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The complex and rapidly changing nature of global health care is constantly generating new challenges and questions. The *Journal of Nursing Management* welcomes papers from researchers, academics, practitioners, managers, and policy makers from a range of countries and backgrounds which examine these issues and contribute to the body of knowledge in international nursing management and leadership worldwide.

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
- Address issues in governance, quality and safety

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- General Management and organisational theory and its application to nursing
- Leadership and strategic analysis
- Clinical management approaches, including role development
- Quality, governance, ethical and legal issues
- Recruitment, retention, job satisfaction and stress
- Health policy, finance and resource allocation
- Health information and communication technology
- Evidence-based management and research methods
- Continuing professional and practice development
- Organisational culture and context in the working environment
- Patient empowerment, participation and safety

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

For *review* and *commentary* articles please use the following headings in your structured abstract:

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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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advancing knowledge and learning... improving research and practice

# Managing holistic nursing practice: The need for spiritual care competence in health care practice

Over the past 30 years, greater attention has been paid to individual, psychological, societal, sociocultural, political, economic and environmental factors that contribute to health and well-being (McEwen & Wills, 2014). This reorientation of health care required a shift from a disease orientated model, towards a greater consideration of the individual, and their psychosocial make up, and supporting or addressing key broader influential issues related to health. The consequential rise in consideration of the need for a person-centred approach to health and health care grew in popularity as greater understandings of the contributions that individual lifestyle to health were made.

The nursing profession has long embraced this person-centred holistic approach to health care, and this philosophy is enshrined within its scientific foundations (McEwen & Wills, 2014). Early attempts at establishing nursing as a scientific discipline began in the United States in the 1960s, focused on determining and understanding not only the person, but equally defining health, environment, nursing and the specific nurse's role through conceptual statements (McEwen & Wills, 2014). Gradually over time, several nursing theories emerged that described what nursing is, shaped nurses' thinking and what nurses do to articulate the unique contribution that nurses make from each nursing disciplinary perspective. The holistic nursing movement that followed was underpinned by a systematic approach to care, offering guidance to nurses on how to assess the individual person and family, plan, implement and evaluate nursing care, with consideration of environmental and other associated factors that might affect health (McEwen & Wills, 2014).

Nursing theories and models initially promoted and espoused holistic care. However, these are not always understood or respected in contemporary nursing practice (McCormack, 2020a) or a good fit for the busy health care environment (Chapman, 2018). However, their legacy remains, as does interest in the core values that these theories espoused (McCormack, 2020a). Resultingly, there is a clear and growing emphasis on person-centred care approaches (McCormack, 2020b), the fundamentals of care (International Learning Collaborate, 2021; Kitson, 2018), compassionate care (Chapman, 2018) and a reemphasis (Pajnikihar et al., 2017) on caring science (Watson, 2012, 2019). Some of this is in response to the lapses in care that received attention at a very high level in the United Kingdom for example (Francis, 2013; Royal College of Nursing [RCN], 2012) and has led to an overarching concern with reinvigorating the nursing profession with skills of compassion (Gallagher, 2013, 2014). However, this reorientation and reemphasis

on the core values of nursing has not necessarily highlighted the need to provide spiritual support to patients by addressing their spiritual needs in health care practice. Spirituality as an aspect of the person was clearly recognized by many of the early nurse theorists (McEwen & Wills, 2014; Ramezani et al., 2014) and requires consideration in health care (McSherry et al., 2020). Authors have linked this requirement for compassion, dignity and respect to the core concepts of spirituality (McSherry et al., 2020), and as such, the absence of clear attention to this element of nursing within emerging frameworks is of concern. Indeed gaps in support for spiritual needs were recently evidenced by a study that explored online resources and supports for spiritual care for hospitalized patients during the COVID-19 pandemic (Papadopoulos et al., 2021). Lack of education and preparedness to provide spiritual support emerged as a clear finding from this study. Indeed, picking up on the findings of this study, the Nursing Times reported that 'emotional and spiritual care [were] "hugely lacking" during pandemic' (Ford, 2021). There are obviously some examples of good practice. The Polish Association for Spiritual Care in Medicine (PTODM), for example, from mid-2020 developed a project entitled 'stay with me—social and spiritual support for patients hospitalized due to COVID-19'. The aim of this project was to enable patients with COVID-19, especially those who are dependent, with a serious or life-threatening condition, to have virtual contact with their relatives. Under the first part of the project, entitled 'talk to me', hospitals participating in the programme received smartphones with a package of free calls and data transmission. In the second part of the project, entitled 'raise me on the spirit', the association provided support for personal protective equipment (PPE) for health care chaplains (PTODM, 2021).

Despite such examples, there is evidence that while we have had more than three decades of calls for a more considered approach to caring for and about the patients in health care that takes account of the person's perspective and situation, anecdotal evidence suggests that the hospital experience can sometimes be quite the opposite. In fact, many patients experience dehumanization (Głębocka, 2019). Although patients are largely satisfied with care received, and find it dignified (Quality Care Commission, 2020), advocacy groups are replete with descriptions of an indifferent approach adopted by health care professionals and poor communication, possibly as a result of care erosion (de Vries & Timmins, 2015, 2016). This impresses upon patients that they were unimportant, insignificant and therefore not considered as individuals. Within this context, spiritual needs can get forgotten

(Radford, 2008). Paradoxically, nursing's focus is directed towards valuing people, and while lapses in care and thoughtlessness may be attributed to many systemic factors (de Vries & Timmins, 2015, 2016; McSherry et al., 2018) including stress (Głębocka, 2019), patients and their families are greatly affected by this.

The omission of spiritual support, particularly at the end of life, described as 'poor' in one study (Ó Coimín et al., 2017), can have long-lasting effects on families (Office of the Ombudsman, 2014; Parliamentary and Health Service Ombudsman, 2014). Nurses are often unclear about what spirituality means to a patient and whether as professionals they should begin to assess and question patients about their spirituality and at what point (Harrad et al., 2019). In some health care organizations, straightforward religious affiliation questions are asked (Timmins et al., 2017), although these are inconsistently applied, and often little else is done. Asking the patient about his or her spirituality, religion, worldviews, health beliefs related to spirituality and health that might affect their interaction, acceptance and concordance with health interventions and treatment is infrequent. Moreover, these issues are often considered as too intimate or even taboo, therefore omitted (Pawlikowski & Dobrowolska, 2016). Spiritual care intervention involves the nurse responding firstly with compassion (Giske et al., 2021). The nurse also needs to consider the patient's beliefs and values and offer relevant care to create a stronger connection between the patient and nurse (Giske et al., 2021). Spiritual care can also involve the provision of or access to religious supports (Giske et al., 2021) and health care chaplaincy services. Patients may have spiritual and religious beliefs that when unattended in the hospital/health care setting, can cause loss, spiritual distress (Martins et al., 2021) and or disenfranchised grief further contributing to experiences of dehumanization. Patients who use spirituality and religion as distinct resources and coping mechanisms (Ross & Austin, 2015) may not be encouraged to use them within health care settings (Radford, 2008); in fact, they may be discouraged.

Encouragingly, there are international guidelines (Whelan, 2019) and now more recently clear European guidelines (Education and Compassionate Care [EPICC], 2021; McSherry et al., 2021; van Leeuwen et al., 2021) because of three decades of ongoing work by this team (McSherry et al., 2020) to support the provision of spiritual care to patients. However, the application of guidelines for spiritual care up until now has been inconsistent and lacking clear direction at both a national and local level (Timmins et al., 2017). This means that spiritual care provision, as a component of holistic nursing care, is inconsistent at best and absent at worst. Additionally, there are limited national nursing standards for spiritual care. In Poland, for example, although single institutions may have guidelines, national guidelines do not exist (Dobrowolska, 2018). Similarly, within the Republic of Ireland, current national requirements and standards (Timmins & Whelan, 2018) provide little specific direction in relation to spiritual care provision.

The standardized European spiritual care competencies that have been recently developed for nurses and midwives (EPICC, 2021; van Leeuwen et al., 2021) may serve to address these deficits. These competencies stem from a 3-year funded project that require nurses firstly

to express *intrapersonal spirituality* (develop an awareness of the importance of spirituality on health and well-being). *Interpersonal spirituality* is also required (engaging with a person's spirituality and acknowledging individual, spiritual, cultural world views and practices) (EPICC, 2021). These require nurses to be competent in *spiritual care assessment* and planning to assess patients' spiritual needs and provide *spiritual care interventions and evaluation* (responding to spiritual needs and providing resources within a caring, compassionate relationship) (EPICC, 2021; van Leeuwen et al., 2021). While these four competencies are new for the nursing profession, it is anticipated that they will be integrated across health care settings in Europe to strengthen and guide spiritual care support. However, support to do this is needed at university level to include this standard to nursing education and equip new nurses with professional knowledge, skills and attitudes in the scope of spiritual care (EPICC, 2021). At the same time, support is needed from nurse managers and nurses in practice settings to support these competencies to guide nurses in health care hospital settings to understand how best to provide spiritual care to patients and their families. The work of this EPICC (2021) group has spearheaded new understandings of spirituality for nurses internationally by clearly outlining four distinct required competencies. Another helpful resource that nurse managers can suggest is the brief screening tool developed by Ross and McSherry (2018). This offers two questions: a model termed '2Q-SAM' that elicits expression of patients' spiritual needs in a straightforward manner, by using the two questions: *What's most important to you now?* and *How can we help?*

Another positive and important step in improving nurses' understanding of spirituality and spiritual care provision is the recent initiation of the Erasmus Plus Project 'From Cure to Care, Digital Education and Spiritual Assistance in Healthcare' (2021), in which the authors are closely involved. This aims to provide education for nurses in spiritual care. This Erasmus Plus Project builds on the EPICC (2021) project by developing an E-Learning programme to support religious-spiritual competencies within a multi-cultural perspective and ultimately hopes to address national and international gaps in nurses' knowledge and skills and improve their confidence in support patients' spiritual needs. It is hoped that this emergent body of knowledge, competencies and specific tools related to spiritual care provision begin to provide the guidance and support that urgently needed across health care settings internationally.

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# Factors affecting the professional functioning of health care workers during the COVID-19 pandemic: A cross-sectional study

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## Abstract

**Aim:** To examine personal and organisational factors related to professional functioning of nurses and physicians during the COVID-19 pandemic.

**Background:** Exposure to COVID-19-related stressors has been associated with lower self-reported professional functioning among health care workers.

**Methods:** A cross-sectional study among 115 hospital workers during the COVID-19 pandemic in Israel was designed to explore (a) personal professional functioning, (b) clarity of guidelines, (c) work organisation by the management, and (d) health care workers' feeling of contribution to a global effort.

**Results:** A feeling of contribution to a global effort while treating patients with COVID-19 mediated the relationships between work organisation by the management and professional functioning ( $\beta = .05, p < .05$ ). The clarity of guidelines for routine procedures ( $\beta = .21, p < .05$ ) and a feeling of  $\beta$  contribution to a global effort ( $\beta = .34, p < .01$ ) positively predicted professional functioning of nurses and physicians during COVID-19 pandemic ( $R^2 = .19, p < .01$ ).

**Conclusions:** In order to achieve optimal functioning of health care workers in an emergency, managers should provide clear guidelines and promote workers' feelings of contribution to a global effort.

**Implications for Nursing Management:** The provision of clear guidelines and protocols is essential for efficient emergency management. Expressing appreciation for health care workers and providing positive feedback may improve professional functioning.

## KEYWORDS

COVID-19, guideline clarity, health care workers, professional functioning, work management

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## 1 | INTRODUCTION

On 11 March 2020, the World Health Organisation declared COVID-19 to be a pandemic (WHO, 2020a). Since then, many countries have experienced a series of epidemiologic waves of COVID-19 infections. By the end of March 2022, more than 486 million cases and more than 6.1 million deaths due to COVID-19 had been reported worldwide (Johns Hopkins University & Medicine, 2020). The percentage of health care workers (HCWs) who tested positive for COVID-19 was 51.7%, with 15.1% being hospitalized and 1.5% dead (Gholami et al., 2021). Between January 2020 and May 2021, around 115,500 out of the 135 million HCWs employed in human health and social activities lost their life due to COVID-19 (WHO, 2021).

At the beginning of the pandemic, hospitals became hot zones for COVID-19 treatment and transmission, and the volume of health care workers who contracted the disease led to a shortness of available manpower (Brindle & Gawande, 2020). US nursing homes whose staff contracted COVID-19 were more likely to experience shortages of licensed nurses and nurse aides and to be unable to fulfil the requirements of infection control (Xu et al., 2020).

### 1.1 | Professional functioning of health care workers during the COVID-19 pandemic

Exposure to COVID-19-related stressors was reported to be associated with mental health problems and a decrease in self-reported professional functioning among front-line HCWs in Australia and China (Hendrickson et al., 2020; Kang et al., 2020). Among nursing managers in mental health centres in Israel, the professional functioning focus changed from managerial to more clinical roles (Kagan et al., 2021). However, there is still a gap in knowledge concerning the factors that affect the professional functioning of health care professionals during a pandemic.

In general, functioning is defined as performing or being able to perform one's regular function (Thefreedictionary.com, 2014). In this study, the personal professional functioning refers to the performance of a variety of professional activities and roles by nurses and physicians during the COVID-19 pandemic.

### 1.2 | Effect of management on the professional functioning of health care providers

A study in a hospital in China reported that an emergency nursing management approach, leading to effective manpower mobilization, personnel training, supply of personal protective equipment (PPE), and motivating nurses to make a significant contribution, was associated with the provision of effective care to all hospitalized COVID-19 patients (Wu et al., 2020). At the same time, health care managers encountered various challenges during the COVID-19 pandemic that had a serious and direct impact on HCW functioning and quality of

care. Among these challenges were severe staff shortages caused by the unwillingness of HCWs to work under conditions with insufficient testing and a lack of personal protective equipment (Grabowski & Mor, 2020), as well as by their suffering from COVID-19 symptoms and being quarantined at home (Barnett & Grabowski, 2020). Other problems included a critical shortage of ICU beds and ventilators (Vincent & Creteur, 2020), a massive influx of patients (Robert et al., 2020), non-optimal shift work scheduling, which affected the physical and psychological well-being of workers (Gao et al., 2020), and a lack of appropriate professional experience among the staff (Bambi et al., 2020).

Management is defined as the act or manner (dictionary.com, 2022b). In this study, the management of health workers during the COVID-19 pandemic refers to handling the staff response to the pandemic, directing health provision by the staff, and to providing staff with the training, protections, rights, and tools necessary to undertake their roles. We found no studies in the literature on management functioning as perceived by their subordinates, and on the relationships between management functioning and the personal professional functioning of health care providers during the COVID-19 pandemic.

### 1.3 | Effect of clear clinical and administrative guidelines on the professional functioning of health care providers

Guidelines provided by managers are an important factor in the effective and professional functioning of staff. The nursing home staff cited education and training on prevention and control measures as most important strategies for coping with the COVID-19 pandemic (Zhao et al., 2021). Similarly, sufficient education and preparation supported nurses' confidence in their ability to cope during this period (Nowell et al., 2021). At the same time, health care workers in the UK noted the presence of changing and inconsistent guidelines and limited training during the COVID-19 pandemic (Vindrola-Padros et al., 2020). In addition, nurses caring for patients with COVID-19 in the US described inadequate preparation and lack of information and direction for caring for patients, including how to provide COVID postmortem care (Kellogg et al., 2021). Similarly, the lack of guidelines for COVID-19 management was among the difficulties noted by infectious disease physicians (Park et al., 2020).

Guidelines are usually defined as a guide to, or indication of, a future course of action (dictionary.com, 2022a). In this study, guidelines were defined as clinical recommendations provided to the health care staff by the hospital management concerning the treatment of patients with COVID-19 and their families, risk assessment, infection prevention and control precautions, as well as administrative directives such as the isolation of patients with suspected or confirmed COVID-19. We found no studies that examined the association between the perceived clarity of guidelines and personal professional functioning among nurses and physicians treating COVID-19 patients.

## 1.4 | Effect of feelings experienced by health care providers on professional functioning

Previous studies demonstrated that positive emotions significantly predict the efficiency of individual performance in the workplace (Sahu & Srivastava, 2017). In contrast, feelings such as burnout, exhaustion, doubts about continuing in the nursing profession, feeling unappreciated, and experiencing injustice and ignorance, led to decreased motivation and performance among nurses during the COVID-19 pandemic (Cengiz et al., 2021).

Feelings are defined as an emotional state or reaction (<https://www.merriam-webster.com>, 2022). In this study, health care workers' feelings were defined as the emotional responses of the participants to their working experience during the COVID-19 pandemic. We found no studies that examined the association between feelings experienced by nurses and physicians and their personal professional functioning during the COVID-19 pandemic.

The purpose of the current study was to examine the association between the clarity of guidelines, management functioning, and feelings while treating patients with COVID-19, and the personal professional functioning of nurses and physicians working with confirmed/suspected COVID-19 patients in a tertiary medical centre in Israel. The results of this study could be used to inform guidelines designed to improve the professional functioning of health care workers during a future pandemic.

## 2 | METHODS

### 2.1 | Design

This was a cross-sectional study.

### 2.2 | Setting and participants

In response to the COVID-19 pandemic, the medical centre diverted eight internal medicine wards comprising six internal medicine, one neurology, and one thoracic medicine department, to the treatment of COVID-19. The selection was based on the availability of an intensive care unit for the treatment of mechanically ventilated patients, and of staff trained to treat such patients. During the first two waves of the COVID-19 pandemic in Israel, one ward in the hospital was designated for patients suspected of having COVID-19. Following verification of the COVID-19 diagnosis, patients were transferred from the ward for "suspected" to two COVID-19 dedicated internal division wards that cared for COVID-19-verified patients. This situation lasted 2 to 3 months, after which the functions were transferred to another three wards out of the eight originally selected.

The convenience sample consisted of 115 health care workers (97 nurses and 18 physicians) working in a tertiary medical centre. The sample size was based on methodological and statistical considerations. Specifically, according to the G\*Power 3.1.9.2 program for

power analysis (Faul et al., 2009), for a medium effect size of .15, an alpha error probability of .05, desired power of .80, and six predictor variables, the minimum sample size required for linear multiple regression is 98 participants.

### 2.3 | Data collection

The study was approved by the ethics committee of the medical centre where the study took place (approval number 0113-20 WOMC). A research assistant who did not work in any of the internal division wards distributed questionnaires between March and July 2020, a period that included two waves of the COVID-19 pandemic in Israel. The questionnaire was distributed to 185 nurses and 90 physicians who had participated in the 2- to 3-month rotation of care of confirmed and suspected patients with COVID-19. Nurses and physicians who provided informed consent were given a questionnaire to complete. The response rate was 52.4% and 20% for nurses and physicians, respectively. The distributed material also contained information describing the purposes of the study and a guarantee of the respondents' anonymity and data confidentiality.

### 2.4 | Tools

The self-administered questionnaire was comprised of five parts that examined: (a) perceived personal professional functioning, (b) clarity of managerial guidelines, (c) respondents' feelings while treating patients with COVID-19, (d) perception of management functioning, and (e) sociodemographic characteristics. The authors constructed the sections (b), (c), (d), and (e) in accordance with recommendations for questionnaire design (Krosnick, 2018; Rattray & Jones, 2007). A panel of experts comprising five senior nurses (three internal medicine department head nurses, one medical centre administration senior nurse, and another senior nurse who is an expert in hospital functioning during disaster) examined the validity, comprehensibility, and feasibility of the questionnaire. Prior to the distribution of questionnaires, a pilot was conducted among ten nurses working at three different internal wards. Some of the questions were subsequently modified according to the pilot participants' comments. In order to test the factor structure empirically, an exploratory factor analysis (EFA) was performed on all questionnaires. Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity (BTS) chi-square, and principal component analysis with Promax rotation with an eigenvalue greater than 1 were performed and the results are presented below.

a. Perceived personal professional functioning was examined by a tool used previously by the authors (Kagan et al., 2017; Melnikov et al., 2013) (Appendix S1, Part 2). The original scale consisted of eight statements related to the perception of personal professional functioning of the respondent, with four positively scored and four reverse scored. The answers ranged on a scale from 1 (*absolutely*

*disagree*) to 5 (*absolutely agree*). A higher mean score indicates a higher level of perceived professional functioning. The original factor analysis of four positively and four reversed worded items led to the production of two distinct concepts: good professional functioning and worse professional functioning. According to van Sonderen et al. (2013) and Zhang et al. (2016), the reversed worded items may not introduce the conceptual differences, at the same time, thereby introducing a response bias that poses a threat to the validity of the scale (van Sonderen et al., 2013; Zhang et al., 2016). For this reason, four reversed worded items were excluded from the analysis. The KMO of the four remaining positively scored items was .68, with BTS chi-square 117.37,  $p < .001$ , and was judged appropriate. One factor with an eigenvalue of 2.34 explained 58.4% of the variance. The items had a significant factor loading, ranging from .76 to .81. The one factor structure comprised the factor named “Personal professional functioning” (four items). Examples of these items are: “I quickly organised myself to handle any situation on the ward” and “Even after a few hours of work, I am functioning well.” Cronbach's alpha for the factor “Personal professional functioning” was .76.

- b. Clarity of managerial guidelines was examined by a questionnaire constructed by the members of the expert panel (Appendix S1, Part 3). Items were designed to assess the degree of comprehensibility and clarity of management guidelines distributed by the hospital administration during the COVID-19 pandemic in Israel. The scale consisted of 12 statements and respondents were asked to rate their agreement regarding guideline clarity, on a scale of 1 (*absolutely unclear*) to 5 (*absolutely clear*). The higher the mean score, the higher the clarity of the organisational guidelines and instructions for the participant. The KMO was .81, BTS chi-square 1044.74,  $p < .001$ . Two factors with eigenvalues of 2.02 and 6.45 explained 65.13% of the variance. The items had a significant factor loading, ranging from .67 to .9. The two factor structure comprised Factor 1 (five items), named “Clarity of guidelines for routine treatments,” item example: “Clinical care of patients with COVID-19,” and Factor 2 (seven items), named “Clarity of guidelines for advanced treatments,” item example: “Clinical care of patients with COVID-19 whose medical condition is deteriorating.” Cronbach's alpha for Factor 1 “Clarity of guidelines for routine treatments” was .80 and for Factor 2 “Clarity of guidelines for advanced treatments” .92, and the value for the whole scale was .91.
- c. Management functioning was examined by a 9-item tool used previously by the authors (Melnikov et al., 2019) and adapted for the current study (Appendix S1, Part 4). The items in this tool examined different aspects and outcomes related to work management and organisation of senior managers, as well as leadership and emotional support provided to the staff during the COVID-19 pandemic. The possible answers ranged on a scale from 1 (*absolutely disagree*) to 5 (*absolutely agree*). A higher mean score indicates a more positive perception of hospital and ward management functioning. The KMO was .84, BTS chi-square was 596.72, with

**TABLE 1** Sociodemographic data ( $n = 115$ )

Variable	Number (%)
Gender	
Men	38 (33.0)
Women	77 (67.0)
Profession	
Nurses	97 (84.3)
Physicians	18 (15.7)
Full/part-time: nurse number (%)	
Full-time	87 (75.7)
Part-time	23 (20.0)
Missing	5 (4.3)
Education	
RN	13 (11.3)
RN BA	59 (51.3)
RN MA	20 (17.4)
MD	18 (15.7)
Other	2 (1.7)
Missing	3 (2.6)
Current place of work	
Dedicated COVID-19 ward	26 (22.6)
Ward with patients with suspected COVID-19	41 (35.7)
Non-COVID-19 ward	42 (36.5)
Missing	6 (5.2)
Frequency of the work in dedicated/suspected COVID-19 wards	
Every shift	48 (41.7)
Sometimes	55 (47.8)
Never entered	9 (7.8)
Missing	3 (2.6)
Volunteered to work in dedicated/suspected COVID-19-wards	
Yes	24 (20.9)
No	87 (75.7)
Missing	4 (3.5)
COVID training participation	
Yes	80 (69.6)
No	31 (27.0)
Missing	4 (3.5)
Age in years: mean (SD), median, range	40.0 (10.2), 40, 23–63
Seniority in years: mean (SD), range	16.6 (11.7), 1–44

$p < .001$ . Two factors with eigenvalues of 1.85 and 4.76 explained 73.9% of the variance. The items had a significant factor loading, ranging from .72 to .94. The two factor structure was composed of Factor 1, named “Emotional management” (three items) which assessed the management ability to be aware of, and constructively handle, employees' emotional reactions to the situation. Item

example: “In my department debriefing meetings take place in order to allow staff members to vent their feelings,” and Factor 2, named “Work organisation” (six items), which assessed factors including the ability of the management to plan, organise, and manage the allocation of responsibilities in the department, including the provision of counselling and leadership, item example: “The division of roles among the staff members during the COVID-19 pandemic is clear.” Cronbach’s alpha for Factor 1 “Emotional management” was .88 and for Factor 2 “Work organisation” .90, and the value for the whole scale was .89.

- d. Respondents’ feelings about their work during the COVID-19 pandemic was examined by a 12-item tool constructed by the focus group (Appendix S1, Part 5). The items in this tool examined possible feelings experienced by nurses and physicians while treating patients with COVID-19. The possible answers ranged from 1 (*absolutely disagree*) to 5 (*absolutely agree*). A higher mean score indicates more positive feelings. The KMO was .75, BTS chi-square was 472.24, with  $p < .001$ . Two factors with eigenvalues of 2.43 and 3.88 explained 52.5% of the variance. The items had a significant factor loading, ranging from .55 to .89. The two factor structure comprised Factor 1, named “Emotional detachment from patient” (7 items), item example: “Lack of empathy towards the patient,” and Factor 2, named “A feeling of contribution to a global effort” (5 items), item example: “A sense of appreciation by society.” Cronbach’s alpha for Factor 1 “Emotional detachment from patient” was .82 and for Factor 2 “A feeling of contribution to a global effort” was .72, and the value for the whole scale was .74.
- e. Demographic characteristics included age, gender, profession, managerial position, and job seniority (Table 1).

## 2.5 | Statistical analysis

Descriptive statistics and differences between the variables were reported using means (M) and standard deviations (SD) for continuous variables, and percentages for categorical variables. Pearson’s correlation was performed to examine the relationships between study variables. Multivariable linear regression was performed to explore the dependent variable variance. In the current study, Work organisation by the management was conceptualized as the independent variable (IV), A feeling of contribution to a global effort as a mediator, and Personal professional functioning as the dependent variable (DV). A mediator is defined as a variable that accounts, in whole or in part, for the relationship between the IV and DV (Baron & Kenny, 1986). Mediator analysis was performed using the bootstrap statistical method, with “A feeling of contribution to a global effort” entered as mediator to the mediation model (Hayes, 2017; Preacher & Hayes, 2008). The significance of the indirect effect of the IV (Work organisation by the management) on the DV (Personal professional functioning) was examined through the mediator (A feeling of contribution to a global effort).

## 2.6 | The mediation hypotheses

The effect of work management on personal professional functioning occurs directly and indirectly via a mediator (A feeling of contribution to a global effort):

**Hypothesis 1.** Better Work organisation by the management (IV) is associated with better Personal professional functioning (DV).

**Hypothesis 2.** Better Work organisation by the management (IV) is associated with higher values for A feeling of contribution to a global effort (M).

**Hypothesis 3.** Higher values for A feeling of contribution to a global effort (M) are associated with better Personal professional functioning (DV).

## 3 | RESULTS

### 3.1 | Participant characteristics

A total of 115 participants completed the questionnaires: 97 (84.3%) nurses, 77 (67%) women, and 59 (51.3%) with a Bachelor of Science in Nursing (BSN) Degree. Participants’ ages ranged between 23 and 63, with a mean age of 40 (SD = 10.2). The mean seniority at work was 16.6 (SD = 11.7) years, with a range of 1 to 44 years. Eighty (69.6%) participants took part in COVID-19 training provided by the medical centre (Table 1).

### 3.2 | Descriptive statistics and differences between groups

The mean scores (all scales on the range 1 to 5) of the main study variables for the whole sample were as follows: Personal professional functioning – 3.87 (SD = .81); 1. Clarity of guidelines: 1a. Clarity of guidelines for routine procedures – 4.04 (SD = 1.23), 1b. Clarity of guidelines for advanced procedures – 4.46 (SD = 1.85); 2. Management functioning: 2a. Work organisation – 2.77 (SD = 1.1), 2b. Providing emotional support to the staff – 2.92 (SD = 1.17); 3. Respondents’ feeling while treating patients with COVID-19: 3a. Emotional detachment from the patient – 2.35 (SD = .98), 3b. A feeling of contribution to a global effort – 3.29 (SD = .58).

Analysis of full or part time work found that full time workers rated their personal professional functioning significantly higher, than part-time employees,  $M = 3.96$ ,  $SD = .81$  versus  $M = 3.53$ ,  $SD = .78$ ,  $t(108) = 2.28$ ,  $p = .03$ . People who had participated in the COVID-19 training provided reported significantly higher management functioning (“Work organisation factor”) than those who had not,  $M = 3.02$ ,  $SD = .97$  versus  $M = 2.19$ ,  $SD = 1.04$ ,  $t(103) = 3.85$ ,  $p < .001$ . Compared with participants who worked all their shifts in the COVID-19

ward, those who worked there only intermittently reported a lower clarity of guidelines, “advanced procedures factor,”  $M = 3.86$ ,  $SD = 1.19$  versus  $M = 4.95$ ,  $SD = 2.15$ ,  $t(107) = 3.16$ ,  $p = .001$ . There were no significant differences between participants with respect to other socio-demographic or professional (nurses vs. physicians) variables.

### 3.3 | Relationships between variables

The results of correlation analyses between main study variable are presented in Table 2. Clarity of guidelines for routine procedures, A feeling of contribution to a global effort, and Work organisation by the management were positively associated with Personal professional functioning. Clarity of guidelines for both routine and advanced procedures were negatively associated with feelings of emotional detachment from patient. Clarity of guidelines for both routine and advanced procedures were positively associated with emotional support provided by the management.

### 3.4 | Multivariable linear regression analysis

Multivariate linear regression analysis was performed to explore the contribution of main study variables to the explanation of personal professional functioning of nurses and physicians. The results (Table 3) revealed that Clarity of the guidelines for routine procedures and A feeling of contribution to a global effort positively predict

Personal professional functioning and explain 19% of the dependent variable variance.

### 3.5 | Mediation analysis

The results of the mediation model based on 5000 bootstrap analyses indicated that Work organisation (IV) significantly predicted A feeling of contribution to a global effort (M; path a;  $\beta = .12$ , 95% CI .01–.22). A feeling of contribution to a global effort (M) significantly predicted Personal professional functioning (DV; path b;  $\beta = .45$ , 95% CI .19–.71). Work organisation (IV) together with A feeling of contribution to a global effort (M;  $a \times b$ ) significantly predicted Personal professional functioning ( $\beta = .05$ , 95% CI .001–.15, Figure 1). No significant correlation was found between Work organisation (IV) and Personal professional functioning (DV; direct effect, path c';  $\beta = .13$ , 95% CI  $-.01$ –.27). The bootstrapping results revealed a significant total effect (path c;  $\beta = .18$ , 95% CI .04–.33, Table 4).

## 4 | DISCUSSION

The clarity of guidelines for routine procedures and a feeling of contribution to a global effort positively predicted the personal professional functioning of nurses and physicians. In addition, a feeling of contribution to a global effort served as a mediator of the relationships between work organisation by the management and personal professional functioning.

**TABLE 2** Correlation analysis between the main study variables ( $n = 111$ )

Variables	1	2	3	4	5	6	7
1. Personal professional functioning	-						
2. Clarity of guidelines (Routine procedures factor)	<b>.24*</b>	-					
3. Clarity of guidelines (Advanced procedures factor)	.11	<b>.43**</b>	-				
4. Feelings (Emotional detachment from patient factor)	-.17	<b>-.26**</b>	<b>-.30**</b>	-			
5. Feelings (A feeling of contribution to a global effort)	<b>.32**</b>	.01	.01	.17	-		
6. Management functioning (Emotional support factor)	.11	<b>.28*</b>	<b>.28**</b>	-.11	.04	-	
7. Management functioning (Work organisation factor)	<b>.23**</b>	<b>.31**</b>	.02	.07	<b>.21*</b>	<b>.35**</b>	-

Note: The significant statistical effects ( $p < .05$  or  $p < .01$ ) are in bold.

\* $p < .05$ . \*\* $p < .01$ .

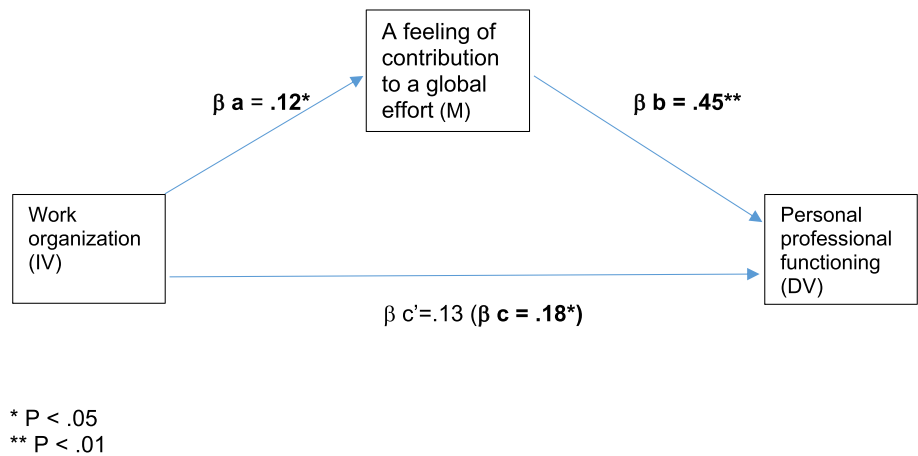
**TABLE 3** Multivariate linear regression analysis of personal functioning ( $n = 107$ )

Independent variables	B	SE	$\beta$	t	p	95% CI
Constant	1.58	.48		3.28	<.001	.62–2.53
Clarity of guidelines (Routine procedures factor)	.14	.06	.21	2.22	<b>.03</b>	.02–.27
Feelings (A feeling of contribution to a global effort factor)	.47	.13	.34	3.70	<.001	.22–.73
Management (Work organisation factor)	.07	.08	.09	.91	.08	-.09–.22

Note:  $R^2 = .19$ ,  $F = 8.04$ ,  $p < .001$ . The significant statistical effects ( $p < .05$  or  $p < .001$ ) are in bold.

Abbreviations: B, unstandardized coefficients; Beta, standardized coefficients.

**FIGURE 1** A feeling of contribution to a global effort mediates the relationships between work organisation and personal professional functioning



This last finding is in accordance with previous reports that practical support provided to nurses by the state, society, and hospitals contributed to an increased motivation that enabled nurses to treat COVID-19 patients regardless of other concerns (Jia et al., 2021). Nurses involved in the COVID-19 rescue task reported that support from the hospital leaders and colleagues caused them to feel safer, and increased their courage and motivation to combat the COVID-19 pandemic (Sheng et al., 2020). It seems that in this study, the general engagement of the public, colleagues and hospital managers in fighting the pandemic boosted nurses' and physicians' morale, sense of meaning, and a feeling of contribution to a global effort which raised their motivation and improved professional functioning.

Our results also indicated that a feeling of contribution to a global effort was positively associated with personal professional functioning. This observation is in line with the results described by Okediran et al. (2020), where health care workers responding to a call to responsibility, expressed optimism regarding the management of COVID-19 patients, and felt that their contribution made patients feel better (Okediran et al., 2020). Working during the pandemic was reported to promote a sense of camaraderie and feeling of community among UK health professionals caring for people with COVID-19 (Baldwin & George, 2021). Jetly et al. (2020) likened the global effort in dealing with the COVID-19 to a "home front" scenario in which a military mission-focused approach with clear objectives and responsibilities leads health care workers to defend their home (Jetly et al., 2020). Similarly, the association between a feeling of contribution to a global effort and professional functioning seen in the current study may reflect the focus on protecting the "home front."

In the current study, one of the items of the factor "A feeling of contribution to a global effort" was "the sense of pride." Committed COVID-19 nurses working with COVID-19 patients expressed satisfaction in knowing that they were able to contribute to the fight with global pandemic and this gave meaning to their work (Lee & Lee, 2020). UK health professionals expressed a similar sense of pride in their ability to fight against the pandemic, and as a result felt better

prepared to face such challenges in the future (Baldwin & George, 2021). Tracy and Robins (2007) distinguished two forms of pride: authentic pride, which is typically based on specific accomplishments, and hubristic pride, which is more related to narcissism and shame (Tracy & Robins, 2007). In the current study, the participants were apparently filled with a sense of authentic pride based on the accomplishment of treating patients with COVID-19, which then led to better professional functioning. In this context, Weidman et al. (2016) also demonstrated that authentic pride leads to improved performance (Weidman et al., 2016). Another item of the factor "A feeling of contribution to a global effort" was "A sense of appreciation by the environment," where a previous study demonstrated that "to be appreciated" and "to receive recognition" were among factors motivating health sector workers (Dieleman et al., 2003). Nurses who cared for COVID-19 patients expressed pleasure in the support they received from social media, and from patients' good will, respect, and gratitude, as well as from a reward and welfare system designed to support and motivate nurses (Sun et al., 2020). Similarly, during a MERS-CoV outbreak, the health care workers reported that positive attitudes expressed by colleagues had the biggest impact in reducing stress, but that they also appreciated the extra financial compensation and recognition provided by the hospital (Khalid et al., 2016). In the current study, it seems that a sense of being appreciated may explain the better professional functioning reported by the respondents. It is therefore important for hospital and health care administrators and nursing leaders to provide health care workers with mental and physical rewards so that positive feedback and reinforcement is given, as well as monetary remuneration and welfare support.

Personal professional functioning was positively associated with the clarity of guidelines. Previous reports have noted that unclear guidelines issued during an emergency situation or crisis may adversely affect the functioning of frontline health care workers. Specifically, ambiguous or otherwise unclear guidelines added to health care workers' confusion about the protocols of infection prevention and control to be followed when dealing with SARS, H1N1, Middle East respiratory syndrome (MERS), tuberculosis, or seasonal influenza

TABLE 4 Summary of mediator model analyses using 5000 bootstraps ( $n = 107$ )

Independent variable (IV)	Mediating variable (M)	Dependent variable (DV)	Effect of IV on M		Effect of M on DV		Direct effect		Indirect effect		Total Effect		
			path a $\beta$	95% CI	path b $\beta$	95% CI	path c' $\beta$	95% CI	a $\times$ b $\beta$	95% CI	path c $\beta$	95% CI	R <sup>2</sup>
Work organisation (IV)	A feeling of contribution to a global effort (M)	Personal professional functioning (DV)	.12*	.01–.22	.45**	.19–.71	.13	–.01–.27	.05*	.001–.15	.18*	.04–.33	.05*

Note:  $R^2 = .05$ ,  $F = 6.05$ ,  $p = .02$ . The significant statistical effects ( $p < .05$  or  $p < .01$ ) are in bold.

\* $p < .05$ . \*\* $p < .01$ .

(Houghton et al., 2020). Unclear guidelines early in the COVID-19 pandemic are thought to have contributed to lower rates of rehabilitation of COVID-19 survivors after in-hospital invasive mechanical ventilation (Musheyev et al., 2021). The frequently changing guidelines regarding personal protective equipment that were issued in the UK during the COVID-19 pandemic generated confusion and distrust among frontline health care workers (Hoernke et al., 2021). On March 19, 2020, the World Health Organisation issued a guidance called “Coronavirus disease (COVID-19) outbreak: rights, roles, and responsibilities of health workers, including key considerations for occupational safety and health” (WHO, 2020b). Unfortunately, while the guidance included general guidelines, it did not address specific situations. For example, although the responsibility to provide adequate infection prevention and control and personal protection supplies was imposed on employers and managers (WHO, 2020b), in practice, a worldwide lack of personal protective equipment made it impossible to follow the guidelines. This led to a prolonged period of multiple reuse of equipment, in parallel with development of methods for cleaning and disinfecting equipment without knowing its effectiveness, and the use of manually prepared masks that had not passed a quality check (Chua et al., 2020). The uniqueness of the current situation is that since COVID-19 is a new pathogen, guidelines did not exist during the early stages of the pandemic. In similar future scenarios, we would recommend the WHO and national health authorities to publish evidence- and research-based information about the causative agent and to update the defence and care guidelines for health care providers on a regular basis. Furthermore, current practical guidelines updated on the base of existing knowledge and a review of recent studies should be published on a regular schedule for the benefit of health care professionals.

## 5 | STUDY LIMITATIONS

Among the main limitations is the fact that this was a cross-sectional study, and it is therefore impossible to determine causal relationships. In addition, since the sample was a convenience sample and was relatively small, the results may not necessarily be representative. Specifically, the study was performed in a single medical centre, which may limit the generalization of the current results.

## 6 | CONCLUSION

The results of the study provide empirical evidence regarding factors associated with personal professional functioning of nurses and physicians in a tertiary general hospital during the COVID-19 pandemic in Israel. A feeling of contribution to a global effort mediated the relationships between work organisation by the management and personal professional functioning. The clarity of guidelines for routine procedures and a feeling of contribution to a global effort positively predicted the personal professional functioning of nurses and physicians.



## 7 | IMPLICATIONS FOR NURSING MANAGEMENT

In an emergency, it is essential to provide health care workers with clear guidelines, instructions, and standard operating procedures in order to optimize their professional functioning. It may be useful to adapt similar protocols to those employed in ER triage, where all health care workers are aware of their specific responsibilities. Another recommendation is the appointment of a pandemic coordinator whose responsibility would be provide information and support to the health care staff. Moreover, positive actions should be taken to maintain health care workers' feeling of contribution to a global effort, sense of meaning, and morale during an emergency. Specifically, the recommendations for nursing management are to appraise workers of what is happening and provide them with positive feedback and reinforcement. Such workers are likely to maximize their efforts on behalf of their ward and hospital. These actions may help to raise health care staff motivation and improve professional functioning.

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### CONFLICT OF INTEREST

The authors declared no conflict of interest.

### ETHICS STATEMENT

The study was approved by the Ethics committee of the Wolfson Medical Center, Holon, Israel, where the study took place (Approval number 0113-20 WOMC).

### DATA AVAILABILITY STATEMENT

We allow to share the supporting information.

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#### SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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# Effects of a learning programme for nurse managers to connect their experience: A quasi-experimental study

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## Abstract

**Aim:** The present study aimed to examine the effects of a learning programme for nurse managers on connecting learning with their own experiences and fostering competence.

**Background:** In Japan, second-level programmes for certified nurse administrators represent the main opportunity for formal training for nurse managers. However, it is difficult for nurse managers to transfer second-level programme learning to their workplace.

**Methods:** This quasi-experimental study used a two-group pretest–posttest design with purposive sampling and non-random assignment of 29 consenting Japanese nurse managers who were participating in a second-level programme through a prefectural nursing association. The programme provided reflection papers and feedback from a researcher, as well as reflective group sessions. The outcome measure was the Japanese First-Line Nurse Managers Competence Inventory (JNMCI) score.

**Results:** The intervention group showed significant improvement in JNMCI scores after participating in the programme. A significant difference in JNMCI scores was also observed between the intervention and comparison groups.

**Conclusion:** This learning programme led to improved competency among nurse managers.

**Implications for Nursing Management:** Nurse manager development programmes should include reflection papers and feedback, as well as reflective group sessions, to improve competency among nurse managers.

## KEYWORDS

competence, learning programme, nurse manager, programme evaluation, reflection

## 1 | BACKGROUND

Nurse managers are vital to the success of health care organisations because they affect staff retention, patient outcomes and profitability (Moore et al., 2016). In addition, they help with organisation, create a suitable environment for the provision of high-quality nursing care,

improve the quality of nursing care, manage resources and ensure an educational setting for nurses (Japanese Nursing Association, 2016a). Furthermore, the results of a conceptual analysis of nurse administrator competency found that they were responsible for ‘improving the quality nursing care by staff nurses’, ‘revitalizing departments and strengthening cooperation among divisions’, ‘improving patient

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satisfaction' and 'improving job satisfaction' (Beppu, 2019). However, numerous first-line nurse managers have left their posts because of poor relationships with department heads and a lack of support, suggesting the need for further opportunities for development (Japanese Nursing Association, 2016b).

In Japan, second-level programmes for certified nurse administrators represent the main opportunity for nurse managers to engage in formal training. Programmes for certified nurse administrators consist of the following: (1) first-level programmes mainly for assistant nurse managers, (2) second-level programmes mainly for nurse managers and (3) third-level programmes mainly for directors and vice-directors of nursing. These programmes were developed by the Japanese Nursing Association with the aim of developing competency among nurse administrators (Japanese Nursing Association, 2019). Nurse administrators who complete first- to third-level programmes can take an examination to become registered as a certified nurse administrator. As of 2019, a total of 62 institutions in Japan, including prefectural nursing associations and various colleges of nursing, operate second-level programmes.

The lecture topics of second-level programmes have included 'health care systems', 'organisational management', 'human resource management', 'resource management', 'quality management' and 'integrated practical training'. The total instruction time is 180 h, and nearly, all nurse managers engage in learning for a few months while working. Second-level programmes can gather many nurse managers in the classroom for lectures at the same time (Kawano, 2014). However, it is often difficult for nurse managers to transfer learning from second-level programmes to their workplace.

A previous study reported that only 66% of second-level programme participants could transfer learning to their workplace, and after participation, the self-evaluation scores regarding competency were low for 'human resources', 'gathering and analysing information' and 'decision-making' (Kikuchi et al., 2008). These findings suggest the need for a new approach to support the transfer of learning from second-level programmes to the workplace.

Therefore, in this study, we decided to focus on the International Masters in Practicing Management (IMPM) programme developed by Mintzberg (2004). Mintzberg describes a very different approach to management education that encourages practicing managers to learn from their own experiences. No one can create a manager in the classroom, but existing managers can improve their practice substantially in a thoughtful classroom that makes use of those experiences. The IMPM components include the following: (1) reflection papers, (2) reflective group sessions and (3) feedback from the faculty. Mintzberg introduced reflection papers to encourage the transfer of learning to the workplace and asked participants to revisit all the material in the module and write a paper that linked whatever seemed most relevant to themselves, their job, their organisation and their world. Through the IMPM, the participants (1) share materials, (2) apply methods, (3) change behaviours and (4) provoke new frames of perceptions.

Previous studies have indicated that many nurse manager development programmes involve reflective learning (Frasier, 2019; McGarity et al., 2020). However, to our knowledge, no programmes have connected the classroom learning and personal experiences of nurse managers.

Although the IMPM participants were business managers, we believe that a structured programme that includes the contents of IMPM that connect classroom learning and nursing experiences would be effective for improving the competency of nurse managers. Therefore, the effectiveness of such a programme should be assessed using nurse managers as the participants.

Given this background, the present study aimed to develop a learning programme for nurse managers that would allow them to connect learning with their own experiences and to clarify whether such a programme would improve competency in nursing management.

## 2 | METHODS

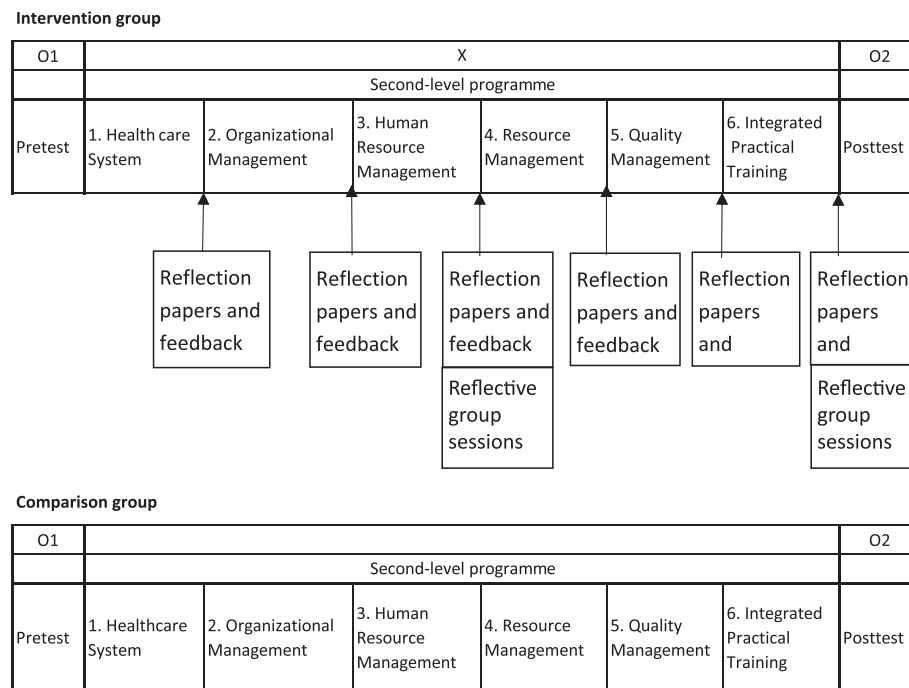
### 2.1 | Programme development

The components of the learning programme developed in the present study were as follows: (1) reflection papers for the participants to revisit all of the material and write a paper that linked whatever seemed most relevant to themselves and their job after completing each subject (six times in total), (2) one-on-one feedback from the researcher (lead author) by e-mail each time the participants made an entry in their reflective papers and (3) reflective group sessions among the researcher and nurse managers for 1 h each time in the middle of and at the end of the programme (two times in total). After completing the programme, each nurse manager was paid 5000 JPY by the lead author for their participation.

The second-level programme was carried out through prefecture A and included the following lecture subjects: 'health care system', 'organisational management', 'human resource management', 'resource management', 'quality management' and 'integrated practical training'. The 3-month programme included a total of 180 h of instruction. The same second-level programme was conducted in 2019 and 2020. Lectures were given for each subject by lecturers other than the researcher (lead author).

### 2.2 | Design and study protocol

The present quasi-experimental study used a convenience sample and a non-random group assignment pretest-posttest design. The intervention group participated in a learning programme to connect learning from the second-level programme with their own experiences, whereas the comparison group participated in the second-level programme only. Pretest and posttest surveys were carried out before the start and after the completion of the second-level programme (see Figure 1).



**FIGURE 1** Design of the study for the effects of the learning programme on nurse managers to connect learning from the second-level programme with their own experiences

### 2.3 | Outcome measures

To measure the perceived job competencies linked to the performance and staff retention of first-line nurse managers working in a hospital setting, the Japanese First-Line Nurse Managers Competence Inventory (JNMCI), the original and Japanese versions of which were developed by DeOnna (2006) and Sakamoto et al. (2016), respectively, was used. The JNMCI consists of the following nine subscales: (1) 'promote staff retention', (2) 'facilitate staff development', (3) 'perform supervisor responsibilities', (4) 'develop a nursing practice environment', (5) 'support training for staff', (6) 'develop the self', (7) 'conduct daily unit operations', (8) 'ensure quality care' and (9) 'manage fiscal planning'. The JNMCI scale is composed of 40 items that are rated on a 4-point Likert scale ranging from 1 (*never*) to 4 (*all the time*). Higher JNMCI scores indicate better nurse management competency. The reliability and validity of the JNMCI have been confirmed (Sakamoto et al., 2016). Cronbach's alpha of the JNMCI is .94.

### 2.4 | Participants and setting

The inclusion criteria for the present study were as follows: (1) a nurse manager and (2) a participant in a second-level programme for certified nurse administrators. The study was conducted at a nursing association in prefecture A in the Kyusyu region of Japan.

### 2.5 | Procedures

The participants were recruited using a document containing information about the study, including notice of a payment of 5000 JPY for

each participating nurse manager, and a request for participation to all nurse managers who were participating in a second-level programme for certified nurse administrators, through the prefectural nursing association in 2019 and 2020. We explained the study purpose and ensured confidentiality, anonymity, and the safety of personal data to all participants both verbally and in writing. Written consent was obtained from all nurse managers who agreed to participate in the study. All nurse managers were also informed of their right to withdraw from the study at any time without penalty and were given a withdrawal form that they also had the option to send by mail if necessary.

We gathered data for the pretest before the start of the second-level programme in a room at the nursing association in prefecture A. We set up reflective group sessions 2 months after the completion of the second-level programme in a room at the nursing association and gathered data for the posttest after the reflective group sessions in the same room.

The original parts of our programme were describing the reflection paper, getting feedback from the researcher and the reflective group sessions. Therefore, we conducted a fidelity evaluation on these parts. We distributed questionnaires to collect information for the fidelity evaluation at same time as the posttest.

The data collection period was from September 2019 to February 2020.

### 2.6 | Ethical considerations

This study was approved by the ethics committee of our institution. In accordance with the Declaration of Helsinki, a written explanation of the study objectives, methods, protection of anonymity and voluntary

nature of participation was given to all participants. We also explained that the collected data would only be used for the purposes of this study.

## 2.7 | Statistical analysis

SPSS version 26.0 (SPSS, Tokyo, Japan) was used for the data analyses, with the level of significance set at 5%. Unpaired *t* tests and the  $\chi^2$  test were used to compare the participants' basic characteristics. We confirmed that the JNMCI scores were normally distributed and used paired *t* tests to compare the differences in JNMCI scores before and after the programme. To confirm the effectiveness of the programme, we analysed the differences between the intervention and control groups using unpaired *t* tests.

## 3 | RESULTS

### 3.1 | Recruitment and baseline comparison between the two groups

The flow of the participants through the study is shown in Figure 2. The study participants were 14 and 15 nurse managers from the intervention and comparison groups who participated in the second-level programmes in 2019 and 2020, respectively. From among these nurse managers, 13 (92.9%) from the intervention group and 15 (100%) from the comparison group completed the study. No significant differences in the participants' characteristics were found between the intervention and control groups. However, significant differences were found in pretest scores ( $P < .05$ ) (see Figure 2 and Table 1).

### 3.2 | Characteristics of the nurse managers

The characteristics of the nurse managers who participated in the study are shown in Table 1. The mean age  $\pm$  standard deviation (SD) of the nurse managers in the intervention and control groups was  $45.5 \pm 5.0$  and  $49.1 \pm 4.7$  years, respectively, and one nurse manager was male in each year. The mean length of experience  $\pm$  SD as a nurse manager in the intervention and control groups was  $4.2 \pm 2.7$  and  $4.9 \pm 4.2$  years, respectively.

### 3.3 | Number of reflection paper entries

The total number of reflection paper entries made by the 13 nurse managers in the intervention group over the course of the programme was 61.

### 3.4 | Feedback from the researcher

The researcher read the reflection papers written by the nurse manager and provided written feedback for each entry. After receiving the feedback from the researcher, the nurse managers revised their reflection papers to clarify what they had learned from the programme and what seemed relevant to their job. The researcher then checked the revisions and responses.

In the reflective group sessions, the researcher asked nurse managers about (1) which lectures left a lasting impression and (2) if they could connect learning in that lecture with their own experiences. The nurse managers discussed these topics freely during the reflective group sessions.

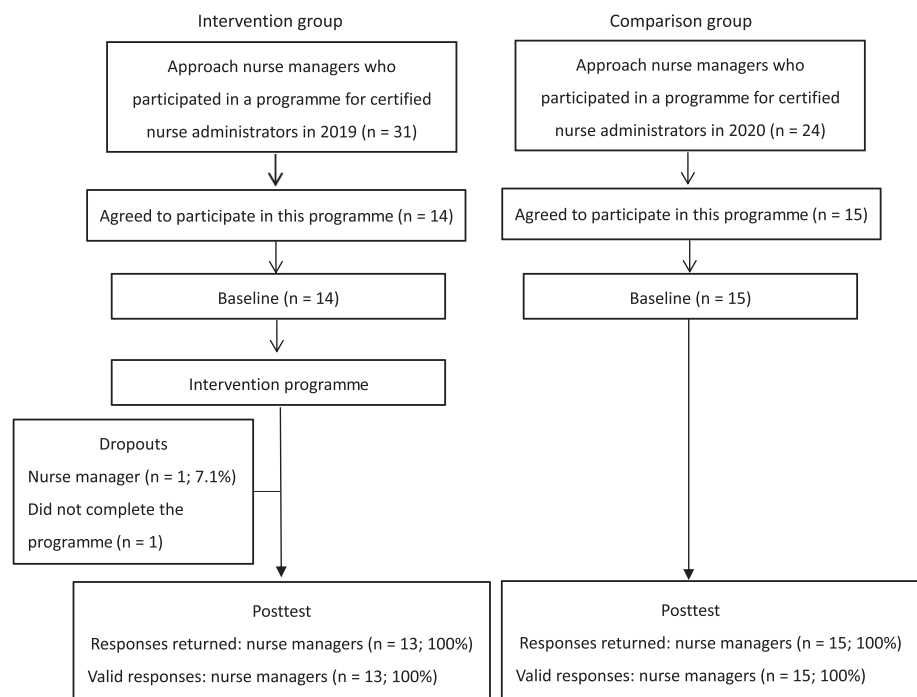


FIGURE 2 Flowchart of the study

**TABLE 1** Comparison between the two groups ( $n = 28$ )

Demographic variables	Intervention group ( $n = 13$ )		Comparison group ( $n = 15$ )		$t$	df	P
	M	SD	M	SD			
Age (years)	45.50	4.99	49.10	4.72	-1.96	26	.061
Years of experience (as a nurse manager)	4.15	2.70	4.93	4.17	-0.58	26	.569
Attribute	N	%	N	%	Total	$\chi^2$	P
Sex							
Female	12.00	92.3	14.00	93.30	26.00	.01	.72
Male	1.00	7.7	1.00	6.70	2.00		
Scales and subscales	M	SD	M	SD	$t$	df	P
Baseline							
JNMCI	3.18	0.53	3.66	0.49	-2.49	26	.020*
Promote staff retention	3.56	0.46	3.63	0.63	-0.34	26	.735
Facilitate staff development	3.00	0.88	3.30	0.66	-1.03	26	.313
Perform supervisor responsibilities	3.83	0.60	4.12	0.66	-1.21	26	.238
Develop the nursing practice environment	3.00	0.91	3.56	0.50	-2.06	26	.049*
Support education for staff	3.80	0.59	3.84	0.85	-0.17	26	.863
Develop self	2.18	0.85	2.44	0.71	-0.90	26	.374
Conduct daily unit preparations	3.28	0.57	3.67	0.46	-1.99	26	.058
Ensure quality care	3.03	0.87	3.29	0.81	-0.83	26	.415
Manage fiscal planning	1.92	0.99	2.04	0.98	-0.33	26	.748
Posttest							
JNMCI	3.63	0.27	3.69	0.48	-0.39	26	.700
Promote staff retention	3.71	0.25	3.83	0.52	-0.77	26	.448
Facilitate staff development	3.71	0.56	3.67	0.69	0.19	26	.853
Perform supervisor responsibilities	4.06	0.25	4.21	0.57	-0.93	26	.359
Develop the nursing practice environment	3.55	0.52	3.71	0.46	-0.82	26	.418
Support education for staff	3.82	0.55	4.04	0.65	-0.97	26	.341
Develop self	2.87	0.73	3.02	0.74	-0.54	26	.594
Conduct daily unit preparations	3.71	0.53	4.00	0.53	-1.46	26	.156
Ensure quality care	3.56	0.61	3.69	0.76	-0.48	26	.638
Manage fiscal planning	2.56	0.80	2.31	1.11	0.68	26	.502
Difference							
JNMCI	0.45	0.38	0.03	0.39	2.89	26	.008*
Promote staff retention	0.22	0.43	0.20	0.36	0.10	26	.919
Facilitate staff development	0.71	0.75	0.37	0.52	1.44	26	.163
Perform supervisor responsibilities	0.23	0.60	0.10	0.59	0.58	26	.566
Develop the nursing practice environment	0.55	0.78	0.15	0.65	1.51	26	.142
Support education for staff	0.26	0.71	0.20	0.71	-0.65	26	.524
Develop self	0.69	0.69	0.58	1.10	0.32	26	.749
Conduct daily unit preparations	0.43	0.48	0.33	0.40	0.59	26	.560
Ensure quality care	0.36	1.26	0.40	0.78	-0.11	26	.913
Manage fiscal planning	0.64	0.90	0.27	0.88	1.11	26	.276

Abbreviation: JNMCI, Japanese First-Line Nurse Managers Competence Inventory.

\* $P < .05$ .



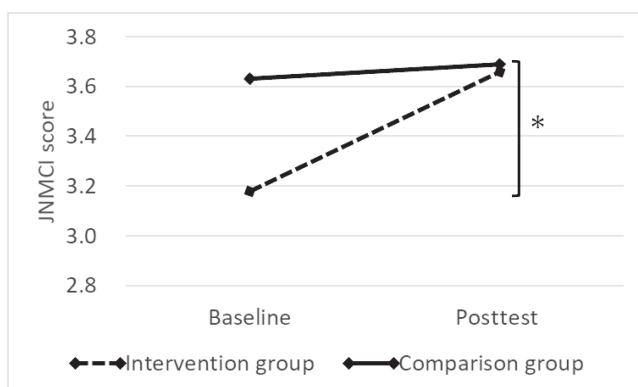
### 3.5 | Pretest and posttest comparison

The results of a comparison of JNMCI scores between the intervention and comparison groups are shown in Table 1. The mean  $\pm$  SD pretest JNMCI scores were significantly higher in the comparison than in the intervention group. The mean  $\pm$  SD pretest score for the 'develop a nursing practice environment' subscale of the JNMCI was significantly higher in the comparison than in the intervention group.

Significant increases were seen in the mean  $\pm$  SD JNMCI scores in the intervention group after compared with before the programme ( $3.63 \pm 0.27$  vs.  $3.18 \pm 0.53$ , respectively,  $P < .01$ ). Mean  $\pm$  SD JNMCI scores also increased in the comparison group after compared with before participating in the programme, but these changes were not significant ( $3.69 \pm 0.48$  vs.  $3.66 \pm 0.49$ , respectively,  $P = .764$ ). A significant difference in JNMCI scores was observed between the intervention and comparison groups ( $0.45 \pm 0.38$  vs.  $0.03 \pm 0.39$ , respectively,  $P < .01$ ). However, no significant difference in the subscale scores of the JNMCI was found between the intervention and comparison groups (Table 1 and Figure 3).

### 3.6 | Programme evaluation

A fidelity evaluation was conducted to assess the participants' satisfaction with the learning programme and whether they had connected learning from the programme with their own experiences. The participants evaluated the programme by completing a four-item questionnaire with a 5-point scale for each item, with five points representing a perfect score. The evaluation contents were as follows: 'usefulness of describing the reflection paper', 'usefulness of getting feedback from the researcher', 'usefulness of the reflective group sessions' and 'satisfaction with the programme'. The highest mean score was for 'usefulness of getting feedback from the researcher' (4.4 points), followed by 'usefulness of the reflective group sessions' (4.2 points), 'satisfaction with the programme' (4.0 points) and 'usefulness of describing the reflection paper' (3.9 points).



**FIGURE 3** Effect of the learning programme on average JNMCI scores ( $n = 28$ ). \* $P < .01$ . JNMCI, Japanese First-Line Nurse Managers Competence Inventory

## 4 | DISCUSSION

In the present quasi-experimental study, data were collected from two groups at different time points. As the homogeneity of attributions affected the internal validity of this programme, it was important to examine the homogeneity of attributions between the two groups. No significant differences were found in the participants' characteristics. However, the mean  $\pm$  SD pretest JNMCI scores were significantly higher in the comparison than in the intervention group, thereby indicating significant differences in competency between the two groups before participating in the programme.

In this study, the mean  $\pm$  SD pretest score for the 'develop a nursing practice environment' subscale of the JNMCI was significantly higher in the comparison than in the intervention group. The nurse managers in the comparison group participated in the study in 2020, and we recognize that they may have struggled to develop the nursing practice environment during the COVID-19 pandemic. Therefore, the score for 'develop a nursing practice environment' in the 2020 comparison group was significantly higher compared with that of both the comparison and intervention groups in 2019.

### 4.1 | Effectiveness of the programme

A comparison of JNMCI scores indicated significant improvement on the posttest in the intervention compared with the comparison group. Regarding the evaluation of the programme, the participants appreciated its usefulness in connecting learning with their own experiences. The effects of the IMPM developed by Mintzberg (2004) were as follows: (1) sharing materials, (2) applying methods, (3) changing behaviours and (4) provoking new frames of perceptions. The programme thus appeared to help nurse managers share materials and apply the methods that they had learned through the programme to improve their competency. Therefore, we believe that the components of the programme are effective for promoting a transfer of learning to the workplace among nurse managers.

A previous study reported significant relationships between experiential learning and nursing management competency among nurse managers who participated in an experiential learning-based programme (Kuraoka, 2019). In addition, significant relationships were observed between 'reflective observation', which is one factor of the experiential learning inventory on the job, and 'leadership', which is one factor of nursing management competency (Kuraoka, 2019). Our programme and that reported by Kuraoka (2019) used reflection as the method of delivery, and each study indicated comparable results, which suggests that reflection is important to improve the competency of nurse managers.

The present programme involved reflection papers, corresponding feedback from the researcher and reflective group sessions. The results of the fidelity evaluation indicated that getting feedback from the researcher was the most useful for the nurse managers, followed by the reflective group sessions and the descriptions of the reflection papers. A previous study reported that mentoring and coaching were

important in nurse manager development programmes (Flatekval & Corbo, 2019; Manning et al., 2015). In an Australian programme, a mentoring and coaching model was used to guide the coaching of prospective nurse managers (Manning et al., 2015). As a result, although mentorship was not the only component of that programme, significant improvements in managerial skills and the confidence to undertake a nurse manager role were seen in the participants who had received mentoring. Another 3-month pilot study aimed at developing the competencies of eight nurse managers by conducting coaching during lunch sessions showed positive results (Flatekval & Corbo, 2019). Feedback from the researcher in the present study corresponds to mentoring or coaching. Furthermore, our programme and others (Flatekval & Corbo, 2019; Manning et al., 2015) that included feedback, mentorship or coaching for didactic learning were shown to be effective for improving the competency of nurse managers. We therefore believe that additional support for mentorship and coaching involving feedback would be even more effective.

In the present programme, the researcher provided feedback, but no organisational support was provided. We consider that it is important for nurse managers to get support from researchers when participating in a second-level programme, which could help them consider the relationship between the learning contents and their experiences in their workplace. On the other hand, nurse managers need organisational support, for example, from the director or vice-director of nursing, to transfer learning to their workplace after participating in a second-level programme. In a previous literature review on the common components of nurse manager development programmes, Ullrich et al. (2021) indicated that organisational support is needed by leaders to backfill positions so that participants can complete programmes and take roles to consolidate learning and experiences. In the future, it will be necessary to design nurse manager development programmes that involve organisational support to promote the transfer of learning from second-level programmes to the workplace.

## 4.2 | Limitations and future challenges

This study had some limitations. First, this was only a second-level programme conducted through a prefectural nursing association, so the generalizability of the results is limited and potential biases should be considered. This study also used a non-equivalent control group design instead of a randomized controlled trial, and the two groups were not homogenous; therefore, the internal validity in regard to the intervention effect was weaker. The validity of this programme needs to be confirmed in a randomized controlled trial. Second, the sample size was small; therefore, no significant differences in the mean JNMCI subscale scores were observed, as each JNMCI subscale only has 3 to 10 items. In the future, it will be necessary to increase the sample size and examine the effects of the programme on the JNMCI subscales. Third, the present study focused on JNMCI scores among nurse managers immediately after participating in the programme. To

examine the effects of this programme on nursing management practice in the workplace, JNMCI scores should be evaluated over the long term. In addition, it will be necessary to clarify the practices of nurse managers who participate in this programme using a qualitative study and examine changes before and after participation.

## 5 | CONCLUSION

The present learning programme for nurse managers was found to improve competence. These findings suggest that to improve nursing management competency, future nurse manager development programmes should include reflection papers, feedback and reflective group sessions. A randomized controlled trial is also needed to confirm the validity of this programme.

## 6 | IMPLICATIONS FOR NURSING MANAGEMENT

It seems that nurse manager development programmes are inclined to provide only didactic learning from the perspective of efficiency. However, it is difficult for nurse managers to transfer learning from formal training programmes to their workplace with only didactic learning programmes.

In this study, we developed a learning programme for nurse managers to allow them to connect learning from the programme with their own experiences and thereby improve nursing management competency. The results suggested that nurse manager development programmes should include reflection papers and feedback, as well as reflective group sessions, to improve competency among nurse managers. Therefore, nurse manager development programmes should allow nurse managers to transfer learning from formal training programmes to their workplace. It is important for learning programmes for nurse managers to integrate interactions with the instructor and other members of the programme into the programme for a period of time and aim to transfer learning from formal training to their role in the workplace.

Furthermore, in the present programme, the researcher provided feedback, but no organisational support was provided. In the future, it will be necessary to design nurse manager development programmes that involve organisational support to further promote the transfer of learning from second-level programmes to the workplace.

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## CONFLICT OF INTEREST

None declared.

## ETHICAL APPROVAL

This study was conducted after obtaining approval from the ethics committee for Epidemiological Studies at Japanese Red Cross Kyusyu International College of Nursing, Fukuoka, Japan (approval 18-011).

## 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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# Health care managers' competence in knowledge management: A scoping review

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## Abstract

**Aim:** To identify current evidence on health care managers' competence in knowledge management.

**Background:** Although successful knowledge management improves the quality of care and performance of health care organisations, there is limited evidence on health care managers' competence in knowledge management

**Evaluation:** A scoping review was conducted by including original published and unpublished studies (qualitative, quantitative, and experimental) and review designs in English, Finnish, or Swedish. The studies were retrieved from six databases (CINAHL, ProQuest, PubMed, Scopus, Mednar, and Finnish database Medic) in November 2020 and then complemented in January 2022. Narrative synthesis was used to synthesize data.

**Key issues:** A total of 21 articles was included in the review. The main themes of managers' competence in knowledge management presented in these were system management, professional development, and leadership behaviour and attitude. No valid and reliable instruments were described in the included studies.

**Conclusion:** At present, there is a limited understanding of health care managers' competence in knowledge management. A comprehensive understanding of this topic can provide a direction for future research.

**Implications for Nursing Management:** The results can be utilized in the assessment and development of managers' competence in knowledge management, as well as the formulation of education and in-service training for health care managers.

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## KEYWORDS

knowledge management, competence, manager, leader, health care, scoping review

## 1 | INTRODUCTION

Several examples of factors that are linked to health care managers' need to develop their knowledge management competence include a decreasing number of professionals in the future, an aging health care workforce, the increasing relevance of multi-professional education, and changes to many health care roles (Fellows & Edwards, 2016). Additionally, the expectations of the new generation of employees differ from those of older generations, which means that the required knowledge management competences have changed for modern managers (Coulter & Faulkner, 2014; Stanley, 2010).

There is a wide range of definitions for knowledge management (Dulipovici & Baskerville, 2015). Hislop et al. (2013) define the term knowledge management as a systematic and organized approach for improving the ability of an organisation to mobilize knowledge to enhance decision-making, take action and deliver results which support the underlying business strategy. According to Ojala and Aura (2005), knowledge management is a concept that can be managed to achieve goals as well as optimize organisational resources such as money, equipment, people, and raw materials. In the context of health care, knowledge management involves knowledge transfer, coaching, and the development of an operating culture for either the near future or long-term activities (Lunden et al., 2019). According to Orzano et al. (2008), it is the process through which people in organisations find, share, and develop knowledge for action. It is also important to note that the definition of competence is complex. In this review, managerial competence can be defined as the knowledge, skills, behaviour, ability, and attitudes that contribute toward a manager's individual effectiveness (Rahman et al., 2014).

Successful knowledge management leads to better performance and higher care quality in health care organisations (Wu & Hu, 2012). Previous research has recognized that knowledge management requires persistent planning, monitoring, and support (Ayatollahi & Zeraatkar, 2020), with support from management found to influence knowledge management (Al Saifi et al., 2016). In a nurse leader's daily work, activities related to knowledge management are focused on ensuring sufficient levels of competence and the ability to respond to sudden changes (Lunden et al., 2019).

Managers have a key role in the implementation of knowledge management through their ability to discover and disseminate knowledge throughout the organisation; moreover, nurse managers are influential in their ability to encourage employees to accept the knowledge-sharing culture. Hence, the presence of excellent managers is a crucial factor for the successful implementation of knowledge management (Ayatollahi & Zeraatkar, 2020). In addition, Currie et al. (2007) note that line managers play a crucial role in helping, or hindering, graduate specialist practitioners transfer their learning to

the clinical setting and actively develop their practical skills. In a study by Lunden et al. (2021), half of the nurses shared positive perceptions of their managers' actions related to knowledge management. The responding nurses identified anticipation of nurses' competency needs, ensuring and assessing competency, and intervening when inadequacies in competence as the weakest aspects of knowledge management.

There continues to be little research available on knowledge management in the context of health care despite the long tradition of nursing leadership research (Lunden et al., 2017). For example, managers recognize the importance of ensuring competence development among staff, yet nearly 50% of managers feel that they are insufficiently prepared to manage competence (Omoike et al., 2011). Nevertheless, there is evidence that leadership competence can be gained by a solid educational foundation, and then maintained through continuous training and guidance (Hsu et al., 2011; Leggat & Balding, 2013; Omoike et al., 2011).

This scoping review aims to identify current evidence on health care managers' competence in knowledge management and demonstrate gaps in the current knowledge base. A preliminary search of PROSPERO, PubMed, the Cochrane Database of Systematic Reviews, and JBI Evidence Synthesis was conducted, with no published or ongoing systematic reviews on competence in knowledge management identified. In this review, the term health care manager encompasses all managers and leaders of which a significant proportion are nurse managers. The terms managers and leader include all health care managers. Therefore, in this review, the terms manager and leader are used interchangeably.

## 2 | AIM AND RESEARCH QUESTIONS

This scoping review was conducted to identify current evidence on health care managers' competence in knowledge management.

This scoping review addressed two questions:

1. What types of competence in knowledge management do managers have and need in health care?
2. Which instruments have been used to study managers' competence in knowledge management in the context health care?

## 3 | INCLUSION CRITERIA

Inclusion and exclusion criteria were chosen based on the PCC (population, concept, and context) framework (Peters et al., 2020) and are clarified in Table 1.

**TABLE 1** Inclusion and exclusions criteria applied in this scoping review (PCC)

Inclusion criteria		Exclusion criteria
Population (P)	Health care leaders, supervisors, managers, chief executive officers, administrators, administrative personnel, heads or charges. Health care professionals if they assessed the managers' competence in knowledge management.	All other people in the population, such as patients and students, who assessed managers' competence in knowledge management.
Concept (C)	Competence management, knowledge management, knowledge leadership, skill management, competence development and competence-based management.	
Context (C)	Health care organisations in any geographic locations	
Type of Study	Qualitative, quantitative, mixed methods studies and review designs. Published in English, Finnish or Swedish. No time limit.	Unpublished reports and all other publications.

## 4 | METHODS

The scoping review was chosen as the employed methodology because there is a clear need to increase knowledge on the research topic, map the current literature, identify the characteristics of available research, and demonstrate gaps in research knowledge. This scoping review followed the JBI scoping review methodology (Peters et al., 2020). In addition, The Preferred Reporting Items for Systematic reviews and Meta-analyses extension for Scoping Reviews (PRISMA-ScR) checklist has been used when reporting the results (Tricco et al., 2018).

### 4.1 | Search strategy

An extensive search was performed in November 2020, after which the search was complemented for the years 2020–2021 in January 2022. The search strategy was developed to find both published and unpublished studies. A three-step search strategy was utilized. An initial limited search of PubMed and Scopus was undertaken, followed by an analysis of the words in the title and abstract, and of the index

terms used to describe the articles. A second search using all of the identified keywords and index terms was undertaken across all of the included databases with a focus on the PCC aspects of the review question. To create an exhaustive search, an experienced information specialist assisted with the search.

Next, the reference lists of all the identified reports and articles were searched for additional studies that were not retrieved through the database searches. Published and unpublished studies in English, Swedish and Finnish were considered for inclusion. No restriction on the time of publication was applied. The database search included CINAHL, the Finnish database Medic, PubMed, and Scopus. The Mednar and ProQuest databases were searched for unpublished studies and grey literature. The search strategy and results for each database are shown in Table 2.

### 4.2 | Study selection

A search of the six database resulted in 3923 records. Following the search, all of the identified citations were collated into the Covidence Systematic Review Software tool (2021). The titles and abstracts were independently reviewed against the inclusion criteria by two reviewers. Studies that met the inclusion criteria were retrieved in full. A total of 21 studies was included in this review. Any discrepancies that arose during selection were resolved through discussion. Full-text studies that did not meet the inclusion criteria were excluded, and the reasons for exclusion were reported. Further information on the excluded studies can be obtained from the contact person. The search and study selection process is shown in Figure 1.

### 4.3 | Data extraction, analysis, and presentation

Data were extracted from the included studies by two independent reviewers. Data extraction included specific details about the author(s), year and country, research design, research question or study aim, study population and sample size, context, outcomes, and key findings related to the review (Table 3). It is important to note that one study was excluded due to the lack of a full-text article. Any disagreements that arose between the reviewers were resolved through discussion (Peters et al., 2020). The results were analysed, and the findings were reported using both explanatory text and tabular format. A narrative synthesis was used to summarize the main findings (Peters et al., 2020).

## 5 | RESULTS

### 5.1 | Article inclusion

A total of 3923 records were identified through the database search. After the removal of 680 duplicate records, a total of 3243 articles were screened by title and abstract, of which 3139 were subsequently

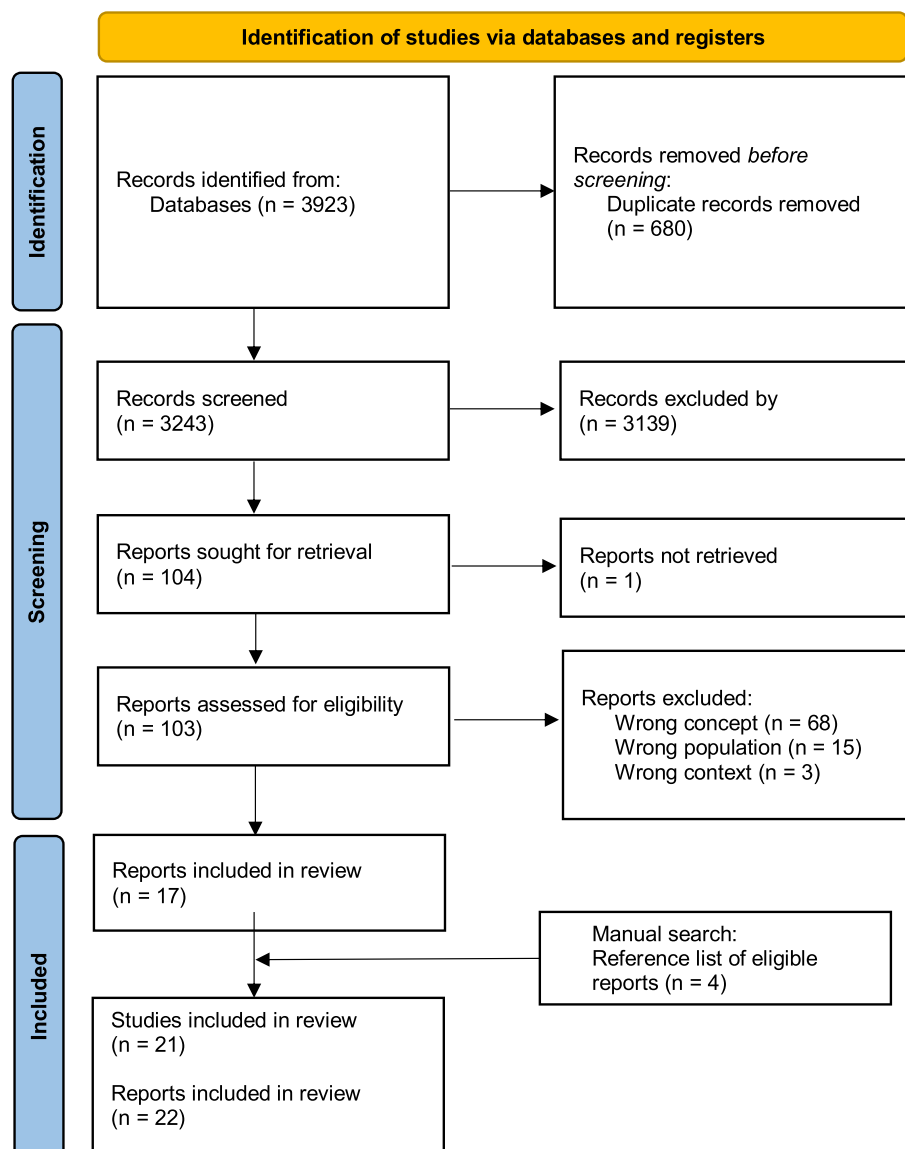
**TABLE 2** Search strategy (search results by databases)

Database (n =)	Keywords and limit
CINAHL (n = 1442)	((MH "Leadership") OR (MH "Supervisors and Supervision+")) OR (leader* OR supervisor* OR manager* OR "chief executive officer*" OR ceo OR administrator* OR "Administrative Personnel" OR head OR charge) AND ((MH "Health Occupations+") OR (nurs* OR health OR healthcare OR hospital)) OR (MH "Health Services Administration+") OR (MH "Nurse Administrators+") OR (MH "Nursing Leaders") AND (MH "Knowledge Management") OR ("competence management" OR "knowledge management" OR "knowledge leadership" OR "skill management" OR "competence development" OR "competence based management") Limit - Exclude MEDLINE records; Language: English, Finnish, Swedish
Medic (n = 206)	leader* supervis* administr* manager* AND Competen* knowledge Limit - No
Mednar (n = 275)	(leader* OR supervisor* OR manager* OR "chief executive officer*" OR ceo OR administrator* OR "Administrative Personnel" OR head OR charge) AND (nurs* OR health OR healthcare OR hospital) AND ("competence management" OR "knowledge management" OR "knowledge leadership" OR "skill management" OR "competence development" OR "competence based management") Limit - No
ProQuest (n = 952)	(TITLE-ABS-KEY ((leader* OR supervisor* OR manager* OR "chief executive officer*" OR ceo OR administrator* OR "Administrative Personnel" OR head OR charge) AND (nurs* OR health OR healthcare OR hospital)) AND TITLE-ABS-KEY ("competence management" OR "knowledge management" OR "knowledge leadership" OR "skill management" OR "competence development" OR "competence based management")) Limit - No
PubMed (n = 267)	((("Nursing, Supervisory"[Mesh]) OR "Administrative Personnel"[Mesh]) OR (((("Leadership"[Mesh]) OR (leader* [Text Word] OR supervisor* [Text Word] OR manager* [Text Word] OR "chief executive officer*" [Text Word] OR ceo [Text Word] OR administrator* [Text Word] OR head [Text Word] OR charge [Text Word])) AND (("Health Occupations"[Mesh]) OR (nurs* [Text Word] OR health [Text Word] OR healthcare [Text Word] OR hospital [Text Word])))) AND (("Knowledge Management"[Mesh]) OR ("competence management" [Text Word] OR "knowledge management" [Text Word] OR "knowledge leadership" [Text Word] OR "skill management" [Text Word] OR "competence development" [Text Word] OR "competence based management" [Text Word])) Limit - Language: English, Finnish, Swedish
Scopus (n = 781)	(TITLE-ABS-KEY ((leader* OR supervisor* OR manager* OR "chief executive officer*" OR ceo OR administrator* OR "Administrative Personnel" OR head OR charge) AND (nurs* OR health OR healthcare OR hospital)) AND TITLE-ABS-KEY ("competence management" OR "knowledge management" OR "knowledge leadership" OR "skill management" OR "competence development" OR "competence based management")) Limit - Include: article, conference paper, review, conference review, editorial; Language: English, Finnish, Swedish

excluded. The full-text versions of 104 records were assessed for eligibility, with 86 eventually excluded. Finally, the reference lists of the 17 full-text studies which met the inclusion criteria were checked. Additional relevant records (n = 4) were identified from the reference lists (Anonson et al., 2014; Carr & Clarke, 2010; Kivinen, 2008; Kramer et al., 2007). Hence, the current scoping review included a total of 21 articles. A flow diagram which demonstrates the number of studies at each stage of the review process is presented in Figure 1 (Page et al., 2021).

## 5.2 | Characteristics of the included studies

The characteristics of all 21 included studies are presented in Table 3. The earliest study was published in 2002 while the latest study was published in 2020. The studies were conducted in eight countries: Canada, the United States, Finland, Norway, the United Kingdom, Greece, Iran, and Nigeria. Of the identified studies on competence in knowledge management, eleven articles were written in English, and 10 were written in Finnish. In terms of study design, eight studies had



**FIGURE 1** Flowchart of the study selection process (Page et al., 2021)

a qualitative design, five studies had a quantitative design, three studies represented doctoral dissertations, three studies were reviews, one study employed a mixed-methods design, and one study described instrument development and validation.

In the eight qualitative studies, competence in knowledge management was examined in many different ways, namely, in-depth personal interviews with open-ended questions, semi-structured interviews, individual interviews, focus groups, thematic interviews, and half-structured interviews. Concerning data analysis, the qualitative studies employed content analysis, thematic content analysis, thematic analysis, and/or deductive content analysis. The median number of participants in these studies was 10 (range 5–446). All five of the quantitative studies were examples of cross-sectional research. All of the participants were managers or leaders who assessed their competence in knowledge management by answering a questionnaire. The median number of participants in the quantitative studies was 292 (range 119–3097).

Of the 21 identified studies, three were doctoral dissertations. Harmoinen (2014) presented the development of a valid and reliable instrument which was used to collect the study material. In the research presented by Heikka (2008), data were collected with a valid and reliable instrument, along with thematic interviews; the interview responses were later subjected to content analysis. The research discussed by Kivinen (2008) utilized concept analysis and a quantitative cross-sectional study.

The identified studies that were relevant to competence in knowledge management also included three systematic reviews. A review published by Flaig et al. (2020) included 23 articles, which were published between 2009 and 2019. The review by Kantanen et al. (2011) review included 13 articles which were published between 2000 and 2009, while Lunden et al. (2017) presented a review which included 18 articles published between 2009 and 2014. Notably, two articles included in the review by Lunden et al. (2017) were included in this scoping review (Anonson et al., 2014; Carr &



TABLE 3 Summary of the studies included in the review

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Anonson et al., 2014 Canada	Qualitative: In-depth personal interviews with open-ended questions, content analysis.	What do frontline nurses who have experienced exemplary leadership perceive as the qualities of an exemplary nurse leader?	Frontline nurses (n = 6)	The health care system in the Province of Alberta	Identified five characteristics of nurse leaders that allowed them to effectively assist and support frontline nurses in the clinical setting.	Mentoring and role modelling are areas in which the frontline nurses see their exemplary nurse leaders excelling. The leader's mentorship encourages all staff to expand their knowledge base, try different roles and support them in trying out different areas in the specialty.
Carr & Clarke, 2010 United Kingdom	Qualitative: Semi-structured interviews, thematic content analysis.	To explore the managers' role in promoting and nurturing learning.	Health Action Zone (HAZ) coordinators, manager and staff delivering services, (n = 36)	Health care, social care, adult care, child care, (HAZ) localities	Two alternative ways of engagement and entrenchment to practice were identified to develop new ways of working and learning from experiences.	The manager's role is central to nurturing learning and continuous development of practice improvement and the associated knowledge base.
Flaig et al., 2020, USA	Systematic review.	For hospital managers and leaders, how do formal and structured leadership development programs (LDPs) positively affect individual and organisational outcomes?	Hospital managers and leaders who are attending leadership development programs (LDPs). Twenty-three articles, timeframe 2009–2019.	Not defined.	Hospital leaders gain a wide range of individual beneficial outcomes when attending a formal LDP; the most frequent benefits were knowledge of management and leadership roles, increased confidence, and improved communication skills.	LDPs provided an array of positive outcomes for hospital leaders. These included: - Increased Job Satisfaction/Positivity, appeared 7 times each. - Improved Career Planning Skills/Succession Planning, appeared 6 times each. - Gained Ability to Empower/Encourage others, appeared 6 times each. - Positive Impact on Organisation (Patient Satisfaction, Outcomes, etc.) - Increased Motivation, appeared 4 times each.

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Harmoinen, 2014, Finland	Doctoral dissertation: (1) Develop a valid and reliable instrument and (2) quantitative cross-sectional research survey	(1) To develop a valid and reliable instrument to facilitate appreciative management, and (2) to describe the concept of appreciative management.	(1) Concept analysis (n = 14), systematic literature review (n = 20), the Delphi method included essays (n = 76), students (n = 68), young nurses (n = 8), piloted in a group of nurse scientists (n = 8), pretested in two health care organisations staff participants (n = 229) and managers (n = 95). (2) Staff participants (n = 2671) and managers (n = 426)	10 hospital districts in Finland (involved five university hospital districts)	(1) To develop the appreciative management instrument (AMI 1.0) to facilitate appreciative management by means of concept analysis, systematic literature review and a Delphi-study. (2) According to the results of the study, appreciative management (planned management, equality, valuing competence, promoting resilience at work) is well realized in the health care organisations.	Appreciative management has a moderate connection to the career development of staff and managers. The staff estimated that the valuation of competence is moderate, but the managers estimated that it is well implemented.
Heikka, 2008, Finland	Doctoral dissertation: (1) quantitative, cross-sectional research survey and (2) thematically interviewed, content analysis.	(1&2) To analyse the content and related competences of the work of the manager of municipal social and health services	(1) Social and health services managers (n = 169). (2) Social and health service managers (n = 5)	Social and health services in five provinces in Finland.	Management of change, financial and human resource management, cooperation and networking were emphasized in the basic duties of social and health managers.	One of the basic tasks of managers is human resources management, which also includes KM. The challenges of human resource management were related to the management of competence and its development. For human resources management methods, development discussions are typical, with dialogue between employees and the manager the most important approach. (Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Holmlund et al., 2007, Finland	Quantitative: Cross-sectional research	To describe the skills of nurse managers working in specialized health care (self-estimations) according to the four points of view of the Balanced Scorecard; in addition, to illustrate the nature of the connection between the background variables and the nurse managers' skills.	Nurse managers (n = 119)	Hospital District of Helsinki and Uusimaa (HUS).	The nurse managers estimated their skills to be good in all four sectors of the skills: process; customer; economy; and staff point of view.	The nurse managers estimated their skills to be good from the staffs point of view. From the staff point of view, the nurse managers described their skills in the management of human resources and management of staff promotion to be good. Instead, promotion of the training of the staff was illustrated as the weakest sector. Self-assessed skills were best among nurse manager who had few employees and academic education.
Kantanen et al., 2011, Finland	Systematic review	To describe the management and leadership skills of nursing leaders based on existing research evidence.	Nurse managers, nursing leaders, head nurses, nurse administrators, charge nurses, supervisory. 13 articles (2000–2009).	Nursing	The subdivisions of management and leadership skills are substance knowledge, human resource (HR), management, operational management, and research and development competence.	Managers' competence in KM was included in three different subdivisions: human resource (HR); operational management; and research and development competence.
Karamitri et al., 2020, Greece	Development and Validation of an instrument	To present a valid and reliable The Applied Knowledge Management Instrument (AKMI) questionnaire.	Employees (n = 31), health professionals (n = 261)	General Hospital of Kalamata	The developed questionnaire can help policymakers and hospital administrators collect information about KM processes in health care organisations, which can improve the performance of the health care organisation.	The developed questionnaire seems to be reliable, valid, and suitable to be used for studying the suggested nine dimensions of KM: perceptions of KM; intrinsic and extrinsic motivations; knowledge synthesis and sharing; cooperation; leadership; organisational culture; and barriers.

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Lunden et al., 2017 Finland	Systematic review	To describe factors facilitating or inhibiting the development of registered nurses' competency and the nurse leader's role in KM.	Head nurses, nurse managers, charge nurses, nurse directors, nurse leaders, administration nurses, 18 articles (2009–2014).	Not defined.	Organisational culture and leadership were determined as the main themes for factors facilitating KM. Organisational culture and management of human resources emerged as themes that inhibit KM.	The nurse leader's role in KM contains two themes: the facilitator and the organizer. A leader is interested in facilitating nursing and professional growth. As an organizer, the leader is a team coordinator who is well acquainted with the substance of nursing and they must recognize any development areas in employee competences.
Lunden et al., 2019, Finland	Qualitative: Individual and focus groups interviews, thematic analysis.	To describe nurse leaders' perceptions of and experiences with KM in nursing.	Leaders (n = 33)	Emergency services, acute care units, shelter homes, dental care facilities and occupational therapy units.	Daily KM focuses on ensuring individuals' necessary competence and responding to sudden changes. KM also involves knowledge transfer, coaching and development of the operating culture for the near future. KM in nursing involves anticipation of future competence requirements in long-term activities.	Nurse leaders' views of, and experiences with, KM can be organized into three main themes: daily KM; management that promotes knowledge; and management that anticipates knowledge requirements.
Kivinen, 2008, Finland	Doctoral dissertation: (1) concept analysis and (2) quantitative, cross-sectional research.	(1) To clarify the concept of KM using Rodgers' concept analysis, and (2) to describe the state of KM and explain the influential factors.	(1) The data for the concept analysis consisted of 56 international articles, timeframe 1985–2003. (2) Managers (n = 521) and staff members (n = 853)	25 organisations: Primary and secondary health care and private company.	Health care requires a holistic approach to KM. This approach takes into consideration aspects of human, structural and social capital.	Managers made the least use of information systems that are conducive to knowledge creation and personnel development.
Kramer et al., 2007, USA	Mixed methods: (1) quantitative survey and (2) qualitative semi-structured focus group	Nurse manager support from the staff nurse perspective, specifically the role behaviours that staff	(1) Staff nurses (n = 2382) (2) staff nurses (n = 446)	From 101 clinical units in 8 magnet hospitals.	Results from the Nurse Manager Support Scale and individual interviews (two sources) revealed that the role behaviours	Staff nurses perceived two of the four role functions identified through factor analysis of the Nurse Manager

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
	interviews, categorical and constant comparative strategies	nurses in acute care hospitals identify as supportive and the organisational structures and leadership/management practices that promote development of these behaviours.			managers use convey support to staff nurses are essentially the same, with 30 behaviours included in the scale described by some interviewees.	Support Scale data as very supportive: Leadership, particularly "soft" leadership behaviours such as building, guiding, nurturing, and Managing Resources, notably hiring competent staff, making expectations known and clear, and facilitating teamwork. The Career Development function and corresponding behaviours fell between the "nice to have" and "expected" ( $X = 3.88$ ) positions on the 5-point Nurse Manager Support Scale.
Nurmeksela et al., 2011, Finland	Qualitative: Thematic interviews, deductive content analysis.	To describe the development of nursing practice in performance appraisals from nursing leaders' point of view.	Nursing leaders ( $n = 8$ )	One hospital district in Finland.	Nursing managers can leverage developmental discussions in leadership. Development discussions can also take place within the framework of a theme, and can be used to lead change.	Development discussions is one method of KM that nurse leaders should master. The performance appraisal could be utilized in KM by intensifying educational needs and the skills necessary for the change. The appraisal enabled systematic assessment and individual discussion.
Okonkwo et al., 2020, Nigeria	Quantitative: cross-sectional research	To assess the management knowledge of Health care Managers in a tertiary hospital in Calabar, Nigeria.	Managers ( $n = 266$ )	The University of Calabar Teaching Hospital (1 of the 56 federal tertiary health care institutions in Nigeria	The knowledge rating of role of non-clinical professionals, regulatory agency standards, preparation of business communication, change process management and	There is inadequate managerial knowledge at all levels of management (include KM) in a typical tertiary hospital in Nigeria.

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Oksanen et al., 2005, Finland	Qualitative: Thematic interviews, thematic content analysis.	To describe and analyse the core leadership and management competences of the head of radiography in the radiological department.	Heads of radiography ( $n = 10$ )	Two different health care districts from the areas of special care and primary health care.	The core leadership and management competence of the head of radiography in the radiological department consists of maintaining expertise in clinical practice, supporting resources linked to personnel, assuring activity of the department, and strengthening leadership. The core leadership and management competence, for the most part, mirrored what has been described for head nurse in other areas of health care.	The head of radiography demonstrated three of the four analysed core KM competences. Maintaining clinical practice is seen as a way to get to know the skills of staff. The duties of heads in supporting resources of personnel are considered to include taking care of the well-being at work and the professional competence of the personnel. Assuring activity of department comprised the dissemination of information and the utilization of research.
Ollila, 2008, Finland	Qualitative: Half-structured interviews, content analysis	To define and analyse strategic competence-based management, which is a part of leadership.	Managers (2002 $n = 22$ and 2005 $n = 12$ )	Social and health service organisations in western Finland	Management supervision includes dialogue and reflective thinking as features of competence-based management and its development. It is a strategic method of	The meaning of management supervision of competence-based management is visible as a managers' developing ability to observe the

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Rahimghaee et al., 2010, Iran	Qualitative: Semi-structured interviews, content analysis.	The purpose of the study was to document clinical nurses' views on the impact of their managers' roles on their professional growth and development.	Clinical nurses ( $n = 15$ ), head clinical nurses ( $n = 4$ ), supervisors ( $n = 1$ ).	Teaching hospitals in Tehran, Iran.	Managers played two major roles in nurses' professional growth process: motivating and inhibiting. General managers' hypocrisy (positive and negative) has a great influence on employees' professional growth.	competence of other people in an organisation. The development is based on insights into maintaining professionalism, finding core facts, and exploiting special human competence. Gaining insight means observing those facts which contribute to a human's competence, managing, and actions at work. These are not only facts connected with professional skills, but also with personal life, environment, and atmosphere. In management what is needed are the tools of the trade and methods by which the competence of other people will bring forward. Managers' support, encouragement, and constructive criticism could lead the nurses toward providing better care and job precision. Managers' incompetency (lack of job responsibility, knowledge, attitude, and personality of a leader) harmed the nurses' professional growth. In management what is needed are the tools of

(Continues)

TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Sinkkonen & Taskinen, 2002, Finland	Quantitative; cross-sectional research	To examine leadership and management knowledge, along with the skills (both required and possessed) of nurse leaders.	Nurse leaders (n = 268)	Primary health care organisations, municipal health centres.	The importance of KM competence and skills was rated higher than own competence in 68 management areas of 69 in the exam, which is indicative of a need for further training and development.	The most important competences of nurse leaders', which included KM competence, were motivating nursing personnel and methods for developing personnel. The largest difference between the needed and possessed competence were KM and activities related to the management of evidence-based nursing practices such as supporting and research, transmitting information, and using research results.
Sinkkonen & Taskinen, 2003a, Finland	Quantitative; cross-sectional research	To determine whether the level of leadership and management knowledge competence self-assessed nursing managers differs according to the type of organisation, the organisational status of the director, and the level of education.	Nurse leaders (n = 604)	Primary health care, special medical care	The assessments of leadership and management knowledge competence were related to the respondents' organisational status and training, and to some extent also to the type of organisation.	Nurse leaders rate their KM competences as the best area of expertise regardless of the organisational position of the leaders. Masters have a better self-assessed level of KM competence than non-masters.

(Continues)



TABLE 3 (Continued)

Author(s), year and country	Research design	Research question or study aim	Study population and sample size	Context	Outcome	Key finding related to the scoping review
Sinkkonen & Taskinen, 2003b, Finland	Quantitative: cross-sectional research	The aim is to find out the competence requirements for nursing leadership and management knowledge and to evaluate the indicator used to identify them.	Nurse leaders ( $n = 604$ )	Primary health care, special medical care	The general ways of structuring the content of leadership and management knowledge are also suitable for describing the contents of nursing management and the skills required for it.	Nursing leaders value leadership competence more than management. Leadership includes KM. The appreciation of KM changed with the organisational position of the nurse leader and by organisation type.
Sørdeide et al., 2019, Norway	Qualitative: Focus group interviews, thematic analysis	To examine perceptions of key challenges that nursing leadership face when organizing health care services in the municipality.	Nurse leaders ( $n = 9$ )	Health care services in the municipalities of Western Norway	Three themes were identified: tension between organizing daily work and future challenges; challenges with recruiting enough registered nurse (RNs) in municipal health care services; and competence development plan—a strategic tool for nursing leadership. In addition, the municipal health care services need a better knowledge base, including information about both the content and quality of services, organisation, leadership and management, to develop new forms of work and professional approaches.	The KM competence requires systematic measures. The key challenges that nursing leadership faces when organizing health care services in the municipality are: Tension between organizing the daily work and future challenges; Challenges with recruiting enough RNs in municipal health care services; and Competence development plan—a strategic tool for nursing leadership.

Abbreviation: KM, knowledge management.

Clarke, 2010). The identified systematic reviews and the current scoping review did not include other instances of duplicate articles.

The research identified through the database search also included one mixed methods study and one study which described the development and validation of an instrument. In the mixed methods study, the quantitative research employed a survey using The Nurse Manager Support Scale while the qualitative research applied semi-structured focus group interviews, with the collected data analysed through categorical and constant comparative strategies. Concerning instrument development, Karamitri et al. (2020) reported the development of a new knowledge-management questionnaire (The Applied Knowledge Management Instrument).

### 5.3 | Review findings

#### 5.3.1 | Health care managers' competence in knowledge management

The research covering managers' competence in knowledge management described three distinct themes: system management; professional development; and leadership behaviour and attitude (Figure 2).

##### System management

Competence in knowledge management requires an understanding of systematic measures and governance (Sørdeide et al., 2019). However,

this will require various tools, structures, processes, methods, and information systems which will improve the competence of other people at the organisation (Kivinen, 2008; Lunden et al., 2019; Okonkwo et al., 2020; Ollila, 2008). For example, managers could use discussion, competence assessment instruments, induction programs, training plans, education cards, and job rotation to improve knowledge management among employees (Holmlund et al., 2007; Oksanen et al., 2005). The identified articles showed a lack of competence in system management based on the fact that a majority of health care organisations had discussed knowledge management issues (information needs, data acquisition, storage, and use), but only a handful of organisations had plans and structures for knowledge management (Kivinen, 2008).

##### Professional development

Performance appraisal is one method of knowledge management which nurse leaders should master to enable competence development. In the clinical setting, this aspect of knowledge management could be realized through intensified educational needs and the promotion of skills necessary for a specific change. The appraisal process should also involve systematic assessment and individual discussion (Heikka, 2008; Nurmekkala et al., 2011). In addition, managers have a central role in education and the continuous development of clinical practice through their influence on the associated knowledge base and ability to facilitate both organisational learning and knowledge transfer (Carr & Clarke, 2010; Kantanen et al., 2011; Karamitri

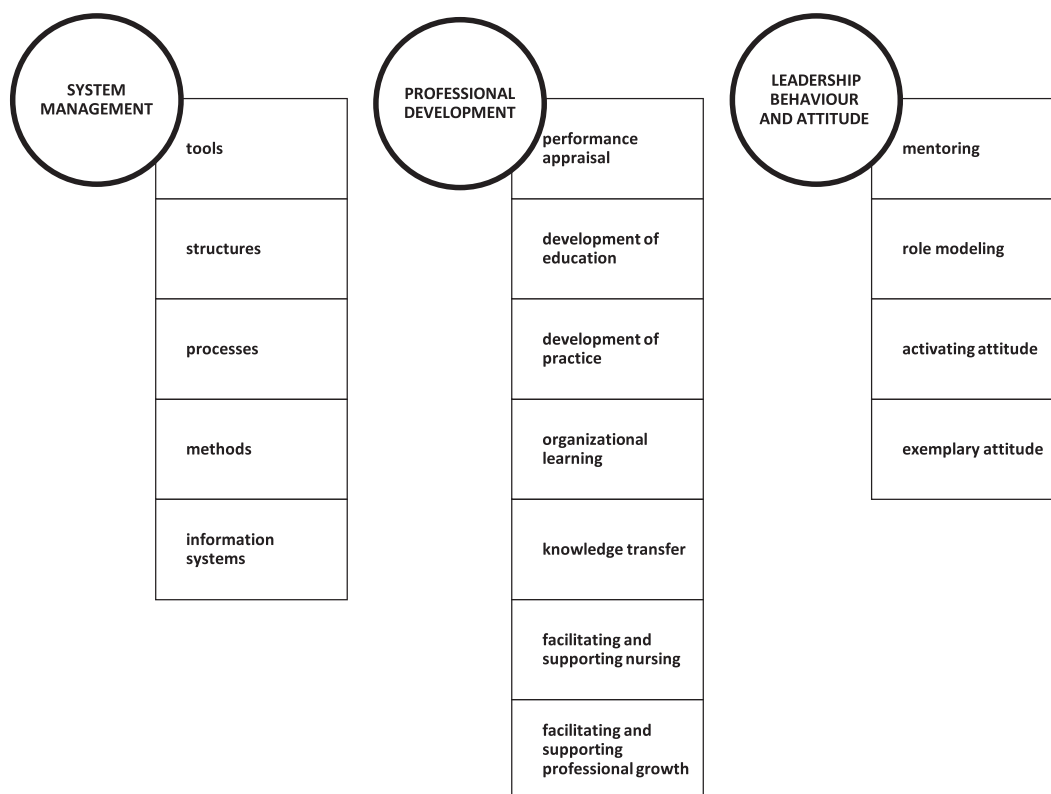


FIGURE 2 Themes identified in the included articles

et al., 2020). A leader must also be interested in facilitating and supporting nurses and professional growth (Flaig et al., 2020; Holmlund et al., 2007; Kramer et al., 2007; Lunden et al., 2017; Okonkwo et al., 2020; Oksanen et al., 2005). For example, Oksanen et al. (2005) stated that the a manager who actively maintains their clinical competences will also positively influence the competences of their staff, while Harmoinen (2014) emphasized that appreciative management has a moderate connection to professional development (Harmoinen, 2014).

#### Leadership behaviour and attitude

Managers' leadership skills and behaviour strongly impact knowledge management (Anonson et al., 2014; Rahimghaee et al., 2010). For example, frontline nurses have stated that nurse leaders excel at mentoring and role modelling. A leader who can act as a mentor will encourage staff members to expand their knowledge base, try different roles, and try new areas of specialization (Anonson et al., 2014). On the other hand, managers who lacked competence (i.e., lack of responsibility, poor attitude, and personality of the manager) were found to harm nurses' professional growth (Rahimghaee et al., 2010). In addition, a manager's ability to provide genuine feedback was considered an important part of their professional competence (Kramer et al., 2007; Ollila, 2008). Thus, successful knowledge

management in an organisation requires managers who take an active role in the knowledge management process as well as show an exemplary attitude towards the systematic development of competence (Flaig et al., 2020; Harmoinen, 2014; Karamitri et al., 2020; Kramer et al., 2007; Lunden et al., 2017; Okonkwo et al., 2020; Ollila, 2008).

### 5.3.2 | Instruments used to study managers' competence in knowledge management

A total of eight distinct instruments have previously been used to assess managers' competence in knowledge management in the context of health care. Of these eight instruments, seven have been validated. None of the instruments solely measured a manager's competence in knowledge management. Instead, competence in knowledge management was usually assessed as a part of a manager's management competence (Table 4). None of the themes and variables included in the instruments were completely identical.

The instruments were answered by nurse managers (Harmoinen, 2014; Heikka, 2008; Holmlund et al., 2007; Kivinen, 2008; Okonkwo et al., 2020), nurse leaders (Sinkkonen & Taskinen, 2002, 2003a, 2003b), and employees (Harmoinen, 2014; Karamitri et al., 2020; Kivinen, 2008; Kramer et al., 2007). The same

**TABLE 4** The eight instruments which have been used to assess competence in knowledge management, including examples of themes and measured variables

Author(s), year	Instrument	Theme of competence?/What is measured?	Variables	Validated
Harmoinen, 2014	The appreciative management instrument	Valuing competence	The manager enables the employee to develop his/her professional skills. The manager gives honest feedback on the work.	yes
Heikka, 2008	Questionnaire for municipal and social and health managers	Skills needed for the job	Motivating/engaging employees	yes
Holmlund et al., 2007	The Balanced Scorecard	Staff point of view	Human resource management skills. Personnel development management.	no
Kivinen, 2008	Innovations in human resource management in health care (HumanRe)	Management and culture of work	The skills development needs of the personnel are taken seriously and the conditions are created for their implementation.	yes
Karamitri et al., 2020	The Applied Knowledge Management Instrument	Leadership	My supervisor rewards people who share their knowledge. Leadership creates channels of communication that help knowledge transfer.	yes
Kramer et al., 2007	Nurse Manager Support Scale	Career Development	Make it possible for staff to attend education programs, seminars, and courses.	yes
Okonkwo et al., 2020	Health care Leadership Alliance competency directory	Knowledge of leadership	Support innovation and creativity (motivational) Mentoring/coaching principles	yes
Sinkkonen & Taskinen, 2002, 2003a, 2003b	Importance of leadership competency requirements (knowledge and skills required for leadership)	Training and development	Personnel development methods	yes

instrument was used in three studies (Sinkkonen & Taskinen, 2002, 2003a, 2003b), while two studies relied on the same data (Sinkkonen & Taskinen, 2003a, 2003b).

## 6 | DISCUSSION

The study compiled comprehensive information concerning which knowledge management competences health care managers have and which competences they need to improve; furthermore, the research presents which instruments have been used to study managers' competence in knowledge management. A total of 21 original studies was identified. These articles scrutinized various aspects of health care managers' competence in knowledge management, which fell under three main themes: system management; professional development; and leadership skills and behaviour. The identified literature has been published evenly during the past 20 years (2002–2022), and none of the included articles solely covered managers' knowledge management. The paucity of research into this topic during the past two decades highlights that there is an urgent need to investigate health care managers' competence in knowledge management, along with the associated factors.

Previous studies have shown that organisational learning is a cumulative phenomenon which facilitates the personal and professional growth of individuals and teams (Goh et al., 2013). At the organisational level, managers have a key role in supporting learning practices in their organisation. For example, managers have the authority to enact structures or policies that facilitate learning (Li & Sun, 2018). Therefore, nurse managers are crucial to the success of any health care organisation (Shaffer, 2003). Previous research has also shown that supportive organisational leadership is necessary to funding, adequately valuing, and supporting nurses' professional development, and should be considered an investment into patient safety and nurse retention (Coventry et al., 2015). According to the reviewed studies, managers have a central role in motivating and enabling the professional growth of nurses, but a lack of competence will mean that managers can also inhibit their employees' professional growth. For example, mentoring and role modelling are methods of competence development which promote competence development among employees.

Although managers have a key role in the functioning of health care organisations (Ayatollahi & Zeraatkar, 2020), managers' competence in knowledge management is a topic which has received limited research attention. For example, none of the reviewed articles assessed managers' competence in knowledge management as a distinct area of management competence. Moreover, previous research literature mainly explains what knowledge management is, but does not clarify which skills are needed for successful knowledge management (Hislop et al., 2013; Lunden et al., 2019; Orzano et al., 2008; Ojala & Aura, 2005). In addition, the concepts used in the literature to discuss competence in knowledge management vary considerably. These factors make it difficult to assess the current state of nurse managers' competence in knowledge management.

The competitiveness of a health care organisation increasingly depends on how knowledge is utilized and how the organisation can absorb new information. Therefore, knowledge management needs to be managed more systematically and purposefully (Christine, 2011), i.e., via continuous planning, monitoring, and support (Ayatollahi & Zeraatkar, 2020). A manager's competence in knowledge management is a concept which should be continuously assessed because successful knowledge management leads to better performance and high-quality care (Wu & Hu, 2012). According to our results, several instruments have been developed to assess health care managers' competence in knowledge management, yet these instruments are already quite old and do not specifically measure competence in knowledge management but rather management skills in a broader sense. As such, these previously developed instruments may not be reliable for application in the rapidly evolving health care environment.

The results of this review were limited regarding the identification of distinct aspects of health care managers' competence in knowledge management. As a result, more empirical research will be needed before strong inferences and conclusions can be made about health care managers' competence in knowledge management. It would be important to examine which issues contribute to managers' competence in knowledge management. Well-designed educational intervention studies could also shed light on which aspects of knowledge management health care managers need to develop. Health care organisations should also draw parallels from studies concerning the business sector to improve the functioning and competitiveness of organisations (Kothari et al., 2011).

## 7 | LIMITATIONS

The presented review included some inherent limitations. First, although we conducted a thorough literature search under the guidance of an information specialist, there is a possibility that certain relevant studies were missed. For example, the fact that no clearly established definition for the concept of knowledge management currently exists in the context of health care caused challenges when retrieving information (Dulipovici & Baskerville, 2015). Second, the review only included studies available in English, Swedish or Finnish; hence, the review should be replicated by other researchers in additional languages for comparison with the present study and to provide a clearer picture of health care managers' competence in knowledge management.

## 8 | CONCLUSIONS

In conclusion, little research is currently available on managers' competence in knowledge management in the context of health care. It could be expected that the results would not differ much from what has been reported for other managers, as managers are recognized to play a crucial role in successful knowledge management practices. There are currently no valid or reliable instruments for assessing

health care managers' competence in knowledge management. Thus, future research should focus more on managers' competence in knowledge management, seek to establish a consensus regarding terms related to knowledge management, and work to develop an instrument that assesses managers' competence in knowledge management.

## 9 | IMPLICATIONS FOR NURSING MANAGEMENT

It is essential to the health care sector that managers have high levels of knowledge management competence, as possessing skills related to knowledge management can improve employees' work-life balance and work satisfaction. Managers need to identify how they can support employees' professional skills, learning and continuous development, as well as encourage the entire staff to expand their knowledge base. The presented results can be utilized in the assessment and development of nurse managers' competence in knowledge management, notably, via the development of robust educational and in-service training programs for health care managers.

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### CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

### ETHICS STATEMENT

The scoping review do not need ethical approval statement or informed consent, as the review does not compromise the physical integrity of the subjects, data are not used or stored without consent, the target group does not contain persons under 15 years of age.

### AUTHOR CONTRIBUTIONS

EK, MM, AMT, KK, EJ, KM, AO, MK, PJ-I, and OK made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. EK, MM, AMT, KK, EJ, KM, AO, MK, PJ-I, and OK involved in drafting the manuscript or revising it critically for important intellectual content. EK, MM, AMT, KK, EJ, KM, AO, MK, PJ-I, and OK have given final approval of the version to be published. All authors have participated sufficiently in the work to take public responsibility for appropriate portions of the content. EK, MM, AMT, KK, EJ, KM, AO, MK, PJ-I, and OK agreed to be accountable for

all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

### DATA AVAILABILITY STATEMENT

Authors do not wish to share the data.

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# The organisation of nurse staffing in intensive care units: A qualitative study

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## Abstract

**Aims:** To examine the organisation of the nursing workforce in intensive care units and identify factors that influence how the workforce operates.

**Background:** Pre-pandemic UK survey data show that up to 60% of intensive care units did not meet locally agreed staffing numbers and 40% of ICUs were closing beds at least once a week because of workforce shortages, specifically nursing. Nurse staffing in intensive care is based on the assumption that sicker patients need more nursing resource than those recovering from critical illness. These standards are based on historical working, and expert professional consensus, deemed the weakest form of evidence.

**Methods:** Focus groups with intensive care health care professionals ( $n = 52$  participants) and individual interviews with critical care network leads and policy leads ( $n = 14$  participants) in England between December 2019 and July 2020. Data were analysed using framework analysis.

**Findings:** Three themes were identified: the constraining or enabling nature of intensive care and hospital structures; whole team processes to mitigate nurse staffing shortfalls; and the impact of nurse staffing on patient, staff and intensive care flow outcomes. Staff made decisions about staffing throughout a shift and were influenced by a combination of factors illuminated in the three themes.

**Conclusions:** Whilst nurse:patient ratios were clearly used to set the nursing establishment, it was clear that rostering and allocation/re-allocation during a shift took into account many other factors, such as patient and family nursing needs, staff well-being, intensive care layout and the experience, and availability, of other members of the multi-professional team. This has important implications for future planning for intensive care nurse staffing and highlights important factors to be accounted for in future research studies.

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**Implications for Nursing Management:** In order to safeguard patient and staff safety, factors such as the ICU layout need to be considered in staffing decisions and the local business case for nurse staffing needs to reflect these factors. Patient safety in intensive care may not be best served by a blanket 'ratio' approach to nurse staffing, intended to apply uniformly across health services.

**KEYWORDS**

intensive care unit, staffing levels, workforce, workload management

## 1 | INTRODUCTION

Pre-pandemic UK survey data show that up to 60% of intensive care units (ICUs) did not meet locally agreed staffing numbers and 40% of ICUs were closing beds at least once a week because of workforce shortages, specifically nursing (FICM, 2018). Nurse staffing in ICUs is based on the assumption that sicker patients need more nursing resource than those recovering from critical illness. These standards are based on historical working, and expert professional consensus, deemed the weakest form of evidence (Howick et al., 2011). For a fuller description, see Endacott et al. (2021).

In England, critical care services are supported by 15 Critical Care Networks (NHS Commissioning Board, 2012). Critical care networks support the coordination of patient pathways between health services to ensure access to specialist support at a regional level and benchmark services to ensure consistency, including peer review (NHSE, 2021). Critical care networks also monitor workforce levels and provide support to individual ICUs, particularly to nurse and medical critical care leads. It is timely to examine how ICU nurse staffing is organised in this resource-constrained climate and what factors influence how the workforce operates.

## 2 | BACKGROUND

A recent systematic review of 55 studies found significant associations between low ICU nurse staffing and worse outcomes for patients, staff and health services, with odds of nosocomial infection 3.28–3.60 times higher and mortality odds 1.24–3.50 times greater (Rae et al., 2021). Rae et al. (2021) highlighted the wide variation in the way nurse staffing is defined and organised. However, the most common approach was some form of ratio (nurse: patient or nurse: bed). From their systematic review of ICU nursing workload instruments, Greaves et al. (2018) concluded that no workload instrument has been adequately validated for this purpose or found to be superior to the clinical judgment of an experienced ICU nurse manager. In England, one-to-one nurse:patient ratios remain the norm for the sickest ICU patients, with 1:2 ratios for those requiring critical care support for single, non-respiratory organ failure (NHSE, 2021).

Persistent registered nurse and ICU-qualified nurse staffing challenges, with vacancy rates at 10% across the United Kingdom

(CC3N, 2020), have led to consideration of alternative staffing models. Coupled with the development of new roles, such as critical care nursing associates (Bates, 2019), and physician assistant/assistant practitioner roles in ICU, the workforce operates in an increasingly diverse way across the United Kingdom. The evidence around these changes is, as yet, lacking but a need to better understand what influences how this new workforce is deployed has been articulated (Henshall et al., 2018), not least as there are several implications around role boundaries that have a direct impact on staffing decisions.

### 2.1 | Aims

The aims of the study were to examine the organisation of the nursing workforce in intensive care units and identify factors that influence how the workforce operates.

### 2.2 | Design

A qualitative in-depth exploration of the organisation of nurse staffing in ICUs from the perspectives of multi-disciplinary ICU teams, critical care networks and policy leads. Focus Groups were conducted with a mix of uni-professional (nursing) and multi-professional teams in ICUs and individual interviews were conducted with network leaders and policy makers.

### 2.3 | Participants

Purposive sampling was used to recruit nurses and other members of the ICU multi-professional, critical care network leaders, national and regional policy makers to the study. The concept of *information power* (Malterud et al., 2016) underpinned sample size, the premise being that the larger the information power of the sample, the smaller the sample required to achieve saturation. It was anticipated that the network and policy participants would provide broad insight across a number of ICUs. Policy-makers were drawn from senior levels of the National Health Service and clinicians responsible for commissioning ICU services at regional and national level. Representing most regions

in England, 14 individual interviews were conducted with network leaders and policy makers. All but two of the interview participants had an ICU clinical background. The network participants were responsible for networks across England covering between eight and 21 ICUs, a total of 145 ICUs. Six Focus Group interviews, lasting on average just over 80 min, were conducted with 52 health care professionals (nurses, allied health professionals, doctors and nursing assistants) from four hospitals and eight ICUs across England. The number of participants at each focus group ranged from 4 to 12 and participants worked in general ICUs ( $n = 4$ ), cardiac ICUs ( $n = 2$ ) and neurosurgical ICUs ( $n = 2$ ) in hospitals of varying bed size and patient population. Professional roles for all 66 participants are provided at Table 1.

## 2.4 | Data collection

Study design and conduct were underpinned by principles of trustworthiness (credibility, transferability, dependability and confirmability) (Lincoln & Guba, 1985). The interview topic guides were developed with an expert advisory group external to the research team (the UK Critical Care Nursing Alliance, which is the alliance uniting all critical care nursing organisations in the United Kingdom).

Individual interviews were conducted by RE, and Focus Groups were led by SP with support from one other member of the study team. RE and SP are highly experienced qualitative researchers with extensive backgrounds in research related to the organisational aspects of care delivery. The interviewers (RE and SP) had regular meetings during data collection and analysis. Early analysis was reviewed by the whole research team, and analytical memos were shared. To ensure a strong connection between the analysis and clinical perspectives, emerging themes were discussed with a clinical stakeholder group. Focus Groups were conducted at the health services from December 2019 to February 2020 (pre-pandemic), and the

individual interviews were conducted using an online video platform between July–September 2020, the early stages of the COVID-19 pandemic. The individual interviews had two components: pre-pandemic staffing (reported here) and the impact of COVID-19 on staffing models (reported in Endacott et al., 2021).

## 2.5 | Data analysis

Framework analysis was used, a process comprising five stages: familiarization, defining a thematic framework, indexing, charting and mapping/interpretation (Pope et al., 2000). The Focus Groups were conducted first and the individual interviews built on the initial themes, in an inductive process. Early analysis identified that nurse staffing was commonly discussed in relation to safety, and was described in terms of structures, processes and outcomes. Hence we used the Donabedian model of structures, processes and outcomes to structure the a priori framework for the analysis (Donabedian, 1988); Donabedian's model is one of the most dominant quality evaluation instruments used in health care and has been used in the ICU context, for example, to develop ICU patient safety indicators (Wu, 2020).

## 2.6 | Ethical considerations

Participants were contacted prior to planned interviews and given sufficient time to consider participation. Audio-recorded verbal informed consent was sought prior to each interview. Focus Group participants provided written consent in person. Focus groups and interviews, were audio-recorded and transcribed verbatim. A favourable research ethics opinion was provided by Yorkshire and Humber Research Ethics Committee (REC ref no: 19/YH/0284) and the Health Research Authority (IRAS ID 259475).

**TABLE 1** Participant roles

Focus groups ( $n = 52$ participants)		Individual interviews ( $n = 14$ ) <sup>a</sup>	
Role	<i>n</i>	Role	<i>n</i>
Staff nurse	17	Network director	6
Sister/senior sister/charge nurse	15	Network lead nurse	5
Physiotherapist/advanced physiotherapist	6	National policy lead	2
Matron	4	Regional policy lead	2
Specialist registrar	3	Clinical reference group member	1
Pharmacist	2	Specialist commissioner	1
Dietician	1		
Health care assistant	1		
Nurse associate	1		
Trainee advanced critical care practitioner	1		
Medical consultant	1		

<sup>a</sup>Some interviewees had multiple roles.

### 3 | FINDINGS

The categories initially used for the framework were: the staffing establishment, rosters, staff allocation structures and decisions, multi-professional teamwork, communication and outcomes for patients and staff. These were iteratively refined as coding and categorization developed, in line with framework analysis methods (Gale et al., 2019). Three themes were identified: the constraining or enabling nature of structures; whole team processes to mitigate nurse staffing shortfalls; and the impact on patient, staff and ICU throughput outcomes. Further categories emerged during the analysis; the final framework with themes, contributing categories and codes is provided at Figure 1.

Data excerpts presented below and in tables are annotated as follows: FG denotes Focus Group and participant type, by profession; Int refers to interview and participant category (Network Lead or Policy Maker).

#### 3.1 | The constraining or enabling nature of structures

Many of the organisation-wide and ICU-specific structures described by participants related to the staffing models used to set the nursing establishment and the rostering template used to provide nurse staffing for each shift. The other categories in this theme are decision-making structures and ICU factors (see Table 2). These were all described in terms of the extent to which they enabled or constrained the organisation of ICU nurse staffing.

Discussions about the staffing establishment focused on number of staff and the skill-mix required; there was evidently a complexity and interaction between roles. The inclusion of support staff (referred to by participants as Band 4, health care assistants [HCAs] or nurse associates) in the staffing establishment has been standard practice for a long time: *'we have had band 4 probably on our shop floor taking patients alongside a registered nurse for over 10 years'* (FG4/sister). These roles were also deemed important: *'we did not used to have any but, in a way, it's probably made more*

*of a difference (having an HCA) than having another nurse' (FG5/staff nurse).*

The skills of support (non-registered) staff were particularly valued in the care of long-term patients *'band 4 (senior) HCAs have a more holistic view [than junior support staff], they have built a relationship with the family so they know the patient a bit better'* (Int5/Network Lead) and patients with delirium (FG7/staff nurse). The importance of supernumerary roles (for example, shift leader, practice educator) was also emphasized, although they were also described as *'on the substitutes' bench - when it's busy they have to take a patient, which happened about 25% of the time over the past year'* (Int 1/Policy Maker).

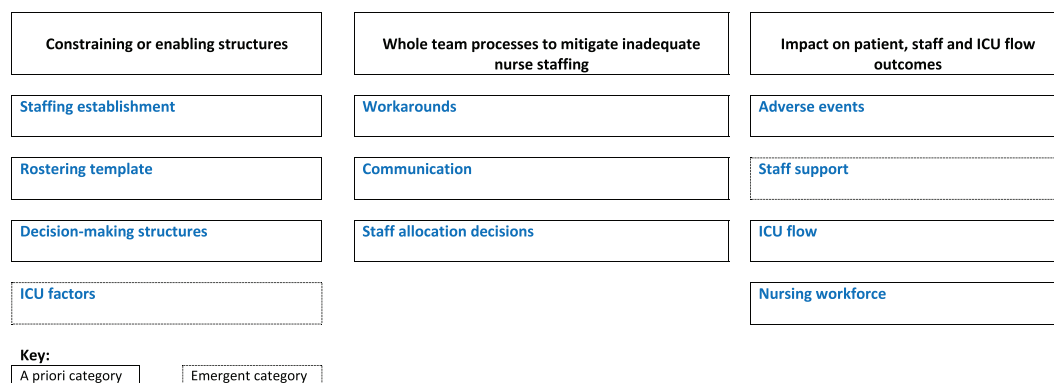
The number and skill mix of the multi-disciplinary team (MDT) also had an impact on the organisation of nurse staffing: *'also "how many physios are there? How many doctors? Is it the weekend?" because there's less (other MDT members) about then'* (FG6/matron). Doctors also acknowledged that:

(medical) staff have become more junior so we cannot guarantee there's always someone who can intubate and ventilate on the unit, meaning we rely on the advanced critical care practitioners (senior ICU nurses) (FG7/doctor).

Staff rostering structures were discussed; all sites described some form of rostering template, grouping nursing staff according to skill-mix, to keep the staff and patients as safe as possible. However, hospital-wide quotas for annual leave, maternity leave and study leave also had an impact on rostering: *'to just get all the [nursing] staff to do their mandatory study time takes us over the quota we are allowed, without allowing any time for ICU [specialist] education'* (FG4/matron).

Nurse:patient ratios, linked to the designation of individual patients as intensive care (level 3) or high dependency (level 2), did not seem to work for high dependency patients:

... you know - an intubated ventilated level three patient who ... just needs regular rolling and some early physio can actually quite often be easier to manage from a workload point of view than a level two



**FIGURE 1** Managing nurse staffing: overview of themes and categories

**TABLE 2** Data excerpts related to *constraining or enabling structures* theme

Structures	
Staffing establishment	<p><i>That's where an experienced group of people working together – and I'm not talking skill mix I'm talking just experience with – you know – team dynamics and the demands of the unit – if they work well together then it's easier to overcome the challenges that come along the way and everybody still gets breaks and drinks. Than when you've got junior staff (FG4/staff nurse) Because that [reduced skill mix] just increases the pressure on you to micro-manage each individual bed space ...if you've got a whole load of new grads in an area then you're trying to go, 'Well, have you done that? Is the inotrope being reduced? Are you doing that?' and you can almost trust less in a way. (FG1/staff nurse)</i></p> <p><i>So, we don't plough enough into building our staff's resilience and robustness... We don't have a psychology service. Absolutely, desperately, need one. Trialled one a couple of years ago but then no more money got put into it. So, we know the need is there. (FG2/Matron)</i></p>
Rostering template	<p><i>I think we probably use our beds slightly differently but the staffing models are fairly traditional and well established... 1:1 and 1: 2 following the national guidance. (Int1/Policy Maker)</i></p> <p><i>So, SafeCare system [rostering software] – you can add on tasks. Not all organisations do this... but we have added on our five person turns, for instance, and our side rooms. So, we have built that in trust-wide so that does tell us what the workload indicates and that's how many hours you're short in care hours. So, we are getting there.... We've got the data to show that there's a big gap between the number of staff hours we have and the number of care hours we have. (FG3/matron)</i></p> <p><i>Our Nurse Dependency Scoring is fully embedded into the units and everyone uses it now. Based on our nurse dependency score, if they've got somebody who's a new admission, needs a lot of interventions and is really sick then they will bring in more staff to support that patient. I know a lot of the senior nurses use it as a defence against finance coming on and wanting to cut your staff, and also to explain to doctors what the nursing workload really is, as opposed to what they think it is based on pure physiology [how sick the patient is].(FG8/Network Lead)</i></p>
Decision-making structures	<p><i>From a trust-wide perspective. We all meet. All together. Across every single care group at 11 o'clock and we look at everyone's staffing and see which area can help others. (FG2/Matron)</i></p> <p><i>When you don't have enough staff, you then escalate to agency, high cost agency, and that's a matron decision or Head of Nursing decision. (FG3/Matron)</i></p> <p><i>We commission critical care and when critical care nurses are pulled off to go and work on the ward, that doesn't help with recruitment and retention. Also, we are paying those nurses to be on critical care and they're ending up elsewhere. So, we did put out a framework about what our expectations were about the use of critical care nurses and they shouldn't be routinely being pulled off critical care. (Int 13/Policy Lead)</i></p>
ICU factors	<p><i>We don't leave our patients alone so there's always a nurse next to them. So, if there is someone that is in a side room, someone has to come in, physically, and cover you to get medication, go to the toilet. For absolutely everything. (FG3/staff nurse)</i></p> <p><i>if you're managing two cohorted critical care sites within one – what used to be one – critical care unit – that means you need more senior staff. You need more coordinators. Because you can't say, 'Well, that's the annexe so we're going to do that at a less standard and the patients in there are going to be compromised'. (FG8/Network Lead)</i></p> <p><i>Sister: As the nurse in charge, I might end up with three level two patients but if one is in bedspace 2 the other's in 10, the other's down in 14, they all require a nurse because the location does not allow me to split a nurse into three or into two safely ....</i></p> <p><i>Staff Nurse: Yeah ...</i></p> <p><i>Staff Nurse: .... and often they're in side rooms for a reason ... (FG1/Staff Nurse/Sister/Staff Nurse)</i></p>

delirious patient who's taking three people to hold them in the bed and stop them ripping their lines out. There's no measure of those things. (FG1/sister)

There was a clear sense of a shift away from organ support as the rationale for nurse staffing 'we need 1:1 nurse patient ratios for different reasons now (than when ratios were first introduced 20 years ago)' (Int 8/Network Lead). This was also referred to as needing 'more columns' in the decision-making algorithm:

P1: ... the rehab patients are not an organ failure in the strictest sense of the word. They're not on filtration (renal support). They're on minimum amounts of oxygen but they are requiring the services of one nurse just to look after them in the way that they should be looked after. (FG5/Doctor)

However, whilst it was suggested that 'most units do not measure against the ratios, day to day' (Int 10/Network Lead), they were deemed to provide a safe standard that was easily communicated from junior ICU nurse right through to Board Members. As a policy lead (and ICU clinician) commented: 'you are aiming for it or you are not; you are achieving it or you are not ... it allows a more coherent discussion about risk' (Int 1/Policy Lead). There were concerns that the loss of this clear standard would put ICU nurses in the same (unacceptable and understaffed) position as hospital ward nurses (Int 4/Network Lead). Nurse:patient ratios were also deemed valuable to develop a business case for staffing: 'it's fairly clear how many nurses you need to open an extra critical care bed' (Int 1/Policy Lead).

The executive-level hospital decision-making structures were also perceived to be important; however, the inclusion of non-clinical managers in staffing decisions caused frustration and anger:

as senior nurses we have lost the ability to manage our staff within intensive care ... the key frustration is when it's the Housekeeping Supervisor, who happens to be the on-call manager, telling you to move staff to the ward (FG1/Sister)

Having 'a champion for ICU at executive level' (Int 9/Network Lead) was deemed to make a positive difference, as well as twice-daily meetings to look at hospital-wide staffing (FG2, FG5). A longer-term impact of hospital staffing policies related to promotion criteria, with nurses in some sites having to leave ICU to achieve promotion (Int 4, Int 8, FG4) (see also Table 2).

Two issues emerged during the analysis: challenges in identifying staffing across hospitals and factors related to the individual ICU. There were some challenges in identifying exactly what the staffing is across different hospitals because of differences in coding: 'You cannot at any point say exactly how many registered nurses, or vacancies, you have got [across hospitals]. Because a clinical nurse specialist might not be coded as a nurse' (Int 1/Policy Maker).

Individual ICU factors such as visiting policies (FG6), admission policies (FG2), the size of the ICU (Int 4) and the mix of emergency and elective patients admitted (FG7) influenced how nurse staffing was managed. The latter point had an important influence on processes, in particular the frequency of workarounds, articulated more frequently in ICUs with fewer elective patients. However, the layout of the ICU was the most frequently discussed factor across Focus Groups and individual interviews. This was important for structure and process factors as it affected whether the staffing establishment was correct for that particular ICU but also affected how staff were allocated and re-allocated during the shift (see Table 2).

### 3.2 | Workarounds: Whole team processes to mitigate inadequate nurse staffing

The processes described were positive steps, that enabled care to continue despite challenging staffing, often undertaken in rapidly changing situations, such as emergency admissions, patients deteriorating. The main categories were workarounds, communication and staff allocation decisions (see data excerpts at Table 3).

The most dominant processes talked about across the Focus Groups and individual interviews were 'work-arounds'. These were decisions and practices undertaken to reach a practicable solution. A picture was presented of a practised fluidity in the blurring of roles across professions when nurse staffing levels were inadequate, from the relatively short-term 'do you mind if I get something while you are here (staff nurse talking to physio)?' (FG4/N24) to more substantive examples of physiotherapists informally doing nursing 'work':

**Physio 1:** We'll do the obs[ervations] while people are on break ...

**GROUP:** (murmurs of agreement).

**TABLE 3** Data excerpts related to whole team processes to mitigate inadequate nurse staffing theme

Processes	
Workarounds	<p><i>The physios and the techs, they will muck in. They will come and help. They will do turns. They will help a lot if they feel - if we need them to. So, we have that extra support which helps. Consultants will help; they're very visible. They're very hands-on. (FG3/Matron)</i></p> <p><i>If we need to get a patient in [when we short of nurses] ... then you need to present that to them: 'We're at full stretch from a nursing point of view. I haven't got a nurse for this [patient] but bring them into our safe zone, which is in easy sight of everything and anything that you could need. But you [doctor] will have to remain with them'. (FG5/Matron)</i></p>
Communication	<p><i>I see it then as well in also our interactions with people like nurse in charge because your concentration is far more divided on those days when you don't have a good skill mix...for things like ward rounds having the ability for the nurse in charge to come around and actually focus on the plans rather than jiggling staff and all that sort of thing. (FG4/Doctor)</i></p> <p><i>[Which nurse is in the bed space] that makes a huge difference as a doctor coming in, where you only get snapshots of patients. The information you get fed from nursing staff and having either an experienced nurse overseeing or - you know - the right people in the bed space is key to getting that information. (FG1/Doctor)</i></p> <p><i>So, you're getting the handover and you're thinking, 'What's gone on? And who's made that decision?' ....I think that's when I just turn around and I just go, 'Well, I feel unsafe doing this' but it's taken nearly six years [of experience in ICU] to say, 'I'm not happy. I don't think this is safe. Can we do something about it?' (FG3/staff nurse)</i></p>
Staff allocation decisions	<p><i>I mean there's nothing more frustrating than [when] you're about to have a really important conversation with the family, you really need the nurse to be there with you, but there isn't the staff to free up the nurse to come along... or it takes 10 minutes of jiggling to free somebody up...(FG1/doctor)</i></p> <p><i>Sometimes it's not about the amount of courses they've done. Sometimes it's just about confidence and trust. Actually do I trust that nurse to keep an eye on my patient and know that they're gonna escalate if something went wrong? (FG3/matron)</i></p> <p><i>What we do in [name of network] is that staff use flexi-staffing; instead of coming into the unit and being sent to the ward, they'll bank hours and they'll go home [and work those hours another time]... They prefer to do that, essentially unpaid on call, knowing that they could potentially get called back in...rather than be sent to a ward. (Int9/Network Lead)</i></p>

**Physio 1:** ... that's so the nursing staff can have a break, then nursing staff will help us with stuff. And all of a sudden you are a morphed, merged MDT that's making the best of a bad situation .... Those days are more frequent than not .... (FG1/Physio)

Communication with family members was one area where support from the nurse-in-charge, taking the family to one side to explain what is happening, or from a support worker, who would often get to know the family and provide continuity (FG4), made a positive difference to the nurse caring for the patient at the bedside. Communication processes between MDT members and between senior and junior nurses were important, in particular the role-modelling: 'good communication flows through to everyone' (FG6/doctor) (see Table 3).

It was clear that allocation decisions were not based solely on nurses' experience or education; confidence and trust in the nurses also had a key role to play. Tailoring allocations to staff well-being as well as patient need came through as key to getting these decisions right:

you just would not put the nurse there (with a particular type of patient) for two consecutive days because it's unfair on your nurse .... we are always very receptive to how people are – how the staff are feeling. And that does have a bearing on how you staff the unit. (FG 6/sister)

Decisions about staffing, mainly allocation and re-allocation throughout the shift, were emphasized: 'it's not that one allocation first thing in the morning. It's how that allocation works through the day. It's quite an organic thing maybe' (FG6/sister). The acuity of the patient was the 'most important' driver (FG6/sister) but care needs, such as bowel care, pressure area care (FG3/nurse) and the need for family support (FG5/matron) were also factored in where possible. By contrast, there was a clear perception that decision-makers from outside of critical care focused on levels of care and the nurse:patient ratio (structure factors) to make decisions, usually about moving ICU nurses to the ward to fill gaps. A network participant also reported a 'lack of understanding (from managers outside of ICU) of what it means to be a 24/7 service' (Int 8/Network Lead). The importance of avoiding 'levels of care' terminology when discussing staffing with managers outside of ICU was evident in one setting:

**P1:** that takes a bit of justification sometimes. But that's why, on our unit, when we report back to the powers that be, we do not refer to level 3, 2 or 1 (level of sickness). We refer to patients that are one to one (nurse:patient ratio), one to two or 'fit for the ward'. So, that they can be easily justified and they can understand why on this particular day we might be fully staffed but actually ... we have no beds because of the acuity of the unit based on one to one, one to two or ward-fit patients ...

**P3:** ... and I think when you cannot achieve that and a nurse ends up looking after two people – the impact is actually massive I think. (FG5/Matrons)

Decisions to move nursing staff sometimes happened within the ICU to balance out the workload for 'certain activities such as a patient admission, [which] need additional staffing' (Int 5/Network Lead), or between ICUs in the same hospital, including from general ICU to paediatric ICU. This latter staffing move 'causes upset' (FG7/staff nurse) because it left staff feeling vulnerable 'it's the fear of making an error ... you are terrified of getting it wrong' (FG7/sister). As discussed above, staff were also moved from ICU to the wards either for a shift or, in one setting, for a longer secondment to the ward (FG7/sister). This was also perceived as damaging for nurses: 'it breaks people (to be constantly asked to work on the wards)' (Int 4/network lead). There was also a perception that ICU nurses were seen as a 'feeding station for the wards' (Int 8/network lead), providing a bank of staff to fill gaps in ward staffing.

### 3.3 | Impact on patient, staff and ICU flow outcomes

Participants identified a number of outcomes that they perceived to be influenced by nurse staffing but also identified the challenges of demonstrating some of these outcomes in the data currently collected. Categories in this theme were: adverse events; staff support; ICU flow and nursing workforce (see Table 4).

Most of the outcomes discussed were negative outcomes for patients or staff; safe staffing was most commonly described in patient safety terms. Network participants identified a number of outcomes that they see as 'red flags' (potential risks to safety), particularly adverse events such as nasogastric tube displacements (Int 4/Network Lead), and pressure injuries (Int 1/Policy Lead). Focus Group participants emphasized the lack of time to provide full care for the patient, such as brushing hair and teeth and planning for the next stage in the patient's care, and the lack of time for nurses to take breaks and stay hydrated (FG3/Staff Nurses and Sisters). Doctors also articulated an impact on medical workload of having experienced ICU nurses, for example in prioritizing the actions needed after the ward round (FG1/Doctor; FG7/Doctor), but in a more general way they also emphasized 'the importance of the art and skill of the senior nurse' (FG6/doctor).

Having enough staff to provide support to colleagues during tough shifts was deemed important. Examples included the reallocation of experienced nurses to work closely with, and support, less experienced staff so that the situation was safe for patients and staff (FG5/Nurse). Receiving good feedback from nurse in charge and/or colleagues was reported to make a big difference for team morale and job satisfaction (FG4/Staff Nurse and Sister). Important outcomes for nurses included having the time to provide fundamental care such as hair washing and nail care.

**TABLE 4** Data excerpts related to impact on patient, staff and ICU flow outcomes theme

Outcomes	
Adverse events	<p><i>Increased mortality... increased morbidity but that takes a longer time to play through. Some of it you can see within the hospital stay – so a catheter ulceration. Or a pressure ulcer. Or UTIs. Staff – patient experience Also patient flow: are we having to do more transfers? Have we had to close beds? Have we had to cancel any theatre lists through lack of ICU beds? (Int 1/Policy Maker)</i></p> <p><i>The two big red flags for me there are people leaving and a high number of cancellations on training courses, such as ITU transfer training, and it's always the off-duty cited as the reasons (Int 7/Network Lead)</i></p> <p><i>The literature shows that getting a sick patient out of bed, or at least getting them moving in bed... it reduces length of stay and halves mortality.....but we just can't do it consistently [because of lack of staffing] (FG1/Staff Nurse)</i></p>
Staff support	<p><i>We had a situation one time that we lost three patients in the same day. In two to three hours. And the nurse in-charge on that day, she was brilliant because she gathered all the nurses that were looking after the patients and the healthcare supporters. Even the students. We just sat in the office and had a discussion. A debrief about how we felt. (FG4/staff nurse)</i></p> <p><i>I allocated [a junior nurse] to a lower acuity patient at the start of the day. Absolutely stable. Of course within an hour of going into the shift [the patient] became acutely unwell and I said, 'Take this the right way. But I'm going to re-allocate you because he's become very, very unwell and I don't want to...' I said, 'I don't want to break you'. And the patient was then safe and the nurse was safe. (FG5/Sister)</i></p>
ICU flow	<p><i>We have quite significant vacancies in the larger units; that doesn't mean that you dilute the nurse:patient ratios. It may mean that we have beds shut because of that ... they stick to the ratios but it has an impact on the service. (Int 9/Network Lead)</i></p> <p><i>Where we lack the data is the patients that don't need to come in immediately but we don't have the staffing. It's very difficult for a clinician to declare that in the [patient's] notes that 'this patient should be in intensive care right now'. Erm. What they don't want to do is stand up in a court of law and have to defend why that patient wasn't. So they'll put something like, 'Conversation with critical care. To manage the patient on the ward at the moment with critical care support'. which means we haven't got a staffed bed and we'd move them if we could (Int 10/Network Lead)</i></p>
Nursing workforce	<p><i>We've seen, in specialist areas, an exodus of our really good senior Band 5s – upper Band 5s – they leave to go into advanced practice roles [outside of ICU]. (FG4/matron)</i></p> <p><i>It's the fear of making an error and making an error for a baby – you know – it can be fatal and even just getting a blood gas – getting a bit of air in – you're just terrified, you know, of getting it wrong. (FG7/staff nurse)</i></p> <p><i>You are looking at the more measurable factors initially. Such as vacancies, sickness, recruitment and retention. And then that makes you ask questions about morale, culture, where is the unit [in relation to those issues]? (Int1/Policy maker)</i></p>

Patient flow outcomes such as delayed admission (FG 1/Staff Nurse), transfers for non-clinical reasons (Int 1/Policy Lead) and newly closed beds were also important outcomes suggesting to participants that nurse staffing may be inadequate. Weaning from sedation medication is important in preparing patients for ICU discharge but often delayed because of nurse staffing: *'we sometimes sedate patients for longer if there aren't enough staff'* (FG 7/doctor). Patient rehabilitation, usually led by physiotherapists, was also delayed, especially when the nurse was managing two patients and not able to assist physiotherapists (FG7/Physio). Other aspects of physiotherapy treatment were also affected by nurse staffing: *'we want to go in and bag [manually ventilate to loosen secretions] the patient but they are often cardiovascularly unstable so we need a nurse to be there in case they need a bolus [of medication] or something .... Often we cannot get on with what we need to do'* (FG4/physio).

Nursing workforce outcomes discussed by participants included retention of nurses, nurse vacancies, use of agency staff (Int 9/Network Lead), loss of education opportunities (FG1/Staff Nurse) and the number of shifts without supernumerary staff (Int10/Network Lead). The risk of allocating two high dependency patients to one nurse was also echoed across the interviews and Focus Groups: *'when one level 2 patient goes off (deteriorates) another level 2 patient is left unattended'* (Int 7/Network Lead). The impact of being allocated two level 2 patients was articulated by some nurses as inducing a feeling

of failure, because they could not spend enough time with either patient (FG7/Staff Nurse).

The challenges of demonstrating outcomes, particularly of reduced staffing, were acknowledged:

the patient case-mix programme measures things like length of stay and mortality but these are not qualitative enough for nursing workload, but there are flaws in subjective data too, as things like patients and family satisfaction can be skewed by gratitude [for surviving the ICU stay] (Int 8/Policy Lead).

### 3.4 | Interaction between the themes

The interaction between the three themes is depicted at Figure 2; decisions about staffing were made throughout a shift and were influenced by a combination of factors illuminated in the three themes. Participants often described structural, process-related and outcome factors that influenced staffing decisions. An example was narrated in one Focus Group, comprised mainly of Matrons, where decisions about staffing depended on the *structure* of the MDT staffing for that shift, whether *workaround processes* were feasible and the *outcome* of current staffing, with regards to patient rehabilitation (FG5). Participants described reallocating staff during a shift,

where possible, if patients were not going to get the care they required. Similarly, the complex interplay between the structure, process and outcome factors could constrain or enable decisions about nurse staffing.

## 4 | DISCUSSION

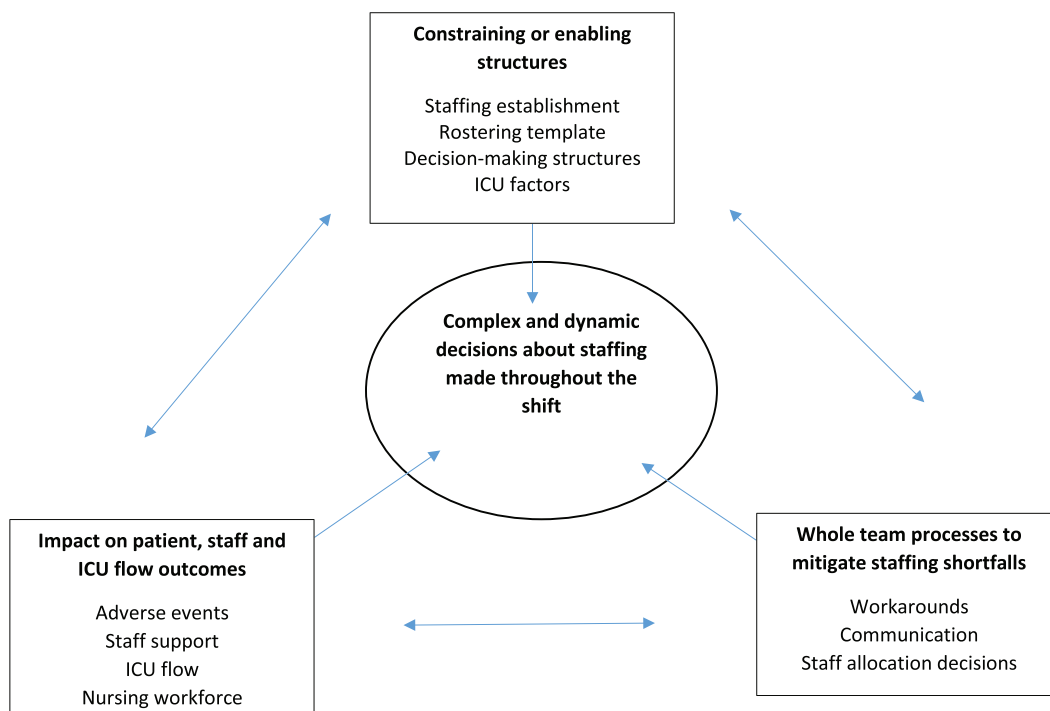
Previous studies provide evidence that outcomes such as patient mortality and increased risk of nosocomial infection are associated with nurse staffing in ICU (Rae et al., 2021). Analysis of our qualitative data from focus groups and individual interviews with 66 health care professionals showed three key factors influencing the complex and dynamic organisation of nurse staffing: multi-professional interdependence and workarounds; ICU geography; and staff well-being.

The ICU care of critically ill patients is typically delivered using inter-professional care bundles, for example for managing sedation, delirium and early mobility (Pun et al., 2019) and the ventilator associated pneumonia reduction bundle (Rello et al., 2013), with clear responsibilities for the different professions but, ideally at least, shared mental models (Boltey, 2019; Liu et al., 2021). Hence the blurring of roles evidenced in our findings should not be a surprise. However, the examples, including workarounds, provided by our participants were not part of a planned inter-professional care bundle and carried an implicit assumption that they will understand each other's roles, e.g. that the physiotherapist will know whether s/he needs to alert the RN to the observations just recorded. There is also an implicit assumption that interdisciplinary working will take place;

our participants indicate that patient safety relies on this. However, there is no infrastructure to support this, for example knowledge/sharing of rosters between professions or joint planning, with evidence that hierarchical issues and cognitive biases persist (Liu et al., 2021). Staffing guidance assumes that health care professionals work in silos, rather than in the multi-professional models portrayed by some of our participants and reflected the work cited above (Boltey, 2019; Pun et al., 2019; Rello et al., 2013). The distinct contribution of individual professions to the management of the critically ill patient has been articulated, particularly in the many studies evaluating care bundles (Boltey, 2019; Pun et al., 2019; Rello et al., 2013); our findings do not contradict this. However, there is unlikely to be a one size fits all solution and the potential opportunities for different staffing models are likely to be highly dependent on other professions. Hence, any change to staffing models needs to take into account how different professions work together, and to formalize this in staff planning processes.

Processes are more amenable to change than structures (Mountford & Shojania, 2012), which may explain why workarounds were quite dominant in the Focus Group discussions. The number of processes, including decision-making, reported by our participants to make the ICUs 'safe' for patients and staff highlight the importance of undertaking process evaluation alongside implementation of a change to staffing models. Process evaluation, as a component of a research study, captures the context in which changes are introduced and other factors that might illustrate why change does or does not become embedded.

The impact of the workplace layout on nurse workload has been reported in previous studies. The increase in nurses' workload of



**FIGURE 2** Managing nurse staffing: interaction between themes



changing from multi-occupancy to single room layout, has been reported in hospital wide and ICU settings (Lin et al., 2016; Maguire et al., 2013). In Lin et al.'s (2016) exploration of an ICU relocation, participants voiced concerns about patient and staff safety with the move to a single room model, whilst Leon-Villapalos et al. (2020) found that perceptions of safety in ICU were negatively correlated with higher patient numbers and higher percentages of patients managed in single rooms. These studies, together with our findings, suggest that patient safety in ICU may not be best served by blanket 'ratios' approaches to nurse staffing, intended to apply uniformly across health services.

Staff well-being has arisen as a major concern during the COVID-19 pandemic, with one study in nine UK hospitals showing evidence of 49% of ICU nurses meeting criteria for post-traumatic stress disorder (168/344) and/or depression (167/344) (Greenberg et al., 2021). Similar levels are reported in other studies (Ratray et al., 2021; Sampaio et al., 2021). Whilst these findings are important for future recruitment and retention of ICU nurses, our findings show that, among our participants, the shift-by-shift organisation of nurse staffing takes account of staff well-being were possible. Our Focus Group interviews were conducted before the COVID-19 pandemic, demonstrating that concerns about staff well-being are not purely pandemic-related.

Across the interviews and Focus Groups it was evident that a constant re-visiting of decision-making about staffing happened throughout the shift; this is reflected in the categories for structure, process and outcome themes. Most of the outcomes described are unintended consequences of the staffing model, or decisions in relation to the model. For example, the review of the number of level 2 and level 3 patients against the number of RNs on a shift, by a decision maker with limited understanding of ICU patient needs, might lead to an ICU RN being deployed to a ward to cover staffing shortages. However, the ICU shift leader cannot move the ICU RN back to ICU when a new patient is admitted (unintended outcome). Some of these unintended outcomes warrant exploration in empirical studies designed to examine staffing models.

#### 4.1 | Strengths and limitations

This national study recruited participants from ICUs of different size, with different health service configurations from across England. The inclusion of staff from different professions has provided a more complete picture of factors influencing, and influenced by, nurse staffing in intensive care units. We conducted the focus groups before the pandemic, and the individual interview participants reflected on the organisation of staffing pre-pandemic, hence it is not known the extent to which perceptions about nurse staffing may have changed. However, our findings reveal a picture of under-staffing, at times, across all settings; this situation will not have improved during the pandemic.

The steps taken to ensure trustworthiness, described earlier, gave us confidence that the findings have credibility, transferability,

dependability and confirmability. Of note, the early sharing of analytic memos between the analysis team, and the discussion of emerging themes with a clinical stakeholder group helped to refine the findings. This early sharing was also valued by the clinical stakeholders.

There was a, sometimes implicit, focus on patient and staff safety across the interviews, hence Donabedian's model was a useful framework with which to structure the initial analysis. The Donabedian approach did not detract from inductive generation of themes, but provided an overarching framework for analysis, facilitating constant comparison across the data sources.

## 5 | CONCLUSIONS

Whilst ratios were clearly used to set the nursing establishment, it was clear that rostering and allocation/re-allocation during a shift took into account many other factors such as staff well-being, the nursing needs of patients and family members, the ICU layout and the experience of all members of the multi-professional team. This has important implications for the future planning for ICU nurse staffing and highlights important factors to be accounted for in future research studies. The findings have the potential to feed into discussions about the national tariff for critical care and quality metrics to be included in commissioning contracts.

## 6 | IMPLICATIONS FOR NURSING MANAGEMENT

Factors such as ICU layout, reported to influence nurse staffing decisions, suggest that patient safety in ICU may not be best served by blanket 'ratio' approaches to nurse staffing, intended to apply uniformly across health services.

The potential opportunities for different staffing models are likely to be highly dependent on other professions. Hence, any change to staffing models needs to take into account how different professions work together.

The findings have the potential to feed into discussions about funding tariffs for critical care and quality metrics to be included in commissioning contracts.

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## CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

## ETHICS STATEMENT

A favourable research ethics opinion was provided by Yorkshire and Humber Research Ethics Committee (REC ref no: 19/YH/0284) and the Health Research Authority (IRAS ID 259475).

## DATA AVAILABILITY STATEMENT

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

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# Evaluation of nurses' experiences with digital storytelling workshop: New way to engage, connect, and empower

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## Abstract

**Aim:** The aim of this work is to evaluate nurses' experiences, barriers, and facilitators in participating in digital storytelling workshops

**Background:** Nurses face ever-increasing demands and work time spent in isolation, leading to burnout. Storytelling—narrative skills of listening and creativity—may encourage meaningful connections with others, especially during the COVID-19 pandemic. However, evaluation of the user experiences of storytelling among nurses has been limited.

**Method:** The methods used are semistructured individual interviews with 13 nurses from a public health nursing organization who participated in a 3-day digital storytelling workshop in 2019. The interviews were audio-recorded, transcribed verbatim, and thematically analysed using NVivo12.

**Results:** All participants were women and half were white. Healing, human connection, and nursing pedagogy were the three main themes. Participants highlighted the organizational support in providing a safe and dedicated “space” for nurses' well-being. They also expressed desire and willingness to participate in additional workshops outside of work hours.

**Conclusion:** Further studies using a larger sample are needed to examine the scalability and efficacy of storytelling at work.

**Implications for Nursing Management:** Nurses rated storytelling positively and suggested a brief version to be incorporated into nursing practice. Establishing the culture of organizational support and psychological safety was identified as the necessary antecedents.

## KEYWORDS

burnout, narrative, nurses, organization, storytelling

## 1 | BACKGROUND

Today's nurses face ever-increasing work demands with rapidly changing technologies and complex and highly specialized care (Buchanan

et al., 2020). Amid these changes, contemporary nurses work in isolation more often than their predecessors did (Thimbleby, 2013) due to electronic documentation and decentralized nursing stations (Buchanan et al., 2020). The repercussions of these changes for nurses' health,

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well-being, and work engagement were already well documented in the literature (Melnyk et al., 2018). The global coronavirus 2019 (COVID-19) pandemic further overwhelmed the nursing workforce around the world, with more than half reporting acute stress and burnout (Galani et al., 2021), and one in five reported signs and symptoms of post-traumatic stress disorder (Marvaldi et al., 2021). To address the dangers of work-related stress and concerns regarding the long-term consequences of COVID-19 on nurses' health, well-being, and productivity, institutions have initiated wellness and stress-reduction programmes, either person- (i.e., cognitive-behavioural training and relaxation techniques) or organizational-directed (i.e., management skill training; Awa et al., 2010; Pollock et al., 2020). However, the essence of the nursing profession—the human connection—is often missing. The importance of humanity has never been greater than during COVID-19. Numerous studies highlighted that nurses relied on the support of their peers and colleagues as coping strategies (Fernandez et al., 2020; Jun & Rosemberg, 2021).

Peer support occurs between people who share similar life experiences and provides mutual encouragement, advice, empathy, validation, and a sense of belonging and community (Murphy & Higgins, 2018). Storytelling—which brings together powerful narrative skills of radical listening and creativity—is a potentially powerful tool to facilitate building peer support through developing a trusting relationship and building cohesion. As one of the most basic and oldest forms of communication, storytelling can describe a situation and motivate people to act in a certain way, expressing human agency and self-identifying (Murphy & Higgins, 2018). And storytelling can also promote healing by allowing both storytellers and listeners to make sense of their own experiences, building a degree of connectedness with others, providing personal resilience and coping, and decreasing stress (East et al., 2010). When used among nurses, storytelling can also offer a space to voice their experiences and be heard, recognized, and valued (East et al., 2010). For example, having a facilitated safe space encouraged nurses to share their practical wisdom and inspire a shared vision of what it meant to be a nurse (Fitzpatrick, 2017). Therefore, storytelling can capture everyday examples of practice and generate powerful curricular products that support reflection and deep understanding (East et al., 2010). Furthermore, storytelling is also an innovative tool for nurse leaders in building a person-centred cultures and staff development by centering human relationship approach (Cardiff et al., 2018; Smeltzer & Vlasses, 2004). By understanding the nurses' stories and lives, leaders will not only build relationships but will better understand the motivations and values of their workforce by eliciting, sharing, and valuing relationships and stories in shaping vision and culture. For these reasons, sharing experiential realities through storytelling holds tremendous potential as a technique for promoting increased wellness among frontline nurses confronting pandemic-related patient-care demands.

Storytelling can be done in several different ways. Digital storytelling is a generic term to describe storytelling using media technologies to create narrative forms (Hardy & Sumner, 2018). Digital storytelling differs from traditional oral storytelling in that other medium such as images (e.g., photographs) or music is added to a

scripted story. Nonetheless, the differences in the methods used in storytelling, digital or traditional oral, the essence of storytelling is the same—shared humanity. Guided by these findings with storytelling, a not-for-profit, public-health nursing organization provided optional 3-day digital storytelling workshops facilitated by an established storytelling organization to provide opportunities for the nurses to share their stories, potentially increasing their organizational commitment and job satisfaction. This paper aims to evaluate the first-person experiences of attending in-person digital storytelling workshops and identify barriers and facilitators in attending such workshops.

## 2 | METHODS

### 2.1 | Design

This in-depth programme evaluation using a descriptive qualitative method involved a purposive sample of 13 registered nurses who had attended digital storytelling workshops offered by their organization.

### 2.2 | Sample/participants

At a national not-for-profit public-health nursing organization, the nursing leadership identified storytelling as a potentially beneficial professional development opportunity for their nurses and provided optional three-day facilitated digital storytelling workshops at two regional locations in February and November 2019. The regional managers shared the information regarding the workshops and were encouraged to attend. However, participation was voluntary. To further assist attendance, the organization provided the workshop fees and the necessary time off to attend the three-day workshop.

#### 2.2.1 | Storytelling workshops

The digital storytelling workshops were led by trained facilitators from StoryCenter, one of the most established storytelling organizations. Each workshop consisted of three main parts: writing down a story, creating a short composition of audio and visual elements that include a written script that becomes a voiceover, visuals such as still images and video, sound effects and soundtrack, and sometimes text on a screen. These compositions represented and portrayed the story using digital media such as photos or music. As with all StoryCenter workshops, these participants constructed their stories digitally, using software to put together the composition and narrate their creations. The material covered in these workshops included but was not limited to, introduction to digital storytelling; group sharing and feedback throughout and at the end; scriptwriting and voice recording; image preparation and storyboarding; video editing and production (i.e., transitions, effects, music, and titles); and production of digital stories (StoryCenter). Participants were not obliged to stick to a particular topic but strongly encouraged and directed to stories specific to nursing before attending the

workshop and bringing any media material to facilitate their stories, such as pictures, music, or video. Nursing-specific stories included origin stories, experiences with patients/clients/coworkers, and/or their definitions of care. Each step of the story development included informally sharing of their stories with the other participants as a way to refine the stories. Finally, the participants shared the whole story by watching the completed digital products together. Stories created and shared during the workshop by the participants were the sole property of participants and were not shared or collected by the organization, StoryCenter, or the evaluation team.

## 2.3 | Data collection

After the workshops were completed, nurses who participated in the storytelling workshops were invited in a semi-structured phone interview to share their experiences with a PhD-prepared researcher (JJ), who was not affiliated with and had no pre-existing relationships with either the organization or StoryCenter. A recruitment email using the listserv of the participants was sent in November 2019. Those interested in participating in the study contacted the research team via email to set up a time with a phone number. Once the contact was made, verbal consent was obtained, and each interview lasting 30–60 minutes (average 43 minutes) was audiotaped. The interview guide (Supporting Information) included open-ended questions on the participants' previous knowledge and experiences with the workshops and their basic demographic and employment information (e.g., age and duration of tenure with the organization); participants received a \$30 gift card as compensation for their time. Moreover, the stories created during the workshop were not shared during the interviews to protect the privacy of participants.

## 2.4 | Ethical consideration

An exemption from the Institutional Review Board of the author's university was received. All participants were informed about the study's aim, participated voluntarily, and signed an informed consent document. The participants' anonymity, privacy, and confidentiality were guaranteed. In addition, the audio recording was destroyed once the deidentified transcripts were obtained.

## 2.5 | Data analysis

Each audiotaped interview was transcribed verbatim, and study data were subject to thematic analysis, a theoretically flexible method of qualitative data examination allowing researchers to identify patterns in coded data (Braun & Clarke, 2006). The research team read the transcripts independently and took notes prior to coding. Using computer-assisted qualitative data software NVivo 12, the researcher team coded data by highlighting key passages addressed to the study's research question. Once the coding was completed, patterns in participants' stories emerged. Once patterns within the coded materials were identified, they were collapsed and refined into distinct study themes (Braun & Clarke, 2006).

## 2.6 | Rigour

Trustworthiness was established through repeated member-checking with participants during phone interviews. During the phone interview, the interviewer asked participants to repeat and/or affirm the veracity of both the researchers' conceptualizations. Additionally, an audit trail was maintained to preserve the transparency of each step in the analysis.

## 3 | FINDINGS

### 3.1 | Participants

Seventeen nurses participated in the workshops, of which 13 agreed to be interviewed (response rate = 76.5%). All participants were women (100%), and seven were identified as white (53%). Participants averaged 7.6 years of nursing experience while averaging 4.2 years working with their current organization. Participants took part in the workshop, in general, for one of three reasons: (1) recommendation by their superiors, (2) curiosity, or (3) an opportunity for self-care. Prior to attending the workshop, only one participant had any experience with storytelling, but even this participant was unsure what to expect from the experience.

### 3.2 | Themes

#### 3.2.1 | Healing

Healing was the most consistent theme in this study; participants perceived their storytelling experience as therapeutic and reported that the workshop afforded a safe space and time, which allowed them to focus on themselves. In the words of participant 8, "I personally think the whole process was therapeutic ... [and I] think anything that could help a nurse to focus on herself is beneficial. We are so focused externally and [on] everybody and everything else around us, [so] this bit is for ourselves." Participant 10 echoed this sentiment:

Nurses are always there to pick up the pieces for everybody else. We have our stories, but we have our own trauma; we have our own issues. I think what the storytelling does is dig into nurses and [expose] some things we don't want to disclose. We put all that in a backburner [sic] because we have to do everything for everybody else.

Several participants described the healing process as feeling as if they were finally seen as human beings rather than simply as a nurse. This "humanizing" experience was important to participants who described some of their work as secondary trauma requiring some manner of processing. As participant 9 explained:

Maybe it's the shared emotions like sometimes the release of the emotions .... Being heard and being seen as a human, not just as a nurse ... Our whole job is all about secondary trauma; hearing stories that are so challenging that you have to be able to put that somewhere ... storytelling is a way to do it. I felt significantly more energy afterward and the ability to be kind to my client.

As discussed earlier, most participants did not have expectations regarding or knowledge of storytelling; these individuals reported not realizing that they had a story worth telling.

### 3.2.2 | Human connection

Similar to the healing quality of the storytelling experience, participants reported a sense of increased human connection through shared stories; realizing they shared more in common than they had realized allowed them to better relate to their peers. As participant 4 explained, "I find myself relating to every single story. I have a story within that story ... and then I think maybe I need to get to know someone else." This sentiment was shared by another participant 7, "Listening to [others'] stories ... feels so much a part of something bigger than my own personal experiences."

Participant 2 echoed this notion that listening to the stories told by colleagues helped her gain insight into the experiences of others. Finally, participant 12 emphasized the human connection as being an integral part of nursing, noting that "we," as nurses, "need to connect ourselves in the process" and adding that "having more platforms where nurses can have an outlet, a safe space to do certain things," which would, in their view, be "definitely beneficial."

### 3.2.3 | Nursing pedagogy

Lastly, most of the nurses traced their stories back to their nursing practice, emphasizing its potential to help them build a better relationship with their clients. As participant 7 explained, listening to stories is "what we do all day; every day [involves] listen[ing] to the story [of our clients]." This sentiment resonated with another participant, who added, "Whether hospital nursing or home care nursing, we're there to witness our clients' stories. And [there is a] little piece of our stories in them sometimes."

In addition to developing meaningful relationships and empathizing with patients, several participants had begun incorporating principles of storytelling when visiting their clients as a tool for education. Participant 11 summarized this principle of sharing as a means of educating patients,

I will use a story in order to pass along information that you don't like telling them about, [such as] research. When you talk to clients about research and evidence-based [information] that does not resonate as much as

caring about somebody else's experience, their story. I feel like I had to make sense some of these topics and decisions ... [to] personalize it in a way that I think can be very beneficial for people.

In the same spirit, participant 9 stressed that storytelling could help nurses establish a necessary human connection with clients, explaining that "if we are allowing [ourselves] to be vulnerable, we are going to be able to reach our clients and ... meet their needs in a more realistic way instead of telling the client what to do. We can see them eye to eye."

Lastly, several participants indicated that intentional listening skills and being present in the moment were vital. Making this point, participant 3 noted that nursing is "all about fixing and making [patient's conditions] better as opposed to being there with the person." This participant also added, "That's the essence of the storytelling—you are really, really being present in the process." Amplifying this point, participant 2 reasoned that being present and listening carefully was an essential skill for nurses, especially for those who might not have anyone at their side.

### 3.3 | Facilitators and barriers

Overall, all participants reported positive experiences and expressed a desire to repeat the workshop or to continue developing the skills. However, there were barriers and facilitators in participation (Table 1). All participants stressed that organizational and leadership support as the essential facilitator; such support included designated time-off, helpful and nurturing nurse managers who encouraged attendance, and a healthy and well-functioning organizational culture. Even more so, nurses emphasized the importance of their organization's commitment to nurses' well-being and professional growth as a critical facilitator while also explaining that such support was not currently the norm elsewhere. As participant 5 put it,

[my organization] is very supportive of nurses and trusting of nurses. I never worked in an environment like this. So it was kind of a shock. I came from the hospitals [and] and was ... used to being dismissed, never really asked for my thoughts on anything. So I do think it is organization. Our organizations allowed this to be part of our work, which takes some of those barriers away.

**TABLE 1** Facilitators and barriers to workshop participation

Facilitators	Barriers
<ul style="list-style-type: none"> <li>• Leadership support</li> <li>• Designated time-off</li> <li>• Curiosity</li> <li>• Perceived self-development opportunity</li> <li>• Need for individual expression</li> </ul>	<ul style="list-style-type: none"> <li>• Time commitment</li> <li>• Lack of familiarity with storytelling</li> <li>• Fear of being vulnerable with colleagues or strangers</li> <li>• Lack of access to storytelling</li> <li>• Constant busy-ness of work</li> </ul>

Other features facilitating participation included personal curiosity and interest in exploring creative outlets to express themselves, which participant 9 highlighted “you’re just holding these extraordinary encounters inside of us. And sometimes it feels like. If you don’t let him out, you might explode.”

Identified barriers included the time commitment associated with participation and a lack of familiarity with storytelling. Several participants also mentioned the fear of being vulnerable with their colleagues as a potential barrier, and a few recalled their colleagues who chose not to participate but regretted their decision upon hearing about the experience after the fact, as participant 2 explained.

I think there might have been one person that wasn’t quite ready, maybe being vulnerable. But it might be a little bit easier if they know that other people on their team are participating. Being around complete strangers for three days is kind of terrifying.

## 4 | DISCUSSION

Our findings suggest that nurses rated the experience with storytelling highly positive, underscoring the importance of reflecting on their work and life while also connecting through the sharing of feelings and experiences. These human connections were also therapeutic and offered renewed enthusiasm for their nursing practice. These findings are consistent with other studies. For example, the work of Fitzpatrick (2017) concluded that nurses enjoyed an enhanced moral, ethical, scientific, and practice basis within their profession after sharing a vision of what nursing meant through the telling of stories. In this regard, our findings were also supported by the Narrative theory, which begins with the assumption that narrative is a basic and fundamental human strategy (Riessman, 2008). Narrative theory helps us to understand that the person’s accounts of what happened in particular events and circumstances can be at once so common and so powerful. It is through the narrative process that people can make sense of the past, identify turning points and transitions, and formulate the next steps (Riessman, 2008).

While the literature on the use of storytelling among nurses is limited and the method of storytelling may differ (in-person narrative vs. digital storytelling), narratives and peer support—two core components of storytelling—are consistent. Narrative is a key communication strategy and concept crucial in storytelling and stories, allowing humans—natural storytellers—to process and understand information (Gray, 2009). Fitzpatrick (2017) coined the term “narrative nursing” to frame reflective practice in the context of caregiving. In this narrative nursing practice, storytelling is a tool to engage nurses with patients by incorporating attention to their knowledge, beliefs, and values (Fitzpatrick, 2017). A review of the literature showed promising benefits of narrative interventions, such as storytelling and reflective communications, although such a high degree of heterogeneity made it too challenging to demonstrate efficacy (Laskow et al., 2019). Peer support is another important aspect of nurses’ experiences with storytelling. In other studies, researchers found that participants were less nervous

sharing their experiences, feelings, and thoughts through stories than with traditional peer approaches (Kim et al., 2020; Mancini, 2019). When storytelling occurred between people who share similar life experiences, it encouraged mutual support, advice, empathy, validation, and a sense of belonging and community (Palacios et al., 2015). Peer-based storytelling also allowed participants to consider their emotions, develop problem-solving skills, set goals, develop strategies, and exchange social support (Rennick-Egglestone et al., 2019).

Additionally, research has shown that storytelling is a powerful educational tool. Storytelling has been used successfully in health promotion, such as campaigns for cervical cancer prevention and vaccine usage (Kim et al., 2020). Traditionally, skills and benefits of stories derived from storytelling have been between students and educators in informal educational settings (Petty et al., 2020; Price et al., 2015); however, scholars increasingly recognize that patients in clinical settings could also benefit, especially among culturally diverse, hard-to-reach populations (Kim et al., 2020). Nurses in our study did not initially consider storytelling as a part of their interactions with patients, but they regarded storytelling as a nursing pedagogy embedded in every aspect of nursing practice, from assessment to education. Those in our study also felt that storytelling engaged and empowered their patients because stories reduced the hierarchy within the provider-patient relationship and created a space where providers could connect with patients.

### 4.1 | Limitations

In terms of this study’s limitations, storytelling workshops and nurses’ participation in them was made possible by an organization’s vigorous commitment to the well-being of its nurses; thus, replicating the workshop and realizing the same level of involvement could be difficult. This challenge notwithstanding, the present research results suggested considerable value in having nurses participate in such workshops. A second limitation is that the participating nurses volunteered for their workshop; thus, the self-selection of early adopters could not be ruled out. Early adopters are more likely to be extraverted, open and inclined to explore a new product or technology before others have taken part (Lynn et al., 2017). Thus, the findings may differ if nonearly adopters may have chosen not to participate in the workshops. Finally, our study included only two workshops and a small purposive sample; perhaps we did not capture the full essence of storytelling due to selection effects.

## 5 | CONCLUSION

The findings from this study support growing evidence that storytelling is an effective tool for bolstering the human connection within the nursing profession and for encouraging nurses to recommit to their practice. Sharing stories is already a necessary human activity in our daily lives. Therefore, storytelling in nursing can help establish and maintain an organizational environment where nurses feel protected



and valued by reframing how nurses connect with one another and with their patients.

## 6 | IMPLICATIONS FOR NURSING MANAGEMENT

Based on our findings coupled with what is known in the literature, there are several implications for nurse managers. As increasing numbers of organizations recognize the importance of sustaining a healthy and well-functioning nursing workforce, storytelling can restore the humanity and connectivity that are the lifeblood of nursing practice. However, the culture of psychological safety, which shared beliefs and the confidence to speak up within a group without fearing embarrassment, rejection, or punishment (Salas et al., 2018), is a necessary antecedent before people could feel comfortable taking part in and reaping the benefits of storytelling as a practice in organizations. Nurse managers are an essential element of cultivating the culture of psychological safety within each nursing unit. In a systematic review of psychological safety in the healthcare system, leader behaviour and support are consistently reported as the enabler across all levels of organizations (O'Donovan & McAuliffe, 2020). Nurses' ability and willingness to reflect and share their stories may not be possible without managers' support and leadership.

Second, nurses viewed storytelling as a feasible and potentially powerful professional development opportunity that could be incorporated within their work environment. That said, logistical arrangements, especially time constraints and the required in-person presence of both storyteller(s) and listener(s), presented a considerable barrier. Nurses in our study acknowledged that not all employers would be able to provide the kind of space and/or time away from work. Nurses in the study described both listening and telling a story as equally important and suggested sharing stories on digital platforms, such as videos, as a possible alternate format that allowed nurses could access on their own time. Another suggestion was providing the workshop digitally in shorter sessions and in more frequency to offer more opportunities for nurses to participate. Additionally, nurses also proposed short but meaningful opportunities to be integrated into daily or weekly huddles with one or two volunteers sharing a personal experience that relates to any aspects of patient care, family interactions, or team member relationships.

Lastly, storytelling may also provide therapeutic and healing benefits for nurse managers. Nurse managers have different roles and responsibilities from nurses, thus, their stories may reflect different aspects of organizational life. Creating opportunities and space for nurse managers to share with their peers may aid in nurse managers' sense-making of the past and current situations and strengthening leadership.

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### CONFLICT OF INTEREST

We have no conflict of interests to report.

### HUMAN SUBJECT

University of Michigan IRB Exemption (HUM00168852)

### ETHICS STATEMENT

An exemption from the Institutional Review Board of the author's university was received. All participants were informed about the study's aim, participated voluntarily, and signed an informed consent document. The participants' anonymity, privacy, and confidentiality were guaranteed. In addition, the audio recording was destroyed once the deidentified transcripts were obtained.

### DATA AVAILABILITY STATEMENT

The authors do not wish to share the data.

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## SUPPORTING INFORMATION

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# Evaluation of nurses' experiences with digital storytelling workshop: New way to engage, connect, and empower

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## Abstract

**Aim:** The aim of this work is to evaluate nurses' experiences, barriers, and facilitators in participating in digital storytelling workshops

**Background:** Nurses face ever-increasing demands and work time spent in isolation, leading to burnout. Storytelling—narrative skills of listening and creativity—may encourage meaningful connections with others, especially during the COVID-19 pandemic. However, evaluation of the user experiences of storytelling among nurses has been limited.

**Method:** The methods used are semistructured individual interviews with 13 nurses from a public health nursing organization who participated in a 3-day digital storytelling workshop in 2019. The interviews were audio-recorded, transcribed verbatim, and thematically analysed using NVivo12.

**Results:** All participants were women and half were white. Healing, human connection, and nursing pedagogy were the three main themes. Participants highlighted the organizational support in providing a safe and dedicated “space” for nurses' well-being. They also expressed desire and willingness to participate in additional workshops outside of work hours.

**Conclusion:** Further studies using a larger sample are needed to examine the scalability and efficacy of storytelling at work.

**Implications for Nursing Management:** Nurses rated storytelling positively and suggested a brief version to be incorporated into nursing practice. Establishing the culture of organizational support and psychological safety was identified as the necessary antecedents.

## KEYWORDS

burnout, narrative, nurses, organization, storytelling

## 1 | BACKGROUND

Today's nurses face ever-increasing work demands with rapidly changing technologies and complex and highly specialized care (Buchanan

et al., 2020). Amid these changes, contemporary nurses work in isolation more often than their predecessors did (Thimbleby, 2013) due to electronic documentation and decentralized nursing stations (Buchanan et al., 2020). The repercussions of these changes for nurses' health,

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well-being, and work engagement were already well documented in the literature (Melnyk et al., 2018). The global coronavirus 2019 (COVID-19) pandemic further overwhelmed the nursing workforce around the world, with more than half reporting acute stress and burnout (Galani et al., 2021), and one in five reported signs and symptoms of post-traumatic stress disorder (Marvaldi et al., 2021). To address the dangers of work-related stress and concerns regarding the long-term consequences of COVID-19 on nurses' health, well-being, and productivity, institutions have initiated wellness and stress-reduction programmes, either person- (i.e., cognitive-behavioural training and relaxation techniques) or organizational-directed (i.e., management skill training; Awa et al., 2010; Pollock et al., 2020). However, the essence of the nursing profession—the human connection—is often missing. The importance of humanity has never been greater than during COVID-19. Numerous studies highlighted that nurses relied on the support of their peers and colleagues as coping strategies (Fernandez et al., 2020; Jun & Rosemberg, 2021).

Peer support occurs between people who share similar life experiences and provides mutual encouragement, advice, empathy, validation, and a sense of belonging and community (Murphy & Higgins, 2018). Storytelling—which brings together powerful narrative skills of radical listening and creativity—is a potentially powerful tool to facilitate building peer support through developing a trusting relationship and building cohesion. As one of the most basic and oldest forms of communication, storytelling can describe a situation and motivate people to act in a certain way, expressing human agency and self-identifying (Murphy & Higgins, 2018). And storytelling can also promote healing by allowing both storytellers and listeners to make sense of their own experiences, building a degree of connectedness with others, providing personal resilience and coping, and decreasing stress (East et al., 2010). When used among nurses, storytelling can also offer a space to voice their experiences and be heard, recognized, and valued (East et al., 2010). For example, having a facilitated safe space encouraged nurses to share their practical wisdom and inspire a shared vision of what it meant to be a nurse (Fitzpatrick, 2017). Therefore, storytelling can capture everyday examples of practice and generate powerful curricular products that support reflection and deep understanding (East et al., 2010). Furthermore, storytelling is also an innovative tool for nurse leaders in building a person-centred cultures and staff development by centering human relationship approach (Cardiff et al., 2018; Smeltzer & Vlasses, 2004). By understanding the nurses' stories and lives, leaders will not only build relationships but will better understand the motivations and values of their workforce by eliciting, sharing, and valuing relationships and stories in shaping vision and culture. For these reasons, sharing experiential realities through storytelling holds tremendous potential as a technique for promoting increased wellness among frontline nurses confronting pandemic-related patient-care demands.

Storytelling can be done in several different ways. Digital storytelling is a generic term to describe storytelling using media technologies to create narrative forms (Hardy & Sumner, 2018). Digital storytelling differs from traditional oral storytelling in that other medium such as images (e.g., photographs) or music is added to a

scripted story. Nonetheless, the differences in the methods used in storytelling, digital or traditional oral, the essence of storytelling is the same—shared humanity. Guided by these findings with storytelling, a not-for-profit, public-health nursing organization provided optional 3-day digital storytelling workshops facilitated by an established storytelling organization to provide opportunities for the nurses to share their stories, potentially increasing their organizational commitment and job satisfaction. This paper aims to evaluate the first-person experiences of attending in-person digital storytelling workshops and identify barriers and facilitators in attending such workshops.

## 2 | METHODS

### 2.1 | Design

This in-depth programme evaluation using a descriptive qualitative method involved a purposive sample of 13 registered nurses who had attended digital storytelling workshops offered by their organization.

### 2.2 | Sample/participants

At a national not-for-profit public-health nursing organization, the nursing leadership identified storytelling as a potentially beneficial professional development opportunity for their nurses and provided optional three-day facilitated digital storytelling workshops at two regional locations in February and November 2019. The regional managers shared the information regarding the workshops and were encouraged to attend. However, participation was voluntary. To further assist attendance, the organization provided the workshop fees and the necessary time off to attend the three-day workshop.

#### 2.2.1 | Storytelling workshops

The digital storytelling workshops were led by trained facilitators from StoryCenter, one of the most established storytelling organizations. Each workshop consisted of three main parts: writing down a story, creating a short composition of audio and visual elements that include a written script that becomes a voiceover, visuals such as still images and video, sound effects and soundtrack, and sometimes text on a screen. These compositions represented and portrayed the story using digital media such as photos or music. As with all StoryCenter workshops, these participants constructed their stories digitally, using software to put together the composition and narrate their creations. The material covered in these workshops included but was not limited to, introduction to digital storytelling; group sharing and feedback throughout and at the end; scriptwriting and voice recording; image preparation and storyboarding; video editing and production (i.e., transitions, effects, music, and titles); and production of digital stories (StoryCenter). Participants were not obliged to stick to a particular topic but strongly encouraged and directed to stories specific to nursing before attending the

workshop and bringing any media material to facilitate their stories, such as pictures, music, or video. Nursing-specific stories included origin stories, experiences with patients/clients/coworkers, and/or their definitions of care. Each step of the story development included informally sharing of their stories with the other participants as a way to refine the stories. Finally, the participants shared the whole story by watching the completed digital products together. Stories created and shared during the workshop by the participants were the sole property of participants and were not shared or collected by the organization, StoryCenter, or the evaluation team.

## 2.3 | Data collection

After the workshops were completed, nurses who participated in the storytelling workshops were invited in a semi-structured phone interview to share their experiences with a PhD-prepared researcher (JJ), who was not affiliated with and had no pre-existing relationships with either the organization or StoryCenter. A recruitment email using the listserv of the participants was sent in November 2019. Those interested in participating in the study contacted the research team via email to set up a time with a phone number. Once the contact was made, verbal consent was obtained, and each interview lasting 30–60 minutes (average 43 minutes) was audiotaped. The interview guide (Supporting Information) included open-ended questions on the participants' previous knowledge and experiences with the workshops and their basic demographic and employment information (e.g., age and duration of tenure with the organization); participants received a \$30 gift card as compensation for their time. Moreover, the stories created during the workshop were not shared during the interviews to protect the privacy of participants.

## 2.4 | Ethical consideration

An exemption from the Institutional Review Board of the author's university was received. All participants were informed about the study's aim, participated voluntarily, and signed an informed consent document. The participants' anonymity, privacy, and confidentiality were guaranteed. In addition, the audio recording was destroyed once the deidentified transcripts were obtained.

## 2.5 | Data analysis

Each audiotaped interview was transcribed verbatim, and study data were subject to thematic analysis, a theoretically flexible method of qualitative data examination allowing researchers to identify patterns in coded data (Braun & Clarke, 2006). The research team read the transcripts independently and took notes prior to coding. Using computer-assisted qualitative data software NVivo 12, the researcher team coded data by highlighting key passages addressed to the study's research question. Once the coding was completed, patterns in participants' stories emerged. Once patterns within the coded materials were identified, they were collapsed and refined into distinct study themes (Braun & Clarke, 2006).

## 2.6 | Rigour

Trustworthiness was established through repeated member-checking with participants during phone interviews. During the phone interview, the interviewer asked participants to repeat and/or affirm the veracity of both the researchers' conceptualizations. Additionally, an audit trail was maintained to preserve the transparency of each step in the analysis.

## 3 | FINDINGS

### 3.1 | Participants

Seventeen nurses participated in the workshops, of which 13 agreed to be interviewed (response rate = 76.5%). All participants were women (100%), and seven were identified as white (53%). Participants averaged 7.6 years of nursing experience while averaging 4.2 years working with their current organization. Participants took part in the workshop, in general, for one of three reasons: (1) recommendation by their superiors, (2) curiosity, or (3) an opportunity for self-care. Prior to attending the workshop, only one participant had any experience with storytelling, but even this participant was unsure what to expect from the experience.

### 3.2 | Themes

#### 3.2.1 | Healing

Healing was the most consistent theme in this study; participants perceived their storytelling experience as therapeutic and reported that the workshop afforded a safe space and time, which allowed them to focus on themselves. In the words of participant 8, "I personally think the whole process was therapeutic ... [and I] think anything that could help a nurse to focus on herself is beneficial. We are so focused externally and [on] everybody and everything else around us, [so] this bit is for ourselves." Participant 10 echoed this sentiment:

Nurses are always there to pick up the pieces for everybody else. We have our stories, but we have our own trauma; we have our own issues. I think what the storytelling does is dig into nurses and [expose] some things we don't want to disclose. We put all that in a backburner [sic] because we have to do everything for everybody else.

Several participants described the healing process as feeling as if they were finally seen as human beings rather than simply as a nurse. This "humanizing" experience was important to participants who described some of their work as secondary trauma requiring some manner of processing. As participant 9 explained:

Maybe it's the shared emotions like sometimes the release of the emotions .... Being heard and being seen as a human, not just as a nurse ... Our whole job is all about secondary trauma; hearing stories that are so challenging that you have to be able to put that somewhere ... storytelling is a way to do it. I felt significantly more energy afterward and the ability to be kind to my client.

As discussed earlier, most participants did not have expectations regarding or knowledge of storytelling; these individuals reported not realizing that they had a story worth telling.

### 3.2.2 | Human connection

Similar to the healing quality of the storytelling experience, participants reported a sense of increased human connection through shared stories; realizing they shared more in common than they had realized allowed them to better relate to their peers. As participant 4 explained, "I find myself relating to every single story. I have a story within that story ... and then I think maybe I need to get to know someone else." This sentiment was shared by another participant 7, "Listening to [others'] stories ... feels so much a part of something bigger than my own personal experiences."

Participant 2 echoed this notion that listening to the stories told by colleagues helped her gain insight into the experiences of others. Finally, participant 12 emphasized the human connection as being an integral part of nursing, noting that "we," as nurses, "need to connect ourselves in the process" and adding that "having more platforms where nurses can have an outlet, a safe space to do certain things," which would, in their view, be "definitely beneficial."

### 3.2.3 | Nursing pedagogy

Lastly, most of the nurses traced their stories back to their nursing practice, emphasizing its potential to help them build a better relationship with their clients. As participant 7 explained, listening to stories is "what we do all day; every day [involves] listen[ing] to the story [of our clients]." This sentiment resonated with another participant, who added, "Whether hospital nursing or home care nursing, we're there to witness our clients' stories. And [there is a] little piece of our stories in them sometimes."

In addition to developing meaningful relationships and empathizing with patients, several participants had begun incorporating principles of storytelling when visiting their clients as a tool for education. Participant 11 summarized this principle of sharing as a means of educating patients,

I will use a story in order to pass along information that you don't like telling them about, [such as] research. When you talk to clients about research and evidence-based [information] that does not resonate as much as

caring about somebody else's experience, their story. I feel like I had to make sense some of these topics and decisions ... [to] personalize it in a way that I think can be very beneficial for people.

In the same spirit, participant 9 stressed that storytelling could help nurses establish a necessary human connection with clients, explaining that "if we are allowing [ourselves] to be vulnerable, we are going to be able to reach our clients and ... meet their needs in a more realistic way instead of telling the client what to do. We can see them eye to eye."

Lastly, several participants indicated that intentional listening skills and being present in the moment were vital. Making this point, participant 3 noted that nursing is "all about fixing and making [patient's conditions] better as opposed to being there with the person." This participant also added, "That's the essence of the storytelling—you are really, really being present in the process." Amplifying this point, participant 2 reasoned that being present and listening carefully was an essential skill for nurses, especially for those who might not have anyone at their side.

### 3.3 | Facilitators and barriers

Overall, all participants reported positive experiences and expressed a desire to repeat the workshop or to continue developing the skills. However, there were barriers and facilitators in participation (Table 1). All participants stressed that organizational and leadership support as the essential facilitator; such support included designated time-off, helpful and nurturing nurse managers who encouraged attendance, and a healthy and well-functioning organizational culture. Even more so, nurses emphasized the importance of their organization's commitment to nurses' well-being and professional growth as a critical facilitator while also explaining that such support was not currently the norm elsewhere. As participant 5 put it,

[my organization] is very supportive of nurses and trusting of nurses. I never worked in an environment like this. So it was kind of a shock. I came from the hospitals [and] and was ... used to being dismissed, never really asked for my thoughts on anything. So I do think it is organization. Our organizations allowed this to be part of our work, which takes some of those barriers away.

**TABLE 1** Facilitators and barriers to workshop participation

Facilitators	Barriers
<ul style="list-style-type: none"> <li>• Leadership support</li> <li>• Designated time-off</li> <li>• Curiosity</li> <li>• Perceived self-development opportunity</li> <li>• Need for individual expression</li> </ul>	<ul style="list-style-type: none"> <li>• Time commitment</li> <li>• Lack of familiarity with storytelling</li> <li>• Fear of being vulnerable with colleagues or strangers</li> <li>• Lack of access to storytelling</li> <li>• Constant busy-ness of work</li> </ul>

Other features facilitating participation included personal curiosity and interest in exploring creative outlets to express themselves, which participant 9 highlighted “you’re just holding these extraordinary encounters inside of us. And sometimes it feels like. If you don’t let him out, you might explode.”

Identified barriers included the time commitment associated with participation and a lack of familiarity with storytelling. Several participants also mentioned the fear of being vulnerable with their colleagues as a potential barrier, and a few recalled their colleagues who chose not to participate but regretted their decision upon hearing about the experience after the fact, as participant 2 explained.

I think there might have been one person that wasn’t quite ready, maybe being vulnerable. But it might be a little bit easier if they know that other people on their team are participating. Being around complete strangers for three days is kind of terrifying.

## 4 | DISCUSSION

Our findings suggest that nurses rated the experience with storytelling highly positive, underscoring the importance of reflecting on their work and life while also connecting through the sharing of feelings and experiences. These human connections were also therapeutic and offered renewed enthusiasm for their nursing practice. These findings are consistent with other studies. For example, the work of Fitzpatrick (2017) concluded that nurses enjoyed an enhanced moral, ethical, scientific, and practice basis within their profession after sharing a vision of what nursing meant through the telling of stories. In this regard, our findings were also supported by the Narrative theory, which begins with the assumption that narrative is a basic and fundamental human strategy (Riessman, 2008). Narrative theory helps us to understand that the person’s accounts of what happened in particular events and circumstances can be at once so common and so powerful. It is through the narrative process that people can make sense of the past, identify turning points and transitions, and formulate the next steps (Riessman, 2008).

While the literature on the use of storytelling among nurses is limited and the method of storytelling may differ (in-person narrative vs. digital storytelling), narratives and peer support—two core components of storytelling—are consistent. Narrative is a key communication strategy and concept crucial in storytelling and stories, allowing humans—natural storytellers—to process and understand information (Gray, 2009). Fitzpatrick (2017) coined the term “narrative nursing” to frame reflective practice in the context of caregiving. In this narrative nursing practice, storytelling is a tool to engage nurses with patients by incorporating attention to their knowledge, beliefs, and values (Fitzpatrick, 2017). A review of the literature showed promising benefits of narrative interventions, such as storytelling and reflective communications, although such a high degree of heterogeneity made it too challenging to demonstrate efficacy (Laskow et al., 2019). Peer support is another important aspect of nurses’ experiences with storytelling. In other studies, researchers found that participants were less nervous

sharing their experiences, feelings, and thoughts through stories than with traditional peer approaches (Kim et al., 2020; Mancini, 2019). When storytelling occurred between people who share similar life experiences, it encouraged mutual support, advice, empathy, validation, and a sense of belonging and community (Palacios et al., 2015). Peer-based storytelling also allowed participants to consider their emotions, develop problem-solving skills, set goals, develop strategies, and exchange social support (Rennick-Egglestone et al., 2019).

Additionally, research has shown that storytelling is a powerful educational tool. Storytelling has been used successfully in health promotion, such as campaigns for cervical cancer prevention and vaccine usage (Kim et al., 2020). Traditionally, skills and benefits of stories derived from storytelling have been between students and educators in informal educational settings (Petty et al., 2020; Price et al., 2015); however, scholars increasingly recognize that patients in clinical settings could also benefit, especially among culturally diverse, hard-to-reach populations (Kim et al., 2020). Nurses in our study did not initially consider storytelling as a part of their interactions with patients, but they regarded storytelling as a nursing pedagogy embedded in every aspect of nursing practice, from assessment to education. Those in our study also felt that storytelling engaged and empowered their patients because stories reduced the hierarchy within the provider-patient relationship and created a space where providers could connect with patients.

### 4.1 | Limitations

In terms of this study’s limitations, storytelling workshops and nurses’ participation in them was made possible by an organization’s vigorous commitment to the well-being of its nurses; thus, replicating the workshop and realizing the same level of involvement could be difficult. This challenge notwithstanding, the present research results suggested considerable value in having nurses participate in such workshops. A second limitation is that the participating nurses volunteered for their workshop; thus, the self-selection of early adopters could not be ruled out. Early adopters are more likely to be extraverted, open and inclined to explore a new product or technology before others have taken part (Lynn et al., 2017). Thus, the findings may differ if nonearly adopters may have chosen not to participate in the workshops. Finally, our study included only two workshops and a small purposive sample; perhaps we did not capture the full essence of storytelling due to selection effects.

## 5 | CONCLUSION

The findings from this study support growing evidence that storytelling is an effective tool for bolstering the human connection within the nursing profession and for encouraging nurses to recommit to their practice. Sharing stories is already a necessary human activity in our daily lives. Therefore, storytelling in nursing can help establish and maintain an organizational environment where nurses feel protected

and valued by reframing how nurses connect with one another and with their patients.

## 6 | IMPLICATIONS FOR NURSING MANAGEMENT

Based on our findings coupled with what is known in the literature, there are several implications for nurse managers. As increasing numbers of organizations recognize the importance of sustaining a healthy and well-functioning nursing workforce, storytelling can restore the humanity and connectivity that are the lifeblood of nursing practice. However, the culture of psychological safety, which shared beliefs and the confidence to speak up within a group without fearing embarrassment, rejection, or punishment (Salas et al., 2018), is a necessary antecedent before people could feel comfortable taking part in and reaping the benefits of storytelling as a practice in organizations. Nurse managers are an essential element of cultivating the culture of psychological safety within each nursing unit. In a systematic review of psychological safety in the healthcare system, leader behaviour and support are consistently reported as the enabler across all levels of organizations (O'Donovan & McAuliffe, 2020). Nurses' ability and willingness to reflect and share their stories may not be possible without managers' support and leadership.

Second, nurses viewed storytelling as a feasible and potentially powerful professional development opportunity that could be incorporated within their work environment. That said, logistical arrangements, especially time constraints and the required in-person presence of both storyteller(s) and listener(s), presented a considerable barrier. Nurses in our study acknowledged that not all employers would be able to provide the kind of space and/or time away from work. Nurses in the study described both listening and telling a story as equally important and suggested sharing stories on digital platforms, such as videos, as a possible alternate format that allowed nurses could access on their own time. Another suggestion was providing the workshop digitally in shorter sessions and in more frequency to offer more opportunities for nurses to participate. Additionally, nurses also proposed short but meaningful opportunities to be integrated into daily or weekly huddles with one or two volunteers sharing a personal experience that relates to any aspects of patient care, family interactions, or team member relationships.

Lastly, storytelling may also provide therapeutic and healing benefits for nurse managers. Nurse managers have different roles and responsibilities from nurses, thus, their stories may reflect different aspects of organizational life. Creating opportunities and space for nurse managers to share with their peers may aid in nurse managers' sense-making of the past and current situations and strengthening leadership.

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### CONFLICT OF INTEREST

We have no conflict of interests to report.

### HUMAN SUBJECT

University of Michigan IRB Exemption (HUM00168852)

### ETHICS STATEMENT

An exemption from the Institutional Review Board of the author's university was received. All participants were informed about the study's aim, participated voluntarily, and signed an informed consent document. The participants' anonymity, privacy, and confidentiality were guaranteed. In addition, the audio recording was destroyed once the deidentified transcripts were obtained.

### DATA AVAILABILITY STATEMENT

The authors do not wish to share the data.

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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# High hiring rate of nurses in Catalonia and the rest of Spain hides precarious employment from 2010 to 2019: A quantitative study

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## Abstract

**Aim:** This study aims to describe the hiring of nurses in Catalonia and the rest of Spain over 10 years.

**Background:** Precarious employment (PE) has negative consequences for nurses' quality of life and work performance.

**Methods:** Quantitative study using a retrospective, longitudinal, descriptive design. We analysed publicly available employment data from Catalonia and the rest of Spain.

**Results:** Nurses are among the health professionals with the lowest proportion of open-term (permanent) contracts, 25% during the first 4 years of employment. During the study period, each nurse hired had an average of 3.44 contracts per year. The proportion of nurses with a fixed-term (non-permanent) contract shrank from 25.3% in 2006 to 20.5% in 2012 and grew rapidly to 38.7% in 2018. We estimate that 14,800 nurses signed fixed-term contracts in 2018 without ever having registered as unemployed in nursing.

**Conclusion:** High rates of fixed-term hiring and the high number of contracts per nurse are evidence of a high level of PE for nurses in Catalonia.

**Implications for Nursing Management:** When policymakers and workforce planners design recruitment and retention programmes for nurses, they should consider improving working conditions by extending more open-term contracts to combat PE and, indirectly, the shortage of nurses.

## KEYWORDS

contracts, nurses, precarious employment, Spain

Paola Galbany-Estragués and Pere Millán-Martínez should be considered joint first author.

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## 1 | INTRODUCTION

Precarious employment (PE) is multidimensional, and researchers across the disciplines have tried to define it from the point of view of economic, labour and social systems (Kreshpaj et al., 2020). New technologies, globalization and economic recessions have changed the nature of labour agreements (Padrosa et al., 2021). There is no single definition of PE, which is associated with terms such as flexible, temporary, casual, atypical, non-standard, contingent, underemployment and poor (Benach et al., 2014). Kreshpaj et al. (2020) classify PE into three dimensions: insecure employment, income inadequacy and lack of rights and protection. In this sense, PE describes a situation of unfavourable 'quality of employment', encompassing employment conditions (e.g., working hours, organisation and pay) and the formal and informal relations between workers and employers (Julià et al., 2017). At the same time, PE has enabled economic growth (Kreshpaj et al., 2020), and flexible contracts may enhance some people's work-life balance.

PE is more prevalent in young people, women, immigrants, people of lower social class and less training and those who perform manual work (Baines & Kgaphola, 2019; Julià et al., 2017). PE affects the health of individuals, families and the community (Benach et al., 2014; Julià et al., 2017). Precarious workers are at risk of stigmatization and social isolation (Julià et al., 2017). PE affects all professions but is especially prominent in those dedicated to care, such as nurses, who represent 59% of health professionals worldwide (Baines & Kgaphola, 2019; World Health Organization, 2020). In Turkey, PE has increased nurses' conflicts at home, as they are unable to meet their families' expectations (Santas, 2020). In Brazil, nurses' working conditions have worsened, leading them to experience physical and psychological deterioration and compromising the societal value of nursing (Dias et al., 2019). In Mexico, the liberalization of the market following the North American Free Trade Agreement has led the Mexican health system to adopt private sector models that have worsened PE for nurses (Nigenda et al., 2020). In Poland, PE leads to a shortage of nursing students, because the profession is unattractive to young people (Marc et al., 2019).

The characteristics of the working environment and the qualifications of nursing staff affect the well-being and satisfaction of patients (RN4CAST, 2017). In the last 10 years, European nurses have improved the quality of care. They are now better trained, more competent and more empowered, allowing them to make complex decisions and provide comprehensive care (Cabrera & Zabalegui, 2021). However, power, class and gender relations lead nursing to be a precarious profession with little social recognition (Dias et al., 2019; World Health Organization, 2020).

In Spain, the economic crisis that began in 2008 led to the implementation of austerity policies that affected the health sector and, in turn, the health of the population (Sánchez-Recio et al., 2020; Spijker, 2020). The crisis also affected health professionals and especially nurses, as the most vulnerable part of the health workforce. In 2013 alone, Spain lost 5200 active nurses (Galbany-Estragués & Nelson, 2016). The European Court of Justice has noted that Spanish legislation conflicts with the rule of law in the European Union, as it

allows fixed-term contracts to systematically meet structural needs (EUR-Lex, 2016). Nurses throughout Spain have opposed the austerity measures implemented by the Spanish government, as they perceive that their workloads have increased and their working conditions and the quality of health services have deteriorated (Gea-Sánchez et al., 2021). In Catalonia in particular, nurses have also noted the deterioration of their working conditions, among which are the loss of economic remuneration, rotation to different departments, an increase in patient complexity and increased demand for health services, as well as an increase in the number of patients per nurse (Granero-Lázaro et al., 2017). The deterioration of working conditions is accentuated when nurses work in nursing homes (Fité-Serra et al., 2019) where labour agreements are even less favourable.

While researchers have analysed the characteristics of PE and how it affects nurses and other workers, to our knowledge, no research has quantified the relationship between PE and hiring rates in any country. This study describes the hiring of nurses in Catalonia and the rest of Spain from 2010 to 2019 and its link to PE. Because PE is a problem in many countries, our findings have implications for health policy beyond Catalonia and Spain.

## 2 | METHODS

### 2.1 | Design

We analysed the hiring rate to give us a greater understanding of PE. To do so, we conducted a quantitative study with a retrospective, longitudinal, descriptive design (Grove & Gray, 2019) using open-access data from 2010 to 2019. We analysed the data published by the Ministry of Universities of the Government of Spain (Ministry of Universities of Spain, 2021), the Observatory of Occupations of the State Public Employment Service (SEPE)<sup>1</sup> (Ministry of Labour and Social Economy of Spain, 2021), the Central Balance Sheet Data Office of Catalonia (CatSalut, 2021) and the National Institute of Statistics (INE, 2021).

### 2.2 | Samples and settings

The study population is the generalist nurses from Catalonia and the rest of Spain (excluding Catalonia) represented in the data summarized by the SEPE. We use the SEPE's terms 'unemployed nurses' (those without work and registered as seeking employment in nursing the last day of the period under consideration) and 'non-specialized nurses'. We use the Central Balance term 'full-time equivalent employees' (CatSalut, 2021), defined as the hours worked by part-time personnel divided by the average annual hours worked in full-time jobs (Organisation for Economic Co-operation and Development [OECD], 2001). From the INE, we use the term 'nurses licensed to practice' (*enfermeras colegiadas*) (INE, 2021), which is defined by Spanish law as nurses who are certified members of a regional professional nursing association.

## 2.3 | Data collection

From the SEPE, we obtained the monthly series of employment statistics between 2010 and 2019 (covering the period from the beginning of the series to the beginning of the COVID-19 pandemic), from the Central Balance Sheet (Catsalut, 2021), the annual series of statistics of the ratio of workers according to type of contract from 2008 to 2017 (which comprise all publicly available data), and from the INE, the annual series of active licensed nurses from 2010 to 2019 (INE, 2021). We chose this period to coincide with the SEPE data. From the Ministry of Universities, we used indicators of participation in the social security system among university graduates in 2014, which is the most recent publicly available employment data about new graduates.

## 2.4 | Ethical considerations

Because we used public data, no ethical approval was required. We have a commitment to use the data ethically and transparently, in accordance with the approach of Catalonia's Office for Open Data (Vidal-Juanola, 2021).

## 2.5 | Data analysis

We performed a descriptive analysis of the different time series and used the data visualization packages `brinton` and `ggplot2` of the R statistical computing environment (Millán-Martínez & Oller, 2021).

## 3 | RESULTS

We first examined the indicators of participation in the social security system of university graduates published by the Ministry of Universities of Spain (2021). In Figure 1, coloured lines represent trends in the percentage of 2014 health graduates having an open-term (permanent) or fixed-term (non-permanent) contract over the 4 years

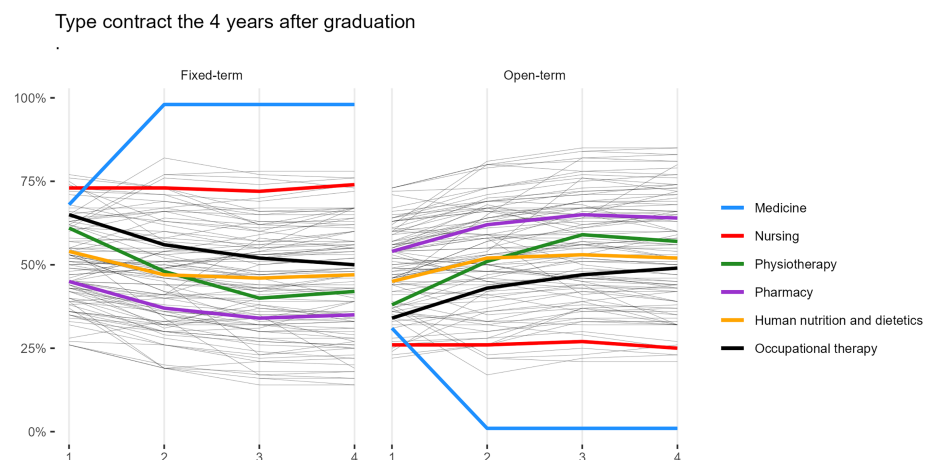
following their graduation, by profession. Grey lines show overall trends across all university graduates in Spain.

This figure shows that, in the case of graduates in medicine, the percentage of workers with open-term contracts is zero between the second and fourth years. This is explained by the fact that graduates in medicine continue their studies to prepare for specialist exams and then as residents. Between 30% and 40% of graduates in occupational therapy, human nutrition and dietetics and physiotherapy have an open-term contract the first year after graduating, which increases to approximately 50% by the fourth year. Graduates in pharmacy have the highest proportion of open-term contracts: above 50% in the first year after graduation and 65% by the third year. Employed nursing graduates, on the other hand, have among the lowest proportions of open-term contracts in the first year (just over 25%), and this figure does not improve during the following 3 years.

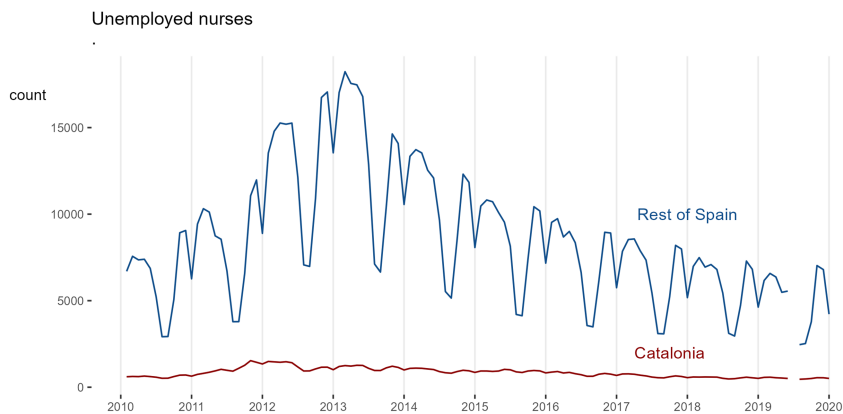
The SEPE publishes monthly and yearly statistics for job seekers, unemployed people and the number of contracts issued in each occupation, including nursing (non-specialist nurse, specialist nurse and nurse-midwife). These data are the source for Figures 2–5.

Figure 2 shows trends in the number of unemployed nurses in Catalonia and the rest of Spain. The two series have different orders of magnitude, which is logical considering the difference in population size: Catalonia's population grew from 7,462,044 inhabitants in 2010 to 7,722,203 inhabitants in 2020, while Spain's population grew from 46,486,621 inhabitants to 47,332,614 inhabitants. In Catalonia, the number of unemployed nurses grew exponentially between 2010 and 2012, when it reached its maximum of 1500. Beginning in 2012, the number gradually decreased until 2018, when it returned to the 2010 value of around 500 unemployed nurses. In the rest of Spain, the curve is bell shaped, with a rapid increase in unemployment between 2010 and 2013 and a slower recovery between 2013 and 2020. In the rest of Spain, the number of unemployed nurses also presents high seasonality with marked valleys during August and September and less pronounced ones in December, coinciding with holiday periods. We also observe that as unemployment increases, so does the amplitude of the wave derived from seasonality.

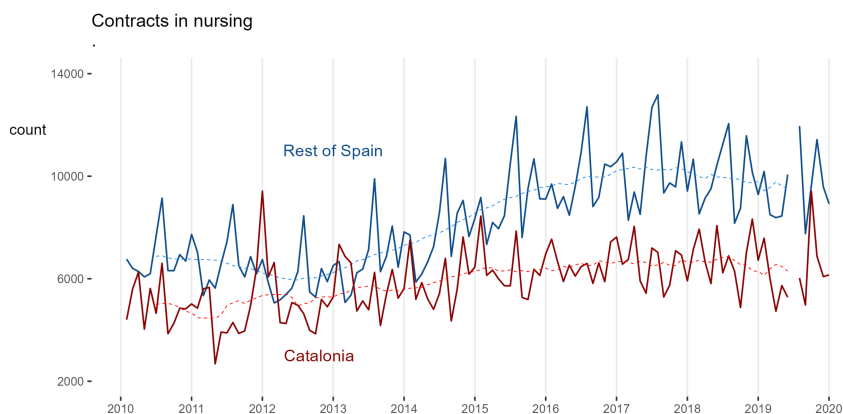
Figure 3 shows that, despite the difference in population between Catalonia and the rest of Spain, the monthly count of nursing



**FIGURE 1** Percentage of open-term or fixed-term contracts of health graduates over the 4 years following graduation. Source: Ministry of Universities of the Government of Spain



**FIGURE 2** Monthly number of unemployed nurses in Catalonia and the rest of Spain. Source: Observatory of Occupations of the State Public Employment Service (SEPE) of the Ministry of Labour and Social Economy of Spain



**FIGURE 3** Monthly number of contracts held by nurses in Catalonia and the rest of Spain. Source: Observatory of Occupations of the State Public Employment Service (SEPE) of the Ministry of Labour and Social Economy of Spain

contracts is very similar. The two trend lines share a cycle, although in Catalonia, we find the minimum in 2011, and in the rest of Spain, this minimum is delayed until 2013. Between 2012 and 2017, the growth of both lines corresponds to the decrease in unemployment in nursing in Spain in this period. As of 2017, however, the number of contracts both in Catalonia and in the rest of Spain trends downwards, while unemployment continues to fall. We also observe that the number of contracts in the rest of Spain presents seasonal cycles that peak in June.

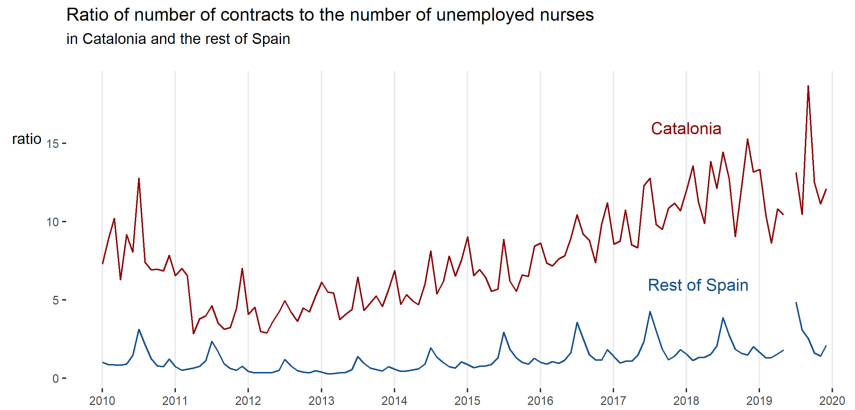
Given that the data represented in Figure 2 contrast with those in Figure 3 and in order to explore the different behaviour of the two territories analysed, we offer Figure 4, which represents the evolution of the monthly ratio of contracts held by nurses with respect to the monthly number of unemployed nurses in Catalonia and the rest of Spain. We observe that the ratio of both territories falls suddenly between 2010 and 2012 and, from this moment on, grows steadily until 2019. The two ratios differ in the regularity of the intra-annual cycles and in the order of magnitude of the average annual value, with both being much more stable in the rest of Spain. The order of magnitude of the average value in the case of Catalonia is from four contracts per month per unemployed nurse in 2011 to around 12 in 2019, meaning that in 2019, there was a monthly ratio of 12 contracts per unemployed nurse. (This does not mean that on average each nurse in Catalonia had 12 different contracts, because not all contracts go to nurses who are registered as unemployed.) In the rest of

Spain, the average number of contracts per nurse ranges between one and four, with large peaks in July and smaller peaks in December.

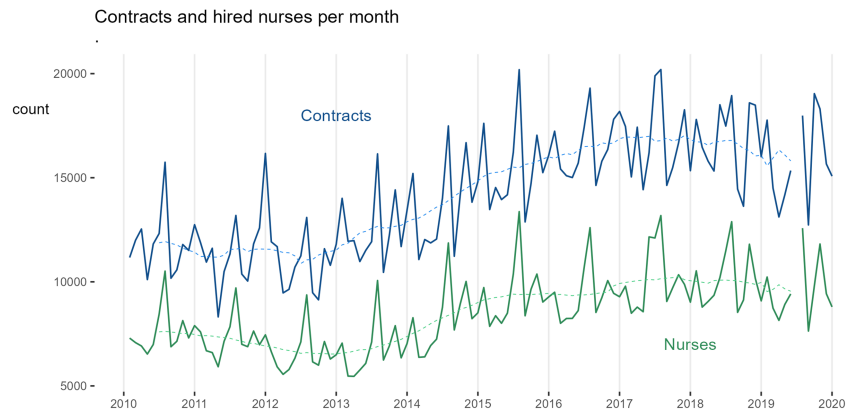
Because there were 12 times more contracts in a month than unemployed nurses in the same month, we can deduce that contracts especially benefited nurses who were not registered as unemployed. Figure 5 shows the monthly number of nursing contracts and the monthly number of nurses who have benefited from these contracts in Spain. We observe that these two statistics are positively correlated ( $r = .89$ ) and that the two trend lines share a cycle. The evolution of the number of contracts and nurses hired peaks in July, and as the number of contracts increases, the separation between the two trends also increases, with the average value of the ratio of contracts per nurse hired between 1.6 and 1.8, and the extremes of this ratio around 1.4 and 2.2 (see Figure S1). Notably, between 2010 and 2020, each nurse hired each month, had on average, between 1.6 and 1.7 contracts in that month, indicating PE. If we look at the aggregated data by year, we can see that, for example, in 2019 in Spain, 195,214 contracts were issued to a total of 56,684 nurses; that is, each nurse hired had on average 3.44 contracts that year.

The disaggregated number of single nurses hired for Catalonia is not available, which prevents us from including this data in Figure 5. However, we know that in Catalonia in 2019, a total of 76,851 contracts were issued, and we estimate that they benefited a total of 22,315 nurses. We obtain this number by applying the Spanish ratio of 3.44 contracts per nurse and considering that contracts in

**FIGURE 4** Monthly ratio of contracts held by nurses and the monthly number of unemployed nurses in Catalonia and the rest of Spain. *Source:* Observatory of Occupations of the State Public Employment Service (SEPE) of the Ministry of Labour and Social Economy of Spain



**FIGURE 5** Monthly number of contracts held by nurses and the monthly number of nurses hired in Spain. *Source:* Observatory of Occupations of the State Public Employment Service (SEPE) of the Ministry of Labour and Social Economy of Spain



Catalonia represent almost 40% of contracts in Spain overall, while Catalonia has only 17% of the population of non-retired licensed nurses (47,714 registered in Catalonia in 2019 compared with 267,861 registered in Spain).

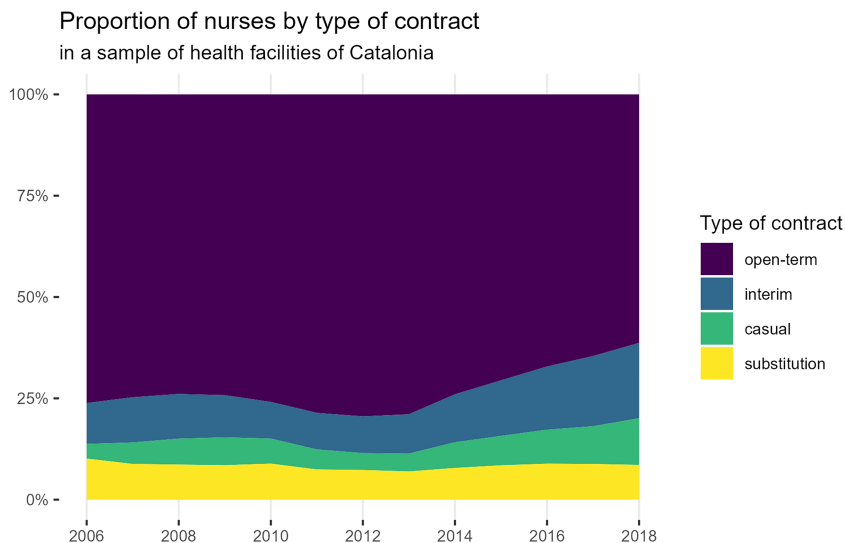
Finally, the only data relating to the proportion of nurses with open-term contracts with respect to the total number of employed nurses that is not protected by the Catalan Data Protection Authority is that published annually in the Central Balance Sheet (CatSalut, 2021). Figure 6 shows the proportion of graduates with a 3- or 4-year university health degree (mainly nurses) with an open-term contract or fixed-term contract (interim, casual or substitution), by year. Interim contracts are, in theory, used to cover a vacant permanent position until an open-term contract can be signed; in practice, they can last for years because the administration often fails to fill vacancies. Casual contracts are used to cover sporadic needs, such as peaks in workload. Substitution contracts are used to cover short-term absences due to circumstances such as illness and maternity leave. The proportion of those with a fixed-term contract decreased from 25.3% in 2006 to 20.5% in 2012 and then increased dramatically to 38.7% in 2018. If we extrapolate the result of this sample to the group of active licensed nurses in Catalonia in 2018 (46,793), we can approximate the number of nurses with fixed-term contracts at 18,108 nurses in 2018.

Another consideration is that the sum of the monthly count of unemployed nurses in Catalonia in 2018 is 6597 (which correspond to

fewer single nurses, given that a nurse can be registered as unemployed for more than 1 month over a given year). If we take the number of nurses without an open-term contract (approximately 18,108) and subtract the sum of the monthly count of unemployed nurses (approximately 6,597), it follows that there are at least 11,511 nurses without an open-term contract who have not been registered as unemployed in nursing (this means that they are not unemployed, that they have not registered as job seekers and/or that they have registered as job seekers but not in nursing). We therefore deduce that the number of people who worked regularly as nurses by stringing together fixed-term contracts without registering as unemployed in nursing was between 11,511 and 18,108 in 2018. Taking the midpoint between these two values, we estimate 14,809 nurses (31%) fit this description, out of a total of 46,793 registered active nurses.

## 4 | DISCUSSION

Among health graduates, nurses are the workers with among the lowest proportion of open-term (permanent) contracts in the first 4 years after their graduation. There are many more unemployed nurses in the rest of Spain than in Catalonia, but the number of contracts is similar (SEPE, Ministry of Labour and Social Economy of Spain, 2021). Therefore, there is a great difference between the ratio of contracts per unemployed nurse. While in Catalonia, the ratio is between four



**FIGURE 6** Proportion of graduates with a three- or four-year university health degree (mainly nurses) with open-term or fixed-term (interim, casual, or substitution) contracts in a sample of between 100 and 109 (depending on the year) Catalan health facilities. *Source:* Central Balance Sheet Data Office of Catalonia

and 12 contracts per unemployed nurse, in the rest of Spain, the ratio is between one and four. This high ratio of contract per unemployed nurse indicates that the Catalan health system much more frequently requires nurses to string together multiple fixed-term (non-permanent) contracts each year, causing high rates of PE.

The number of nursing contracts per year would appear to be a favourable indicator, but in fact, it indicates PE and a lack of adherence to European Union law. According to European Union law, fixed-term contracts cannot systematically meet ongoing structural needs (EUR-Lex, 2016). These contracts have been used especially in Catalonia, a region in which, for example, in 2019, a number of contracts between 10 and 15 times greater than the number of unemployed people in nursing were issued every month. Despite the difficulties in collecting data about the type of contracts that health professionals hold (because they are protected by the Catalan public administration), we estimate that in 2018, approximately 14,800 nurses strung together several fixed-term contracts without registering as unemployed in nursing, as shown in Section 3.

Nurses ensure the safety and quality of care (Aiken et al., 2017). In Spain, citizens living in regions with a higher nurse-patient ratio are more satisfied with their health system (Ministry of Health, 2019). The region of Spain with the highest ratio of nurses per population is Navarra (8.6 nurses per thousand inhabitants), while Catalonia has a ratio of 6.2 nurses per thousand inhabitants. If Catalonia wanted to place itself on par with Navarra, it would have to incorporate 17,325 nurses into its health system, about 35% more than the nurses it currently has. If Catalonia wanted to approach the median of the European Union, which is around 9.5 nurses per thousand inhabitants, the figure would be even higher: 24,197 nurses would need to be hired (50% more). In making such comparisons, we must take into account that different European countries have different health models. However, taking Spanish data as a reference point, it is evident that Catalonia needs to hire and retain more nurses by offering them open-term contracts instead of a string of fixed-term ones.

PE is one of the factors that leads Spanish nurses to emigrate or leave the profession in search of better living conditions (Galbany-Estragués et al., 2019; Galbany-Estragués & Nelson, 2016; Rodríguez-Arrastia et al., 2021). These data coincide with nurses' perceptions of poor working conditions, including fixed-term contracts (Fité-Serra et al., 2019; Granero-Lázaro et al., 2017). Junior nurses with fixed-term contracts show high levels of emotional fatigue, depersonalization and lack of personal fulfilment, which leads them to suffer psychological problems such as stress and anxiety (Acea-López et al., 2021). PE is so recurrent in the nursing profession that even new Spanish graduates consider the possibility of emigrating due to lack of work and job insecurity (Gea-Caballero et al., 2019).

We must emphasize that the period of analysis is prior to the COVID-19 pandemic. Nursing understaffing in Catalonia and the rest of Spain made it particularly difficult to meet care needs during this health emergency. The 2020 hiring figures show fewer contracts than the prior year, given emergency hiring programmes designed to create staffing stability during the COVID-19 crisis. The number of nursing contracts in Catalonia shrank 21% between 2019 and 2020 (in contrast to 14% in the rest of Spain, SEPE). This dramatic decrease in the number of contracts during the greatest health crisis in a century points to Spain's and especially Catalonia's tendency to overuse fixed-term contracts. Catalonia's health system, and likely many others around the world, now faces the opportunity to address PE by permanently incorporating the nurses hired to face the COVID-19 crisis. Health policies should be updated, and the working conditions of nurses improved to avoid compromising the response of health systems (see Lasater et al., 2021). The World Health Organization has committed to a global strategy on human resources for health, Workforce 2030, which calls for the defence of personal, labour and professional rights of all health personnel (World Health Organization, 2020). If these actions are not taken, the shortage of nurses is likely to continue in many countries, and their citizens are likely destined for decreased quality of life and increased mortality, morbidity and dissatisfaction (Aiken et al., 2017; RN4CAST, 2017).

## 5 | LIMITATIONS

To analyse the seasonality of nursing hiring, we requested statistical data from Statistics from Hospitalisation Health Facilities (EESRI) from the Agency for Health Quality and Assessment of Catalonia (AQUAS). We were denied access to the data because it is protected by the Catalan Data Protection Authority, and this research was not sponsored by a university belonging to the Catalan Association of Public Universities (ACUP). To overcome this limitation, we analysed open data sources that made it possible to assess PE in nursing in Catalonia and, more specifically, to reveal Catalonia's heavy reliance on fixed-term contracts in nursing.

## 6 | CONCLUSIONS

The high hiring rate of nurses in Catalonia conceals a problem of PE. In 2018, between a minimum of 11,511 nurses and a maximum of 18,108 held fixed-term (non-permanent) contracts without appearing in unemployment statistics. Their failure to enrol in the unemployment registry likely reflects the fact that they become accustomed to the pattern of consecutive short fixed-term contracts. These data indicates the ongoing structural need for nurses in the Catalan health system. PE influences the decision of Catalan nurses and Spanish nurses more broadly to emigrate and to leave the profession, which accentuates the shortage of nurses. This shortage endangers the ability of the health system to provide high-quality care to citizens. Our analysis points to the importance of examining statistical data closely; seemingly positive data for the hiring of nurses can in fact hide dismal levels of PE. The finding that 'good' hiring numbers can hide PE may be helpful to quantitative health researchers in other countries.

## 7 | IMPLICATIONS FOR NURSING MANAGEMENT

When policymakers and workforce planners, nationally and internationally, design recruitment and retention programmes for nurses, they should consider addressing PE by extending more open-term (permanent) contracts to combat shortages and attract new generations of nurses.

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### CONFLICT OF INTEREST

We have no conflict of interest.

### AUTHOR CONTRIBUTIONS

PGE, PMM, JCCB, MSC and ARA made substantial contributions to the conception and design, acquisition of the data and analysis and

interpretation of the data. PGE, PMM, JCCB and ARA have been involved in drafting the manuscript, and PGE, PMM, JCCB, MSC and ARA revised it critically for important intellectual content. PGE, PMM, JCCB, MSC and ARA have given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. PGE, PMM, JCCB, MSC and ARA agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

### ETHICAL APPROVAL

No ethical approval was required because we used public databases.

### DATA AVAILABILITY STATEMENT

Authors do not wish to share the data.

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### ENDNOTE

<sup>1</sup>Standard abbreviation in Spain.

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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## **CORRIGENDUM**

**WILEY**

In the article by Lake et al. (2020), authors discovered an error in the Results section.

On page 2162, in the third paragraph under the Results section, the below section is incorrect:

“Similarly, in hospitals with poorer staffing in 2016, 5% fewer nurses missed care in 2016 ( $p < .01$ ). For total missed care activities, in hospitals with improved (or stable) work environments, 0.86 (or 0.55) fewer care activities were missed in 2016 ( $p < .001$ ). Similarly, in hospitals with poorer staffing in 2016, 0.32 more care activities were missed in 2016 ( $p < .001$ ).”

It should be corrected as follows:

‘Similarly, in hospitals with improved staffing in 2016, 5% fewer nurses missed care in 2016 ( $p < .01$ ). For total missed care activities, in hospitals with improved (or stable) work environments, 0.86 (or 0.55) fewer care activities were missed in 2016 ( $p < .001$ ). Similarly, in hospitals with improved staffing in 2016, 0.32 fewer care activities were missed in 2016 ( $p < .001$ ).’

The authors apologize for this error.

### **REFERENCE**

Lake, E. T., Riman, K. A., & Sloane, D. M. (2020). Improved work environments and staffing lead to less missed nursing care: A panel study. *Journal of Nursing Management*, 28(8), 2157–2165. <https://doi.org/10.1111/jonm.12970>

# Risk factors for newly acquired pressure ulcer and the impact of nurse staffing on pressure ulcer incidence

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## Abstract

**Aim:** To analyse patient factors and nurse staffing-related issues involving hospital-acquired pressure ulcers in patients at two types of hospital.

**Background:** Hospital-acquired pressure ulcers are important for the safety of hospitalized patients. Hospital-acquired pressure ulcers not only cause health problems, but also pose an economic burden to patients. In addition to patient factors such as mobility and skin integrity, hospital factors such as nurse staffing can also affect the management of such patients.

**Methods:** This study is a retrospective review of patient data and analysis of factors related to hospital-acquired pressure ulcers using stratified Cox proportional hazards regression.

**Results:** A total of 53,923 patients were included. The incidence of hospital-acquired pressure ulcers was 0.98 per 1,000 days. Hospital-acquired pressure ulcers were affected by gender, age, previous falls, low oxygen levels, positioning and toilet use. When the levels of nurse staffing were determined as one of the hospital factors, the daily hours of patient care was increased thereby contributing to the reduced incidents of hospital-acquired pressure ulcers.

**Conclusion:** Strategies for preventing hospital-acquired pressure ulcers should be based on the analysis of risk factors.

**Implications for Nursing Management:** Most individual risk factors for hospital-acquired pressure ulcers identified cannot be modified easily in a short time. Nurse staffing should be set at adequate levels to prevent hospital-acquired pressure ulcers.

## KEYWORDS

hours per patient-day, incidence, nurse staffing, pressure ulcer, risk factor

## 1 | INTRODUCTION

Pressure ulcers (PUs) are localized skin injuries that can result in serious health problems (National Pressure Ulcer Advisory Panel, 2014).

It is associated with extended hospital stays and substantial economic burden for patients (Bauer, Rock, Nazzal, Jones, & Qu, 2016). The incidence of hospital-acquired pressure ulcers (HAPUs) is approximately 1.8%–14% (Bauer et al., 2016; Chaboyer et al., 2016; Fu

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Shaw, Chang, Lee, Kung, & Tung, 2014; Schneider & Geraedts, 2016). It varies depending on the detection methodology used. A HAPU is a preventable adverse event. While not all stages of HAPUs are direct causes of death, a deep HAPU is a strong risk factor for death (Brown, 2003; Khor et al., 2014). Thus, it is imperative to prevent the occurrence of HAPUs through various strategies.

Risk factors for HAPUs can be divided into patient factors and hospital factors. The most influential patient factor is restricted mobility (de Azevedo Macena et al., 2017; Li et al., 2019; Primiano et al., 2011). Increasing age, multiple comorbidities and poor nutritional status are other risk factors of HAPUs (Alhaug, Gay, Henriksen, & Lerdal, 2017; Cox & Rasmussen, 2014; Roberts, Chaboyer, & Desbrow, 2015). Hospital factors include health care types and nursing staff. Of different types of health care, nursing homes have higher incidents of PU, suggesting that patients admitted to nursing homes are more vulnerable to PUs (Bates-Jensen, McCreath, & Pongquan, 2009; Cai, Mukamel, & Temkin-Greener, 2010). However, structural issues such as staffing and facilities can also affect the risk of PU development. A number of studies have shown a direct relationship between nurse staffing and patient outcomes such as PUs, falls, infections and other safety indicators (Bae, Kelly, Brewer, & Spencer, 2014; Cho, Chin, Kim, & Hong, 2016; Kim & Bae, 2018; Kim, Kim, Park, & Lee, 2019; Schneider & Geraedts, 2016). The higher the level of nurse staffing, the lower the risk for PU development (Cho, Lee, June, Hong, & Kim, 2016; Choi & Staggs, 2014; Stalpers, de Brouwer, Kaljouw, & Schuurmans, 2015).

Even if nurse staffing has a direct influence on patient safety, hospitals in Korea cannot secure adequate numbers of nurses for inpatient care (OECD, 2018). Each Korean nurse cares for more patients than each nurse in some advanced countries (Aiken et al., 2012; Cho, Lee, et al., 2016). Hence, inpatients who are elderly or restricted in mobility would need a personal caregiver such as a family member or a paid informal caregiver during their hospital stay and treatment. However, economic burden involving the hiring of private caregivers and the low quality of care requires a resolution at a government level. To address this issue, the Korean government revised the nurse staffing policy in 2013 and designated an integrated nursing unit among existing nursing units. An integrated nursing unit, also known as the new inpatient care system in Korea, is established to provide all services by nursing staffs whose number is more than twice compared to that in a general nursing unit. Patients who do not have caregiver could be admitted to this nursing unit, irrespective of their medical department. The staffing standards in this unit differ according to hospital types and characteristics. The number of nursing staffs ranges from 5 to 12 patients cared for by a single registered nurse (RN) and from 25 to 40 patients cared for by a single nursing assistant (NA; Kim, Kim, Park, Jeong, & Lee, 2017).

It is difficult to completely heal HAPUs that occur during hospitalization in a short period of time. Even if HAPUs are completely healed, the recurrence of PU is high (Kuwahara et al., 2005). Therefore, risk factors affecting the development and recurrence of HAPUs during hospitalization must be evaluated. Known risk factors for HAPU development include immobility and impaired

skin integrity (Clements, Moore, Tribble, & Blake, 2014; Coleman et al., 2013; Garcia-Mayor et al., 2018; Li et al., 2019; Primiano et al., 2011). Several assessment tools such as the Braden Scale and the Waterlow scale have been developed to predict the risk of HAPUs (Pancorbo-Hidalgo, Garcia-Fernandez, Lopez-Medina, & Alvarez-Nieto, 2006). However, such risk assessment tools for HAPUs are limited to patient factors. In case of hospital factors, high nurse staffing has been reported to be a significant factor for the development of HAPUs (Schneider & Geraedts, 2016; Stalpers et al., 2015). However, previous studies did not include various patient factors. Hence, factors affecting HAPU development have not been analysed fully. Especially, no study has included both patient and hospital factors in the same model. To clearly predict and prevent HAPUs, it is necessary to consider not only patient factors, but also hospital factors. Therefore, the objective of this study was to investigate patient and nurse staffing factors related to HAPU development, focusing on the effectiveness of nurse staffing policy.

## 2 | METHODS

This was a retrospective cohort study. This study included patients who were admitted to integrated nursing units in Korea from April 2017 to June 2017 to identify the incidence and factors contributing to HAPU development. As these data were extracted from the National Health Insurance (NHI) in Korea, this research was certified as exempted by the IRB (No. E1710/002-003).

### 2.1 | Sample and data sources

We initially included all patients who were hospitalized and discharged from an integrated nursing unit for 3 months. Next, we investigated HAPU incidence and factors related to the newly acquired PUs, excluding patients who already had PUs on their first day of hospitalization. A total of 53,923 patients admitted to 175 hospitals were included in this study. We reviewed the hospitals and patients' data included in the NHI database. Hospital data consist of the type of hospital (tertiary or general) and nurse staffing in a nursing unit. Patient's data consist of gender, age, main disease, level of nursing needs and activities of daily living (ADL). We merged the hospital and patients' data collected daily during patients' hospitalization.

### 2.2 | Variables

Hospital-acquired pressure ulcer incidence was calculated as the number of PUs per 1,000 patient-days. PUs were determined and categorized by nurses according to the guidelines stipulated by the National Pressure Ulcer Advisory Panel (National Pressure Ulcer Advisory Panel, 2014). Accordingly, PUs were divided into four types, ranging from the most superficial PU (stage 1) to the

deepest PU (stage 4; National Pressure Ulcer Advisory Panel, 2014).

Hospital data used in this study include the hospital type and nursing staff including RNs and NAs. Tertiary and general hospitals differ according to organisation and patient. Therefore, the nurse staffing standards also vary according to the type of hospital. The RN-to-patient ratio ranged from 1:5 to 1:7 in a tertiary hospital and from 1:7 to 1:12 in a general hospital. The NA-to-patient ratio varied from 1:30 to 1:40 in a tertiary hospital and from 1:25 to 1:40 in a general hospital. The nurse-to-patient ratio was converted into hours per patient-day (HPPD), dividing the total number of working hours in a day by the number of nurses in charge.

We extracted the patients' age, gender and the purpose of hospital visit, that is, the need for surgery or surgical procedures and the main diagnosis. Moreover, we used health status data such as the level of nursing needs and assistance for activities of daily living (ADL). These data were collected daily during hospitalization. The level of nursing needs was evaluated using 10 indicators and assessed according to the criteria. The score is high if patients meet several criteria. Among the indicators monitored, four indicators were based on performance frequency. These four indicators were: vital signs (7 times/day), intake and output (4 times/day), medication via intravenous route (IV; 6 times/day) and medication via other routes (subcutaneous, intramuscular or intradermal but not oral medication, 6 times/day). The other six indicators were assessed depending on whether or not the nurse provided services such as suction, monitoring, oxygen saturation analysis, drainage care, application of restraints and professional care such as transfusion, inotropic or anti-cancer therapy. The ADL was assessed by the degree of functional ability required to move in bed (positioning), ambulate, use toilet facilities and eat. The score in each area ranged from 0 to 2, indicating three levels: independence (requires no assistance), partial dependence (some assistance is needed) and total dependence (complete assistance is needed).

## 2.3 | Analysis

We conducted descriptive statistical analysis to report characteristics of hospitals and patients. The HAPU incidence was calculated as HAPUs per 1,000 patient-days. HAPU stages were reported as frequencies and percentages. Nurse staffing was reported as means and SD of HPPD. It was calculated according to nurse staff-to-patient ratio.

Survival analysis was conducted to estimate the cumulative probability of HAPUs and investigate risk factors related to HAPU development. In survival analysis, HAPU development represented the occurrence of the event. The duration of hospitalization was indicated by the timing of the event. First, the Kaplan–Meier hazard curve was used to show differences in the probability of HAPU according to hospital type. Next, we conducted log-rank tests to analyse the difference between two curves. The Cox proportional hazards regression was used to correlate the probability of HAPUs

with covariates. Stata/SE version 14 was used for all statistical analyses. Before analysis, we computed and plotted the logarithm of the cumulative baseline hazards for predictors to assess the proportional hazard assumptions. In the case of hospital type (tertiary and general hospitals), the resulting curves were not parallel. The proportional hazard assumptions of other predictors were not violated (Mehrotra, Su, & Li, 2012). We also conducted stratified Cox proportional hazards regression analysis which treated hospital types as strata (Mehrotra et al., 2012; Oakes & Feng, 2010) to increase the accuracy of estimation and determine the effect of coefficient of patient factors and nurse staffing on HAPU. Univariate regression analysis with independent variables was conducted prior to multiple analysis. Variables with  $p < .15$  in the univariate analysis were selected for the multivariate model. Results of the stratified Cox regression analysis are reported as hazard ratios and with 95% confidence intervals.

## 3 | RESULTS

### 3.1 | Patients' characteristics

A total of 53,923 patients admitted to tertiary and general hospitals in Korea were included in this study. Their characteristics are summarized in Table 1. The proportion of women was higher than that of men in general hospitals, while the proportion of men was higher in tertiary hospitals. The mean age of patients was 61.49 years. The age of patients in tertiary hospitals was higher than those admitted to general hospitals. Approximately 50% of patients in tertiary hospitals were admitted for treatment of neoplasms. Most (90.5%) patients were admitted because of a surgical procedure. The mean score of nursing needs of patients admitted to tertiary hospitals was 0.824, which was higher than that of patients in general hospitals (0.528). Among the 10 categories of nursing needs, professional care accounted for 27.1% was the highest in tertiary hospitals, followed by vital sign monitoring, IV medication, input and output assessments. For patients admitted to general hospitals, vital sign monitoring was the most frequently provided nursing care service, followed by IV medication and professional care. Dependence on assistance for ADL was also high in patients at tertiary hospitals. A higher number of patients showed partial dependence in four areas: ambulation (43.7%), eating (36.7%), toilet use (26.4%) and positioning in bed (24.3%). Patients were hospitalized for 7.58 days on average. The length of stay was shorter in tertiary hospitals (7.00 days) than in general hospitals (7.71 days).

### 3.2 | HPPD by RN and NA, and pressure ulcer incidence

Hours per patient-day data by RNs and NAs from 175 hospitals are shown in Table 2. The mean RN-HPPD was 2.86 hr, which was higher in tertiary hospitals (4.09 hr) than in general hospitals (2.59 hr). In

	Total (n = 53,923)	Tertiary hospital (n = 10,370)	General hospital (n = 43,553)
<b>Gender</b>			
Women	29,406 (54.5)	4,583 (44.2)	24,823 (57.0)
Men	24,517 (45.5)	5,787 (55.8)	18,730 (43.0)
Age, mean ± SD	61.49 ± 19.96	62.31 ± 16.73	61.29 ± 20.65
<b>Disease</b>			
Neoplasm	10,074 (18.7)	5,202 (50.2)	4,872 (11.2)
Injury	7,934 (14.7)	475 (4.6)	7,459 (17.1)
Musculoskeletal	6,299 (11.7)	474 (4.6)	5,825 (13.4)
Digestive	6,283 (11.7)	1,269 (12.2)	5,014 (11.5)
Respiratory	4,722 (8.8)	693 (6.7)	4,029 (9.3)
Others	18,611 (34.5)	2,257 (21.8)	16,354 (37.5)
<b>Surgery/procedure</b>			
Yes	48,779 (90.5)	9,962 (96.1)	38,817 (89.1)
No	5,141 (9.5)	407 (3.9)	4,734 (10.9)
Nursing needs, mean ± SD	0.585 ± 1.020	0.824 ± 1.190	0.528 ± 0.967
Vital sign check	6,860 (15.8)	1,860 (17.9)	5,000 (9.3)
I&O check	2,662 (6.1)	1,052 (10.1)	1,610 (3.0)
Monitoring	2,550 (5.9)	443 (4.3)	2,107 (3.9)
SpO <sub>2</sub> monitoring	2,523 (5.8)	465 (4.5)	2,058 (3.8)
Suction	279 (0.6)	54 (0.5)	225 (0.4)
IV medication	5,803 (13.3)	1,305 (12.6)	4,498 (8.3)
Other medication	1,104 (2.5)	69 (0.7)	1,035 (1.9)
Drainage care	1,793 (4.1)	397 (3.8)	1,396 (2.6)
Restraint apply	684 (1.6)	91 (0.9)	593 (1.1)
Professional care	7,300 (16.8)	2,809 (27.1)	4,491 (8.3)
ADL dependence, mean ± SD	1.67 ± 2.25	1.84 ± 2.32	1.63 ± 2.23
<b>Position</b>			
Partial	9,209 (17.1)	2,436 (23.5)	6,773 (15.6)
Total	3,880 (7.2)	795 (7.7)	3,085 (7.1)
<b>Ambulating</b>			
Partial	17,324 (32.1)	3,652 (35.2)	13,672 (31.4)
Total	6,253 (11.6)	1,129 (10.9)	5,124 (11.8)
<b>Eating</b>			
Partial	16,434 (30.5)	3,168 (30.5)	13,266 (30.5)
Total	3,326 (6.2)	739 (7.1)	2,587 (5.9)
<b>Toilet use</b>			
Partial	8,144 (15.1)	2,215 (21.4)	5,929 (13.6)
Total	6,113 (11.3)	1,128 (10.9)	4,985 (11.4)
Length of stay, mean ± SD	7.58 ± 6.38	7.00 ± 5.82	7.71 ± 6.49

Note: Partial dependent patients need some assistance, and total dependent patients need complete assistance.

Abbreviations: ADL, activities of daily living; I&O, input and output; IV, intravenous; SD, standard deviation; SpO<sub>2</sub>, saturation of oxygen.

contrast to RN-HPPD, the mean NA-HPPD was 0.78 hr. This was higher in general hospitals. The HAPU incidence in this study was 0.98 cases per 1,000 patient-days. Tertiary hospitals showed

higher incidence (1.05/1,000 patient-days) than general hospitals (0.97/1,000 patient-days). Stage 1 HAPUs and stage 2 HAPUs accounted for 35.2% and 64.8% of all PU cases, respectively. The

**TABLE 1** Characteristics of inpatients at tertiary and general hospitals

**TABLE 2** Hours per patient-days and pressure ulcer incidence

	Total (n = 175)	Tertiary hospital (n = 38)	General hospital (n = 137)
RN-HPPD, mean ± SD	2.86 ± 0.74	4.09 ± 0.35	2.59 ± 0.31
NA-HPPD, mean ± SD	0.78 ± 0.11	0.75 ± 0.09	0.79 ± 0.10
Pressure ulcer per 1,000 days, mean ± SD	0.98 ± 1.55	1.05 ± 1.72	0.97 ± 1.50
Case of pressure ulcer, n (%)	401 (100.0)	76 (100.0)	325 (100.0)
Stage 1	141 (35.2)	20 (26.3)	121 (37.2)
Stage 2	260 (64.8)	56 (73.7)	204 (62.8)

Note: Stage 1 pressure ulcers only affect the upper layer of skin. Stage 2 pressure ulcers go deeper below the surface of the skin.

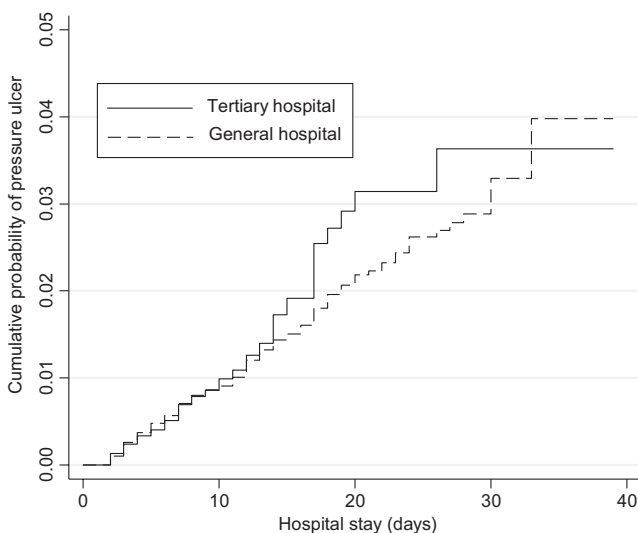
Abbreviations: HPPD, hours per patient-days; NA, nursing assistant; RN, registered nurse; SD, standard deviation.

proportion of stage 2 HAPUs was higher in tertiary hospitals (73.7%) than in general hospitals (62.8%).

### 3.3 | Cumulative probability of pressure ulcer and its influencing factors

The cumulative probability of a PU during a hospital stay is presented in Figure 1. When patients were hospitalized longer, they were more likely to have new PU development. According to hospital type, there was no significant difference in cumulative probability ( $\chi^2 = 0.51, p = .475$ ).

Results of Cox proportional hazards regression survival analyses are shown in Table 3. Based on univariate analysis, a PU is more likely to develop in male and elderly patients. Moreover, there was a high probability of PU development after patient fell (HR = 19.55,  $p < .001$ ). Most variables of nursing needs and ADL dependence were significantly associated with HAPU development. Professional



**FIGURE 1** Cumulative probability of pressure ulcer. Note: Log-rank test for equality of survivor functions  $\chi^2 = 0.51 (p = .475)$

care alone was not significantly associated with HAPU development. In staffing, only RN-HPPD was significantly associated with HAPU in univariate analysis.

Multivariate analysis also showed that new HAPUs are more likely to develop in male and elderly patients. Patients sustaining falls are 18.94 times more likely to develop HAPUs compared with patients without falls. In cases requiring several types of nursing care, most of them were not associated with HAPUs in multivariate analysis. Only oxygen saturation (SpO<sub>2</sub>) monitoring was a significant factor in PU development. Hence, patients with low oxygen levels are 1.98 times more likely to develop HAPUs ( $p < .001$ ). Among different ADLs, dependence on bed positioning and toilet use was significantly associated with HAPUs. According to the level of dependence, fully dependent patients are more likely to develop PUs than partially dependent patients. The risk for HAPU development was 5.84-fold higher for patients fully dependent on assistance for bed positioning compared to patients without such need. In multivariate analysis, HPPD by RNs and NAs was a significant factor in developing HAPUs. HAPUs are less likely to develop during higher levels of RN-HPPD (HR = 0.20,  $p < .001$ ) and NA-HPPD care (HR = 0.12,  $p < .001$ ).

## 4 | DISCUSSION

This study investigated the patient characteristics and nursing needs associated with HAPU development. The HAPU incidence was 0.98 per 1,000 patient-days, which was lower than the results of previous studies (Bauer et al., 2016; Fu Shaw et al., 2014; Schneider & Geraedts, 2016). The HAPU incidence, which might be under-reported, varies with the detection methodology used. Regardless of the used criteria, the incidence of HAPUs was extremely low which can be attributed to the focus on the outcome of integrated nursing units, where nurses monitor patients' skin and document the stage of HAPUs daily. Moreover, nurses are required to regularly reposition patients with impaired mobility. Periodic skin assessment and repositioning are components of an effective PU prevention strategy for HAPU (Chaboyer et al., 2016;

**TABLE 3** Cox proportional hazards regression analysis of development of pressure ulcers

	Univariate			Multivariate		
	Hazard ratio	95% CI	p-Value	Hazard ratio	95% CI	p-Value
Gender (ref: female)	1.36	1.12–1.65	.002	1.54	1.26–1.88	<.001
Age	1.01	1.00–1.01	<.001	1.00	1.00–1.01	.017
Surgery/procedure	0.95	0.67–1.36	.787			
Fall	19.55	10.08–37.93	<.001	18.94	9.69–37.02	<.001
Nursing needs						
Vital sign check	2.45	1.95–3.07	<.001	0.99	0.77–1.27	.949
I&O check	2.57	1.92–3.43	<.001	1.29	0.96–1.75	.091
Monitoring	2.37	1.71–3.28	<.001	0.84	0.59–1.21	.351
SpO <sub>2</sub> monitoring	4.82	3.82–6.06	<.001	1.98	1.53–2.57	<.001
Suction	4.80	3.01–7.64	<.001	0.92	0.57–1.51	.751
IV medication	2.12	1.67–2.68	<.001	1.21	0.94–1.55	.134
Other medication	2.00	1.36–2.95	<.001	1.37	0.92–2.03	.122
Drainage care	3.66	2.83–4.74	<.001	1.22	0.93–1.61	.158
Use of restraints	4.80	3.47–6.65	<.001	0.94	0.66–1.33	.722
Professional care	1.18	0.92–1.51	.193			
ADL dependence (ref: independence)						
Position						
Partial	5.55	4.19–7.35	<.001	3.37	2.27–5.01	<.001
Total	16.16	12.40–21.04	<.001	5.84	3.63–9.40	<.001
Ambulating						
Partial	2.18	1.59–2.99	<.001	0.66	0.44–1.00	.049
Total	11.00	8.26–14.64	<.001	0.68	0.42–1.09	.110
Eating						
Partial	3.24	2.48–4.22	<.001	1.32	0.96–1.82	.085
Total	11.67	8.90–15.30	<.001	1.25	0.85–1.84	.265
Toilet use						
Partial	3.51	2.55–4.82	<.001	1.73	1.13–2.65	.012
Total	12.92	10.00–16.70	<.001	3.25	2.05–5.14	<.001
Staffing						
RN-HPPD	0.47	0.34–0.67	<.001	0.20	0.13–0.30	<.001
NA-HPPD	0.45	0.19–1.08	.073	0.12	0.04–0.34	<.001

Note: Partial dependent patients need some assistance. Total dependent patients need complete assistance.

Abbreviations: ADL, activities of daily living; CI, confidence interval; HPPD, hours per patient-day; NA, nursing assistant; RN, registered nurse.

Tayyib, Coyer, & Lewis, 2016). Partial application of the prevention strategy might have contributed to the low incidence of HAPUs in this study. Since most patients in integrated nursing units are hospitalized for a short time, the average length of stay in our study was short (7.58 days). Such short period of hospitalization was associated with a low HAPU incidence. Since not all hospital units are integrated nursing units, the HAPU incidence in this study cannot be applied to the whole of South Korea.

Regarding the initial stage of HAPU, 64.8% were at stage 2 and the remainder were at stage 1. The proportion of stage 2 HAPUs was higher in tertiary hospitals than in general hospitals (62.8%). No deep ulcer such as stage 3 or stage 4 was detected. Previous

studies have reported that the proportion of stage 1 is higher than stage 2 or higher (Alhaug et al., 2017; Chaboyer et al., 2016; Gray & Giuliano, 2018). In the present study, the proportion of stage 2 was relatively high even in the absence of deep ulcers. Further studies are needed because of several factors such as accuracy of assessment, and late detection might have resulted in a high proportion of stage 2 HAPUs.

Since patients admitted to tertiary hospitals had high nursing needs and ADL dependence, the cumulative probability of HAPUs in tertiary hospitals was not significantly different from the general hospitals. Despite the risk of PUs, similar findings in tertiary and general hospitals analysed in this study might be attributed to



differences in nurse staffing. The average standard of nurse staffing was 1:6 in a tertiary hospital while 1:10 in a general hospital (Kim et al., 2017). The gap between these two hospital types was quite different, suggesting that the RN-HPPD in tertiary hospitals (4.0 hr) was 1.6 hr more than in general hospitals (2.4 hr). Despite the poor condition of patients and the severity of their nursing needs and assistance with ADL in tertiary hospitals, the risk of HAPU development was low because of adequate nursing staff. Therefore, appropriate and adequate levels of nursing staff are critical for the prevention of HAPU.

The effectiveness of nurse staffing on HAPU development was also analysed via Cox regression. In multivariate Cox regression analysis, HPPDs provided by RNs and NAs were significant factors influencing the development of HAPUs. The increase in the RN-HPPD or NA-HPPD hours lowered the likelihood of HAPU development. Several studies have reported the association between high levels of nursing staff and better outcomes (Schneider & Geraedts, 2016; Stalpers et al., 2015) not only in preventing HAPUs and patient falls (Cho, Lee, et al., 2016; Kim & Bae, 2018), but also in reducing mortality rates (Kim & Bae, 2018). The high incidence of HAPUs in patients has been associated with low levels of nurse staffing (Schneider & Geraedts, 2016; Stalpers et al., 2015). In the present study, an extra hour of nursing service provided by RN reduced the risk for HAPU development by 80% (HR = 0.20, 95% CI: 0.13–0.30). Hence, adequate nurse staffing might contribute to the reduction of HAPU incidence in hospitals, despite the patient-related risk factors. Besides RNs, levels of NA staffing also affected the risk of HAPU development. Since supportive care such as patient repositioning is a significant factor in the prevention of HAPUs (Chaboyer et al., 2016; Joyce, Moore, & Christie, 2018), NA staffing issues might be associated with HAPU development in this study, similar to the results of previous studies. Total staffing as well as the RN skill mix can affect HAPU development (Choi & Staggs, 2014; Schneider & Geraedts, 2016). These findings suggest that all nursing staff personnel can contribute to the prevention of HAPUs: RNs can evaluate patients' skin and other risk factors, while NAs provide ADL support. It is crucial to protect patients' safety. Thus, hospital managers should identify risk factors in patients and ensure appropriate RN staffing levels. The entire nursing workforce is needed to reduce these risks.

Among individual factors, gender, age and previous falls were significant risk factors for HAPU development. The risk of HAPU development was higher in men and the elderly, consistent with results of previous studies (Bauer et al., 2016; Primiano et al., 2011). Patients who experienced falls during hospitalization had an extremely high risk of subsequent HAPU development (HR = 18.94,  $p < .001$ ). It might be attributed to the change in mobility after a fall. If a patient fell, the risk for HAPUs is significantly increased because the patient is usually restricted from moving due to fall-related injuries (Doran et al., 2014). The patient's mobility is more likely to be fully restricted in the case of a fall-related injury. The risk of HAPUs after falls is the most influencing patient factor in this study;

adequate nursing staff is needed to provide preventative care to such patients.

Among nursing needs, only oxygen saturation monitoring was significantly associated with HAPUs. Patients who are measured for oxygen saturation have the potential for low oxygen levels. There is a lack of research for investigating the direct relationship between oxygen levels and HAPUs. However, low oxygen level might be related to peripheral perfusion and tissue oxygenation, and it may lead to the breakdown of skin integrity (Clements et al., 2014; Garcia-Mayor et al., 2018). Low oxygen levels are not included among the assessment scales such as the Braden scale or the Waterlow scale (Pancorbo-Hidalgo et al., 2006). However, since low oxygen level is likely to affect skin integrity, further studies investigating the relationship between oxygen level and HAPUs are needed.

Mobility impairment is a significant factor in HAPU development (Coleman et al., 2013; Li et al., 2019; Primiano et al., 2011). Patients who need repositioning in bed and toilet use have high risks for HAPU development. Patients with full dependence on positioning were at a 5.84-fold higher risk of developing HAPUs than patients without any restrictions. Mobility was included as a factor in all assessment tools because previous studies showed its role as a risk factor for HAPU hence requiring nurses' attention. Patients with dependence on toilet use were at high risk for HAPUs as well. Since it is difficult for these patients to walk to the toilet and clean themselves, skin integrity around the buttocks might be disrupted due to incontinence and poor hygiene (Garcia-Mayor et al., 2018). Excessively moist skin compromises tissue strength and increases the risk of skin damage under pressure and shear forces (Bates-Jensen et al., 2009; Coleman et al., 2013). In addition to restricted mobility contributing to dependence of toilet use, patients might have two coexisting ADL problems. Patients with limited position in bed and toilet use were more likely to develop HAPUs compared to patients who had a single limitation. It is difficult to resolve these limitations in a short span of time. Thus, active preventive strategies are needed for patients with compound risk factors for HAPUs. Adequate nursing staff personnel are needed to assess risk factors and implement prevention strategies.

The study has few limitations. First, results were analysed only in the case of integrated nursing units because we could not use data from other nursing units. Therefore, the incidence of HAPU cannot be generalized to the entire Korea. Second, this study did not verify whether all hospitals adopted similar reporting criteria for HAPU. It did not include all factors related to HAPU because only secondary data were analysed.

## 5 | CONCLUSION

This study analysed patient factors and nursing staff-related issues influencing the development of HAPU. Gender, age, previous falls, low oxygen levels and dependence of position in bed and toilet use were significant patient factors influencing HAPUs. To prevent HAPUs, risk factors should be analysed first so that prevention

strategies could be implemented accordingly. In addition, adequate and appropriate nurse staffing could contribute to the prevention of HAPUs.

## 6 | IMPLICATIONS TO NURSING MANAGEMENT

This study showed that several individual risk factors and factors related to nurse staffing were associated with HAPUs. Appropriate inpatient care via preventative nursing services tailored to individual patients' risk factors can reduce the incidence of HAPUs. As most risk factors are not easy to modify in a short time, preventive strategies in clinical practice should be developed and applied according to risk factors identified in this study. Moreover, nurse staffing should be equipped adequately. Given the current state of nursing shortage worldwide, further studies are needed to maintain meaningful levels of RNs and NAs at hospitals with similar patient severity and characteristics.

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### ETHICAL APPROVAL

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