementation of EBP, evaluation of outcomes and dissemination of the findings for other health professionals are important to improve patient outcomes internationally, but the clinical leaders of the nursing profession have not actively engaged with the dissemination of research to date (Zullig et al., 2020).

Active engagement in EBP to redesign health care structures and nursing research is part of the culture of nursing excellence within most organisations (Weiss et al., 2018). As a practice-based discipline, academic preparation of nurses has chosen to focus on EBP rather than research methods at master degree preparation level (Weiss et al., 2018). Gallen et al. (2019) have argued that nurses prepared to master's degree level are not sufficiently prepared in methods or statistics to undertake a significant lead in a research role. Therefore, the same question could be posed for nurse practitioners, where the minimum academic standard is master's degree level and they have been described as clinical leaders and champions of EBP (Ryder et al., 2020a). However, one author reports that nurse practitioners also lack the confidence to be independently research active (Ryder et al., 2019). Acknowledging that implementing EBP is a vital part of the translational research process clarifies the role that nurse practitioners are able to play in implementation research. Using the proposed translational research continuum provides clarity on nurse practitioner work allocation for nursing management who have struggled to differentiate between the range of scholarly endeavours by demonstrating they are all part of a research continuum where nurses contribute to evidence to improve patient outcomes (Carter et al., 2017).

Weiss et al. (2018) provides guidance clarifying where EBP aligns with translational research. EBP is the systematic process of reviewing, critiquing and synthesizing research evidence to develop best practice protocols incorporating local nuances (Weiss et al., 2018). This process is alternatively referred to guideline development. Guideline development is a small component of nurse practitioners work (Ryder et al., 2020b). Evidence identifies that nurse practitioner work is focused at leading on innovative health care transformation (Ryder et al., 2019). This manuscript proposes building on this work by presenting a translational research continuum for nurse practitioners (Figure 2) that has adopted the widely accepted interdisciplinary continuum to provide a research framework supporting nurse practitioners transformative activities. Importantly, the proposed translational research continuum for nurse practitioners retains the four phases of translational research to ensure nursing research is equivocal and mapped to accepted phases (Fort et al., 2017).

This proposed translational research continuum for nurse practitioners aligns activities with the four phases of translational research (Phases T1–T4). The continuum of research acknowledges the traditional research in the 'discovery' phase which is presented and applied in a small or single health care setting.

Development of the evidence or basic research is the first requirement to enable any change in practice. The first phase translation (T1) in translational research is described as discovery to application phase (Khoury et al., 2007), incorporating clinical trials and observational research, where researchers observe human behaviours in a natural setting (Lopez & Whitehead, 2013).

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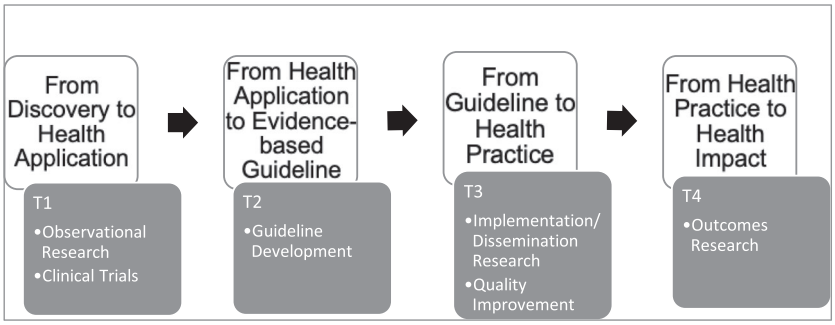
FIGURE 2 Translational research continuum for nurse practitioners



Development of EBP guidelines is necessary to enable evidence to be assessed for implementation to practice. Phase T2, the second translational phase, measures the value of the application in practice leading to the development of an evidence-based guideline (Khoury et al., 2007). Guideline preparation is traditionally described as an EBP or a quality improvement project as distinct from research (Carter et al., 2017; Kredo et al., 2016). However, translational research acknowledges that using knowledge after discovery localized to a specific context to enable guideline development is required to enable implementing into practice. The acknowledgement of the importance of the development of evidenced-based guidelines as part of the research continuum is essential to value the impact nurses have in translation of research into practice (Weiss et al., 2018). This supports the nurse practitioner leadership activities identified by Elliott et al. (2014) in generating standards and guidelines to support clinical practice.

Implementation science theory/models/frameworks support the third phase of translational research (T3) into health practice and focusing and reporting on the context of the specific intervention, including organisational supports required to successfully implement changes to health care delivery. Quality improvement frameworks are arguably the more familiar to nurse managers, and they continue to have a platform. However, to build the nursing research agenda, quality improvement frameworks arguably should be replaced with implantation science frameworks for nurse practitioners in the proposed translational research continuum.

The latter two phases (T3 and T4) of the translational research continuum provide an opportunity for greater operational engagement during implementation and evaluation phases of interventions. The final phase of translation research (T4) relates to the real-world application of evidence reporting on patient outcomes to health care interventions. Phases T3 and T4 are essential for the profession to ensure the sustainability of the role, by demonstrating the outcomes of nurse practitioner implementations in health care.

4.4 | Key issues

Translational research and implementation science have the potential to strengthen clinical nursing research to demonstrate the strengths of nursing care. Research is essential to the nurse practitioner role. As clinical leaders, they are the ideal conduit to strengthen the scientific evidence-base for the profession in the evolving health care structures. The proposed translational research continuum outlines an evidence-based framework capturing the breadth of nurse practitioner research. Adaptation of this translational research continuum by nurse practitioners guides and directs their research activities (Weiss et al., 2018; Zullig et al., 2020). This proposed translational research continuum provides a platform to enable nurse practitioners to identify areas of research activities incorporating their health care transformation agenda. Nursing management have a significant role in nurse practitioner integration (Lowe et al., 2018), and this provides an opportunity to address the gap in research support and understanding cited previously (Ryder et al., 2019). In addition, this provides nursing management with an opportunity to benchmark nursing research through the clinical leadership role of nurse practitioner.

5 | CONCLUSION

This article identifies the need for nurse practitioner research to embrace a translational research framework/continuum to expedite the implementation of new evidence into clinical practice. The transformational health care clinical leadership role of the nurse practitioner is suitably placed to lead the translation of evidence-based knowledge in the clinical practice setting. This translational research continuum for nurse practitioners has the potential to bridge the ever present theory-practice gap in their role. In addition, the framework supports that nurse practitioners, as clinical leaders, are equipped to identify where their clinical work can fit in a research framework. Embracing this translational research continuum ensures the nursing profession contributes to health care scientific knowledge, using equivocal research language and cementing the sustainability of the nurse practitioner role in health care transformation.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

The translational research continuum provides nursing management with a platform to benchmark nursing research across organisational research strategies. Utilizing the continuum provides nursing

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management with a guide to appropriate use of evidence-based implementation frameworks and incorporates evaluation and dissemination of findings into the process. The translational research continuum provides reassurances to nursing management that much of the evidence-based work already in action can be appropriately applied to a research framework. The review enhances current knowledge by explaining the importance of the nurse practitioner research role in contributing clinical nursing research to the wider health care knowledge base and proposing a modern research framework to support this.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

ETHICS STATEMENT

No ethical approval was required for this review manuscript.

DATA AVAILABILITY STATEMENT

Authors elect to not share data.

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ORIGINAL ARTICLE

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Factors influencing career success of clinical nurses in northwestern China based on Kaleidoscope Career Model: Structural equation model

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Abstract

Aim: To explore the relationships among self-efficacy, information literacy, social support and career success of clinical nurses and identify factors influencing clinical nurses' career success in northwestern China.

Background: Understanding the influencing factors of career success is important for the professional development of nurses and the improvement of clinical nursing quality. Many influencing factors of career success have been identified, but there is no large-scale research on the relationships among self-efficacy, information literacy, social support and career success of clinical nurses based on Kaleidoscope Career Model. Studies examining the association of the four factors remain limited.

Methods: A total of 3011 clinical nurses from 30 hospitals in northwestern China were selected in the cross-sectional survey, and the response rate was 94.71%. The clinical nurses completed the online self-report questionnaires including self-efficacy, information literacy, social support rating scale and career success scale. The data were analysed by SPSS23.0 statistical software using *t* test, analysis of variance, Pearson's correlation and multiple linear regression. Structural equation model (SEM) was used to analyse the influencing factors of career success using Mplus 8.3.

Results: The career success of clinical nurses in northwestern China was at a medium level. The linear multivariate regression analysis showed that self-efficacy ($\beta = .513$), social support ($\beta = .230$), information support ($\beta = .106$), information consciousness ($\beta = -.097$), information knowledge ($\beta = .067$), information ethics ($\beta = -.053$), hospital grade ($\beta = .118$), marital status ($\beta = -.071$) and age ($\beta = -.037$) entered

Chao Wu and Lin-yuan Zhang contributed equally to this work.

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regression equation of clinical nurses' career success (all $P < .05$). SEM results showed that the career success was negatively correlated with demographic characteristics and positively correlated with social support and self-efficacy.

Conclusion: Demographic characteristics, self-efficacy, social support and information literacy are the influencing factors of nurses' career success, which should be considered in the process of promoting nurses' career success.

Implications for nursing management: Nursing managers need to acknowledge the significance of nurses' career success both for the realization of their own value and for the improvement of clinical nursing quality. They should encourage nurses to enhance self-efficacy and render more social support through incentive policies and foster nurses' information literacy through information technology training so as to improve their career success.

KEYWORDS

career success, clinical nurse, information literacy, self-efficacy, social support, structural equation model

1 | INTRODUCTION

Nursing is an important part of modern medicine. The stability and development of nursing teams are related to the quality of clinical nursing work (Nibbelink & Brewer, 2018). However, the professional development of nurses has long been a problem, and the shortage of nurses and the high turnover rate have always existed (Wan et al., 2018; Zhang et al., 2019). Studies have reported that the global nurse turnover rate is between 15% and 44%, which varies from country to country (Pang et al., 2020). The turnover of nurses is not conducive to the development of their nursing career and not beneficial to the stability and development of the whole nursing community (Yasir et al., 2020). In recent years, with the progress of medical and health services, China's nursing industry has entered a stage of rapid development (Lu et al., 2018; Wong & Zhao, 2012). Although the development of nursing in China has made great progress, there are still many challenges, such as unstable nursing team and unbalanced resource distribution (Liu et al., 2018; Zhang & Tu, 2020). In northwestern China, the level of medical and health care lags behind compared with that in the East, and nurses have a higher turnover rate (Zhang et al., 2017). Therefore, it is of great significance for clinical nurses in northwestern China to clarify their career planning and promote their career success, so as to reduce the turnover rate of clinical nurses and increase their sense of achievements, which would facilitate the development of the whole nursing enterprise and the improvement of nursing quality (Laschinger et al., 2016).

1.1 | Background

Career success refers to a person's accumulated positive work-related achievements or psychological sense of achievement (Cumbler et al., 2018). At present, most of the researches on career success are concentrated in the field of enterprise management, but gradually, researches have turned to the field of nursing (Brown et al., 2018; Thammasitboon et al., 2017). Researches have showed that career success is helpful to promote the innovative behaviour of nurses, and it can improve the quality of service and stabilize the nursing teams (Wang, Zhang, et al., 2019; Zamanzadeh et al., 2019). A study among nurses in mainland China with master's or doctor's degrees shows that their career success is at a medium level, which was consistent with the research of 460 nurses in Tianjin, China (Dan et al., 2018b; Wang, Zhang, et al., 2019). However, there is no study on the career success of clinical nurses in northwest China.

Self-efficacy refers to the individual's judgement on whether he can successfully accomplish something (Cziraki et al., 2018). Studies have shown that low self-efficacy will have a negative impact on clinical nurses' work performance, mental health and nursing service quality, whereas higher self-efficacy can help nurses better adapt to clinical work, promote individual mental health and career development (Al-Kalaldeh et al., 2019; Wahlberg et al., 2016).

Information literacy refers to the ability to understand, collect, evaluate and utilize information (Boruff & Harrison, 2018). In the era of big data medicine, the information literacy of nurses is directly related to the efficiency of nursing work (Wadson & Phillips, 2018). Good information literacy can help nurses master the frontier dynamic knowledge, quickly collect, find, analyse and utilize data, which will help nurses improve their work efficiency (Wahoush & Banfield, 2014).

Social support means material, mental and daily care and support or help received from colleagues, friends and family (Kelly et al., 2017). Research shows that social support could provide protection to individuals when they are under stress, which has a buffering

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effect on striking events. On the other hand, it promotes the maintenance of good emotional experience (Clayton et al., 2019; Wu & Sheng, 2019).

The Kaleidoscope Career Model (KCM) asserts that career success is mainly composed of three factors: challenge, authenticity and balance (Lisa et al., 2018). Challenge is an important driving force for career success. According to Jiao Ye's (Ye et al., 2020) qualitative study, in Chinese culture, standing up to the challenge with different measures, which is also a challenging task, may have an important impact on career success. In our study, it is a great challenge for nurses to master skills of information identification and processing in the intense and heavy clinical work. So, we used information literacy to reflect this parameter. Authenticity means being genuine and correct in understanding of oneself. Research showed that the authentic assessments were conducive to improving self-efficacy (Ommering et al., 2021). In previous studies of Chinese nurses, there was a significant positive correlation between self-efficacy and career success (Dan et al., 2018b). So, we used self-efficacy to reflect this parameter in our study. Balance means the interaction between individual and external environment. In Chinese research, social support is an important aspect of balance (Xia & Yang, 2019). Social support includes both subjective and objective support, which is the representative of internal and external balance. Some studies showed that the nurses' career success was influenced by gender, educational background and organisational support (Liu & Liu, 2016; Zhang & Jin, 2018). However, our study, which was based on KCM, aimed at exploring the career success of nurses in a more efficient manner.

1.2 | Aims

This study was designed to examine: (1) the levels of career success, self-efficacy, social support and information literacy; (2) the relationships of career success, self-efficacy, social support and information literacy; (3) factors and the structural model of nurses' career success.

2 | METHODS

2.1 | Study design

Our study was a multicenter cross-sectional survey. Nurses completed the self-report questionnaires on the network platform.

2.2 | Participants

The calculation of sample size is 10 times of the number of items in the scale. There are 67 items in this questionnaire. Therefore, the calculation formula of sample size is $N = (6 + 10 + 30 + 10 + 11) * 10 = 670$, which means that at least 670 subjects are required for this study. We use the convenient sampling method, and 3480 clinical nurses from 5 tertiary hospitals, 7 secondary hospitals and 18 primary hospitals are recruited. According to voluntary principle, 3180 clinical nurses participate in our survey. The inclusion criteria were (1) nurse qualification certificate of the People's Republic of China; (2) engaging in clinical nursing work; and (3) informed consent to participate in the study. We collected 3011 valid questionnaires, and the response rate was 94.71%. There was no significant difference in the demographic composition ratio between the valid questionnaires and the total questionnaires.

2.3 | Procedures

This study was conducted in 30 hospitals in northwest China from March to July 2020. Initially, researchers explained the purpose of the survey to the hospital administrators to obtain their approval and support prior to data collection and gave their consent to participate in the research. With the help of head nurses of various departments, questionnaires were sent through email to the clinical nurses. The respondents were given questionnaires to complete within 2 weeks. All the clinical nurses were informed that participation in this study was voluntary. They could withdraw from the study at any time for any reason, and the questionnaires were answered anonymously. They were assured that their information would only be used for research, and the scores of their questionnaires would not have any influence on their career.

2.4 | Measurements

2.4.1 | Demographic

Demographic characteristics were designed by the researchers including age, years of working, educational levels, relationship status, hospital level and positions.

2.4.2 | Self-efficacy

The general self-efficacy scale (Chinese version) was translated and revised by Wang Caikang in 2001 (Chen et al., 2019). It has 10 items and is widely used in Chinese with high reliability and validity. In the process of response, '1' means 'completely inconsistent'; '2' means 'basically not conforming'; '3' is 'basically conforming'; and '4' is 'completely conforming'. In our study, the test–retest reliability of the scale was .832, and the half reliability was .828. The Cronbach's alpha coefficient was .951.

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2.4.3 | Information literacy

The information literacy scale (Chinese version) was translated and adapted by researchers through expert meetings and discussions based on Wadson's information literacy scale (Wadson & Phillips, 2018). The scale has 5 dimensions and 30 items: information awareness (8 items), information knowledge (6 items), information ability (4 items), information ethics (6 items) and information support (6 items). It used Likert's 5-grade scoring method, namely, from 'fully consistent' to 'non-conforming', and the scale was scored from '1 point' to '5 point'. The coefficients of the internal consistency of the whole scale and subscales were over .87. The scale had high content validity and structural validity as well as discrimination validity. In this study, the Cronbach's alpha coefficient of this questionnaire was .957, and the Cronbach's alpha coefficient of the five dimensions ranged from .872 to .939.

2.4.4 | Social support

The Chinese version social support rating scale was developed by Xiao Shuiyuan (Xiao, 1999). This scale is widely used in nursing research and has high reliability and validity (Gu et al., 2016; Wang et al., 2018). It has 10 items, including 3 dimensions: objective support (3 items), subjective support (4 items) and utilization degree of social support (3 items). Items 1–4 and 8–10 are scored from '1' to '4' in the order of options. Item 5 is scored from '1' to '4' from 'none' to 'full support'. Items 6 and 7 are multiple topics where each option selected is counted as '1'. In this study, the Cronbach's alpha coefficient of this questionnaire was .821, and the Cronbach's alpha coefficient of the five dimensions ranged from .740 to .818.

2.4.5 | Career success

Career success scale was used to assess individual's positive psychological feelings accumulated and obtained in the work, as well as their work achievements (Woolston, 2019). It contains 2 dimensions and 11 items: career satisfaction (5 items) and career competition (6 items). The scale has been widely used in Chinese research and has high reliability and validity (Li et al., 2014; Xin et al., 2020). The Cronbach's alpha coefficient of this study was .947, and the Cronbach's alpha coefficients of the dimension of career satisfaction and career competition were .936 and .917 respectively.

2.5 | Data analysis

We adopted IBM SPSS Statistics version 23.0 for Windows to analyse the data. All variables were described by using descriptive statistics. Levene's test was employed to test the variance homogeneity. The differences of participants' career success in demographic characteristics were compared by independent t test and analysis of variance. Pearson's correlation analysis was taken to explore the correlation among career success, self-efficacy, information literacy and social support. Influencing factors of nurses' career success and its two dimensions were identified by using a stepwise multiple liner regression. The structural equation model (SEM) was adopted to analyse the influencing factors of career success, and the measurement and structural models were performed through using Mplus 8.3. All the tests were performed by two-sided test, with $P < 0.05$ as the statistical difference evaluation standard.

3 | RESULTS

3.1 | Subjects' characteristics and distribution of career success

Table 1 presented nurses' demographic and work-related characteristics. The average age of the respondents was 30.77 years old (SD = 5.78; ranging from 18 to 56 years old), and the average years of working was 8.53 years (SD = 6.30; ranging from 1 months to 38 years). There were 237 head nurses and 2774 nurses in our study. Among these nurses, 1278 (42.45%) had junior college's degrees, 1720 (57.12%) had bachelor's degrees and 13 (0.43%) had master's degrees or above.

The differences of participants' career success in demographic characteristics were shown in Table 1. In career success, the study showed significant differences in hospital rank ($F = 11.730$, $P < .001$) and position ($t = 2.529$, $P = .011$). In the dimensions of career satisfaction, the study showed significant differences in hospital rank ($F = 12.471$, $P < .001$) and position ($t = 3.345$, $P = .001$). In the dimensions of career competition, the study showed significant differences in hospital rank ($F = 10.486$, $P < .001$). The scores of nurses' career success and its two dimensions in the secondary hospital were the highest, followed by the tertiary hospital, and the lowest were in the primary hospital. The scores of head nurses' career success and its two dimensions were higher than those of ordinary nurses.

3.2 | Self-efficacy, information literacy, social support and career success of study participants

As shown in Table 2, the career success score of clinical nurses in this study was (35.56 ± 8.87), (16.75 ± 4.65) for career satisfaction and (18.81 ± 4.84) for career competition. The score of self-efficacy was (25.42 ± 6.93). The score of information literacy was (114.18 ± 18.62). The score of social support was (43.63 ± 8.57), and its dimension scores were as follows: subjective support (24.42 ± 5.07), objective support (10.76 ± 3.69) and utilization of support (8.45 ± 1.95).

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TABLE 1 The univariate analysis of general information and career success ($n = 3011$)

Variables	*N* (%)	Career satisfaction	Career competition	Career success
Age (years)				
≤25	532 (17.67)	16.61 ± 4.69	18.72 ± 4.95	35.33 ± 9.10
26–30	1165 (38.69)	16.64 ± 4.69	18.72 ± 4.88	35.36 ± 8.96
31–35	774 (25.71)	16.73 ± 4.66	18.88 ± 4.86	35.61 ± 8.95
>35	540 (17.93)	17.16 ± 4.47	18.96 ± 4.64	36.12 ± 8.33
Years of working				
≤2	458 (15.21)	16.70 ± 4.70	18.68 ± 4.82	35.38 ± 8.96
3–5	657 (21.82)	16.55 ± 4.63	18.66 ± 4.92	35.21 ± 8.95
6–10	1062 (35.27)	16.63 ± 4.73	18.76 ± 4.94	35.38 ± 9.10
>10	834 (27.70)	17.09 ± 4.50	19.05 ± 4.67	36.15 ± 8.44
Educational levels				
Junior college	1278 (42.45)	16.94 ± 4.65	18.82 ± 4.85	35.76 ± 8.84
Undergraduate	1720 (57.12)	16.61 ± 4.63	18.80 ± 4.84	35.41 ± 8.89
Master degree or above	13 (0.43)	16.62 ± 5.42	18.15 ± 5.31	34.77 ± 10.47
Relationship status				
Single	809 (26.87)	16.61 ± 4.48	18.93 ± 4.76	35.54 ± 8.65
Married	2175 (72.23)	16.81 ± 4.70	18.76 ± 4.87	35.57 ± 8.93
Widowed or separated	27 (0.90)	15.81 ± 5.34	18.93 ± 5.64	34.74 ± 10.59
Hospital level				
Tertiary hospital	1280 (42.51)	16.35 ± 4.64[ab]	18.66 ± 4.81[b]	35.01 ± 8.88[b]
Secondary hospital	1485 (49.32)	16.92 ± 4.76	18.71 ± 4.97	35.63 ± 9.05
Primary hospital	246 (8.17)	17.82 ± 3.69	20.15 ± 3.96	37.98 ± 7.21
Positions				
Head nurse	237 (7.87)	17.72 ± 4.04[a]	19.24 ± 4.16	36.95 ± 7.41[a]
Nurse	2774 (92.13)	16.67 ± 4.69	18.77 ± 4.90	35.44 ± 8.98

[a]Comparison of the first and second items ($P < .05$).
[b]Comparison of the first and third items ($P < .05$).

TABLE 2 The scores of career success, self-efficacy, information literacy and social support

Scales and dimensions	Minimum	Maximum	Average score	Score
Career success	11.00	55.00	3.23 ± 0.81	35.56 ± 8.87
Career satisfaction	5.00	25.00	3.35 ± 0.93	16.75 ± 4.65
Career competition	6.00	30.00	3.14 ± 0.81	18.81 ± 4.84
Self-efficacy	10.00	40.00	2.54 ± 0.69	25.42 ± 6.93
Information literacy	30.00	150.00	3.81 ± 0.62	114.18 ± 18.62
Information consciousness	8.00	40.00	4.35 ± 0.66	34.76 ± 5.28
Information knowledge	6.00	30.00	3.26 ± 0.88	19.56 ± 5.29
Information capability	4.00	20.00	3.44 ± 0.83	13.74 ± 3.33
Information ethics	6.00	30.00	4.02 ± 0.75	24.09 ± 4.49
Information support	6.00	30.00	3.67 ± 0.83	22.03 ± 4.96
Social support	16.00	66.00	4.36 ± 0.86	43.63 ± 8.57
Subjective support	8.00	32.00	6.11 ± 1.27	24.42 ± 5.07
Objective support	3.00	22.00	3.59 ± 1.23	10.76 ± 3.69
Support utilization	3.00	12.00	2.82 ± 0.65	8.45 ± 1.95

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3.3 | Relationships among self-efficacy, information literacy, social support and career success

In Table 3, nurses' career success clearly showed a positive correlation with self-efficacy ($r = .584$, $P < .001$), information literacy ($r = .148$, $P < .001$) and social support ($r = .264$, $P < .001$). Career satisfaction was positively correlated with self-efficacy ($r = .510$, $P < .001$), information literacy ($r = .127$, $P < .001$) and social support ($r = .252$, $P < .001$). Career competition was positively correlated with self-efficacy ($r = .514$, $P < .001$), information literacy ($r = .150$, $P < .001$) and social support ($r = .242$, $P < .001$).

3.4 | Factors influencing of career success and its dimensions

Career success and its two dimensions were dependent variables, whereas general information, self-efficacy, information literacy and social support were independent variables for multiple linear regression analysis. Table 4 revealed self-efficacy ($\beta = .513$, $P < .001$), social support ($\beta = .230$, $P < .001$), objective support ($\beta = -.057$, $P = .017$), information support ($\beta = .106$, $P < .001$), information consciousness ($\beta = -.097$, $P < .001$), information knowledge ($\beta = .067$, $P < .001$), information ethics ($\beta = -.053$, $P < .011$), hospital grade (primary hospital, $\beta = .118$, $P < .001$), relationship status (married, $\beta = -.071$, $P < .001$) and age (>36 years old, $\beta = -.037$, $P = .018$) regression ($R^2 = .359$, $F = 168.259$, $P < .001$).

3.5 | SEM of career success

In Figure 1, referring to the results of multiple linear regression analysis, we built an SEM of career success and verified the hypothesis. In Figure 2, we used confirmatory factor analysis to test whether the index of the measurement model conformed to requirements. The results of confirmatory factor analysis were as follows: $\chi^2 = 776.509$, $df = 66$, Comparative Fit Index (CFI) = 0.955, Tucker–Lewis Index (TLI) = 0.938, Standardized Root Mean Square Residual (SRMR) = 0.062, Root Mean Square Error of Approximation (RMSEA) = 0.060. Although the chi-square value was not significant, the other indicators met the requirements, and the model fit well. The larger chi-square degree of freedom ratio was due to the larger sample size (Xie et al., 2018). In structural equation modelling, demographic, social support and self-efficacy had significant impact on career success.

4 | DISCUSSION

It is the first multicenter study that analysed the factors influencing of career success of clinical nurses in northwestern China basing on KCM and SEM and explored the relationships among career success, self-efficacy, information literacy and social support. The score of career success of clinical nurses in northwestern China was at an intermediate level across the country which was lower than that of Dan's research of clinical nurses' in eastern China (Dan et al., 2018a). The scores of career success were generally not high, which was related to the occupational fatigue, social status and nurse–patient relationship of clinical nurses in China (Huang et al., 2019; Wang, Lv, et al., 2019; Zhou et al., 2019). The reasons for the low scores of clinical nurses in northwestern China lie in the fact that the level of basic medical facilities is backward, which is a far cry from the eastern region (Liu et al., 2019; Ntekim et al., 2020). Therefore, it is of great significance for us to identify the status of clinical nurses' career success and to explore its influencing factors.

In terms of demographic data, hospital grade, age and marital status were also the influencing factors of career success. In our study, we found that the career success of nurses in the tertiary hospitals was not as great as that in the secondary hospitals and first-class hospitals. This is partly due to the large number of patients and the high work pressure of nurses in the tertiary hospitals (Bateman et al., 2016), which may make the sense of career success of nurses in the tertiary hospitals inferior to that in the lower level hospitals.

TABLE 3 The correlation between career success and self-efficacy, information literacy and social support

Item	Career success	Career satisfaction	Career competition
Self-efficacy	0.548**	0.510**	0.514**
Information literacy	0.148**	0.127**	0.150**
Information consciousness	0.043**	0.052**	0.029
Information knowledge	0.136**	0.085**	0.167**
Information capability	0.161**	0.123**	0.178**
Information ethics	0.089**	0.089**	0.078**
Information support	0.177**	0.168**	0.163**
Social support	0.264**	0.252**	0.242**
Subjective support	0.253**	0.247**	0.226**
Objective support	0.166**	0.154**	0.158**
Support utilization	0.188**	0.173**	0.178**

**$P < .01$.

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TABLE 4 Multiple linear regression analysis of career success and its two dimensions of nurses ($n = 3011$)

Dependent variable	Independent variable	*B*	SE	*B′*	*t* value	*P*
Career success[a]	Constant	12.634	1.069	—	11.816	<.001
	Self-efficacy	0.656	0.019	0.513	33.716	<.001
	Social support	0.238	0.027	0.230	8.931	<.001
	Objective support	−0.137	0.057	−0.057	−2.389	.017
	Information support	0.190	0.036	0.106	5.227	<.001
	Information consciousness	−0.163	0.031	−0.097	−5.231	<.001
	Information knowledge	0.112	0.031	0.067	3.653	<.001
	Information ethics	−0.105	0.041	−0.053	−2.530	.011
	Married	−1.398	0.324	−0.071	−4.319	<.001
	Primary hospital	3.824	0.483	0.118	7.924	<.001
	>36 years old	−0.851	0.358	−0.037	−2.376	.018
Career satisfaction[b]	Constant	5.138	0.577	—	8.912	<.001
	Self-efficacy	0.316	0.011	0.471	29.829	<.001
	Social support	0.115	0.014	0.212	7.944	<.001
	Objective support	−0.081	0.031	−0.064	−2.583	.010
	Information support	0.104	0.016	0.111	6.294	<.001
	Information consciousness	−0.080	0.015	−0.090	−5.161	<.001
	Married	−0.575	0.173	−0.055	−3.327	<.001
	Primary hospital	1.873	0.274	0.110	6.843	<.001
	Secondary hospital	0.359	0.149	0.039	2.420	.016
Career competition[c]	Constant	7.344	0.595	—	12.351	<.001
	Self-efficacy	0.338	0.011	0.484	31.136	<.001
	Social support	0.086	0.012	0.152	7.072	<.001
	Support utilization	0.101	0.047	0.041	2.137	.033
	Information support	0.081	0.025	0.089	3.308	.001
	Information consciousness	−0.099	0.017	−0.108	−5.670	<.001
	Information capability	0.085	0.043	0.059	1.978	.048
	Information support	0.067	0.021	0.069	3.278	.001
	Information ethics	−0.084	0.024	−0.078	−3.527	<.001
	Married	−0.825	0.183	−0.076	−4.496	<.001
	Primary hospital	2.052	0.270	0.116	7.593	<.001
	>36 years old	−0.471	0.200	−0.037	−2.356	.019

[a]Determination coefficient $R^2 = .359$; adjusted determination coefficient $R^2 = .357$; $F = 168.259$, $P < .001$.
[b]Determination coefficient $R^2 = .306$; adjusted determination coefficient $R^2 = .304$; $F = 165.104$, $P < .001$.
[c]Determination coefficient $R^2 = .331$; adjusted determination coefficient $R^2 = .328$; $F = 134.678$, $P < .001$.

Compared with the tertiary hospitals, patients in the lower level hospitals are less seriously ill, and nurses' working environment is less tense, so the level of career success of nurse is higher. The results of our study are consistent with the previous studies, which have shown that work environment is positively correlated with career success of nurses (Wang, Zhang, et al., 2019). Therefore, hospital managers in the tertiary hospitals should attach greater importance to helping nurses achieve career success and offering them support owing to their younger age, lack of work experience and work accumulation, and their sense of achievement is low (Chen et al., 2018).

In Table 4, self-efficacy was influencing factors of nurses' career success, which is consistent with Dan's research results (Dan et al., 2018b). According to KCM, authenticity is an indispensable factor in career success. Authenticity means facing and accepting oneself. So we used self-efficacy to reflect this parameter. A good sense of self-efficacy is conducive to enhancing individual confidence, which is helpful to address problems actively and facilitate individual success (Karabacak et al., 2019; Santucci et al., 2018). Therefore, it is sensible for nurses to raise awareness of self-efficacy and improve it in their clinical work. They should adopt positive strategies to approach clinical problems. Nursing managers may encourage nurses regularly, so it can help nurses gain confidence in clinical work (Spurlock et al., 2019). In the study of continuing education courses, managers are supposed to develop courses about self-confidence

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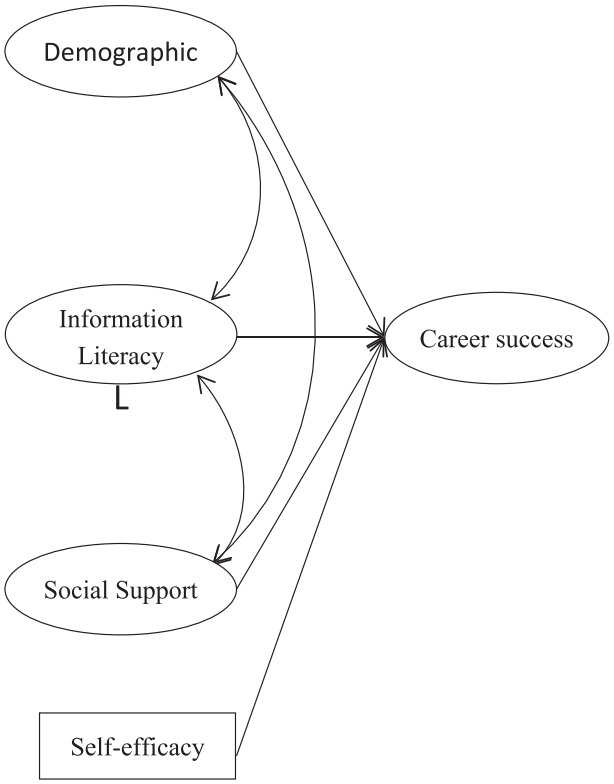

FIGURE 1 Nurses' career succuss structural equation model

improvement and collective activities to improve nurses' sense of self-efficacy. Nursing managers may as well carry out clinical skill training for nurses to improve their nursing skills and enhance their self-confidence (McCutcheon et al., 2015).

In KCM, subjective factors and objective conditions are of equal importance to achieve career success. One needs to balance his internal and external relations. Therefore, balance is another important factor in KCM, and we used social support to reflect this parameter. In our study, good social support was another important factor in achieving career success of nurses, and it had a positively predictive effect on career success equation model. Good social support, especially colleague support, is conducive to creating a good working atmosphere and handling difficulties (Li, Guo, et al., 2019; Rogers et al., 2016). Hospital managers are expected to increase the support for clinical nurses by formulating supportive policies, and colleagues are supposed to help and support each other (Gouweloos-Trines et al., 2017). In terms of financial support, nursing managers can increase the bonus in order to stimulate nurses' work enthusiasm. In terms of emotional support, nursing managers need to care about nurses' work and living conditions, providing them with immediate help and emotional support. Additionally, this is a call for family members of the nursing staff to acknowledge the work of nurses and share understanding.

In this study, information literacy was also an important influencing factor of career success. That was consistent with the KCM in which challenges are another important factor for career success. In

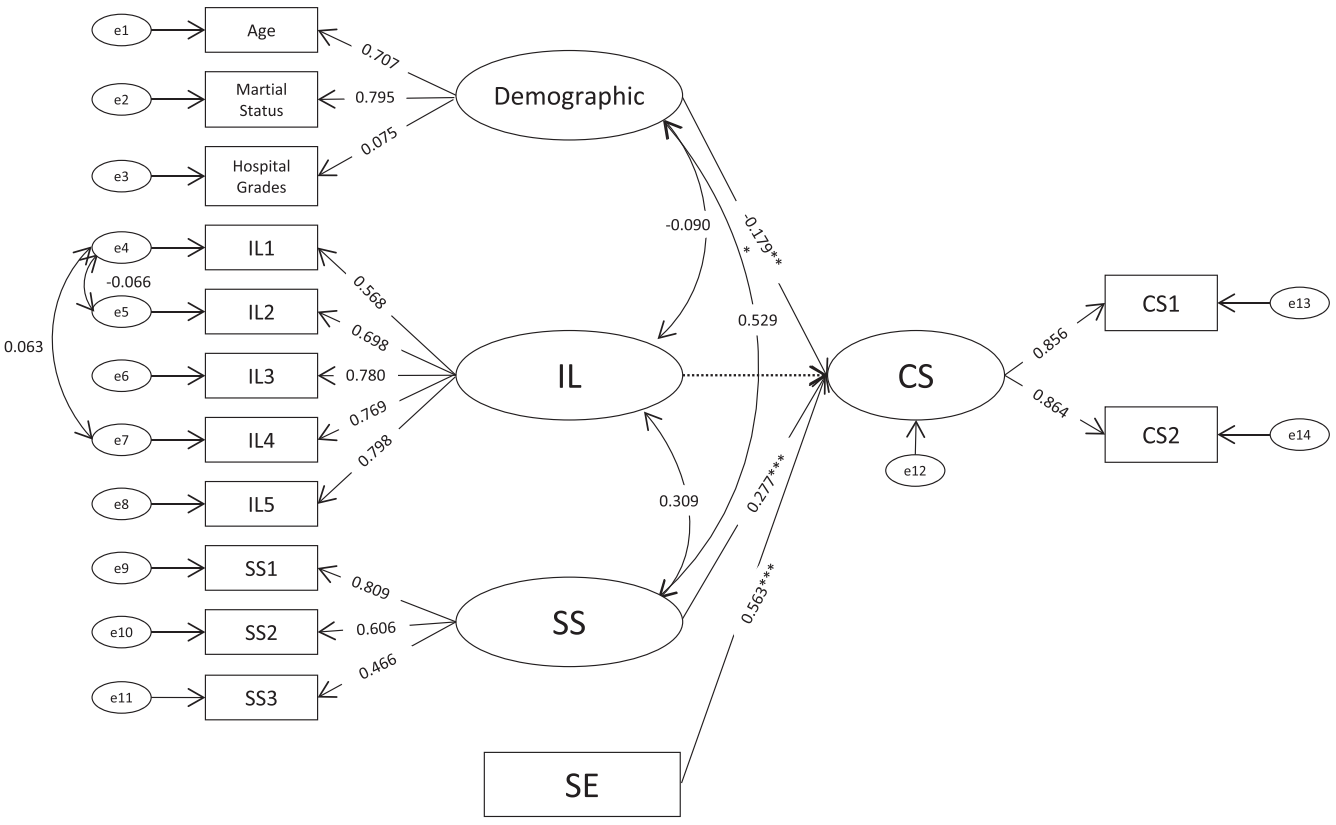

FIGURE 2 Path parameters of model. IL, information literacy; SS, social support; SE, self-efficacy; CS, career success; IL1-IL5, manifest variables of Information Literacy; SS1-SS3, manifest variables of Social support; CS1-CS2, manifest variables of career success; ***$P < .01$

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clinical nursing work, it is a great challenge for nurses to master skills of information identification and processing. So we used information literacy to reflect challenge. However, the effect of information literacy on career success was not significant in SEM. The reason may be that the SEM is used to analyse the relationship between latent variables, whereas multiple linear regression is used to analyse manifest variable (Kiefer & Mayer, 2020). Nurses with good information literacy are more likely to seize the opportunity in big data medical treatment and collect medical data and resources faster and more efficiently (Westra et al., 2017). Therefore, hospital managers tend to highlight the importance of information literacy in nursing work and organize information literacy training to raise nurses' information literacy (Carroll et al., 2019). Besides, managers should improve nurses' information literacy by improving the hospital information system, as well as introducing and popularizing digital medicine (Ricciardi et al., 2019).

5 | LIMITATIONS AND RECOMMENDATIONS

There are some limitations in our study that need to be improved through follow-up research. First, our study is conducted in the form of self-report questionnaire, and the results are relatively subjective. Second, our research is only carried out in northwest China, so the regional scope is expected to be further expanded. Last, our study chose the convenient sampling method for the reason that there are too many hospitals in China and the research fund of our study is limited. In future studies, we will choose stratified random sampling method, which may provide a more scientific result, especially in the massive investigation.

6 | CONCLUSIONS

Our study evaluated the levels of career success, information literacy, self-efficacy and social support of clinical nurses, explored the relation of the four factors and analysed the influencing factors of career success of clinical nurses. Through the study, we found that information literacy, self-efficacy, social support, hospital grade, age and marital status were the influencing factors of nurses' career success that should be noted by nurses and managers. These findings may be employed as effective measures to enhance nurses' career success.

7 | IMPLICATIONS FOR NURSING MANAGEMENT

Hospital and nursing managers should promote the career success of clinical nurses because it is conducive to helping nurses make good career planning, realize the sense of achievements in work, promote the improvement of work efficiency and stabilize the teams of nurses. Hospitals and nursing managers can regularly organize career planning training for clinical nurses to help them clarify the direction of career development. Additionally, managers should emphasize the importance of information literacy, self-efficacy and social support to the career success of nurses. They can make incentive policies to increase social support for nurses (Fu et al., 2018), promote the training of nurses' information literacy (Phelps et al., 2015) and encourage nurses to increase their self-efficacy (Liu & Aungsuroch, 2019).

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

ETHICAL CONSIDERATIONS

Our study was conducted according to the ethical guidelines of the Helsinki Declaration (World Medical Association, 2013). However, an ethics approval was not required according to the institutional guidelines and national laws and regulations because this study was conducted in an anonymous manner and no ethical human trials were involved. We just conducted electronic questionnaire through email and were exempt from further ethics board approval because our study did not involve human clinical trials or animal experiments.

DATA AVAILABILITY STATEMENT

Authors elect to not share data.

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ORIGINAL ARTICLE

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Effects of group psychological counselling on transition shock in newly graduated nurses: A quasi-experimental study

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Abstract

Aim: This study examined the effects of group psychological counselling on transition shock in newly graduated nurses.

Background: Newly graduated nurses are often faced with transition shock as they enter the workforce. Helping them adapt to the new work environment and role as quickly as possible is an important goal for nursing managers.

Method: This prospective, parallel-group, quasi-experimental trial enrolled 71 newly graduated nurses who were randomly assigned to the intervention ($n = 38$) or control ($n = 41$) group. In addition to routine hospital training, the intervention group received psychological counselling. Participants were evaluated with the Transition Shock Scale of Newly Graduated Nurses before (pre) and after (post) the training with or without intervention.

Results: The total score and score on each dimension of the scale were decreased after the intervention ($P < .05$); control subjects showed no difference between pre- and post-scores. The total score and score on each dimension were higher in the control group than in the intervention group ($P < .05$).

Conclusion: Psychological counselling alleviates transition shock in newly graduated nurses entering the workforce.

Implications for Nursing Management: Nursing managers can introduce group psychological counselling into their training programmes to increase the job readiness of newly graduated nurses.

KEYWORDS
group psychological counselling, newly graduated nurses, transition shock

Bin Xu and Suyuan Li contributed to this work equally.

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1 | INTRODUCTION

Adapting to the work environment as quickly as possible is a challenge faced by all newly graduated nurses (Winfield et al., 2009). At the beginning of their career, newly graduated nurses face issues such as difficulty in executing medical orders, insufficient capacity, lack of technical skill and low job satisfaction, which cause considerable stress to the nurses and can result in transition shock. In this state, nurses experience feelings of self-doubt, confusion and uncertainty about their roles because of the conflict between their previous experiences and the demands of their professional relationships and responsibilities, shortcomings in their skill set and their needs as they transition from a known to an unknown role (Duchscher, 2009).

Most newly graduated nurses face enormous pressure from their environment during role transition (Duchscher, 2009). Educational background, income level, mode of employment and place of origin are factors that influence the intensity of transition shock that nurses experience (Calleja et al., 2019; Darvill et al., 2014; Kim & Yoo, 2018). Poor transition leads to job burnout, which affects the quality of nursing care and results in high turnover in the profession. One study reported that transition shock resulted in an attrition rate of 35%–60% among newly graduated nurses after 1 year (Altier & Krsek, 2006). Therefore, helping newly graduated nurses adapt to the new work environment is an important goal for nursing managers.

Newly graduated nurses are often in a sensitive and emotionally unstable state because of changes in their interpersonal relationships, the discrepancy between their expectations and reality, stress, and other factors (Read & Laschinger, 2017). Professional training programmes do not adequately prepare nurses for their new work environment, such that they experience a strong sense of transition shock (Wildermuth et al., 2020). A positive and healthy work environment can facilitate nurses' transition to the professional realm (Calleja et al., 2019). To ensure a smooth transition, nurses need support and help from clinical instructors, the hospital department and other sources (Regan et al., 2017). Group psychological counselling can help individuals examine themselves, improve their relationships with others and adopt new attitudes and behaviours through interactions with others (Dang et al., 2014). Compared with individual counselling, group counselling can have a greater influence on participants, may be more appealing and is efficient and cost-effective. Group counselling has been shown to reduce stress and coping skills (Ehsan et al., 2019; Karimi et al., 2019; Mirmahmoodi et al., 2020). In this study, we investigated whether group psychological counselling can reduce transition shock in newly graduated nurses and thus promote the physical and mental health of newly graduated nurses.

2 | METHODS

2.1 | Study design and participants

This prospective, parallel-group, quasi-experimental trial was conducted at a general hospital in Nanjing, Jiangsu Province, China in June 2019. Newly graduated nurses were defined as those who had worked for less than 1 year following graduation. The participants were randomly assigned to the intervention or control group. Participants in both groups were told that they would receive routine hospital training and group psychological counselling but were unaware of when the counselling would occur until they were instructed to attend the sessions. Participants in the control group did not receive group psychological until the end of all sessions of counselling in the intervention group. All participants signed a written, informed consent form before the start of the study.

Inclusion criteria were newly graduated nurses who volunteered to participate in this study. Exclusion criteria were newly graduated nurses who experienced major personal or family events that could affect their psychological state in the previous 6 months such as traffic accidents, bereavement, etc. Criteria for discontinuing participation in the study were as follows: (1) did not complete all investigations; (2) unable to continue participating in the study because of illness, pursuit of further study, maternity leave, etc.; and (3) voluntary withdrawal of informed consent during the study.

The sample size was estimated based on the $n=\frac{2S^2}{(\overline{X}_1-\overline{X}_2)^2}\times f(\alpha,\beta)$, with a confidence interval of 95% ($\alpha=.05$), statistical power of 90% ($\beta=.1$) and comparison boundary value of $f(\alpha,\beta)=10.8$. Based on a previous study (Zhaoxia et al., 2019), the standard deviation of the control group was $S=0.54$, and the means of the intervention and control groups were $\overline{X_1}=2.14$ and $\overline{X_2}=3.71$, respectively. According to this calculation, the minimum sample size for each group was determined to be 20. However, considering potential dropout and in order to ensure an adequate sample size, we increased the sample size of each group by 120% ($n=22$).

2.2 | Data collection

Data were collected using a questionnaire consisting of two parts. The first section collected demographic information (including age, sex, marital status, education, sibship status), and the second part was a 27-item Chinese version of Transition Shock Scale of Newly Graduated Nurses Scale (You-ru et al., 2015), which comprises four dimensions: physical (six items), psychological (eight items), knowledge and skills (five items) and social culture and development (eight items). Answers to each item range from *strongly disagree* (1 point) to *strongly agree* (5 points). The final score for each participant (ranging from 27 to 135) was obtained from the total score of the related questions; a higher score reflected a higher degree of transition shock. The Cronbach's α coefficient of the total scale was .918, and the content validity was .906.

After coordinating with the relevant departments at the hospital, we recruited newly graduated nurses by convenience sampling; those who met the inclusion criteria and provided consented were enrolled. The study was explained to each participant in an in-person interview at the hospital. We first identified 127 participants and excluded 48 (11 who did not meet the inclusion criteria and 37 who declined to participate). Thus, 79 newly graduated nurses constituted the study

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population. The participants were randomly assigned to the intervention and control groups using a random number table (Figure 1). Each participant completed the questionnaire before (pre) and after (post) the training (with or without intervention).

2.3 | Intervention

Both groups received routine hospital training that included basic nursing theory and practical skills. The intervention group also received group psychological counselling for 5 weeks. The content of the counselling sessions (Table 1) was reviewed by professors specializing in nursing education and psychology. The intervention was carried out from September to October 2019 once a week for 60–90 min per session. To ensure maximum involvement of each participant in the intervention, the intervention group was divided into three subgroups with 12, 13 and 13 participants. Two instructors with extensive psychological counselling experience carried out the intervention at different times during the week.

2.4 | Data analysis

Statistical analyses were performed using SPSS v22.0 software (IBM, Armonk, NY, USA). Categorical variables are described as frequencies (%), and the χ^2 test or Fisher's exact test was used to assess intergroup differences. Continuous and nonnormally distributed data were described as the median and interquartile range (25%–75%), and the

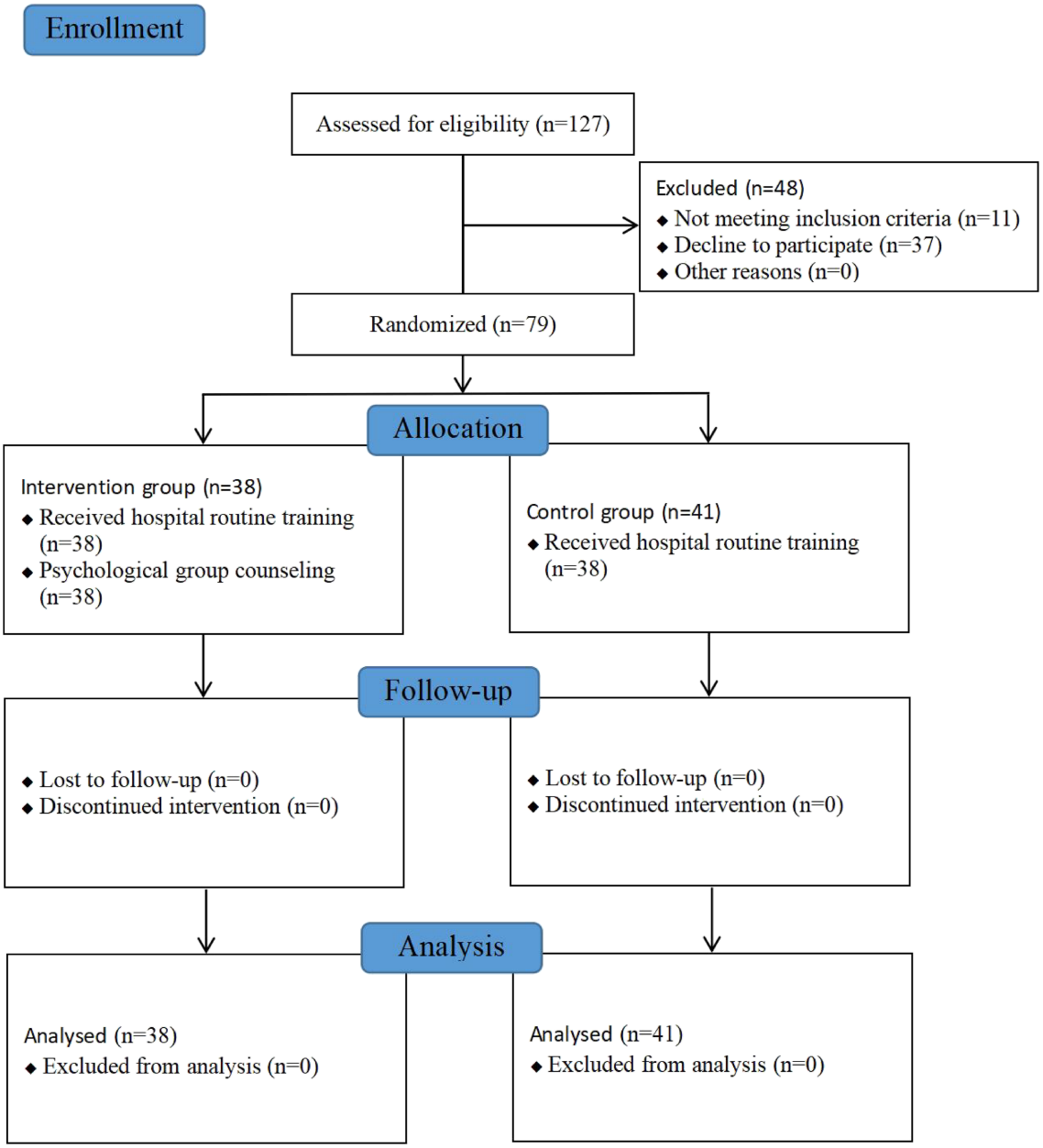

FIGURE 1 Flow diagram at each stage of the quasi-experimental trial

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TABLE 1 The structure of the sessions and the content of psychological group counselling intervention

Session	Theme	Target	Procedure	Homework
Session 1	Ice breaking action, self-awareness	Members know each other, trust each other, and guide members to find their own advantages	1. Self-introduction: Pine moving, 2. Build a team and set sail: Stand together through storm and stress 3. Advantage evaluation: Self portrait	Write a blessing for the team and use your strengths to accomplish one thing
Session 2	Recognize the pressure and speak out	Recognize that pressure is common, and be good at telling it bravely	1. Pressure ring 2. Speak out the pressure bravely 3. Facilitator summary	Write down the things that have put pressure on you recently and how you deal with it
Session 3	Control pressure and work happily	Learn how to decompress and discover your potential	1. Share the moment of glory 2. Psychological yoga 3. Stress management training	Use stress management training to relieve the stress caused by one thing
Session 4	Barrier free communication, being grateful	Establish a good interpersonal relationship and establish the belief of being grateful for life and returning to the society	1. Golden idea 2. Memories moved 3. Thanksgiving blessing	Write a letter of gratitude
Session 5	Harmony between you and me, towards the future	Think and plan for the future	1. Wisdom relay 2. Time pizza 3. Unsent letter	Develop future plans

Mann–Whitney U test or Wilcoxon signed-rank test was used to evaluate intergroup differences. The threshold for significance was set to $P < .05$ for all tests.

3 | RESULTS

3.1 | Characteristics of the study population

A total of 79 newly graduated nurses (38 in the intervention group and 41 in the control group) were enrolled in the study. There were no statistically significant differences in age ($\chi^2 = .034$, $P = .854$), sex ($\chi^2 = .431$, $P = .512$), education level ($\chi^2 = .143$, $P = .705$), marital status ($\chi^2 = .140$, $P = .708$) or single-child ($\chi^2 = .219$, $P = .639$) between the two groups (Table 2).

3.2 | Transition shock evaluation

There was no statistically significant difference between two groups in physical aspect ($Z = -1.096$, $P = .854$), psychological aspect ($Z = -0.413$, $P = .680$), knowledge and skills aspect ($Z = -0.143$, $P = .886$), social culture and development aspect ($Z = -0.860$, $P = .390$) and total scores($Z = -0.648$, $P = .517$) of the Transition Shock Scale of Newly Graduated Nurses Scale before the intervention. After the intervention, there was no significant improvement in physical aspect ($Z = -1.374$, $P = .169$), psychological aspect ($Z = -0.747$, $P = .455$), knowledge and skills aspect ($Z = -0.468$, $P = .640$), social culture and development aspect ($Z = -0.033$, $P = .974$) and total scores ($Z = -0.663$, $P = .507$) of the scale in the control group, whereas the intervention group showed significant improvement in physical aspect ($Z = -3.798$, $P = .000$), psychological aspect ($Z = -3.935$, $P = .000$), knowledge and skills aspect ($Z = -3.431$, $P = .001$), social culture and development aspec ($Z = -3.112$, $P = .002$), and total scores ($Z = -4.317$, $P = .000$) of the scale. There were also significant differences in post-scores of physical aspect ($Z = -4.182$, $P = .000$), psychological aspect ($Z = -3.980$, $P = .000$), knowledge and skills aspect ($Z = -4.547$, $P = .000$), social culture and development aspect ($Z = -3.657$, $P = .000$) and total scores ($Z = -4.345$, $P = .000$) between groups (Table 3).

4 | DISCUSSION

The transition shock evaluation scores of both the intervention and control groups in this study indicate that newly graduated nurses did not transition smoothly to the professional setting, consistent with previous findings (Dyess & Sherman, 2009). In the initial stage of adaptation to nursing work, newly graduated nurses face challenges in interpersonal relationships and with responsibilities, knowledge and skills. Difficulties in adapting to their professional role and overcoming transition shock can cause nurses to experience stress, role confusion, anxiety and other complex emotions and can even lead to resignation (Baumann et al., 2018; Lea & Cruickshank, 2015). A successful transition depends on organizational support; social support from senior nurses and the department can alleviate the stress of transition, improve nurses' ability to respond to work demands and reduce work-related stress (Ashley et al., 2016; Regan et al., 2017). In the present study, our hospital adopted group psychological counselling as a way to provide support and guidance to newly graduated nurses.

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TABLE 2 Demographic characteristics of the intervention and control group

Variable	Intervention *N* (%)	Control *N* (%)	χ^2	*P*
Age (years)				
18–23	29 (76.31)	32 (78.05)	.034	.854[b]
24–30	9 (23.69)	9 (21.95)		
Sex				
Male	2 (5.26)	1 (2.44)	.431	.512[a]
Female	36 (94.74)	40 (97.56)		
Education				
Junior college	22 (57.89)	22 (53.66)	.143	.705[b]
Undergraduate	16 (42.1)	19 (46.34)		
Marital status				
Single	36 (94.74)	38 (92.68)	.140	.708[a]
Married	2 (5.26)	3 (7.32)		
Single-child				
No	26 (68.42)	26 (63.42)	.219	.639[b]
Yes	12 (31.58)	15 (36.58)		

[a]Chi-square test.
[b]Fisher's exact test.

TABLE 3 Transition shock scores in the intervention and control group before and after psychological group counselling intervention`

Variable	Before (median [IQR])	After (median [IQR])	$Z^{\#}$	*P*
Physical aspect				
Intervention	22 (18.5,25)	18 (14.08,20)	−3.798	.000
Control	23 (19,27.5)	21.18 (20,24)	−1.374	.169
$Z^{\#\#}$	−1.096	−4.182		
P	.273	.000		
Psychological aspect				
Intervention	27 (22.75,31.5)	22 (19.63,25.5)	−3.935	.000
Control	28 (23.5,31.5)	26.94 (24,30)	−0.747	.455
$Z^{\#\#}$	−0.413	−3.980		
P	.680	.000		
Knowledge and skills aspect				
Intervention	18 (15,20)	15 (12.4,16)	−3.431	.001
Control	18 (15,20)	17.73 (16,19.5)	−0.468	.640
$Z^{\#\#}$	−0.143	−4.547		
P	.886	.000		
Social culture and development aspect				
Intervention	21 (14,25.25)	17.32 (14.71,20)	−3.112	.002
Control	21 (17,25)	21.97 (19,24)	−0.033	.974
$Z^{\#\#}$	−0.860	−3.657		
P	.390	.000		
Total				
Intervention	85.5 (67,103.25)	71.69 (61.19,83)	−4.317	.000
Control	90 (77,102.5)	87.82 (81.5,96)	−0.663	.507
$Z^{\#\#}$	−0.648	−4.345		
P	.517	.000		

Abbreviations: IQR, interquartile range; $Z^{\#}$, Wilcoxon signed-rank test; $Z^{\#\#}$, Mann–Whitney U test.

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The concept of transition shock is based on reality shock theory and has been proposed as an assessment model based on qualitative research (Duchscher, 2009). The model covers the physical, intellectual, emotional, developmental and sociocultural impact of transitions. The Transition Shock Scale of Newly Graduated Nurses Scale, which is based on reality shock theory but is applicable to real-life situations, evaluates the intensity of transition shock of newly graduated nurses in four dimensions, namely, physical, psychological, knowledge and skills, and social culture and development (You-ru et al., 2015). The physical dimension focuses on external performance, sleep, energy, etc. The psychological dimension comprises stress, feelings of inferiority and other emotions. The knowledge and skills dimension measures the ability to cope with practical problems at work. The social culture and development dimension assesses the integration of newly graduated nurses into the work environment and nursing profession. Based on these, the structure of the sessions and content of psychological group counselling intervention were formed.

Improving nurses' subjective well-being is an effective way to enhance nurses' positive mental attitude, encourage their initiative and improve their work efficiency (Seguin, 2019). In order to increase the subjective well-being of nurses, we used the first four counselling sessions to make the participants feel at ease by praising their colleagues, family members and friends and encouraging them to understand and actively help others and adopt positive communication methods to establish good interpersonal relationships. Newly graduated nurses can also choose to consider being busy at work as a source of happiness, as caring for and helping patients is a worthy endeavour.

Newly graduated nurses are often in an emotionally unstable state because of changes in their interpersonal relationships, conflict between their expectations and reality, stress and other factors. Improving psychological endurance can improve job satisfaction and reduce the risk of resignation (Zamanzadeh et al., 2015). In order to help participants develop their ability to cope with stress and recover quickly from stressful events, Sessions 2 and 3 were designed to allow participants to explore their own potential and strength through application of stress management skills to their life and work.

Successful adaptation to professional life by a nurse is associated with a decrease in negative emotions that reduces the impact of transition (Lan et al., 2016). Career adaptability is the ability to remain balanced during career changes, which is critical for an individual to achieve career success (Hou et al., 2012). In this study, Session 5 of the intervention was designed to provide newly graduated nurses with a quiet space to reflect on their professional goals. Rational career positioning can prevent nurses from making blind comparisons with other professions and help them maintain an appropriate career mentality while strengthening their professional identity and motivation to work and mobilizing positive factors that will allow them to cope with pressures and frustration in their work.

Most studies to date on professional training for nurses have focused on standardized methods in simulated training programmes and one-on-one tutorials that improve knowledge, skill level and job competency, while overlooking the fact that such interventions can add to the pressure felt by new nurses and thus achieve an effect contrary to the one that was intended. In this study, we provided group counselling to cultivate a positive attitude among participants through themed activities in a safe, non-judgmental and respectful environment that allowed them to recognize their potential and strength, find happiness in learning, develop skills necessary for establishing positive relationships and coping with stress, and plan their careers and lives. Our results demonstrate that group psychological counselling can effectively reduce the transition shock experienced by newly graduated nurses.

4.1 | Limitations

This study had some limitations. The small sample size limits the generalizability of the results; a multicenter study with a larger sample size is needed to validate our findings. The group psychological counselling only consisted of five sessions, and the long-term impact of the intervention was not examined; this warrants further exploration in future studies to determine the cost-effectiveness of such programmes.

5 | CONCLUSION

Newly graduated nurses' overall level of coping with the transition to the work environment needs to be improved. Group psychological counselling significantly reduced transition shock in newly graduated nurses and should be integrated into professional training programmes.

5.1 | Implications for nursing management

In addition to improving newly graduated nurses' knowledge and skills, nursing managers need to address the impact of transition shock. To help newly graduated nurses identify their strengths, overcome stress, build positive relationships and realize their potential, group psychological counselling can be introduced into daily management practices. Because nurses work in shifts, implementation of group sessions may be difficult. This can be circumvented by having each hospital department separately carry out group counselling sessions led by trained senior nurses. This can not only improve participation but can also allow emotional catharsis in a guided form with the nurses providing mutual support and forming a cohesive unit.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

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FUNDING INFORMATION

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The Ethics Committee of Jiangsu Province Hospital and Nanjing Medical University First Affiliated Hospital approved the study (approval number: 2019-NT-45). Written informed consent was obtained from individual participants.

CONSENT FOR PUBLICATION

Written informed consent for publication was obtained from all participants.

AUTHOR CONTRIBUTIONS

B.X., S.L., W.B., M.W, Z.L. and X.W. implemented the study in China. B.X., S.L. and W.B. conducted the data analysis. B.X. and S.Y.L. wrote the initial draft of the manuscript. M.W., Z.L. and X.W. reviewed and revised the manuscript. Z.L. and X.W. designed and coordinated the study and take responsibility for the accuracy of the data analysis.

DATA AVAILABILITY STATEMENT

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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ORIGINAL ARTICLE

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Defining nursing workload predictors: A pilot study

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Abstract

Aim: To explore predictors of perceived nursing workload in relation to patients, nurses and workflow.

Background: Nursing workload is important to health care organisations. It determines nurses' well-being and quality of care. Nevertheless, its predictors are barely studied.

Methods: A cross-sectional prospective design based on the complex adaptive systems theory was used. An online survey asked nurses to describe perceived workload at the end of every shift. Data were gathered from five medical-surgical wards over three consecutive weeks. We received 205 completed surveys and tested multivariate regression models.

Results: Patient acuity, staffing resources, patient transfers, documentation, patient isolation, unscheduled activities and patient specialties were significant in predicting perceived workload. Nurse-to-patient ratio proved not to be a predictor of workload.

Conclusions: This study significantly contributed to literature by identifying some workload predictors. Complexity of patient care, staffing adequacy and some workflow aspects were prominent in determining the shift workload among nurses.

Implications for nursing management: Our findings provide valuable information for top and middle hospital management, as well as for policymakers. Identification of predictors and measurement of workload are essential for optimizing staff resources, workflow processes and work environment. Future research should focus on the appraisal of more determinants.

KEYWORDS
hospital, nursing, staffing, workflow, workload

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1 | BACKGROUND

Nursing work is complex in nature and capturing its variegation is therefore difficult (White et al., 2015). Previous research estimated nursing workload by calculating nurse-to-patient ratios, nursing hours per patient day, or volume of nursing tasks based on patient complexity classifications (Griffiths et al., 2020). Other researchers suggested including non-patient related activities in the workload measurement (Campos et al., 2018; Duffield et al., 2011). Despite extensive research on nursing workload measurement this remains a hot topic in nursing literature.

Nursing workload was defined as 'all nursing work that must be carried out over a defined period of time', (Myny et al., 2011) and was recently described as 'the amount of time and care that a nurse devotes (directly and indirectly) to patients, the workplace, and professional development' (Alghamdi, 2016). Systems based on quantification of patient care needs, including patient acuity/intensity, complexity of nursing care, casemix of patient diagnosis, and patient turnover, attempted to estimate the demand for nursing resources and related workload (Fagerström & Vainikainen, 2014; Swiger et al., 2016). An increase in nursing care requests, the number of patients cared for, patient demands, and diagnoses can lead to discrepancy between patient needs and the adequacy of nursing resources and heavier workloads (Duffield et al., 2011; Griffiths et al., 2020). Moreover, increased patient numbers and a heavier patient load limit nurse–patient contact, increase care left undone, and intensify time pressure on nurses and concerns about patient outcomes (Yanchus et al., 2017).

Additionally, evidence is emerging that patient turnover in hospitals is increasing (Blay et al., 2017). Increased admissions, discharges, and transfers were reported to intensify nursing workload, create unstable work environments (Yanchus et al., 2017), and were associated with communication gaps, adverse events, and greater length of hospital stay (Blay et al., 2017). Increased patient turnover might also generate an accumulation of patients on a ward from specialties different to those customary in the unit of care. An increased number of patient specialties can lead to more frequent work interruptions, increased information needs from patients and caregivers, reduced work efficiency, poorer patient outcomes (Congdon et al., 2020), and undoubtedly an increase in the perception of nursing workload. Moreover, coordinating several different physician teams might influence workload (Duffield et al., 2011). The effect of patient casemix, understood as previously described, on perceived nursing workload has, however, barely been identified.

Another factor connected to patient care needs and resources is the development of nosocomial infections. It requires prophylactic measures to prevent or contain the spread, including wearing protective equipment, strictly following decontamination protocols, and the creation of dedicated areas for stocking specific supplies (Giuliani et al., 2018). All these measures involve additional nursing activities that increase perceived workload (Duffield et al., 2011). Caring for one or more isolated patients should therefore be considered when estimating nursing workload.

There is copious research on staffing resources, and on nurse and patient outcomes. Evidence reported significant associations between hospital staffing resources, quality of care, and patient outcomes like mortality or failure to rescue (Driscoll et al., 2018). Nursing resources determine the intensity of nursing work necessary for satisfying patient needs (Swiger et al., 2016), and decreased staffing and skill mix was reported to increase workload, tasks left undone, overtime, work pressure, and concerns about quality of care (Duffield et al., 2011; Yanchus et al., 2017).

Besides observing patient acuity, nurse-to-patient ratio and staffing resources, researchers also observed the amount of activities performed by nurses during their shift, and workflow, to identify connections with workload. Different time studies documented that nurses spent less than 50% of working time caring for patients, while dedicating the rest of their time to documentation, communication, ward rounds, handover, supply stocking and so forth. (Congdon et al., 2020). Therefore, because the majority of nursing time is employed away from the patient (Congdon et al., 2020) it is important to identify workflow and to evaluate its connection with perceived nursing workload.

Nursing activities were classified as activities connected to patient care (directly or indirectly), unit-related activities, miscellaneous work and nurses' personal time during a shift (Lavander et al., 2016). Among indirect patient activities, documentation of patient care was reported to occupy a large part of nurses' working time (Duffield et al., 2011). In recent years, the volume of nurse's documentation increased, due in part to increased patient turnover (Blay et al., 2017) or to multiple paper-based or electronic recording systems (Shihundla et al., 2016). Documentation time might therefore be associated with workload and requires further exploration.

One workflow aspect that might influence nursing workload can be unpredictable events such as patient emergencies or unscheduled patient examinations. These unplanned events are a daily occurrence in nursing work (Fagerström & Vainikainen, 2014). When studying workload, connections between unplanned events and perceived nursing workload should therefore be explored.

With the intention of filling a gap in literature and of revealing prediction effects, this research intends to identify some of the variables associated with nursing workload. Within this study, we test the following hypotheses:

Hypothesis 1. Patient care complexity, number of patients assigned to each nurse (nurse-to-patient ratio) and staffing adequacy on shifts are significantly associated with higher workload levels.

Hypothesis 2. Workflow activities related to patient transfers, the number of patients in isolation, presence of patients from different specialties, performing unscheduled activities, information provided to patients or family members, and documentation, all affect the perceived nursing workload.

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2 | METHODS

2.1 | Design

This research is part of an ongoing multicentre observational study on workload and well-being. Below we present the pilot study results, which employed a cross-sectional prospective design.

2.2 | Theoretical framework

This research was based on the complex adaptive systems (CAS) theory (Holland, 1996). Similarities between CAS and nursing practice have been described (Kiviliene & Blazeviciene, 2019). CAS can therefore be used to understand complex situations, to achieve process optimization, to improve work environments, and to advance nursing science (Kiviliene & Blazeviciene, 2019).

2.3 | Setting and participants

The pilot study was performed in February 2021 in five medical-surgical wards of a University Hospital in Italy. We chose random nursing shifts (morning or afternoon) over three consecutive weeks, and at the end of every shift, we asked nurses to complete a questionnaire about the workload perceived. All nurses involved in this study were registered nurses with a university degree in nursing. Some of them also held a master's degree or a clinical specialization. Only full-time nurses performing direct patient care and working in the ward for at least 2 months were included. Nurses working double shifts or nurses from other services providing support were excluded.

2.4 | Data collection

All nurses working on the selected shifts and fulfilling the inclusion criteria received a Google Forms link to the survey via their institutional email address. They were identified with a unique numeric code to safeguard anonymity (World Medical Association, 2013), and they could choose whether to answer the entire questionnaire or parts of it.

Nurses were asked to provide demographic details, information about their work experience, their perception of staff adequacy on the shift, the number of patients each nurse was caring for, the number of isolated patients, the number of patients from different specialties, and the patients' care complexity expressed in a rating from 0 (*no complexity*) to 4 (*high complexity*).

Workflow aspects were examined. Nurses were asked to report their involvement in the transfer of patients within and between wards. Unscheduled activities explored were related to unscheduled tests or examinations. Aspects related to providing information to admitted patients and their family members, and to documentation, were also investigated. These aspects of workflow were measured on a 5-point Likert scale using single items purposely developed for the study, where 0 refers to no nurse involvement in the activity and 4 to high nurse involvement.

To measure perceived workload, we developed a general single item with a 5-point Likert scale answer option where 0 refers to high workload and 4 to no workload. We chose to measure workload and other workflow predictors with a general single-item measurement based on literature supporting the use of single item measurements to explore issues in different constructs, and main effects in a reduced number of questions (Diamantopoulos et al., 2012). Research in different fields documented comparable or equal predictive validity when using single-item scales compared with multiple item measures (Hoeppner et al., 2011).

2.5 | Ethical considerations

This research received the approval of the local Ethics Committee. The researchers approached the participants individually, explaining the aims of the study, and asked them to sign a written informed consent. Those who refused to sign the informed consent were excluded from the study.

2.6 | Data analysis

Descriptive statistics, frequency, percentage, means, standard deviations, and chi square tests were performed to describe the participants' characteristics and variables studied. Preliminary data analysis was performed to test assumptions (Alexopoulos, 2010; Byrne, 2013). Using maximum likelihood (ML) estimation and structural equation modelling (SEM), we fitted multivariable linear regression models to identify workload predictors. Variables entered in the model were chosen according to theoretical importance. Three distinct SEMs were tested: one to identify the association between perceived nurse workload, patient acuity, staffing adequacy and nurse-to-patient ratio; one to identify the association between workload and patient isolation, specialties, transfers, information, documentation and unscheduled activities; and one to control the final trimmed model using covariates. To evaluate model fit, we used several goodness-of-fit indices (Byrne, 2013; Hu & Bentler, 1999). Regression parameters were presented with unstandardized and standardized coefficients. The coefficient of determination (R^2) was also reported. Statistical tests were two-sided; p values <.05 were considered significant.

It was estimated that a sample size of 125 participants could achieve 95% power to conduct a multivariable linear regression analysis using six predictors with anticipated effect size of 0.10 and a level of significance $p < .05$. However, we enrolled 205 participants for a more stable analysis. Sample size was calculated using G*Power 3.1 (Heinrich Heine University). IBM SPSS Statistics v. 25 and MPLUS v. 8.4 were used to perform analysis.

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3 | RESULTS

Overall, we received 205 completed surveys (response rate 91.5%). Morning and afternoon shifts were equally represented. A substantial number of nurses (37.1%) had up to two years' work experience. The most documented nurse-to-patient ratio was from 1:8 to 1:10 (66.4%) and high complexity in patients (55.6%) was reported. Nurses perceived high (59.0%) or medium (37.6%) workload. Other details are presented in Table 1.

3.1 | Assumptions testing

All variables were distributed normally. No missing data were recorded. Assumptions testing for regression analyses showed no multicollinearity and correlations did not exceed the cut-off point of 0.80 (Vatcheva et al., 2016). Correlations between workload and the determinants explored are presented in Table S1.

3.2 | Variables associated with nursing workload

Different multivariable models were tested. Because the first model was saturated (0 degrees of freedom) and the nurse-to-patient ratio effect was not statistically significant, we specified a new model, removing the insignificant variable. Patient acuity and staffing adequacy were confirmed as variables associated with the perceived workload.

In the second model, which considers workflow variables, patient isolation, specialties, transfers, documentation and unscheduled activities were significantly related to workload. Insignificant association was found between workload and the variable information.

In the third model, we introduced the nurse work experience covariate. All variables, except patient specialty, were confirmed to be significantly associated with nursing workload. The fit indices of the models tested are presented in Table S2. The trimmed models respectively explained 45%, 25% and 26% of the variance in workload. Results of the multivariable regression models are presented in Table 2.

The models tested showed that workload was significantly associated with patient acuity ($\beta = -0.563$), adequacy of staffing resources ($\beta = 0.213$), patients in isolation ($\beta = -0.171$), patient transfers ($\beta = -0.233$), documentation ($\beta = -0.204$) and unscheduled activities ($\beta = -0.242$).

4 | DISCUSSION

This study explored aspects of patient and workflow to identify variables associated with nursing workload. We identified significant prediction effects of patient complexity and staffing on workload, supporting previous research (Congdon et al., 2020; Qureshi et al., 2020) and improving knowledge on the phenomenon by describing observed effects. Our results indicate that patient acuity and staffing are important aspects to consider when analysing nursing workload and determining staffing requirements. Patient complexity embodies the need for nursing care, and its variation across shifts captures the significance of direct care in workload (Arsenault Knudsen et al., 2018). Additionally, we found that higher staffing is associated with lower nurse workload and identified better prediction effects than those reported in previous literature (Oppel & Mohr, 2021). Insufficient staffing resources were found to predict job dissatisfaction (Hegney et al., 2019) and nurse burnout (Yanchus et al., 2017), and the combination of exiguous staffing and increased workloads were related to poor quality of care (Yanchus et al., 2017). Relational climate (Arsenault Knudsen et al., 2018) and teamwork (Duffield et al., 2011) can mitigate these negative effects. Actions to support teamwork in medical–surgical wards are therefore critical when persistent high workloads are perceived (Yanchus et al., 2017).

Nurse-to-patient ratio was not an antecedent of workload in our sample. This finding contributes to existing literature by confirming that perceived nurse workload is not an automatic consequence of nurse-to-patient ratio (Oppel & Mohr, 2021). Although nurse-to-patient ratio was connected to unfavourable nurse outcomes, job dissatisfaction (Shin et al., 2018) and quality-of-care issues, no previous associations with job stress or workload were identified (Oppel & Mohr, 2021). Moreover, our results contribute to the literature dealing with methods for determining staffing requirements (Griffiths et al., 2020), confirming that nurse-to-patient ratio is not a sufficiently accurate indicator for decision-making with regards to staffing. A recent scoping review (van der Mark et al., 2021) reports that perceived adequacy of staffing by nurses could potentially be an available measure for staffing requirements. Our findings support this study. Therefore, as in Oppel and Mohr (2021), perception of staffing resources adequacy is probably a better indicator than nurse-to-patient ratio for measuring nurse workload and staffing needs.

Workload was predicted by patient transfers. This finding confirms previous literature and adds information about observed effects. Transferring patients was reported to be time consuming, disruptive to workflow and burdensome for nurses (VanFosson et al., 2017; Yanchus et al., 2017). Considering that at least two nurses are required for a bed transfer, when measuring nurse workload and defining staffing resources, the rate of patient transfers within and between wards should be taken into consideration.

Increased patient turnover will result in considerable nursing documentation (VanFosson et al., 2017). Documentation was associated with workload in previous studies (Moore et al., 2020; Myny et al., 2012) and this is also supported by our findings. Nurses dedicate considerable amounts of time to documentation (Moore et al., 2020) and when a patient's documentation is unavailable, or incomplete, this gives rise to additional nursing time, amplifying an already persistent workload (Shihundla et al., 2016). Nurse workload quantification systems should therefore include documentation.

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TABLE 1 Descriptive characteristics of the sample and variables studied ($N = 205$ surveys)

Variables	Mean ± SD (range)	*N* (%)	*p* value
Gender			
Male		10 (4.9)	
Female		195 (95.1)	
Other		0 (0)	
Shifts worked			
Morning shift		106 (51.7)	
Afternoon shift		99 (48.3)	
Work experience in months	79.4 ± 66.1 (2–312)		
0–24 months		76 (37.1)	
25–60 months		25 (12.2)	
61–120 months		45 (21.9)	
>121 months		59 (28.8)	
Nurse-to-patient ratio	1:8.6 ± 1.5 (5–15)		
1:5–7 patients		46 (22.4)	.417
1:8–10 patients		136 (66.4)	
1:11–15 patients		23 (11.2)	
Patient acuity	2.7 ± 0.8 (0–4)		
Not at all/a little		8 (3.9)	.147
On average		83 (40.5)	
Enough/a lot		114 (55.6)	
Patient in isolation	0.8 ± 1.0 (0–4)		
0		97(47.3)	.066
1		59 (28.8)	
2		36 (17.6)	
3		11 (5.4)	
4		2 (1.0)	
Patient specialties	2.5 ± 1.1 (0–6)		
≤2		109 (53.2)	.223
3–4		87 (42.4)	
≥5		9 (4.4)	
Patient transfers	1.1 ± 1.2 (0–4)		
Not at all/a little		142 (69.3)	.444
On average		31 (15.1)	
Enough/a lot		32 (15.6)	
Informing patients/family members	1.9 ± 1.0 (0–4)		
Not at all/a little		71 (34.6)	**.030**
On average		78 (38.1)	
Enough/a lot		56 (27.3)	
Health care documentation	2.6 ± 1.0 (0–4)		
Not at all/a little		22 (10.7)	**.001**
On average		64 (31.3)	
Enough/a lot		119 (58.0)	
Unscheduled activities	1.4 ± 1.1 (0–4)		
Not at all/a little		120 (58.5)	**<.001**
On average		53 (25.9)	
Enough/a lot		32 (15.6)	

(Continues)

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TABLE 1 (Continued)

Variables	Mean ± SD (range)	*N* (%)	*p* value
Adequacy of staff in the shift	1.9 ± 0.9 (0–4)		
Not at all/a little		64 (31.2)	**.003**
On average		96 (46.8)	
Enough/a lot		45 (22.0)	
Perceived nursing workload	1.2 ± 0.8 (0–3)		
Not at all/a little		7 (3.4)	**<.001**
On average		77 (37.6)	
Enough/a lot		121 (59.0)	

Notes: *p* value refers to χ^2 test confronting indicated variables with work experience; in bold significant values.

TABLE 2 Multivariable regression effects of variables on nursing workload ($N = 205$)

Model 1	*b*	*β*	SE	*p* value
Patient acuity	−0.571	−0.563	0.053	<.001
Adequacy of staffing in the shift	0.186	0.213	0.051	<.001
Model 2				
Patient isolation	−0.152	−0.178	0.058	.002
Patient specialties	−0.115	−0.157	0.073	.031
Patient transfers	−0.154	−0.225	0.066	.001
Health care documentation	−0.175	−0.209	0.065	.001
Unscheduled activities	−0.120	−0.158	0.063	.013
Model 3				
Nurse working experience	0.004	0.137	0.067	.040
Patient isolation	−0.147	−0.171	0.068	.012
Patient specialties	−0.082	−0.111	0.086	.197
Patient transfers	−0.161	−0.233	0.077	.002
Health care documentation	−0.167	−0.204	0.073	.005
Unscheduled activities	−0.180	−0.242	0.074	.001

Notes: Model 1: $R^2 = .448$; Model 2: $R^2 = .251$; Model 3 with nursing working experience as covariate: $R^2 = .262$; R^2 scores were significant, $p < .05$.
Abbreviations: R^2, coefficient of determination; *b*, unstandardized coefficient; β, standardized coefficient; SE, standard error.

Patient isolation was confirmed as a workload predictor. When the number of patients in isolation on a ward increases, the perceived nurse workload also rises. This means that when assisting different patients in isolation, nurses are obliged to ration other patients' care; this results in disrupted continuity and quality of care (Hessels et al., 2019). Workload and staffing measurements must, therefore, take our findings into account.

Performing unscheduled activities was another antecedent identified. Previous literature described workflow disruptions and time issues faced by nurses when work routines were fragmented by unexpected events (Fagerström & Vainikainen, 2014), unpredictability of patient casemix or staffing, or when the ward was unstable due to incoming or outgoing transfers (Duffield et al., 2011). Our findings support the literature by identifying significant prediction effects.

Caring for patients of different specialties affects workload. Previous literature reported that an increased length of stay in hospital will increase patient transfers, generating an increased number of specialties within wards (Duffield et al., 2011). Moreover, communication with different physician teams may generate communication gaps, workflow disruption and workload (VanFosson et al., 2017). Our results confirm findings in previous literature and add information about observed effects. In contrast to the other variables, this prediction value disappeared when nurses' work experience was added into the model as a covariate. Literature reported that individual characteristics of nursing staff (like education, skill and experience) improve performance, work engagement (Wang et al., 2021) and that more experienced nurses should report lower workloads (Neill, 2011). We supposed that work experience hinders workload perception in general and that more experienced nurses are better at dealing with the

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disruptions generated by multiple patient specialties. More studies are therefore needed to explore this phenomenon and to confirm or reject our findings.

Our analysis ruled out the hypothesis that giving information to patients or family members is an antecedent of nurse workload. Qualitative studies described how nurses use snippets of time for communication with patients and families, and how essential these moments were for quality of patient care (Chan et al., 2013). On the other hand, giving information might generate interruptions to nursing work (Myny et al., 2011). This was not the case with our sample. It can be justified by the fact that data were gathered during the COVID-19 pandemic and family members were not allowed to visit patients. Consequently, nurses might have perceived fewer disruptions to workflow owing to information seeking. Further research to uncover possible predictive effects of this variable is recommended.

4.1 | Limits and strengths

Although innovative, this study presents some limitations. It is an exploration of pilot data gathered in a single hospital. Even though we included nurses from different wards, our results might be difficult to generalize and should be read with due caution. Additionally, despite our efforts to gather data connected to specific shifts, the observational design of the study means that it is not possible to demonstrate any cause-effect relationships.

The study presents different strengths, however, in terms of advancing the literature on nursing workload in numerous ways. In contrast with all previous studies, the perceived workload of nurses in this study was connected to specific shifts and therefore more objectively reflected nurses' perceptions. Moreover, we were able to test different variables and identify significant prediction effects on workload contributing to nursing workload research.

Future research is needed to confirm our findings and to explore other workflow aspects such as interruptions, patient admissions and discharges, or nurse involvement in ward management activities. Their effects on perceived workload should then be measured. Additionally, human factor research indicates that workload can affect physical, emotional and psychological aspects of a person. Future research should therefore identify determinants of nursing workload specific to each of these aspects.

5 | CONCLUSIONS

Nursing workload is an essential part of nursing literature. It helps estimate required staffing resources and is linked to nurse and patient outcomes, and quality of care. Despite its importance, measuring nurse workload is difficult, and the definition of its predictors is still in its infancy. Our research contributes to filling in the literature gap by identifying some patient and workflow predictors of perceived workload. Our findings provide valuable information for top and middle hospital management, as well as for policymakers, regarding the importance of perceived workload for staffing resources.

IMPLICATIONS FOR NURSING MANAGEMENT

Present national regulations and top management decisions on staffing resources are based on nurse-to-patient ratio or nursing hours per patient day indicators. Our findings suggest that managers should calculate the resources needed to guarantee care standards based on indicators of patient complexity and nurse work experience. Moreover, middle management should consider ward workflow aspects when determining staffing assets. Therefore, measuring and analysing workload determinants are essential for developing flexible solutions capable of responding to increased shift workloads on wards.

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AUTHOR CONTRIBUTIONS

All the following authors are entitled to authorship of the article and meet the criteria for authorship, in particular:

- Dhurata Ivziku, PhD, was responsible for the conception and design of the study, acquisition, analysis and interpretation of data; drafted; and critically reviewed the manuscript for important intellectual content;
- Federica M. P. Ferramosca, PhD candidate, contributed design of the study, data analysis and interpretation and critically reviewed the manuscript;
- Lucia Filomeno, RN, contributed to data acquisition and analysis; drafted; and critically reviewed the manuscript;
- Raffaella Gualandi, PhD, contributed to the data analysis and interpretation, and critically reviewed the manuscript;
- Maddalena De Maria, PhD, contributed to the data analysis, interpretation, and critically reviewed the manuscript;
- Daniela Tartaglini, Associate Professor, contributed the data interpretation, and critically reviewed the manuscript for important intellectual content.

All the presenting authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

The paper has been professionally proofread.

CONFLICT OF INTEREST

None reported.

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ETHICS STATEMENT

The study was approved from the Ethics Committee of University Campus Bio-Medico of Rome in 9 November 2020 with the protocol number Prot.: 95/20 OSS ComEt CBM.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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