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Patient Safety Culture and Speaking Up Among Health Care Workers

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ABSTRACT (ENGLISH)

SUMMARYPurpose

Although previous research showed the importance of safety culture on health care workers' speaking up behaviors, it is not clear how particular safety culture domains are associated with the speaking up behaviors of hospital staff. Also, researchers have suggested that health care workers' speaking up behaviors vary by profession, but there has been limited research into such differences. Thus, this study examined differences in perceptions of patient safety culture and the promotive and prohibitive speaking up behaviors of health care workers by profession and investigated the relationships between patient safety culture and the two types of speaking up behaviors.

Methods

A descriptive correlational study was conducted using secondary data collected through an online survey of health care workers at a private, nonprofit, tertiary-level teaching hospital in South Korea. The sample (N = 831) consisted of nurses (54.0%), physicians (13.0%), and other licensed and unlicensed hospital personnel (33.0%). Analyses of variance were conducted to examine differences in study variables by profession. Hierarchical regression analyses were conducted to evaluate the effects of the seven patient safety culture factors on promotive and prohibitive voice after controlling for tenure and profession.

Results

Perceptions of safety culture and promotive voice behaviors were higher for physicians compared with nurses. Communication openness, reporting patient adverse events, and unit supervisors' and hospital managements' support for patient safety were significant predictors of both types of voice behaviors.

Conclusion

Hospital administrators and unit managers should create a supportive environment where staff feel free to voice their concerns and suggestions. They should also pay attention to the varying perspectives held by different groups of hospital workers and their different voice behaviors. Knowing which dimensions of patient safety culture are most strongly related to health care workers' voice behaviors can guide patient safety improvement activities in health care organizations.

FULL TEXT

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The Moderated Mediating Effects of Nutrition and Physical Activity Between Fatigue and Quality of Life in Childhood Cancer Survivors

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ABSTRACT (ENGLISH)

SummaryPurpose
The aim of this study was to investigate the associations between nutrition, physical activity, fatigue, and quality of life (QoL) among childhood cancer survivors. The specific purpose was to examine whether nutrition mediated and physical activity moderated the relationship between fatigue and QoL in this population.

Methods
A pooled sample of 120 childhood cancer survivors was recruited at pediatric oncology wards and ambulatory settings between August 2020 and May 2021. We collected data on participants’ demographic characteristics, fatigue, nutritional status, physical activity, and QoL. We then adapted Hayes Process Macro to examine the mediating and moderating effects of nutrition and physical activity on the relationship between fatigue and QoL.

Results
In models adjusted for age and sex, (1) the simple mediation analysis identified the mediating effect of nutrition on the relationship between fatigue and QoL; and (2) the mediation and moderation analysis identified that the direct effect of nutrition between fatigue and QoL was significant when adding (a) physical activity and (b) fatigue × physical activity. There were significantly decreasing trends in physical activity at 1 standard deviation

below the mean and at the mean, but not at 1 standard deviation above the mean.

Conclusions

Our findings demonstrate that nutrition mediated and physical activity moderated the relationship between fatigue and QoL. This highlights an opportunity to enhance QoL among childhood cancer survivors through healthy lifestyle interventions. To ensure that future interventions address children's needs and promote the greatest impact, such interventions should include nutrition and physical activity components that involve nurses, pediatric oncology physicians, nutritionists, and physical therapists.

FULL TEXT

Introduction

For children aged 1 through 14 years in high-income countries such as Taiwan and the United States, cancer is the second leading cause of death [1,2]. Due to advances in cancer treatment, the 5-year survival rate has dramatically improved over the past 60 years, from less than 25.0% to more than 80.0% [3]. The term “childhood cancer survivors” indicates people who were first diagnosed with cancer under the age of 18. A children diagnosed with cancer is considered to be a childhood cancer survivor from the time of diagnosis until the end of life [4]. However, despite treatment advances, childhood cancer survivors continue to experience short- and long-term adverse effects [5]. This has turned research attention from “how to survive” to “how to live with cancer well.”

For childhood cancer survivors, cancer-related fatigue (CRF) is one of the most distressing adverse effects [6]. CRF is both more severe than fatigue in healthy people and less likely to be relieved by sleep or rest [7]. While CRF typically improves after treatment is completed, it continues to affect long-term survivors [6]. Persistent CRF not only negatively correlates with nutritional status [8,9] and physical activity [10], it also negatively interferes with quality of life (QoL) [11]. These findings support that fatigue causes these declines, but these associations have not been examined by a single study. Because CRF negatively correlates with nutritional status [8,9] in childhood cancer survivors, and nutritional status positively affects QoL [12,13], we hypothesize that nutrition mediates the relationship between CRF and QoL. In addition, we hypothesize that physical activity moderates the relationship between CRF and QoL, given that physical activity significantly reduces CRF in childhood cancer survivors [14] and significantly enhances QoL in healthy children [15], while fatigue also significantly affects QoL in childhood cancer survivors [11]. Systemic inflammation may be one explanation for these associations. Both CRF [16] and malnutrition [17] are known to activate pro-inflammatory cytokines. This results in systemic inflammation, which creates a catabolic situation and leads to worse QoL in people with cancer [18,19]. Physical activity plays a significant role in reducing the inflammatory protein at sites of inflammation [20]. Thus, proper nutrition and physical activity may have the potential to inhibit the systemic inflammation reaction [21–23].

Evidence has shown that a healthy lifestyle, consisting of proper nutrition and physical activity, improves the relationship between fatigue and QoL [24,25]. However, research into optimizing childhood cancer survivors’ QoL through healthy lifestyle has been limited. The prior research evaluating QoL in association with lifestyle factors has focused primarily on physical activity [24]. Research studies that integrate nutrition, within a single study, to examine the associations between nutrition, physical activity, fatigue, and QoL for childhood cancer survivors are extremely limited. In view of the potential manageability of nutrition and physical activity behaviors, such a study could be important to facilitating timely development of healthy lifestyle interventions for this population.

Aim

The aim of this study was to investigate the associations between nutrition, physical activity, fatigue, and QoL among childhood cancer survivors. Specifically, our purpose was to examine whether (a) nutrition mediated and (b) physical activity moderated the relationship between fatigue and QoL for childhood cancer survivors.

Methods Design, setting, and sample

This correlational study was conducted in accordance with the STROBE guidelines. A pooled sample of 120 childhood cancer survivors were recruited at pediatric oncology wards and ambulatory settings in a university-based hospital in Taiwan that is well-known for pediatric oncology care. Participants were recruited between August 2020 and May 2021, using the following inclusion criteria: (1) age between 3 and 18 years; (2) inpatient receiving active treatment in pediatric oncology/hematology wards, outpatient receiving active treatment in ambulatory settings, or survivor (having completed cancer treatment) now receiving care in ambulatory settings; and (3) ability to understand the study information. We used G-Power version 3.1.9 (Franz Faul, Universität Kiel, Germany) to compute sample size a priori. Although a generally accepted power is .80 [26], higher power is more desirable if it is practically feasible [27]. A minimum of 108 participants would be needed to reach a sufficient power (90.0%), alpha error (.05), and effect size (0.15).

Ethical considerations

This study was approved by the institutional review board of the National Taiwan University Hospital, Approval no. 202001023RINA. Upon agreeing to participate, the child participants provided informed assent and their parents provided informed consent. Once the formal consents were received from the participants and their parents (guardians), all of the measures would be collected. All participants were also informed they had the right to withdraw from the study at any time for any reason.

Procedure

A research assistant approached participants who met the inclusion criteria, along with their parents (guardians), and explained the research aims and procedures. Those who agreed to participate were given a set of questionnaires that included a demographic survey, the Pediatric Quality of Life Inventory Multidimensional Fatigue scale (PedsQL-MFS), the Exercise Involvement Scale, and the Pediatric Quality of Life Inventory 3.0 Cancer Module (PedsQL-C). Both a parent and a research assistant were present when children answered the study questionnaires in case assistance was needed. After completing questionnaires, they were brought to the examination room for evaluating the nutritional status (phase angle) measured by a bioelectrical impedance analysis (BIA) device (InbodyS10, Biospace Co., Seoul, Korea).

Measures

Demographics. Survey items collected demographic data on participants' age, sex, cancer diagnosis, treatment status, years in current treatment status, and body mass index (BMI). The survey also collected data on the child's, father's, and mother's education level.

Fatigue. We used the Mandarin version of the PedsQL-MFS to measure fatigue. This scale was developed to assess fatigue among children with cancer aged 2 to 18 years [28]. It is an 18-item 5-point Likert scale from 0 (never) to 4 (almost always). There are three dimensions: general fatigue (6 items), sleep/rest fatigue (6 items), and cognitive fatigue (6 items). In this study, children 7 years and younger used the proxy-reported versions of the scale for their age group (2–4 years and 5–7 years), and those aged 8 to 18 years used the self-report version. Total scores were transformed on a scale from 0 to 100. Based on the PedsQL-MFS manual, higher scores indicate less fatigue, but we reversed the direction so that higher scores indicated greater fatigue, which seemed more intuitive. Studies have demonstrated the PedsQL-MFS's excellent reliability and validity among children with cancer [28–31]. The Cronbach αs in the current study were between .72 and .93 across the three age groups.

Nutritional status. BIA is a method for acquiring body composition parameters (e.g., phase angle, body fat, muscle mass) that has the advantages of being noninvasive, safe, easy to use, and offering immediate results [32]. Phase angle represents cellular integrity, inflammation, nutritional status, and immune status [33] and has been recommended as a prognostic tool for nutritional screening of children [34–36]. To complete the phase angle measures with the InbodyS10 device, participants had to fast for at least 2 hours, empty their bladder, measure their height and body weight with minimal clothing, and rest for at least 10 minutes before the BIA measurement. During measurement, eight electrodes were attached to hands and feet (this process took around 2 minutes).

Phase angle values have a pattern that holds regardless of gender: values increase progressively from the first years of life until 18 years of age, stabilize from age 19 until 48 years of age, and then decrease progressively thereafter [37]. The phase angle reference values for boys are 5.60° for 3- to 5-year-olds, 6.00° for 6- to 12-year-olds, 6.40° for 13- to 15-year-olds, and 7.30° for 16- to 18-year-olds. Reference values for girls are 5.40° for 3- to 5-year-olds, 5.90° for 6- to 12-year-olds, 6.30° for 13- to 15-year-olds, and 6.40° for 16-to 18-year-olds [37]. Higher scores within the relevant age strata indicate better nutritional status [36]. We set a cutoff point for poor nutritional status at less than 4.00°, which is the same cutoff used for adults with cancer [38].

Physical activity. We used a three-item Exercise Involvement Scale to evaluate participants' degree of physical activity in the prior week [39]. The item regarding exercise frequency ("During the last week, how many times did you engage in exercise?") has six graded response options ranging from 1 (zero) to 6 (5 or more times a week); higher scores indicate more frequent exercise. The item regarding exercise intensity ("During the past week, how much effort did you put into exercising each time?") also has six graded responses: 1 (extremely easy), 2 (very easy), 3 (easy), 4 (a little hard), 5 (very hard), and 6 (extremely hard); higher scores indicate greater amount of effort invested in exercise. The item regarding exercise duration ("During the past week, how much time did you spend exercising per time?") again has six graded responses, starting at 1 (0–10 minutes) and increasing in 10-minute intervals to 6 (51–60 minutes); higher scores indicate longer average duration. The equation is as follows: exercise involvement = exercise frequency × (exercise intensity + exercise duration). Again, higher scores indicate higher levels of physical activity.

Quality of life. QoL was measured using the Mandarin version of the PedsQL-C. This scale was developed to assess the QoL of children with cancer aged 2 to 18 years [40]. There are eight dimensions: pain and hurt, nausea, procedural anxiety, treatment anxiety, worry, cognitive problems, perceived physical appearance, and communication. Scale items use a 5-point Likert scale from 0 (never) to 4 (almost always). PedsQL-C has 25 items for children aged 2 to 4 years, 26 items for those aged 5 to 7 years, and 27 items for those aged 8 to 18 years. Total scores were transformed on a scale from 0 to 100, with higher scores indicating better QoL. Studies have demonstrated the PedsQL-C's excellent reliability and validity among children with cancer [11]. The Cronbach αs in the current study were between .75 and .91 across the three age groups.

Statistical analysis

All statistical analyses were performed using SPSS 20.0 (SPSS Inc., Chicago, IL). We used frequency and percentage to analyze participants' categorical demographic characteristics; we used mean and standard deviation to characterize the interval/ratio demographic characteristics and main variables. Pearson correlation analysis was used to examine the bivariate correlations between fatigue, nutrition, physical activity, and QoL.

Hayes Process Macro with SPSS was used for the analysis [41]. First, to identify the simple mediation, we examined whether nutrition mediated the relationship between fatigue and QoL [41]. Once the simple mediation was identified, we identified the mediation and moderation in Model 5 by examining whether both nutrition mediated and physical activity moderated the relationship between fatigue and QoL [41]. Because previous studies have pointed out gender and age differences in phase angle [37,42], we controlled for covariates (age and sex) in all model analyses. Finally, we plotted the conditional effects of physical activity at low (1 standard deviation below the mean value of physical activity), moderate (mean value of physical activity), and high (1 standard deviation above the mean value of physical activity) levels.

Results Descriptive analysis

Of the 124 participants who agreed to participate and completed all measures, 4 were excluded due to poor-quality BIA measurements. This resulted in 120 included participants (96.8%; 77 boys and 43 girls). The descriptive analyses of participants' age, sex, diagnosis, BMI status, and child's, father's, and mother's education levels are summarized in Table 1.

The mean (*SD*) scores in fatigue, nutrition, physical activity, and QoL were 22.48 (15.51), 4.32 (0.75), 28.65 (13.75), and 79.14 (14.29), respectively (see Table 2). We calculated the percentage of participants with a phase angle less than 4.00° to obtain a 38.3% prevalence of poor nutrition.

Bivariate analysis

Each pair among the four variables was significantly correlated (r range, −.60 to .38), except for the pair of nutrition with physical activity (r = .16; see Table 2). This indicated that although the two modifiable factors (nutrition and physical activity) were not correlated with each other, each was individually correlated with both fatigue and QoL.

Simple mediation analysis

After adjusting for age and sex, simple mediation analysis found both a significant total effect (β = −.55, 95% confidence interval [CI −0.69 to −0.42) and a significant direct effect (β = −.52, 95% CI −0.66 to −0.39) of nutrition on the relationship between fatigue and QoL. We further examined the indirect effect and found that the 95% CI (−0.08 to −0.00) did not include zero. This indicated that after adjusting for age and sex, nutrition partially mediated the adverse effect of fatigue on QoL (see Figure 1).

Mediation and moderation analysis (Model 5)

In the mediation and moderation analysis, after adjusting for age and sex, the direct effect of nutrition on the relationship between fatigue and QoL was significant (β = −.39, 95% CI −0.55 to −0.24) when adding physical activity (β = .21, 95% CI 0.05 to 0.37) and fatigue × physical activity (β = .01, 95% CI 0.00 to 0.02). This indicates that all paths in Model 5 were significant (*p* Figure 2).

Conditional moderating effect on the direct effect of fatigue on QoL

Figure 3 demonstrates how the conditional moderating effect of physical activity affected the relationship between fatigue and QoL after controlling for nutrition. There were significantly decreasing trends in the coefficients of conditions of physical activity at 1 standard deviation below the mean (low physical activity) (β = −.56, 95% CI −0.72 to −0.40) and at the mean (moderate physical activity) (β = −.39, 95% CI −0.55 to −0.24). There was no significantly decreasing trend in condition of physical activity at 1 standard deviation above the mean (high physical activity) (β = −.23, 95% CI −0.47 to 0.01). These results indicate that fatigue was negatively and significantly correlated with QoL among children with low and moderate levels of physical activity.

Discussion

Our study identified the associations between nutrition, physical activity, fatigue, and QoL among childhood cancer survivors. Responding to the specific purpose, our finding identified the mediating role of nutrition between fatigue and QoL, which indicates that enhancing children's nutrition could reduce the adverse effect of fatigue on QoL. This is supported by prior studies [13,43].

When we compare the mean phase angle of our study sample with the estimated reference values for healthy children's phase angles in Germany [37], it appears likely that our participants had worse nutritional status. In addition, our use of the cutoff point for poor nutritional status in adults with cancer [38] resulted in more than one-third of study participants categorized as in poor nutritional status. This is a high proportion of malnutrition among children with cancer and is similar to prior findings [44]. Altogether, these findings highlight the importance of routinely assessing nutritional status for childhood cancer survivors. The goal would be to detect malnutrition early and thus provide timely nutrition interventions to prevent poor nutrition hindering their growth and development [45].

However, there is currently no standardized nutrition assessment in clinical practice for children with cancer [46]. Using a BIA device to acquire phase angle would be a good start. There may be differences in phase angle between populations, and population-specific reference values may be required [42]. As of now, though, published reference values of phase angle for children are lacking. Establishing reference values for healthy children in Taiwan or in other countries with similar ethnic and cultural backgrounds is needed. These reference values can then serve as a basis for phase angle evaluations in the clinical setting to identify childhood cancer survivors—or children with other diseases—whose nutritional status should be closely watched.

Responding to the specific purpose, our finding identified the moderating role of physical activity between fatigue and QoL. This indicates that physical activity may be the variable that affects the strength of the relation between fatigue and QoL. We found that fatigue has an adverse effect on QoL among children who engaged in low and moderate levels of physical activity. In contrast, fatigue had no adverse effect on QoL among those who engaged in a high level of physical activity. These findings indic ated that physical activity might protect childhood cancer survivors from the adverse effect of fatigue and lead to a good and stable QoL. This inference is supported by prior findings that physical activity has a positive effect on QoL in childhood cancer survivors [24,47]. However, an opposite finding was reported by a systematic review and meta-analysis: that physical activity did not moderate QoL [48]. That finding could be associated with participants not following the instructions of physical activity programs due to lack of time, motivation, exercise skills, exercise partners, poor health status, or reluctance to sweat [49,50]. For example, Kim's study found that only 5.0% of participating childhood cancer survivors met physical activity guidelines [49]; Sims's study reported that average increases in participants' activity levels post-intervention only reached 4.47 minutes per day [50]; and Wu's study indicated that children undergoing cancer treatment do not achieve the recommended level of physical activity suggested by the Children's Oncology Group [51,52]. In addition, children entering adulthood are known to follow a natural behavioral pattern of gradually becoming more physically inactive [53]. We conclude that childhood cancer survivors need additional assistance to be physically active.

Evidence indicates that among children undergoing cancer treatment in hospitals, personalized physical activity programs are associated with better QoL, in both physical and psychological dimensions [47]. A similar finding in adult cancer survivors indicates that supervised physical activity has significantly greater effects on QoL than unsupervised activity [54]. Based on these findings, we infer that personalized and supervised physical activity programs can help childhood cancer survivors reach the minimum intensity, frequency, and duration of activity suitable for improving QoL.

In summary, our study clearly addresses the importance of healthy lifestyle behaviors. A healthy lifestyle consists of proper nutrition and adequate physical activity, both of which are essential to reduce fatigue and enhance QoL for childhood cancer survivors. Yet cancer treatment and its effects directly limit children's opportunities to engage in healthy nutrition and physical activity. Children are known to be at a developmental stage of adopting and consolidating health behaviors [55]. Long-term cancer treatment at a young age may lead these children to get used to an unhealthy lifestyle during critical stages of developing behavioral patterns [56]. Evidence indicates that small and optimal changes in children's lifestyle behaviors can result in obvious improvements to children's health outcomes [47]. Thus, timely correction of such behaviors is important. Such intervention can help these children continue a healthy lifestyle into adulthood.

Limitations

Our use of a convenience sample from one medical center may limit this study's generalizability. Also, we used a standard value to identify malnutrition that is based on an adult population [38]; further research to identify appropriate phase angle reference values and cutoff points for malnutrition among children is needed.

Implications

We observed a high prevalence of malnutrition in our study participants. Clinical practice for childhood cancer survivors should include regular screening of phase angle: at diagnosis, throughout therapy, and into survivorship. A phase angle cutoff point for malnutrition among children needs to be established. In addition, future research is needed to identify unhealthy lifestyle factors and then to develop healthy lifestyle interventions. Such interventions must include adequate frequency, intensity, and duration of physical activity as well as sufficient nutrition to facilitate meaningful changes in lifestyle factors. Clinical dietitians, physical therapists, and pediatric oncology nurses should work as a team to promote healthy nutrition and physical activity among children with cancer.

Conclusion

Our study demonstrates the importance of both nutrition and physical activity in reducing the adverse effect of fatigue on QoL. This highlights an opportunity to enhance QoL among children with cancer through healthy lifestyle interventions. Healthy lifestyle behaviors need to be promoted throughout children's entire treatment trajectory and in survivorship. Future interventions should include nutrition and physical activity components and should involve nurses, pediatric oncology physicians, nutritionists, and physical therapists to ensure that the interventions address children's needs and promote the greatest impact.

Conflict of interest

The authors have no conflicts of interest relevant to this article to disclose.

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Variables	Mean (SD) or n (%)	
Age	8.01	(3.93)
Gender		
Men	77	(64.2)
Women	43	(35.8)
Diagnosis		
ALL	65	(54.2)
AML	11	(9.2)
NHL	7	(5.8)
HL	4	(3.3)
Neuroblastoma	12	(10.0)
Brain tumor	4	(3.3)
Others[a]	17	(14.2)
BMI status		
Underweight	13	(10.8)
Healthy weight	69	(57.5)
Overweight or obesity	38	(31.7)
Child's education		
Below elementary	42	(35.0)
Elementary	57	(47.5)

Junior high	12	(10.0)
Senior high or above	9	(7.5)
Father's education		
Junior high	7	(5.8)
Senior high	31	(25.9)
Associate or bachelor's degree	59	(49.2)
Master's degree or PhD	22	(18.3)
Missing	1	(0.8)
Mother's education		
Junior high	6	(5.00)
Senior high	26	(21.6)
Associate or bachelor's degree	66	(55.0)
Master's degree or PhD	20	(16.7)
Missing	2	(1.7)

Variables	Range	Mean	SD	Fatigue	Nutrition	Physical activity	QoL
1. Fatigue	0.00-69.44	22.48	15.51	r = 1.00	r = −.19*	r = −.34**	r = −.60**
2. Nutrition	2.60-6.50	4.32	0.75		r = 1.00	r = .16	r = .29**
3. Physical activity	2.00-60.00	28.65	13.75			r = 1.00	r = .38**
4. QoL	37.96-100.00	79.14	14.29				r = 1.00

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Relationship between Unit-Level Nurses' Expectations from Nursing Assistant Roles and Individual Nursing Assistants’ Information-Sharing Behaviors: A Multilevel Mediation Analysis

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ABSTRACT (ENGLISH)

summaryPurpose
This study aimed to investigate the relationship between the expectations of unit-level nurses from nursing assistants (NAs), frequency of individual NAs' information-sharing behaviors with nurses, and the effect of NAs’ self-perceived roles on this relationship. NAs provide patient care along with nurses, and their information-sharing behaviors with nurses may be influenced by the expectations of the nurses.

Methods
Nurses and NAs from 104 integrated community care (sub- and postacute) units were included in this Japanese cross-sectional study conducted from July to September 2018. Nurses' expectations from NAs and the NAs' self-perceived roles and information-sharing frequency were measured. Multilevel mediation analysis was performed for NAs’ information-sharing behaviors, such as expressing, asking, providing linguistic responses, and providing feedback.

Results
Unit-level nurses' expectations from NAs were associated with the frequency of NAs' asking and responding behaviors with nurses ($p < .05$), mediated by the NAs' self-perceived roles. The frequency of NAs’ expressing behaviors and feedback were also associated with their self-perceived roles ($p < .001$).

Conclusions
High expectations of unit-level nurses from NAs led to better perception by NAs of their roles and led to better information-sharing behaviors. Educating nurses on NAs’ roles may improve information-sharing between nurses and NAs that leads to safe and appropriate care to patients.

FULL TEXT

Introduction

Nursing assistants (NAs) are often included as a part of a care delivery team. A systematic review of the activities of NAs revealed that NAs globally provide direct care, regardless of their specialty area [1]. NAs also provide patient care by themselves; therefore, they need to collaborate with the nurses. Sharing patient information and collaboration between nurses and NAs are critical to providing high-quality patient care [2,3]. Organizational research by Mesmer-Magnus et al. [4] reported that information-sharing within teams was a positive predictor of team performance [4]. Similarly, appropriate information-sharing between nurses and NAs reportedly reduced patient fall rates [5]. Thus, facilitating information-sharing between nurses and NAs is important for quality care [6].

There is a global shortage of medical personnel, and to reduce costs at medical facilities, there has been an increased focus on personnel who can assist with nursing tasks without the need for specific qualifications [1,3,7]. Some tasks of NAs are complex and require high-level skills and are the same as those of nurses [1]. Therefore, promoting collaboration between nurses and NAs is essential for delivery of quality care. However, NAs are seldom considered as professionals or members of the healthcare team despite them providing direct patient care in healthcare settings [8,9].

To cope with the rapidly aging population in Japan, integrated community care units (sub- or postacute care units) have been established to help people live in the familiarity of their communities. Specifically, one or two integrated community care units have been established in each hospital. Some patients in these units require rehabilitation and disease management, whereas others require acute treatment [10]. Most patients wish to return home or be admitted to a nursing home, but they require support with activities of daily living. Nurses and NAs work together to provide care, such as assistance with eating, toileting, and bathing.

In Japan, task shifting is being promoted to increase healthcare professionals' efficiency when completing tasks. In nursing tasks, NAs at some hospitals are certified care workers who have professionally learned about caregiving, whereas some NAs are unlicensed. NAs' tasks overlap those performed by nurses under the latter's supervision. Although NAs do not require some of the specific certifications as those required for certified care workers, they are expected to provide patients with care that is necessary for recuperative living, such as assistance with eating, toileting, and bathing, based on the training provided by hospitals. Therefore, in this study, we define an NA as a staff member who assists in providing basic patient care.

Nurses’ expectations of the NA role

Although nurses and NAs have different roles, their tasks in direct patient care overlap. The role of the nurse is to assist in medical treatment, provide patient care, perform clinical decision making, and coordinate patient care [11], whereas the NA is providing direct patient care as well as care that does not involve direct contact with the patient to support the nurse's work.

Kalisch [12] indicated that nurses' leadership is a key element of an effectively functioning nursing team. To meet this goal, understanding the role of each team member is essential. Previous research has indicated that nurses and NAs have different perceptions of the NA role [2], which varies even among nurses [13,14]. The role of NAs is largely viewed from the perspective of the tasks they perform rather than how they function as members of a nursing team. In a previous study, Saiki et al. [15] focused on how NAs serve as a part of a nursing team and established a relationship between nurses' perceptions of the roles of NAs and their information-sharing behaviors with NAs. To promote interprofessional collaboration, all nurses in a unit must understand the role of NAs and convey their role expectations to the NAs. However, to the best of our knowledge, no study has quantitatively examined the relationship between the expectation of NAs by all members of a nursing unit and the individual NA's behaviors.

In Japan, registered nurses and assistant nurses (licensed practical nurses) are hired as professional nurses [16,17]. Registered nurses are licensed by the national government, whereas assistant nurses are licensed by the prefecture and legally perform their duties under the direction of a physician or nurse. Although registered nurses and assistant nurses have different legal work order systems, they perform almost identical tasks. To support the work of nurses and assistant nurses, NAs are employed, and there is no difference between nurses and assistant nurses in their relationship with NAs [39]. We treated both nurses and assistant nurses as nurses in this study.

NAs’ information-sharing behaviors with nurses

A major part of an NA's role involves interacting with patients and observing minor changes in the patients' conditions [14,18]; NAs often note information about patients that can only be acquired by them [18,19]. However, nurses believe that NAs do not communicate such information at the time of delivering care [12]. Another study found that NAs are unable to ask nurses questions or fail to provide them with information about care [20]. Therefore, information-sharing, especially by NAs, may not be adequate.

In the field of healthcare, face-to-face communication is important for sharing information among employees [21]. According to Downs and Adrian [22], each person is a sender and receiver of information, with the receiver also providing feedback. The accuracy of the shared information increases when the receiver verifies the received information and provides feedback [22]. Therefore, nurses and NAs must improve their information-sharing behaviors, such as providing information, asking questions, verifying their understanding, and providing feedback. Accordingly, identifying strategies that improve NAs’ information-sharing behaviors is essential.

Mediating effects of each individual NA's role perception

The hierarchical relationship between nurses and NAs makes it challenging for NAs to share information with nurses [9]. NAs were found to actively provide input and ask questions about care in units where team members are aware of the role of NAs [18]. Nurses' understanding of the role of NAs who work with them could be the key to improving NAs’ information-sharing behaviors.

According to the role theory, an individual understands the role expectations of “specific others” and, subsequently, internalizes the role expectations of “generalized others” through role acquisition [23]. The “specific others” are also known as “significant others,” and they influence the individual [24]. Previous studies have showed that the perception of the presence of nurses is a key factor in NA's behavior [20,25]. Saiki et al. [26] revealed that NAs' perception of the nurses' expectations from their roles was the key factor influencing how NAs participated in the nursing team. Therefore, NAs may internalize their roles from the role expectations of nurses and choose their own behaviors. We hypothesized that unit-level nurses' expectation from NAs mediates the role perceptions of NAs and improves their information-sharing behaviors with the nurses, which is an essential part of their jobs.

This study aimed to investigate the relationship between the expectations of unit-level nurses from NAs and the frequency of individual NAs' information-sharing behaviors with nurses and to assess the potential mediating effect of NAs’ self-perceived roles in this relationship.

Methods Study design and participants

This was a cross-sectional study on nurses, including registered nurses and assistant nurses, and NAs working in integrated community care units in Japan from July to September 2018. The number of nurses and NAs in each unit was 19.8 and 6.2, respectively [16].

All the nurses assigned to the included units were recruited, excluding only the frontline nurse managers of these units who were rarely expected to work with NAs. An earlier study reported that the stage of socialization at which the values and norms of an organization are acquired is approximately 6 months after employment [27]. It may have taken 6 months for NAs to be influenced by nurses; therefore, NAs who had worked in the unit for >6 months were targeted.

Data collection

Figure 1 presents the flowchart of participant recruitment. Data were collected from July to September 2018 by sending research requests to 182 hospitals randomly selected from Japan. We provided written explanation to the directors of the nursing departments of hospitals with at least one integrated community care unit requesting their participation. A survey was conducted at each hospital wherein each unit provided their consent and the units of the hospitals willing to participate were identified. Frontline nurse managers distributed the questionnaires to all nurses and NAs in their units. Collection boxes were placed in the units for 2 weeks, and the participants were instructed to seal their completed anonymous questionnaires in the unmarked opaque security envelopes provided and place the sealed envelopes in the collection boxes, which were returned to the researcher without checking the collection status. Overall, 1,787 nurses and 596 NAs from 104 units responded to the survey.

Inclusion criteria were participant consent to research and at least 6 months of unit experience for the NAs. The study excluded 67 nurses and 143 NAs with no research consent or with blank responses and 3 NAs with

Measurements Nurses' expectations of the role of NAs and the NAs' perceptions of their role

Nurses' expectations from NAs and NAs' perceptions of their own role were measured using a perception scale for the role of NAs [28]. The scale comprises 16 items with the following four subscales: “improving patients' abilities through daily care,” “caring for various patients using broad perspectives,” “facilitating coordination and cooperation among team members,” and “increasing the amount of information on patients among team members.” We asked the nurses the following introductory question: “Do you expect NAs to take on this role in your unit?” For NAs, we provided the following introductory question: “Do you think the nurses in your unit expect you to take on each role?” The participants rated each item on a 5-point Likert scale from XX to XX. Cronbach's alpha coefficients of the subscales were 0.78–0.81 for nurses and 0.67–0.84 for NAs. As per the method approved by the author of the scale, the sum of the mean scores for each subscale was calculated and used as the NA role perception score (range: 5–20).

The indicators for evaluating the validity of the aggregation of nurses' expectations from NAs as a unit-level variable are as follows: ICC1 (intraclass correlation), 0.11; ICC2 (reliability of the means), 0.68; and r_{wg} (measure of agreement within units), 0.93 [31]. We calculated the average of the nurses' scores in each unit, which was representative of the unit-level variable. A higher scale score was interpreted as a higher understanding of the NA's roles at the unit level and higher expectations for NAs in their own unit.

NAs information-sharing behaviors with nurses

We operationally defined information-sharing behaviors as verbal behaviors, including expressing, asking, linguistic response, and feedback. To assess the expressing and asking aspects of information-sharing, a subscale of a communication audit developed for Japanese care facilities was used [29], which comprised five items (e.g., information on patient condition). The participants were asked, “On average, how often do you express the following items to nurses?” for expressing and “On average, how often do you ask nurses for the following items?” for asking to evaluate the behavior toward the entire unit. Responses were rated on a 5-point Likert scale from 1 (never) to 5 (always).

To measure linguistic responses, the “linguistic response to the conversation” subscale of the revised version of the Listening Skills Scales was used [30]. Participants were presented with the following sentence: “Please choose the statement that best applies to your behavior when interacting with a nurse.” This scale comprises seven items, e.g., not only listening but sometimes telling the other person what you thought or felt. Responses were rated on a 5-point Likert scale, with responses ranging from 1 (absolutely inappropriate) to 5 (absolutely appropriate).

The participants were asked how often they provided feedback to nurses regarding the information they received. The scale was developed in an earlier study on nurses and its reliability (α=0.91) and content validity have been confirmed [15]. This feedback included the value of the information they received from nurses in terms of its validity; the importance of the information; and the possibility, result, and effects of the utilization of this information. The participants were asked “On average, how often do you provide feedback regarding the following items to nurses if you received any information from nurses?” This scale comprises five items (e.g., telling nurses that the information is important for the NA's job). The responses were rated on a 5-point Likert scale from 1 (never) to 5 (always). Cronbach's alpha coefficients for the information-sharing behaviors of telling, asking, linguistic response, and feedback were 0.89, 0.88, 0.90, and 0.93, respectively. We calculated the mean score of each of the four scales and used each for analysis. Higher scale scores are interpreted as higher frequency of each behavior.

Unit- and individual-level characteristics of the participants

Frontline nurse managers were asked about the number of nurses and NAs in their units. We calculated the ratio of NAs to nurses in the units. The greater the ratio of NAs to nurses, the more likely NAs were assumed to share information with nurses. Hence, we adopted the staff ratio as the unit-level control variable. Nurses and NAs were individually asked about their age, gender, marital status, employment status (permanent or part-time), and years of experience working at the hospital. NAs were also asked whether they were certified care workers. From the list of NAs' individual characteristics, we adopted employment status, hospital experience, and qualification of certified care workers as individual-level control variables, which were expected to be related to NAs’ information-sharing behaviors toward nurses.

Ethical considerations

All participants were informed regarding the study purpose, methods, voluntary nature of participation, and privacy protections. We only analyzed the data of participants who provided consent. The unit identification given to each questionnaire was used only to connect each case between nurses and NAs. This study was approved by the Institutional Review Board of the Tokyo University, Approval no. 11582.

Statistical analyses

To examine how much of the overall variance in the dependent variables could be explained by the interclass variance, the ICCs were calculated using the null model. The ICCs for each dependent variable were as follows: 15.2% for expressing, 17.1% for asking, 3.1% for linguistic response, and 4.0% for feedback. Although the ICC typically ranges between 5.0% and 20.0% [31] and the ICC of the linguistic response and feedback were

A random intercept model wherein the variance was allowed only in the intercept of each unit was used to analyze NAs' information-sharing behaviors as the dependent variable, and the restricted maximum likelihood method was used for estimation. Referring to methodological studies, we tested for cross-level mediation (2-1-1 model) [32,33]. We presented the proposed analytical model in Figure 2. First, we entered the nurses' expectations from NAs as a unit-level independent variable (Model 1). Second, we entered variables using Model 1 into Model 2, in which the individual NAs' role perception is the dependent variable. Third, we added individual NAs’ role perceptions to Model 1 as a mediator variable (Model 3). Finally, we used bootstrapping with 20,000 Monte Carlo replications to examine the multilevel mediation effect [34]. Statistical analysis was performed using the “lme4” package [35] in R Studio version 3.5.1 at a significance level of 5.0%. Monte Carlo confidence intervals (CIs) were calculated using the R web utility developed by Selig et al. [36].

Results Participant data

Table 1 presents the demographic data of the participants. Means (standard deviations) for the four information-sharing behaviors of NAs were as follows: 3.48 (0.89) for expressing, 3.24 (0.77) for asking, 3.61 (0.65) for linguistic response, and 3.18 (0.87) for feedback (Table 2).

Relationship between nurses' expectations from NAs and the frequency of individual NAs’ information-sharing behaviors with nurses

There was a statistically significant relationship between the unit-level nurses’ expectations from NAs and the frequency of the following NA information-sharing behaviors: asking (Model 1b, γ_{02} = 0.14, p = .008) and linguistic response (Model 1c, γ_{02} = 0.08, p = .038). In contrast, expressing (Model 1a) and feedback (Model 1d) were not affected (Table 3).

Mediating effects of individual NAs’ role perceptions

We investigated the mediating effects of the NAs' role perceptions on the abovementioned relationship (Table 3). Unit-level nurses' expectations from NAs correlated with the individual NA's role perceptions (Model 2, γ_{02} = 0.69, p 40 = 0.11, p 40 = 0.08, p 40 = 0.11, P 40 = 0.13, P **Discussion**

To the best of our knowledge, this is the first study to quantitatively investigate the relationship between unit-level nurses' expectations from NAs and the frequency of NAs' information-sharing behaviors with nurses. In addition, we proposed a mechanism to explain how each individual NA's perceptions of their role mediate the relationship.

Unit-level nurses' expectations from NAs correlated with the frequency of NAs' information-sharing behaviors with nurses and mediating effect of NAs’ self-perceived roles

We found that the frequencies of NAs' asking and linguistic response behaviors were high in units where nurses had high expectations from NAs. Previous qualitative studies have shown that understanding the roles of other personnel in interoccupational collaborations is essential for effective communication [6]. We quantitatively evaluated the effects of understanding their role on concrete information-sharing behaviors. The hypothesis was constructed on the basis of role theory and supported by quantitatively proving that the NAs' self-perceived roles fully mediated these relationships. In units where nurses understood NA roles and had high expectations, the NAs may expand their own role perceptions regarding patient care, which may encourage them to engage in information-sharing behaviors, such as asking and linguistic response. In terms of helping NAs understand their role on the unit, our results suggest that the understanding of the NA roles by unit nurses can change the individual NA role perception and elicit better communication behaviors. Moreover, a previous study found that some unit-level nurses understood the NA role, whereas others did not [2,14]. The results of this study indicated that an understanding of the NA role among all nurses on the units would facilitate communication with NAs, allowing for more informed clinical decision making and better care coordination.

In another study, nurses with positive perceptions of NA roles engaged in information-sharing with NAs [15]. Thus, the nurses' high expectations from NAs at the unit level indicate that nurses frequently share information with NAs, which may influence the NA's role perceptions and information-sharing behaviors. Another previous qualitative study reported that during medical record review sessions between nurses and NAs as they start working together, nurses play a directing and coordinating role, whereas NAs share their questions and ask for clarifications [18]. This indicates that the asking and linguistic response behaviors of NAs are important for efficient teamwork. Further, as NAs daily interact with and provide care to patients directly, the asking and linguistic responses of NAs will provide nurses with valuable information, resulting in safe, appropriate, and tailored patient care. This study highlighted the importance of nurses understanding the role of NAs in the unit environment for NAs to engage in asking and linguistic response behaviors.

Relationship between NAs' role perceptions and NA expressing and feedback to nurses

The frequencies of NAs' expressing and feedback to nurses did not correlate with unit-level nurses' expectations from NAs. This finding differed from our hypothesis, but the difference is understandable. Regarding NAs' expressing, an earlier study reported that NAs promptly share patient information with nurses when NAs strongly feel like a part of the nursing team [11]. In other words, NAs may express themselves to nurses if they see themselves as a part of the nursing team, regardless of the nurses' expectation of NAs. Another study reported that although nurses and NAs recognize the importance of information-sharing between the two groups of healthcare professionals, a heavy workload in a healthcare unit hinders this sharing [2]. Therefore, increasing the role perceptions of individual NAs may enable NAs to communicate important patient information to nurses even in a busy environment. However, only some behaviors of NAs will not result in effective information-sharing.

In terms of NAs' feedback, NAs convey the value and usefulness of information received from nurses as perceived by the NAs. It can be assumed that NAs evaluate the information they receive from nurses when required; therefore, NAs' feedback highly depends on their individual intention to establish a relationship with nurses. A previous study found that NAs who are aware of their role in the unit engaged in more discussions with nurses regarding patient care [37]. When NAs are strongly aware of their role, the frequency of their feedback to nurses is expected to increase.

Clarifying the roles of nurses and NAs alone often leads to “it's not my job” syndrome, which hinders true collaboration [38]. Nurses and nurse managers must understand that NAs are members of the nursing team that is involved in patient care and not just individuals who simply perform tasks. Moreover, it is necessary to provide encouragement and opportunities for NAs to share their intentions and thoughts regarding patient care with nurses. Our results suggest that improving unit nurses' understanding of NAs' roles can change NAs' communication behavior. NAs' own role perceptions were associated with their information-sharing behaviors, and the relationship between unit-level nurses' expectations of NAs differed according to the type of information-sharing behavior, indicating a need for both nurses and NAs to increase awareness regarding NAs' roles. NAs are important collaborative partners for nurses in providing quality healthcare with limited resources. A previous study indicated that less communication between nurses and NAs can lead to a lack of leadership in the nursing team [12]. If information-sharing between nurses and NAs increases, nurses can demonstrate better leadership qualities. In addition, when NAs better understand their own roles, nurses can delegate and direct tasks based on shared goals, which may enable a more effective and appropriate provision of nursing care. Future research is needed to develop interventions to increase awareness regarding the role of NAs among nurses and NAs, as well as to identify leadership steps that individual nurses can take to promote collaboration.

Limitations

There are some limitations to our study. First, information-sharing by NAs that did not coincide with actual behaviors of NAs may have remained unnoticed because a questionnaire survey was used rather than direct observation. Second, not all nurses in each unit completed the questionnaire; therefore, the unit-level scores may not be sufficiently representative. Third, in this study, nurses included registered nurses and assistant nurses, and NAs included certified care workers and unlicensed NAs; therefore, the differences in the perceptions of the NA role and the frequency of information-sharing behaviors based on their qualifications may have influenced the results. Finally, we captured only one aspect of the communication behavior of NAs (i.e., the frequency of behavior). The elements of communication include frequency of behavior, accuracy of information, and timing [22]. It is necessary to conduct further studies that capture communication from multiple aspects.

Conclusions

In units where nurses have high expectations from NAs, NAs frequently engaged in asking and linguistic responses with the nurses. Thus, nurses' expectations from NAs were important for improving information-sharing by NAs. Furthermore, the effects of nurses' expectations from NAs were mediated by the NAs’ self-perceived roles. Increasing awareness of NA roles by nurses and NAs may be an effective educational intervention to improve information-sharing between nurses and NAs.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Variables	Categories	Nurses	
NAs	(n = 1348)		(n = 393)
Gender[a]	Women	1228 (91.1)	
336 (85.5)	Men	80 (5.9)	
31 (7.9)	Missing	40 (3.0)	
26 (6.6)	Marital status	Single	413 (30.6)
94 (23.9)	Married	731 (54.2)	
193 (49.1)	Divorce or widowed	135 (10.0)	
74 (18.8)	Missing	69 (5.2)	

32 (8.2)	Employment status	Permanent staff	1208 (89.6)
257 (65.4)	Position	Assistant nurse manager	140 (10.4)
–	Nurse qualification	Registered nurse	1196 (88.7)
–	Assistant nurse (licensed practical nurse)	152 (11.3)	
–	NA qualification	Certified care worker	–
135 (34.4)	No qualifications	–	

Individual level	Mean	SD	1	2	3	4	5
NAs (n = 393)							
1Hospital experience (years)	8.06	7.00					
2NAs' perceptions of their role	13.76	2.88	.12**				
NAs' information-sharing behaviors							
3Expressing	3.48	0.89	.04	.40***			
4Asking	3.24	0.77	.12*	.46***	.67***		
5Linguistic response	3.61	0.65	.13*	.36***	.42***	.50***	
6Feedback	3.18	0.87	.03	.43***	.51***	.56***	.48***
Nurses (n = 1348)							
Nurses' expectations from NAs	14.08	2.26					

Variables	NAs' self-perceived roles	NA's information-sharing behaviors							
		Expressing		Asking		Linguistic response		Feedback	
	Model 2	Model 1a	Model 3a	Model 1b	Model 3b	Model 1c	Model 3c	Model 1d	Model 3d
Intercept (γ00)	12.38***	2.90***	3.05***	2.93***	3.07***	3.53***	3.64***	2.94***	3.12***
Unit-level control variable									
Staff ratios[a] (γ01)	1.96	0.96**	0.72*	0.27	0.06	−0.18	−0.35	0.31	0.07
Individual-level control variable									
Care worker qualification[b] (γ10)	−0.30	0.01	0.03	−0.02	0.01	−0.02	0.00	−0.13	−0.10
Permanent staff[c] (γ20)	0.41	0.24*	0.20*	0.17	0.13	0.09	0.06	0.18	0.13
Hospital experience (γ30)	0.05**	0.00	0.00	0.01*	0.01	0.01**	0.01	0.00	0.00
Unit-level independent variable									
Nurses' expectations of the NA role (γ02)	0.69***	0.09	0.02	0.14**	0.06	0.08*	0.04	0.08	−0.01
Individual-level mediating variable									
NAs' self-perceived role (γ40)			0.11***		0.11***		0.08***		0.13***
Random effect									
Variance of Level-1 residual	7.00	0.65	0.61	0.50	0.44	0.41	0.36	0.72	0.62
Variance of Level-2 (intercept)	0.68	0.07	0.02	0.07	0.04	0.00	0.00	0.03	0.01

ICC	.09	.10	.03	.13	.08	.01	.00	.04	.02

DETAILS

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Early Sedation Depth and Clinical Outcomes in Mechanically Ventilated Patients in a Hospital: Retrospective Cohort Study

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ProQuest document link

ABSTRACT (ENGLISH)

sum maryPurpose

This study aimed to identify the early sedation depth in the first 48 hours of mechanical ventilation and its relationship to clinical outcomes to promote the transition to light sedation.

Methods

This retrospective single-center cohort study was conducted in two medical intensive care units (MICUs) at a general tertiary hospital, using a standardized sedation protocol. To investigate the early sedation depth, the Sedation Index was used, which can indicate changes over the first 48 hours. Patients were divided into three groups based on tertiles of Sedation Index. The primary outcome was mortality at 30, 90, and 180 days. The secondary outcomes included length of stay in the ICU and ventilator-free days. Kaplan-Meier analysis and multivariable Cox regression were conducted to compare factors influencing mortality.

Results

This study included 394 patients. The deepest sedation group showed more severe illness, delirium, and deeper sedation at admission ($p < .001$). The survival curve decreased as sedation increased, even within the light sedation levels. In the deepest sedation group, 30-day mortality (hazard ratio [HR] 2.11, 95% confidence interval [CI] 1.33–3.34), 90-day mortality (HR 2.00, 95% CI 1.31–3.06), and 180-day mortality (HR 1.77, 95% CI 1.17–2.67) increased. The length of stay in the ICU and ventilator-free days did not show statistical differences.

Conclusions

These results indicate that early deep sedation is a modifiable factor that can potentially affect mortality. The protocol for inducing the transition into light sedation must comply with recommendations to improve clinical outcomes.

FULL TEXT

DETAILS

Subject:	Intubation; Medical records; Patients; Electronic health records; Ventilators; Length of stay; Quantitative psychology; Mortality; Cohort analysis; Hospitals; Pain; Anesthesia; Delirium; Confounding (Statistics); Critical care; Clinical outcomes; Analgesics
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Effect of Animal-Assisted Therapy (AAT) on Social Interaction and Quality of Life in Patients with Schizophrenia during the COVID-19 Pandemic: An Experimental Study

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ABSTRACT (ENGLISH)

SummaryPurpose

Most patients with schizophrenia exhibit low willingness to return to society because of negative social experiences. The COVID-19 pandemic led to severe social isolation for schizophrenia patients. However, animal-assisted therapy (AAT) can improve individuals' empathy, social functions, and quality of life. The study aimed to evaluate the effectiveness of AAT in improving social interactions and quality of life in patients with chronic schizophrenia during the COVID-19 pandemic.

Methods

An experimental study was conducted, with six institutions for psychiatric rehabilitation in Taiwan as the case institutions. Patients in these institutions were randomly allocated to the experimental group, which received 60 minutes of AAT once a week for 12 weeks, or the control group, which engaged in routine discussion groups and watched short films about animals. Comparisons between the two groups were made before and after the intervention on social function, social adaptive function, and quality of life. Data were collected before the intervention (T1), immediately after the intervention (T2), and 3 months after the intervention (T3).

Results

Comparison between groups showed that social functioning was significantly higher in the experimental group than in the control group at T2. However, there was no sign of improvement in social adaptive functions of the experimental group. The experimental group exhibited significantly higher quality of life than the control group at T2 and T3.

Conclusions

There was an impact of COVID-19 on the studied effects. AAT improved social functioning and quality of life in patients with chronic schizophrenia. The effect on quality of life lasted only up to 3 months after the intervention. AAT should be promoted for use as a community-based rehabilitation tool in patients with chronic schizophrenia.

Trial registration

Chinese Clinical Trial Registry, ChiCTR2200061715. https://www.chictr.org.cn.

FULL TEXT

Introduction

The restoration of patients suffering from psychiatric disorders to society has been a crucial topic given recent trends toward deinstitutionalization. Patients with psychiatric disorders who receive long-term institutional treatment may experience an impaired quality of life and face challenges in returning to and living in society [1]. The possession of beneficial social skills is crucial for patients with psychiatric disorders to return to a community and may improve their quality of life and increase their satisfaction with social support. However, during their return to society, patients with psychiatric disorders may be less willing to interact with others because of their previous experiences with stigmatization and ostracism [2,3]. In particular, patients with schizophrenia experience discrimination and misunderstanding most frequently. Patients who take medication regularly may still exhibit residual psychotic symptoms. When others do not understand their disease condition, they can easily misunderstand and become upset with the patients. The patients thus face setbacks in interpersonal relationships, experience distress, and feel a sense of worthlessness and helplessness [3]; these factors can lower their intention to engage in social interaction [4,5]. When patients with schizophrenia exhibit increased levels of loneliness and social isolation, they are likely to develop illusions and delusions [6]. Social isolation is not only a critical predictor of both positive and negative symptoms but also a risk factor for suicidal behavior and intention [7,8]. Since the outbreak of the COVID-19 pandemic in 2019, human interactions have decreased significantly, worsening the social isolation of schizophrenia patients. Ma et al. [9] conducted a study on schizophrenia patients dwelling in psychiatric facilities and concluded that, after their close contact with COVID-19 patients, there was an obvious increase in social isolation compared to those who did not interact with COVID-19 patients, showing that COVID-19 leads to severe mental burden.

To improve the social interaction skills of patients with schizophrenia, professionals in healthcare institutions should establish stable and positive therapeutic relationships with patients before initiating treatment. However, interpersonal relationships are subjective experiences, even for well-trained professionals; unconditional acceptance of a relationship with other people cannot be achieved easily. Relationships with animals, however, can mitigate this difficulty. The enthusiasm of dog could motivated and engaged participants and help improving participants' social interaction despite their age and diseases [10]. Animal-assisted therapy (AAT) involves the appropriate introduction of animals that satisfy certain criteria into healthcare scenarios with the guidance and assistance of professionals to achieve goal-oriented intervention measures [11]. Animals show unconditional acceptance and companionship, thereby helping reduce depression and anxiety symptoms in older adults [12] and aiding teenagers in understanding their behavioral problems and increasing empathy [13]. Among studies concerning the use of AAT to help patients with psychiatric disorders, Calvo et al. [14] conducted a randomized clinical trial to study the application of AAT to patients with schizophrenia. The results revealed that patients in the experimental group not only improved significantly in terms of both positive and negative symptoms but also exhibited fewer negative symptoms and problematic behaviors, such as social withdrawal after discharge from the hospital. Chang et al. [15] conducted 24 weeks of AAT group activity for patients with schizophrenia and recorded the therapeutic process with respect to 20 patients. The content analysis results indicated that positive activity design and social interaction among participants created supportive group atmospheres, improved participants' willingness to challenge themselves, and increased their self-efficacy. These research results suggest that AAT can substantially improve the physical conditions, psychological status, and quality of life of patients with schizophrenia.

To date, only a limited amount of research has been conducted concerning the application of AAT to patients with schizophrenia. In particular, the social interaction between patients with schizophrenia and other individuals has rarely been explored during the COVID-19 pandemic. Most relevant studies have focused on positive and negative symptoms, depression and anxiety, and quality of life. The objective of the present study was to explore the effectiveness of AAT with respect to improving the social interaction and quality of life of patients with chronic schizophrenia during the COVID-19 pandemic.

Methods Research site and recruitment

This longitudinal, single-blind experimental study mainly recruited participants from institutions for psychiatric rehabilitation in northern Taiwan. A small psychiatric rehabilitation institution generally has an average of 15–30 residents in Taiwan. This study needed to recruit 4–6 institutions. A lot-drawing method using Microsoft Excel was employed to provide a random selection of all institutions for participant recruitment. After approvals were obtained from six institutions by the selection list, coin tosses were used to assign an institution randomly to the experimental or control group, with three institutions per group. Participants of the control group and the experimental group were not in contact throughout the intervention, avoiding interference to the results. The intervention activities in both groups involved the participation of researchers, and animals were featured in the intervention activities of both groups. Participants and institution personnel were blinded to the grouping. Recruitment took place between January 29 and February 7, 2021. The researchers introduced and highlighted the benefits of the objectives and contents of the study to residents at the institutions' activity halls. Individuals who satisfied the inclusion criteria were recruited after signed consent forms were obtained.

The researchers wanted to investigate the changes over time. Referencing Olsen et al. [16]'s research design. Data were collected before the intervention (T1), immediately after the intervention (T2), and 3 months after the intervention (T3).

Inclusion and exclusion criteria for participant recruitment

The inclusion criteria were as follows: patients diagnosed with schizophrenia according to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition; patients who resided in the institution for psychiatric rehabilitation throughout the research period (at least 3 months); patients with ages between 20 and 65 years; and patients who were able to listen to, speak, and write Mandarin or Taiwanese. The exclusion criteria were patients with cognitive impairment, alcoholism, brain injury, mental retardation, personality disorders, or allergies to or fears of dogs.

Sampling

The study used G-power to calculate the sample size. Utilizing the work of Virués-Ortega et al. (2012) on the meta-analysis of AAT on elderly populations and patients with psychiatric disorders, outcome indicators including depression, anxiety, and behavior disturbances. The range of the effect size is 0.29–0.34 [17] and is small to medium ES [18]. The criteria set by this study are rigorous, while ES was set at 0.25, with α being set at 0.05 and power at 0.8. Repeated-measures statistical tests were used at three time points. The total sample size was 86 participants. To account for possible withdrawals, this study recruited 90 patients. After the study has concluded, doing post hoc power analysis by G-power and we found that the calculating power is 81.9%.

Research ethics

This study was reviewed by the Institutional Review Board of National Yang Ming ChiaoTung University, Approval no. YM109184F. Participants were informed that they could withdraw any time without affecting their rights. All personal data were coded for privacy protection. All data were used for research purposes only.

Research instruments Demographics

Demographic data included sex, age, education level, marital status, employment, religion, and age of diagnosis. The demographic data were used as control variables to understand the intervention effectiveness of AAT on residents' social interaction and quality of life.

Mental health-social functioning scale (MHSFS)

This study used the MHSFS developed by Song [19] to measure participants' social competence and abilities in daily life. The MHSFS comprises 36 items across 7 subdimensions, namely, social/withdrawal, interpersonal communication, independence-ability, independence-performance, entertainment, sociality, and occupation/employment. Each item is scored from 0 to 3, except for items in the "occupation/employment" subdimension. The total score ranges between 0 and 100. Higher scores indicate better social functioning. The MHSFS exhibited good internal consistency with respect to patients with psychiatric disorders; Cronbach's α coefficient of the overall dimension was 0.80. MHSFS can be filled by patients with psychiatric disorder or their caregivers [19], for this study to reach the same level of evaluative criteria, it would be filled by the regular institutional staff. The scale was completed by institutional staff who evaluated the social functioning of residents over the last 3 months.

Social adaptive function scale (SAFS)

This study used the SAFS developed by Li and Tsai [20] to measure participants' day-to-day living abilities, social functioning, and occupational abilities. SAFS is used by mental health workers to assess patients with psychiatric disorder's social life. The scale was completed by institutional staff. The SAFS contains 15 items and is scored on a 4-point (0 to 4) Likert scale. Higher scores indicate worse adaptive functions. Cronbach's α coefficients of each factor were 0.88 for day-to-day living abilities, 0.90 for social functioning, and 0.90 for occupational abilities. The internal consistency of the scale was 0.94.

Taiwanese version of the world health organization quality of life brief version WHOQOL-BREF

The WHOQOL-BREF, Taiwanese version [21], the scale is measuring participants' subjective feelings toward their life quality, was completed by participants. This questionnaire consists of four dimensions: physical, psychological, social, and environmental. It contains 28 items, each of which is scored on a 5-point Likert scale. Higher scores indicate better quality of life. Cronbach's α coefficients of the dimensions ranged between 0.70 and 0.77. The overall Cronbach's α coefficient of the questionnaire was 0.91, suggesting good internal consistency [22].

AAT program

This study developed a 12-week AAT program, with one 60 min session of group activity per week. The program was designed considering the labor and economic cost and was also based on previous studies [15]. The intervention program was implemented through support groups to help participants develop their skills in social interaction and emotional expression ([Table 1]). The expert validity of the intervention was determined by five nurses and social workers who had more than 3 years of experience providing clinical care in the Psychiatry Department and by two AAT experts. The scale-level content validity index was calculated to be 0.976, implying that the overall program demonstrated good content validity.

The AAT program proceeded as usual, being held in the reception hall. Activities were carried out by the researchers and social workers, along with the participation of two service dogs and two professional AAT therapists. The dogs had received training for at least 3 months and were amicable. The AAT therapists had undergone at least 6 months of dog-related training and professional courses and had experience providing services to people with disabilities. The control group participated in discussion groups once per week, sharing their thoughts about life; these activities were led by the researchers and social workers. For the blinding of the participants, short films about animals were provided for the members of the control group to watch. Videos of cute animal documentaries were 10–15 minutes length each. Participants will then share their thoughts afterward. The intervention duration and frequency were identical for both groups.

Data analysis

All statistical analyses were conducted using SPSS V23.0 (IBM Corporation, Armont, NY, USA). Participants who did not attend the first and last sessions or were absent for ≥2 sessions were excluded from the analysis. Data are presented as the mean (M) ± standard deviation (SD) or frequency (n) and percentage (%). Chi-square tests and independent-samples t tests were used to compare demographic variables between the two groups. The effectiveness of the intervention with respect to social functioning, social adaptive functions, and quality of life was compared using paired t tests for within-group comparisons and a generalized estimating equation (GEE) for between-group repeated comparisons. According to “Goodness of fit,” the best QIC value is “unstructured” correlation structure in the study. Using the matrix, a GEE analysis was conducted.

Results

The research period for this study was from January 31, 2021, to September 12, 2021. A total of 98 residents met the inclusion criteria, eight of whom refused to participate in the study. Ninety participants completed the study and were included in the data analysis.

Participant demographics

The experimental group and the control group each consisted of 45 participants. The participants of two groups have even gender distribution. The mean age in experimental group was 50.2 years and 49.5 years in control group. Table 2 shows that both groups had no significant differences in terms of eight demographic attributes, including sex, marriage, and education. Participants in the experimental group received significantly more family visits than those in the control group (*p* = .03).

Effectiveness of MHSFS

Within-group comparison (Table 3): In the experimental group, the MHSFS scores of participants were significantly higher at T2 (*M* = 52.80, *SD* = 11.93) than at T1 (*M* = 50.56, *SD* = 11.89) (*p* M = 46.07, *SD* = 14.36) were not significantly different from those at T1 (*p* > .05). Participants in the control group had significantly higher MHSFS scores at T2 (*M* = 55.18, *SD* = 14.34) than at T1 (*M* = 54.09, *SD* = 13.80) (*p* M = 54.81, *SD* = 12.97) were not significantly different from those at T1 (*p* > .05). The results revealed that both groups improved their social functioning after the intervention; however, this effect was not permanent.

Repeated measurements were conducted with respect to both groups. At T2, MHSFS scores increased significantly, indicating improved social functioning in both groups. The interaction of group × time indicated that the MHSFS scores of the experimental group at T2 were significantly higher than those of the control group at T1 (*B* = 1.16, *p* B = −5.37, *p* **Effectiveness of SAFS**

Within-group comparison (Table 3): In the experimental group, the SAFS scores of participants at T2 (*M* = 9.87, *SD* = 7.69) were significantly lower than those at T1 (*M* = 11.56, *SD* = 7.66) (*p* M = 9.30, *SD* = 8.73) did not indicate a significant difference (*p* > .05). The control group had significantly lower SAFS scores at T2 (*M* = 10.51, *SD* = 8.21) and T3 (*M* = 10.16, *SD* = 7.46) than at T1 (*M* = 11.87, *SD* = 7.67) (both *p*

Repeated measurements were conducted with respect to both groups (Table 3). At T2 and T3, SAFS scores decreased significantly (*p* p p > .05). The results suggested that the experimental group did not exhibit a significant difference in terms of the level of improvement in their social adaptive functions as compared with that of the control group. Inclusion of the demographic variable of family visits into the analysis did not yield a significant difference.

Effectiveness of WHOQOL-BREF

First, a within-group comparison was conducted (Table 3). The WHOQOL scores of the experimental group at T2 (*M* = 86.42, *SD* = 17.98) and T3 (*M* = 86.64, *SD* = 15.92) were significantly higher than their scores at T1 (*M* = 79.33, *SD* = 13.40) (both *p* M = 81.02, *SD* = 16.82) and decreased at T3 (*M* = 75.16, *SD* = 13.81); however, none of these differences were significant (all *p* > .05). The results revealed that the quality of life of the experimental group improved significantly after the intervention and that such improvement persisted for 3 months.

Repeated measurements and comparisons of the experimental and control groups were conducted. At group, WHOQOL scores of the experimental group were significantly higher compared with the control grop. At T2, WHOQOL scores increased significantly, indicating improved quality of life in both groups. The interaction of group × time indicated that the experimental group exhibited a significant difference in terms of the level of increase in their WHOQOL scores at T2 and T3 compared with the changes exhibited by the control group (*p* **Discussion**

The objective of this study was to explore the positive effects of AAT for patients with chronic schizophrenia. The research results see great improvements in social function, experimental group at postintervention, but a clear downward trend 3 months after the intervention. However, we saw no great improvements in both social adaptive function and experimental group at postintervention until 3 months later. In terms of the quality of life, the experimental group saw significant improvement at postintervention until three months later. The positive effects on social function and quality of life meant that through animal interactions schizophrenia patients can build social skills and improving their quality of life. Meanwhile, the lack of improvement in social adaptive function is unprecedented considering previous studies [23,24], and there will be related discussed on said topic.

The effects on social function in our study, there was no significant difference in the social function between the experimental group (M = 54.09) and control group (M = 50.56) in the pretest, meaning that the two groups have the same social function level. At T2, both groups exhibited increased social functioning scores. The control group might have been subjected to the Hawthorne effect [25]. During the AAT activities, researchers participated in the activities of both groups to maintain blindness. The control group engaged in routine discussion groups and watched short films about animals, which were not part of their original discussion group. This change may have caused residents to believe that they were of an experimental group and affected their postintervention behavioral performance, thereby leading to a significant effect. In repeated measurements and comparisons between the two groups, the T2 scores of social functioning exhibited by the experimental group increased significantly compared with those of the control group. The intervention effectiveness indicated that the AAT intervention improved participants' social functioning. O'Haire et al. [[23]] used 8 weeks of AAT to improve the social functioning of people with autism spectrum disorder. Wesenberg et al. [[24]] demonstrated AAT to 17 dementia patients, and we saw great increase in patients' social interaction and positive emotion (pleasure). The results of that study revealed that AAT not only improved patients' social skills but also reduced their social withdrawal. During the AAT process used in the present study, interactions between residents and service dogs helped residents understand their internal emotional changes and develop a trusting and interactive relationship with the dogs. Consequently, residents could practice the capabilities required to develop mutual trust and social skills with people, thereby increasing their social functioning. However, at T3, the social functioning of the experimental group decreased significantly, possibly because of the effects of the COVID-19 pandemic. After May 2021, the Taiwan Center for Disease Control announced that no visitors were allowed to enter hospitals, nursing centers, and institutions for psychiatric rehabilitation, including family members. During the study, the researchers found that compared to the control group, the participants in the experimental group received visits from family significantly more frequently. However, the no-visiting regulation was established during T2 to T3. For participants in the experimental group whose family did not visit, the lack of social interactions could lead to the degeneration of their social function. There is negative influence to social function when patients with Schizophrenia lack familial support [[26]]. The situation is shown and proved by previous experimental results by Ma et al. [[9]]. At the same time, to reduce contact between residents of psychiatric rehabilitation and other people, two of the institutions in the experimental group limited the outdoor time of residents (no such limitations were reported by the other four institutions); residents decreased their amount of time spent on outdoor activities and lacked normal social interactions with others in the institutions. Since MHSFS scores were calculated using staff's evaluation of the residents' social life over the last 3 months, the scores of the experimental group decreased significantly. The results were similar to those reported by studies of COVID-19. The pandemic reduced social interaction and social support [[27]]. Thus, the present study assumed that the results were caused by the limitation of residents' interactions by institutions to mitigate the effects of the pandemic.

The social adaptive functions of the experimental group improved significantly at T2 compared to T1, which corresponds to the results found by Chang et al. [[15]]. However, no significant improvement was noted at T3, possibly because of the larger SD (8.37) of the T3 sores in experimental group, which indicated marked inter-individual differences. This result may be explained by the stricter pandemic prevention measures implemented by two of the institutions in the experimental group. Some residents remained in their rooms by themselves most of the time. The staff evaluation of the residents' day-to-day living abilities at T3 changed from “active completion” to “needs reminders by others.” When the social interaction of institutional residents is reduced, their social adaptive functions can easily decrease [[28]]. The between-group comparison results revealed that the experimental group did not exhibit significant improvement at T2 and T3. There are other reasons that could have influenced the effect of the intervention—social function and social adaptation are both subjective perceptions, leading to the potential for different perceptions due to their analysis from different aspects. For instance, it is very challenging for residents and experts to evaluate social adaption and communication about the forced migration issue from their perspectives; hence, subjective perceptions need to be evaluated [[29]]. In addition, Ortega et al. [[30]] performed a follow-up on social function for a year after the first onset of psychosis and used a self-report questionnaire. Considering the objectiveness of the evaluation, the MHSF and SAFS in this study were completed by institutional staff. The study was limited by the lack of consideration on differences in perceptions that would influence the results, so it is recommended that researchers collect information from both participants and staff for reference in future studies.

The quality of life of participants in the experimental group at T2 and T3 significantly improved compared with preintervention. The quality-of-life scores of the experimental group at T2 and T3 were significantly higher than those of the control group. The results implied that AAT not only benefited participants immediately after the intervention but also had persistent effects 3 months after the intervention. The positive effect on quality of life described in other studies were also proven [16,31]. Moreover, the quality of life of the experimental group was not affected by the pandemic. Smolarczyk-Kosowska et al. [32] explored the effects of a rehabilitation program on patients with psychiatric disorders during the COVID-19 pandemic and identified positive effects on their emotions and quality of life that are consistent with the results of the present study. The present study used AAT to improve the quality of life of patients with schizophrenia significantly. During the AAT process, group activities and the development of supportive environments, including physiological, psychological, social, and environmental aspects, were fundamental factors influencing the quality of life of patients with psychiatric disorders [15]. Thus, the present study identified the positive effects of AAT with respect to improving the quality of life of patients with chronic schizophrenia.

During the COVID-19 pandemic, the regulations established by institutions to mitigate the effects of the pandemic affected residents' social functioning and social adaptive functions. These regulations were environmental factors that could not be eliminated, and they serve as limitations for the present study. Another limitation was randomization in one institution and each group. The effects of intervention is easily influenced by the environment of the institutions, random assignment is a method that can be considered in future studies.

Conclusion

Because of the COVID-19 pandemic, institutions for psychiatric rehabilitation established stricter regulations that interfered with the results of this study. The AAT program effectively improved the social interaction and quality of life of patients with chronic schizophrenia. In the case of the quality of life, the effectiveness of the intervention lasted for only up to 3 months after the intervention. Nevertheless, the proposed intervention program can assist patients with chronic psychiatric disorders in returning to social life and can serve as a reference for personnel working in community institutions for psychiatric rehabilitation. This intervention can help improve patients' physiological and psychological health, strengthen their social functioning and social adaptive functions, and promote their return to a healthy life.

Data availability

The data that support the findings of this study are openly available in ResMan clinical trial management public platform at http://www.medresman.org.cn, Reg number ChiCTR2200061715.

Author contributions

Study conception and design: Chieh-An Shih, Man-Hua Yang. Data collection: Chieh-An Shih. Data analysis and interpretation: Chieh-An Shih, Man-Hua Yang. Drafting of the article: Chieh-An Shih, Man-Hua Yang. Critical revision of the article: Man-Hua Yang.

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Conflicts of interest

The authors declare that we do not have any commercial or associative interest that represents a conflict of interest in connection with the work submitted.

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Goal	Proposal content
Building relationship	Week 0 Introducing the group

1.Introduce the content of the group activity to the participants	2.Finish the distribution and measurements of the pretest questionnaires
Week 1 Meet the puppies	1.Introduce the participants to each other and start building relationship
2.Increase participants' willingness to continue engaging in these activities	Week 2 Get to know the puppies—“touching”
1.Guide the participants to try to get along with the service dogs	2.Guide the participants to touch the service dogs to induce their confidence of making social connections and also build trust between each other
Brief interaction	Week 3 Get to know the puppies—“stand up, sit down”
1.Stimulate the participants' sense of autonomy by establishing simple instructions to the service dogs	2.The success of establishing instructions to the service dogs impacts the participants by increasing their confidence in their problem solving skills
Week 4 “embrace and admire”	1.The service dogs will lay down beside the participants, making the participants feel secure and trusted
2.Reflecting on the participants' emotional dilemmas by sharing one's thoughts and listening to others' advices	Week 5 “Take a walk together”
1.From walking the service dogs, the participants get to improve their social interaction skills	2.The activity can increase the participants' physical flexibility and also increase their ability to get along with other people
Week 6 Feeding	1.Increase the participants' feeling of being able to control matters and boost their confidence by the sense of accomplishment after feeding process to the service dogs
2.Let every participant experience the achievement felt through feeding and commanding	Deeper interaction
Week 7 Groom and talk	1.Train the participants' communication and social interaction skills through group activities and talking to each other
2.Foster the participants' confidence during social interactions	Week 8 Repeat week 1–7

1.Hold competitive games to help increase the participants' confidence, sense of accomplishment, and self-efficacy	2.Increase the time of physical activities to train the participants' physical coordination and flexibility through group activities
Week 9 Go through the tunnel together	1.Improve interactive skills between both participants and service dogs through group activities
2.The use of competitive games can provoke the participants' aggressiveness and increase their sense of accomplishment and confidence, hence accumulate their feelings of self-efficacy	Week 10 Touching puppies without seeing
1.Increase the participants' awareness to others' sound and concentrate through the game	2.The participants are able to feel other people physically by touching the service dogs, at the same time practice the appropriate way to control their strength during physical interactions with others
Week 11 Depict the puppy in their most beautiful way	1.Deepen the impression of other participants and the service dogs through painting
2.By holding a group talk session, the participants can share their inner thoughts, receive feedback, and encourage each other	Week 12 Wave goodbye
1.Enhance positive emotions when the participants think back about the memories of group activities	2.Stimulate harmonious relationship between the participants by group activities

Variables	Participants (n = 90)	Experiment group (n = 45)	Control group (n = 45)		
n (%)	n (%)	n (%)	χ^2	p	Gender
			0.04	.833	Women
45 (50.00)	23 (51.11)	22 (48.89)			Men
45 (50.00)	22 (48.89)	23 (51.11)			Marriage

			0.05	.829	Single
55 (61.11)	28 (62.22)	27 (60.00)			Married/divorced
35 (38.89)	17 (37.78)	18 (40.00)			Educational level
			0.00	.999	Below high school
58 (64.44)	29 (64.44)	29 (64.44)			University or above
32 (35.56)	16 (35.56)	16 (35.56)			Religious belief
			0.73	.677	No
6 (6.67)	4 (8.89)	2 (4.44)			Yes
84 (93.33)	41 (91.11)	43 (95.56)			Employment
			0.56	.455	No
69 (76.67)	33 (73.33)	36 (80.00)			Yes
21 (23.33)	12 (26.67)	9 (20.00)			Family visiting
			4.87	.027*	No

16 (17.78)	4 (8.89)	12 (26.67)			Yes
74 (82.22)	41 (91.11)	33 (73.33)			Experiencing side effects
			1.11	.292	No
45 (50.00)	25 (55.56)	20 (44.44)			Yes
45 (50.00)	20 (44.44)	25 (55.56)			
M ± SD	M ± SD	M ± SD	t	p	Age
50.2 ± 9.6	49.5 ± 9.5	51.0 ± 9.7	−0.74	.459	Age of morbidity

Variables	Control group (n = 45)			Experimental group (n = 45)		
T1	T2	T3	T1	T2	T3	Social function M ± SD
54.09 ± 13.80	55.18 ± 14.34	54.81 ± 12.97	50.56 ± 11.89	52.80 ± 11.93	46.07 ± 14.36	Social adaptive function M ± SD
11.87 ± 7.67	10.51 ± 8.21	10.16 ± 7.46	11.56 ± 7.66	9.87 ± 7.69	9.30 ± 8.73	Quality of life M ± SD
78.38 ± 11.89	81.02 ± 16.82	75.16 ± 13.81	79.33 ± 13.40	86.42 ± 17.98	86.64 ± 15.92	Social function t^1/t^2

	2.45*	1.20		4.12**	−1.85	Social adaptive function t^1/t^2
	−2.52*	−2.95**		−4.18**	−1.60	Quality of life t^1/t^2

DETAILS

Subject:	Quality of life; Schizophrenia; Anxiety; Animals; Mental health care; Employment; Pandemics; Society; Mental disorders; Medical research; Rehabilitation; Mental depression; Animal assisted therapy; Likert scale; Social isolation; Personal relationships; COVID-19
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Personal Factors and Clinical Learning Environment as Predictors of Nursing Students' Readiness for Practice: A Structural Equation Modeling Analysis

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ProQuest document link

ABSTRACT (ENGLISH)

SummaryPurpose

It is essential to ensure the readiness for practice among undergraduate nursing students since the purpose of such education is to cultivate competent nurses who deliver high-quality and safe nursing. Astin's theory of student involvement suggests that this is affected by their personal factors and learning environment.

Methods

We conducted a cross-sectional study between November 16, 2020 and December 21, 2020 which examined personal factors and aspects of the clinical learning environment among senior nursing students ($n = 838$) enrolled across 54 nursing schools in Korea. The participants were asked to fill out a self-administered online survey, which assessed demographic characteristics, self-esteem, depression, work-life balance, clinical learning environment, anxiety during clinical practicum, and readiness for practice. Readiness for practice was measured using the Casey-Fink Readiness for practice survey. We used structural equational modeling to test our hypothetical model.

Results

The nursing students' readiness for practice was significantly affected by their self-esteem, work-life balance satisfaction, and clinical learning environment. Anxiety during clinical practicum directly influenced their readiness for practice.

Conclusion

Increasing self-esteem and work-life balance satisfaction, and improving their clinical learning environment by providing sufficient educational and clinical support, could help facilitate the transition from nursing schools to real-world practice for nursing students.

FULL TEXT

Introduction

Nursing students constitute a future healthcare workforce that will be tasked with safeguarding the health and well-being of all people. The cultivation of competent nurses is critical, particularly owing to the high prevalence of global health crises such as the COVID-19 pandemic. Preparing nursing students for clinical practice is a goal shared by nursing educators and administrators in clinical practice and academia [1]. Enabling nursing students to adapt to clinical practice remains a significant challenge, given the global shortage of nurses exacerbated by the high turnover rate of new graduate nurses. The RN Work Project–a 10-year panel study of new nurses in the United States–reported that ~17.5% of new nurses leave their first job within one year [2]. In Korea, the turnover rate of new nurses was 33.6% in 2011 and increased to 44.5% in 2019 [3].

In addition, most of the current nursing students and new graduate nurses belong to Generation Z and, thus, have significantly different generational characteristics and values compared to more experienced nurses [4]. A new generation of students—Generation Z, born between the mid-1990s and ending around 2012 [5]—is entering nursing programs and the workplace [6]. Surrounded by technology, Generation Z is known to be pragmatic; immature in social and interpersonal skills; individualistic; displays a desire for convenience and immediacy; cares about emotional, physical, and financial safety [7]. These characteristics result in lower self-esteem [8], higher depression [9], and greater importance of work-life balance (WLB) [10] than in older generations.

For new graduates, being ready for practice involves possessing the attributes that enable them to succeed in their workplace [11]. Readiness for practice is an essential element of undergraduate nursing programs as its primary objective is to cultivate competent nurses who deliver high-quality and safe nursing care [12]. However, students whose hands-on education is limited to clinical experience are often unprepared for clinical work [13]. The prevalence of perceived unpreparedness among nursing students leads to their maladaptation to practice and high turnover rates for new nurses [14]. To respond to this concern, the American Association of Colleges of Nursing suggested that educational programs should prioritize the adaptation of nursing students to the actual clinical field [15].

Previous research has shown that the readiness for practice of nursing students is associated with diverse factors, including their individual characteristics, psychosocial status, and clinical learning environment. A recent scoping review of 17 studies on nursing education conducted from 2000 to 2017 showed that the readiness for practice of nursing students was primarily influenced by personal and educational factors [16]. Personal factors included their backgrounds and feelings, whereas educational factors involved their professional competencies. Individual characteristics, including age [17,18], sex [17], and previous health care experience [19], were associated with their practice readiness. Self-esteem [20], depression [21], and anxiety during clinical practicum [22] were also related to their readiness for clinical practice. Nursing students who had negative emotions such as fear and anxiety toward clinical practicum experienced insecurity about working as a nurse and lacked professional confidence [7]. The clinical learning environment is integral since it supports the development of the professional competence of students, which in turn influences their readiness for practice. The quality of the practice sites and clinical supervision [17,23], feedback and support from faculty and clinical preceptors [15,23], and clinically centered hands-on training [24] were associated with an improvement in the professional competence of students.

Most previous studies regarding readiness for practice in nursing students were conducted in the Western culture, as described above, to develop an instrument [15] exploring the current status and associated factors [18,24]. On the other hand, research on practice readiness in Korea is scarce, focusing only on nursing competence of graduating nursing students and the role transition of senior nursing students [25]. Although lower readiness for practice is an important predictor of negative outcomes, such as maladaptation [26], turnover [27], and transition shock [28] among new nurses, few studies have comprehensively examined the factors affecting readiness for practice among nursing students [22,29].

The factors that reflect the unique characteristics and values of the new generation of students have also not been explored. Most of the current nursing students and new graduate nurses belong to Generation Z. These individuals are known to be pragmatic, individualistic, and lacking in social and relationship skills, which increases their risk of experiencing isolation, anxiety, insecurity, and depression [7]. The persistently high turnover rates of new nurses warrant innovative actions to improve their readiness for practice [6]. The aim of this study was, therefore, to examine the associations of personal factors with readiness for practice among senior nursing students in Korea. The specific factors of interest included self-esteem, depression, and satisfaction with WLB, clinical learning environment, and anxiety during clinical practicum.

Hypothesized model

A hypothesized model was derived from Astin's theory [30] of student involvement.

Astin's [30] student involvement theory research discusses students' college experiences and how these experiences play a role in changing and developing students over time. With numerous factors influencing academic achievement and social involvement through these experiences, Astin used the critical elements of student inputs (I), the educational environment (E), and student outcomes (O) to create a model for identifying such variables. In this model, “input” variables refer to the characteristics of students on school entry. The “environment” refers to the college context, including institutional aspects or student experiences while attending college. Finally, “outcome” refers to students' academic performances or degree attainment. One notable example is the work of Thomas et al. [31] who utilized Astin's I-E-O model to examine the relationship between personal behavioral and emotional health (e.g., depression, anxiety, and antisocial behavior) as input factors and the school environment factors (e.g., social support, student organization participation) to student retention from a large urban university. Their quantitative study revealed that increased depressive symptoms, antisocial behaviors, lower social support, and school participation were consistently related to decreased college retention. Consequently, Thomas et al. [31] have provided vital insight into how factors such as personal characteristics can benefit college students while challenging individuals to consider which environments may affect their retention.

We identified factors related to individual psychological and emotional health in line with the supposition that the effect of school environment factors on persistence is influenced by individual-level factors in the I-E-O model [30]. Consistent with the model, some entering characteristics are demographic and academic backgrounds, same as most previous studies [32,33], while others represent student values, beliefs, and attitudes [31,34]. Assessing nursing student's personal characteristics, including psychological health, can help nursing programs understand how the educational environment affects students' readiness for practice in a more integrated manner. Therefore, in this study, input referred to personal factors, including their self-esteem, depression, and satisfaction with WLB. Environment referred to their clinical learning environment and anxiety regarding clinical practice. Outcomes include their readiness for practice. We hypothesized that these personal factors affect readiness for practice through their clinical learning environment and anxiety during clinical practicum ([Figure 1]).

Methods Design and participants

In this cross-sectional study, a total of 842 senior nursing students from 54 nursing schools with 4-year baccalaureate programs participated. Inclusion criteria were (1) senior nursing students aged 20–29 years to include Generation Z students (generally referring to those born between 1997 and 2012) [5], (2) expected to graduate in February 2021, and (3) expected to take the national nurse licensure examination in 2021. Data of four participants were excluded due to incomplete responses or the inclusion criteria not being met, and our final sample thus comprised 838 participants. The sample size used for the structural equation modeling (SEM) in the study was calculated based on the condition that the ratio of the sample size to the parameters should be no less than 10:1 [35]. Therefore, the total sample size was suitable for testing a model with 49 free parameters, which would necessitate the inclusion of at least 490 participants.

Measurements

A self-administered questionnaire with 81 items was used. After getting authors' approval for all measures of the study, a committee translation [36] was performed for the measures being used for the first time in Korea–the Casey-Fink Readiness for Practice Survey (CFRPS). The committee translation recommended by the Guidelines for Best Practice in Cross-Cultural Surveys was performed [37]. After the committee translation, cognitive interviews were conducted with 12 nursing students with clinical experience to evaluate the cultural relevance and semantic homogeneity of the translated questionnaire and the response-related complexity of its questions [38]. The survey instrument was finalized after the complicated/ambiguous sentences and questions that were difficult to answer were revised. The Korean version of the readiness for practice survey comprised 20 items (Supplementary Figure 1).

Demographic characteristics

The general characteristics queried included participants' age, gender, type of nursing school, other degrees, school locations, the reason for joining nursing school, and employment expectations.

Personal factors

Self-esteem was measured using the Korean version [39] of Rosenberg's Self-Esteem Scale [40], which consists of 10 items. The Cronbach's α was .85 at the time of the instrument's development [39] and .80 in this study. Each item was rated on a 4-point Likert scale that ranged from 1 (strongly disagree) to 4 (strongly agree). The overall mean is considered the scale score, and higher scores indicated higher levels of self-esteem. The overall mean score of self-esteem was used for the correlation analysis with other variables. In the SEM, item parceling was performed using the "item-to-construct balance" technique to obtain more stable parameter estimates and better model fit. Item parceling was used by averaging item scores in each parcel and generating parcel scores as indicators of latent variables [41]. There were three-item parcels of self-esteem, all of which were confirmed to be valid through confirmatory factor analysis (CFA).

Depression was measured using the Short Form of the Normal Depression Scale for Individual Screening (SFNDS), which consists of five items [42]. The Cronbach's α was .81 at the time of the instrument's development [42] and .80 in our study. Each item was rated on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree), and the total score (range, 5−25) was calculated by adding the scores of each item. A score of 5−17 is considered normal, whereas ≥18 indicates dysfunctional depression. The total score of the five items was used in the correlation analysis. We used the total score as an observed variable in the SEM.

WLB was assessed using two items–one for WLB proportion and the other for WLB satisfaction. WLB proportion was measured using the WLB Charter by the Japanese Cabinet [43]. In this study, the WLB proportion was determined by calculating the ratio of the percentage of time spent on work to the percentage of time spent on private life. WLB satisfaction was measured using a 4-point Likert scale that ranged from 1 (not at all satisfied) to 4 (very satisfied) developed [44]. Higher scores indicated greater WLB satisfaction. The participants were asked, "How satisfied are you with your current WLB?" The WLB satisfaction score was used in the correlation analysis and SEM as an observed variable.

Environment factor

The clinical learning environment was evaluated using a modification of the Korean version of the Clinical Learning

Environment, Supervision and Nurse Teacher Scale (CLES + T) [45]. The Korean version was developed with 33 items and seven subdomains that were adapted from the original CLES + T [46], an instrument that is used internationally to evaluate clinical learning environments in undergraduate nursing education. Given the purpose of this study, we used 13 items from three subdomains: pedagogical atmosphere in the ward, supervisory relationship, and role of nurse teacher. Each item was rated on a 5-point Likert scale that ranged from 1 (“entirely disagree”) to 5 (“entirely agree”), and higher scores indicated that the students perceived their clinical learning environment to be more positive. The Cronbach's alpha of the Korean version of the CLES + T for the overall scale was .94, and the subscales ranged from .78 to .94. [45]. The Cronbach's α was .96 for the total scale and .83 to .88 for the subscales in the present study. The overall mean score was used for the correlation analysis with other variables. As a latent variable in the SEM, clinical learning environment had three indicators, corresponding to the overall mean scores of the three subscales.

Anxiety during clinical practicum was assessed using the Korean version [22] of the clinical experience assessment form [47]. The Korean version was developed with 16 items and three subdomains. Given the purpose of this study, we used 12 items from two subscales (communication and procedural aspects, and interactions with faculty) to measure the perceptions of anxiety-provoking situations during clinical practicum in nursing students. The Cronbach's alpha of the Korean version of the clinical experience assessment form for the overall scale was .82, and the subscales were not reported. [47]. The Cronbach's α was .89 for the total scale and .76 to .86 for the subscales in the present study. Each item was rated on a 5-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”), and higher scores indicated greater anxiety levels about clinical practicum. The mean score for this factor was calculated and used in the correlation analysis. As a latent variable in the SEM, anxiety during clinical practicum had two indicators, corresponding to the average scores of the two subscales.

Outcomes

Readiness for practice was assessed using the comfort/confidence section of the CFRPS [15]. This 20-item self-report questionnaire was used to measure the confidence and comfort to providing nursing care among the participants. The questionnaire contained four subscales: clinical problem solving, learning techniques, professional identity, and trials and tribulations. The instrument underwent committee translation and was validated through a CFA. Based on the validation result, we used the four original subscales, and the items were rated on a 4-point Likert scale that ranged from 1 (“strongly disagree”) to 4 (“strongly agree”). The mean of all items was considered scale score, and a higher score indicated better readiness for practice. The Cronbach's α for the overall scale was .69 and the subscales ranged from .50 to .80 at the time the instrument was developed [15]. The Cronbach's α was .89 for the total scale and .50 to .76 for the subscales in the present study. The overall mean scores of the readiness for practice were used for the correlation analysis with the other variables. As a latent variable in the SEM, readiness for practice had four indicators: the mean scores of the four subscales.

Data collection

For data collection, we selected nursing schools using convenience sampling and asked them to distribute the study flyer online and offline to their students. Students interested in the study participated by accessing the New Nurse e-cohort study website (http://newnurse.or.kr). All participants were asked to complete the survey after carefully reading the explanation on the first page of the online survey link, stating the purpose and content of the study, non-collection of personally identifiable information, confidentiality, and anonymity, and right to withdraw from research participation. Each participant was provided with a small incentive of approximately $16. Data were collected using the online survey, which took 10–20 minutes to complete. The item non-response rate was minimized because the online survey did not proceed to the next question until the current one was answered. The data collection was conducted from November 16, 2020 to December 21, 2020.

Data analysis

SPSS Version 26.0 (SPSS Inc., Chicago, IL, USA, 2019) was used to conduct statistical testing, including a description of the data, correlation analysis, and the calculation of reliability estimates. To explore the impact of personal factors, and clinical learning environment on the readiness for practice among senior nursing students, SEM as implemented in AMOS Version 26.0 was used to test the model hypothesized in this study.

In this study, univariate normality was satisfied, and even if multivariate normality was not satisfied, parameter estimation was performed with the maximum likelihood method according to the report that the estimated parameters are reliable if the maximum likelihood method is used [48]. Maximum likelihood estimation was used to estimate the model, and the bootstrap resampling technique was used in the SEM to obtain more stable and valid standard errors of the estimates. Multivariate normality reported a multivariate kurtosis value of 32.712 in AMOS, and multivariate normality was not satisfied because it exceeded the critical value. Path analysis was used to identify both the direct and indirect effects in the model. The direct, indirect, and total effects of the variables in the model are presented in Supplementary Table 1. The model fit was assessed using the following indices, i.e., relative chi-square (x^2 /df) test 49], comparative fit index (CFI) ≥ 0.90 [50], root mean square error of approximation ≤ 0.08 [49], and standardized root mean square residual ≤ 0.08 [51]. A *p*-value **Ethical consideration**

This study was approved by the Institutional Review Board of Yonsei University Medical Center (Approval No: Y-2020-0138). All participants received information about the study, which guaranteed their confidentiality and underlined that their participation was voluntary and could be terminated at any time.

Results Students' general characteristics

Of the total of 842 participants, 838 were used for the final analysis, excluding two born before 1997 and two with careless responses. The average age of the participants was 22.9 ± 1.4, and women students accounted for 90.6% of the sample (Table 1). In total, 82.6% of the participants were enrolled in university, and only 4.4% of them were pursuing a second degree. The high employment rate after graduation (39.5%), as well as academic interest and aptitude (33.9%), were the major reasons for the participants joining nursing schools. Most (88.4%) of the students are expected to be employed. A majority (54.2%) of the participants spent >50.0% of their time on work (Table 1).

Descriptions and factor loadings of study variables

The participants' perceived readiness for practice was at a moderate level (2.86 ± 0.31) (Supplementary Table 2). In total, 86.8% of the participants responded to questions on the CFRPS with “agree” or “strongly agree,” which indicated that they were ready for practice. Learning technique and professional identity were the subdomains with the highest scores (2.94 ± 0.54 and 2.94 ± 0.43, respectively), whereas trials and tribulations received the lowest (2.73 ± 0.35). Self-esteem was at a moderately high level (3.23 ± 0.45). The mean score of depression among students was 10.85 ± 4.12, and only 7.0% of the students were assessed to be experiencing dysfunctional depression (scores >18). The participants displayed a moderate level of WLB satisfaction (2.82 ± 0.63).

The students perceived their clinical learning environment as moderate (3.14 ± 0.67). Role of nurse teacher (3.79 ± 0.82) was the subdomain that received the highest score, whereas pedagogical atmosphere in the ward (2.82 ± 0.81) received the lowest score. Their anxiety during clinical practicum was at a moderate level (2.84 ± 0.70).

Students felt more anxious about communication and the procedural aspects related to patients (2.90 ± 0.89) compared to interactions with faculty (2.81 ± 0.71). The CFA results are reported in Supplementary Table 2. The values of the factor loadings ranged from .440 to .874 (>.40), showing that the latent variables were measured comprehensively by their observed indicator variables [46].

Correlations of study variables

A correlation matrix was prepared before testing the hypothesized model (Supplementary Table 3). Self-esteem (r = .42, *p* p p p p 52]. The Variance inflation factor (VIF) value of 1.7 or less confirmed no multicollinearity between all variables.

Test of the hypothetical model and parameter estimates

The modified model's goodness of fit with the research variables was x^2/df = 4.888 (x^2 = 98.281 (411.118 − 312.837), *df* = 3 (67 − 64)] is larger than 18.55 and in the range of *p* = 0.005, the modified model may be considered significant and be adopted in place of the hypothesized model [53], and also, CFI improved from .918 to .941 (Supplementary Table 1). A fully adjusted model that controlled for all the participant characteristics (age, gender, type of school, second degree students, location of school, reason for joining nursing school, expected employment) was also tested, and the effects among the study variables were consistent with the unadjusted hypothetical model. For simplicity, we have reported the unadjusted results in this paper. The final model is presented in Figure 2. After checking the modification indices, within-factor correlated measurement was allowed, and the model fit indices improves compared to the previous model.

Tables 2 and 3 summarize the final model's standardized direct, indirect effect, and total path estimates. There were significant direct and indirect effects associated with the personal factors, environment factors, and readiness for practice. Higher self-esteem (β = .29, *p* p p p p p p p = .001). Self-esteem also indirectly influenced readiness for practice through clinical learning environment (β = .06, *p* = .001). WLB indirectly influenced readiness for practice through clinical learning environment, anxiety during clinical practicum sequentially (β = .03, *p* p = .001). Depression had no direct or indirect effect on readiness for practice. The model estimated a 49.7% variance in the readiness for practice of nursing students.

Discussion

The findings of this study generally supported our hypothesized model, even though some paths were not significant. We observed that readiness for practice was directly and indirectly affected by self-esteem, WLB satisfaction, and clinical learning environment.

Anxiety during clinical practicum also directly influenced readiness for practice. These findings provided a more comprehensive picture of how personal factors and clinical learning environment are related to the readiness of nurses for practice, driven by anxiety during clinical practicum. However, given the weak-to-moderate effects of the examined variables, further research is needed to explore more factors related to readiness for practice among nursing students.

We used the comfort and confidence section of the CFRPS after the validation process to measure readiness for practice, new graduate nurses have reported that a lack of clinical confidence impedes their transition to clinical practice [1]. While other researchers changed the subscales or number of items [18,29] of the CFRPS to suit the context of their study, we used the four original subscales with 20 items each to facilitate global comparisons. The Korean senior nursing students displayed a moderate level of readiness, which was similar to, or slightly lower than, those observed in previous studies that used the same instrument [18,23,29]. In terms of the subscales, nursing students were more confident in their professional identity and learning technique and less confident about addressing their trials and tribulations. The results of this study were similar to those of previous studies, which indicated that nursing students reported higher scores in professional attributes but lowest in time management, prioritization, and management of multiple patients [1,15,23]. These results can inform teaching strategies, including simulation education to complement clinical practicum, strengthen academic-clinical partnerships, and promote readiness for entry-level practice [1].

Our findings further revealed that as personal factors, both self-esteem and WLB satisfaction had a specific indirect effect on readiness for practice through the clinical learning environment and the anxiety during the clinical practicum. This finding is supported by the previous study, which reported that lower self-esteem has significant adverse effects on perceiving both themselves and the clinical learning environment, provoking defensive behavior and poor communication, resulting in negative clinical practicum achievements among nursing students [20,54]. These results suggest that the self-esteem level of nursing students needs to be identified before delivering clinical practicum. In addition, improving WLB satisfaction is a potential strategy to improve readiness for practice. Dissatisfaction with WLB causes problems such as anxiety, stress, and depression, which negatively affect the academic performance of students [55]. Given that Generation Z prioritizes WLB, which seems to be commensurate to their academic achievement [56]. WLB satisfaction is an important factor that reflects the characteristics of Generation Z and influences their academic achievement. Educational institutions should thus strive to increase WLB satisfaction in order to improve readiness for practice among students.

On the contrary, depression had no significant effect on readiness for practice, which is a different result from the study by Ruz et al. [57], where the lower the depression of nursing students, the higher their academic achievement. This might be related to self-selection bias. Due to the nature of voluntary participation of the subjects, it is believed that students with depression are not likely to respond to the survey. According to a systematic review by Tung et al.

[58], the prevalence of depression among nursing students is 34.0%. However, only 7% of the participants in the study had dysfunctional depression, which meant that most students do not experience depressive symptoms. A possible reason for this result is that there is a possibility of assessing depression inaccurately in practice although SFNDS has been a relatively reliable and proven tool. Whether the dysfunctional depression identified using the SFNDS is consistent with the actual clinical diagnosis has not fully established [42]. Hence, further studies are needed to confirm the practical usefulness of the SFNDS.

A notable finding of this study was that, among all variables, the clinical learning environment had the most significant effect on the readiness for practice. Specifically, the clinical learning environment had a direct effect on the readiness for practice for nursing students; moreover, it indirectly affected the readiness for practice through the anxiety during clinical practicum. The more positively the students perceived their clinical learning environment, the lower their anxiety during clinical practicum, which in turn indicated better readiness. Similar to our findings, another study reported high rates of attributable to unfamiliar new clinical conditions during clinical practicum [59]. A poor clinical learning environment causes nursing students to worry and diminishes their confidence, reducing the efficiency of their clinical practice education [2]. Thus, the educational environment in the clinical setting is critical, as students should be nurtured as professional nurses and be given the opportunity to integrate their knowledge into practice [60]. In addition, among the sub-domain of CLES + T, " role of nurse teacher" had the highest scores, which means the better the nursing faculty's relationship with the practice setting and ability to integrate theory and practice, the more positive the students' perception of the clinical learning environment. This result is consistent with Saarikoski's study [46], suggesting that the nurse teacher should take effort to ensure the continuity of theory and practice with open communication and commitment between students, teachers, and staff nurses in clinical teaching. Further, a partnership between the nursing school and the hospital is needed to provide better clinical education to the students in a consistent and exemplary manner. In Korea, due to the rapid increase in the number of nursing schools over the last 10 years [61], numerous nursing schools find it difficult to secure clinical practicum sites and qualified preceptors for training students [62]. In addition, the provision of a good learning experience is hindered within the current hospital environment due to high turnover rate of patients, limited access to medical records, and increased awareness regarding the rights and safety of humans [63]. This situation provokes anxiety, depression, and burn-out among students and deteriorates the quality of their clinical education [62,63].

The last notable finding was that anxiety during clinical practicum had directly affected readiness for practice among students. This is in consistent with the results of previous studies, which reported that high levels of anxiety during clinical practicum negatively affect the clinical performance and successful adaptation and retention to practice of students [22]. Incorporating pre-clinical knowledge and skill development sessions through simulation education [64] is effective in decreasing anxiety among students. Most nursing students in Korea are provided simulated education because simulation hours are accepted as 10.0% of the compulsory 1,000 clinical hours by the Korean Accreditation Board of Nursing Education [65]. Given that anxiety during clinical practicum can be mediated through various methods, the persistent attention and efforts of educators are needed to ameliorate this anxiety and improve readiness for practice among students.

This study has several limitations. First, our findings must be viewed with caution as most participants were female and from universities located in urban areas due to the convenient sampling method employed. Second, we measured readiness for practice using a self-administered survey based entirely on the students' perspectives. Readiness for practice should be evaluated by the student, nursing faculty, and nurse educators in practice as they have different lenses through which they view practice readiness. Additionally, this study was cross-sectional, limiting our understanding of the influence of personal and environmental factors on readiness for practice based on the I-E-O model [30]. A longitudinal study may be conducted to better explore relationship between factors and understand the association between analyzed variables. Lastly, we modified the standardized instruments with multiple subdomains into shorter versions to suit the purpose of our study. This may have hindered us from attaining an in-depth understanding of the concepts and limited the comparisons that could be made with other studies that explored readiness for practice. While the readiness for practice instrument maintained the same construct as the original instrument, Cronbach's alpha value was .5 in learning techniques, one of the sub-domains, which was not ideal but was acceptable [66]. Although this is the same result as the original instrument when developed, a psychometric test for the Korean student nursing population is proposed in follow-up studies to secure validity and reliability.

Conclusions

Our findings suggest that taking personal factors into account, improving their clinical learning environment, and providing sufficient educational and clinical support could enable nurses to establish better professional values and readiness for practice. In addition, considering the characteristics of Generation Z, where individual values and characteristics are becoming increasingly important, the cooperation among nursing schools, teaching hospitals, and clinical learning institutions toward providing clinical learning curricula reflecting generational characteristics can effectively improve readiness for practice among nursing students. This would effectively help ensure readiness for practice so that graduates can transition to professional nurses.

Author contribution

Taewha Lee, guided the research plan from the beginning to the completion, participated in the entire process until the completion of the research, and revised and developed the manuscript.

Yoonjung Ji, all processes including research plan preparation, data collection, result analysis, discussion writing, manuscript writing, and submission.

Yea Seul Yoon participated in research plan preparation and data collection.

Hyunju Ji participated in research plan preparation and data collection.

SangA Lee participated in discussion writing and manuscript writing.

Sookhee Yoon participated in statistical analysis, result analysis and writing the result of the manuscript.

Su Jeong Lee participated in research plan preparation.

Conflict of interest

There are no conflicts of interest to declare.

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Appendix A Supplementary data

The following is the Supplementary data to this article.**Multimedia component 1**Multimedia component 1

Appendix A Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.anr.2023.01.003.

Characteristics	Mean ± SD or n (%)
Age (year)	22.9 ± 1.4
21–23	648 (77.3)
≥24	190 (22.7)
Gender	

Women	759 (90.6)
Men	79 (9.4)
Type of school	
University	692 (82.6)
College	146 (17.4)
Second-degree students	
Yes	37 (4.4)
No	801 (95.6)
Location of school	
Capital area	425 (50.7)
Urban	204 (24.3)
Rural	209 (25.0)
Reason for joining nursing school	
High employment rate after graduation	331 (39.5)
Academic interest and aptitude	284 (33.9)
Suggestions of family and friends + Social perception and reputation	123 (14.7)
Depending on SAT score + Aiming to get into medical or dental schools	100 (11.9)
Expected employment	
Yes	741 (88.4)
No	97 (11.6)
WLB proportion	
Balance (50:50)	156 (18.6)
Life-oriented imbalance (spent above 50% of time on private life)	228 (27.2)

Work-oriented imbalance (spent above 50% of time on work)	454 (54.2)

Endogenous variables	Predicting variables	Standardized direct effect		Standardized indirect effect		Standardized total effect		SMC
β	p	β	p	β	p	Clinical learning environment	← Self-esteem	.19
<.001			.19	<.001	.122	← Depression	.03	.425
		.03	.425		← Work-life balance satisfaction	.25	<.001	

	.25	<.001		Anxiety during clinical practicum	←Clinical learning environment	−.37	<.001	
	−.37	<.001	.135	Readiness for practice	←Self-esteem	.29	<.001	.08
.001	.37	.001	.497	←Depression	.03	.343	.01	.416
.04	.214		←Work-life balance satisfaction	.12	<.001	.11	.001	.23
.001		← Clinical learning environment	.30	<.001	.13	.001	.43	.001
	←Anxiety during clinical practicum	−.36	<.001			−.36	<.001	

Path	B	β	p	95% CI
Self-esteem → Clinical learning environment → Anxiety during clinical practicum → Readiness for practice	0.02	0.02	0.001	[.006, .029]
Self-esteem → Clinical learning environment → Readiness for practice	0.03	0.06	0.001	[.016, .060]
Work-life balance → Clinical learning environment → Anxiety during clinical practicum → Readiness for practice	0.02	0.03	<.001	[.009, .025]
Work-life balance → Clinical learning environment → Readiness for practice	0.03	0.08	0.001	[.020, .050]

DETAILS

Subject:	Anxiety; Nursing education; Generation Z; Clinical medicine; Student retention; Structural equation modeling; School environment; Nursing care; Questionnaires; Nursing schools; Generations; Committees; Mental depression; Nurses; Learning; Self esteem
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Dignity and Related Factors in Patients with Cancer: A Cross-Sectional Study

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ProQuest document link

ABSTRACT (ENGLISH)

SummaryPurpose

Dignity is a basic human right that is related to psychological distress factors in patients with cancer such as depression and demoralization. Hence, the dignity issue is of great importance to healthcare professionals. The present study aimed to advise healthcare professionals regarding the related distress factors of dignity in patients with cancer by investigating its relationship with patients' demographics, disease characteristics, and psychological distress.

Methods

This was a cross-sectional study design. A convenience sample of 267 patients with cancer from a medical center was recruited into this study. Each patient completed demographics and disease characteristics questionnaires, the Patient Dignity Inventory Mandarin Version, the Demoralization Scale Mandarin Version (DS-MV), and the Patient Health Questionnaire-9 (PHQ-9). Data were analyzed with SPSS 22.0 software.

Results

Dignity was significantly correlated with age, demoralization, and depression. Cancer patients aged 65 or above were more likely to have a lower sense of dignity. In the present study, the sensitivity and specificity of the Patient Dignity Inventory Mandarin Version for demoralization (DS-MV≥30) were 84.8% and 79.1% and for depression (PHQ-9≥10) were 73.8% and 70.9% in patients with cancer with an aggregate score of 35 or above.

Conclusions

Dignity is significantly correlated with personal demographic characteristics and psychological distress in patients with cancer. The results provide reference data for healthcare professionals to understand and enable dignity in patients with cancer and aid in the development of methods that promote their dignity.

FULL TEXT

Introduction

Cancer is a life-threatening disease. The number of patients with cancer worldwide is estimated to be 18.1 million [1

], and since 1982, cancer has been the number one cause of death in Taiwan [2]. Patients with cancer experience physical symptoms as well as psychological distress such as fear of relapse, depression, demoralization, despair, loneliness, loss of autonomy, and fear of becoming a burden to others [3]. Previous research has shown that the psychological distress patients with cancer experience are related to dignity [4,5]. A severe loss of dignity can lead to a desire for early death [3,6].

Dignity is an intrinsic human feature and is related to personal values, freedom, responsibility, and capability [7]. It arises from interpersonal interactions, in which social constructionism plays a role [8]. Dignity can thus be classified as either fundamental or absolute, or personal or relative [9]. Fundamental or absolute dignity is a universal concept, having its roots in human rights, proclaiming that all humans have value regardless of status and situation, and this does not change under any circumstances [9]. Personal or relative dignity, however, is subject to change. It can be affected by culture, society, and education; it can also be threatened by a healthcare system or lack thereof [10,11]. Everyone hopes to maintain their dignity in all settings and circumstances, including when they seek medical help at healthcare institutions. Previous studies on patient dignity have pointed out that provision of dignified care is closely related to the patient's sense of dignity [12], although being physically weak or challenged, capabilities of patients with cancer might be impaired, leading to an imbalance between health and human rights. In addition, if healthcare professionals do not pay attention to their needs, patients could feel that their dignity has been violated [12,13]; accordingly, protecting the dignity of patients with cancer is a priority for healthcare professionals.

The dignity of patients with cancer is related to personality and psychological distress [5,13,14]. Depression falls under psychological distress, affecting approximately 45.0% of patients with cancer [15]. Compared with the general public, patients with cancer are three or four times more likely to have depression. In severe cases, they may commit suicide [16,17]. Depression is a mood-related disorder; its diagnostic criteria include sadness or feeling down, loss of enthusiasm or joy for daily activities, and recurrent listlessness almost daily for more than 2 weeks. There may also be accompanying symptoms such as lowered self-esteem, guilt, sleeplessness, change in appetite, inability to focus, changes in activity, and suicidal thoughts [18]. Demoralization is also a common psychological state found in patients with cancer, characterized by a sense of misery and doubts over one's own capability [19].

Characteristics of demoralized patients include feeling incapable, helpless, having a sense of failure, feeling like an outcast, despairing, and even considering giving up [20,21]. A systematic review of 10 studies has shown that 13–18.0% of patients with cancer feel demoralized [22]. Three systematic reviews list the following as some of the demoralization-related factors: poor health, poor control over physical or psychological symptoms, decreased quality of life, unemployment and economic pressure, decreased social skills, singlehood, and social rejection or isolation [22–24]. In addition, compared with depression, demoralization has stronger correlation with suicidal thoughts or behavior [25–27]. These findings highlight that demoralization is indeed significant. As a result, sometime in the last 10 years, demoralization was included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) [20]. Our review of existing literature revealed that the dignity of patients with cancer is almost always discussed alongside demoralization or depression [5,28,29]. The Patient Dignity Inventory (PDI) indicates lower sense of dignity with higher scores [14]. According to previous studies, the dignity of patients with cancer with demoralization and depression were positively significantly correlated [28–31], which means that the higher the sense of low dignity, the higher the level of demoralization and depression in patients with cancer.

However, what do dignity scores really mean to patients with cancer and healthcare professionals, and what is the threshold that indicates that the patient may be demoralized or depressed? Existing literature barely addresses these questions. Building on the literature reviewed, the present study examined the relationship between the dignity of patients with cancer in Taiwan and demoralization and depression; it also focused on the cut-off point pertaining to their dignity.

Methods Study design, setting, and sample

This was a cross-sectional study design and convenience sampling from a medical center in Southern Taiwan. Participants were recruited between June 2016 and February 2017, and the inclusion criteria were (1) having a diagnosis of cancer; (2) being 20 years of age or greater; (3) being mentally alert, clear; (4) having no history of diagnosis of depression or other psychiatric disorders; (5) being able and willing to provide written informed consent; and (6) being able to express their own opinions and complete the questionnaires. Participants were excluded if (1) they had organic diseases of the brain, as diagnosed by a physician; (2) they were delirious or unconscious; (3) they had depression or other emotional problems; and (4) they were unable to speak and read Mandarin Chinese. This study was approved by the Institutional Review Board of the Chi Mei Medical center, Approval no. 10411-003.

Variables and instruments Demographics and disease characteristics

Participants' demographics included gender, age, marital status, number of children, education, occupation, monthly income, cohabitation status, religious beliefs, tumor site, cancer stage, and disease characteristics.

Dignity

The original English version of the Patient Dignity Inventory (PDI) was developed by Chochinov et al. in 2008. It is mainly used to measure the degree of dignity in patients with cancer over the past few days [32]. This study used the Mandarin Version of Patient Dignity Inventory (PDI-MV) for measuring dignity. The PDI-MV was translated from the original English version by Li et al. in 2018 [28]. It is a 25-item self-report questionnaire, with each item rated on a 5-point Likert scale (from 1 = not a problem to 5 = an overwhelming problem). Higher scores indicate lower levels of dignity. Cronbach's α coefficient for the PDI-MV was .95. In construct and criterion-related validity, the PDI-MV significantly correlated with the Mandarin Version of the Demoralization Scale (DS-MV) (r = .58, *p* p p 28]. In this study, Cronbach's α for the PDI-MV was .95.

Demoralization

The original English version of the Demoralization Scale (DS) was developed by Kissane et al. in 2004. It was used to assess the levels of demoralization over the past 2 weeks [33]. This study used the Mandarin Version of Demoralization Scale (DS-MV) for measuring demoralization. The DS-MV was translated from the original English version by Hung et al. in 2010 [34]. It is a 24-item self-report questionnaire, with each item rated on a 5-point Likert scale (from 0 = strongly disagree to 4 = strongly agree). Scores higher than 30 indicated significant demoralization [34]. Cronbach's α coefficient for the DS-MV was .90. In construct and criterion-related validity, the DS-MV significantly correlated with the Beck Hopelessness Scale (BHS) (r = .66, *p* p p 34,[35]. In this study, Cronbach's α for the DS-MV was .85.

Depression

The original English version of the PHQ-9 was developed by Kroenke et al. in 2001. It was used to assess the degree of depression over the past 2 weeks [36]. This study used the Mandarin Version of PHQ-9 for measuring depression. The Mandarin version of PHQ-9 was translated from the original English version by Liu et al. in 2011 [37]. It is a 9-item self-report questionnaire; with each item rated on a 4-point Likert scale (from 0 = not at all to 3 = almost every day). The PHQ-9 score higher than 10 had a sensitivity of 86.0% and a specificity of 94.0% for major depression. Cronbach's α coefficient for the PHQ-9 was .80 [37]. In construct and criterion-related validity, the PHQ-9 significantly correlated with the Patient Health Questionnaire-15 (PHQ-15) (r = .65, *p* p p 38]. The PHQ-9 used in the study had a Mandarin version with good reliability and validity. In this study, Cronbach's α for the PHQ-9 was .96.

Data collection

The study protocol was approved by the Institutional Review Board (IRB number: 10411–003). Informed consent and confidentiality were obtained from all the participants. Consent letters for the use of the PDI-MV, DS-MV, and PHQ-9 were obtained for this study. The study obtained the permission from a medical center of Southern Taiwan to contact the participants and conduct the study. The participants were recruited through a face-to-face interview by a research assistant using the self-report questionnaires with standard instructions. A research assistant, who possessed a license to practice nursing and had been the deputy head nurse in the hematology and oncology division for three years, was trained to administer the questionnaires and ensured rigor during administration and data retrieval from the medical charts. The research assistant checked the list of newly admitted patients with cancer in the inpatient information system every day, screened those meeting enrollment criteria, and confirmed with the attending physician. Subsequently, the research assistant went to the ward to recruit patient one by one and face-to-face based on the list of participants who were eligible for inclusion in this study. The research assistant explained the purpose and procedure of the study to patient, and obtained patient's informed consent in writing, after which the questionnaire survey was conducted. The research assistant used easy-to-understand words, and appropriate volume, speed, and tone to explain the study objectives and processes for the patients. The explanation method of the research assistant was appropriate to the patient's educational level and cultural background, and allowed sufficient time for the patients to consider the pros and cons of participating in the study. If the patient was unable to select the questionnaire options, the research assistant would read out the questions one-by-one and complete the scale based on the patient's answers. Patient autonomy was respected during the completion of the questionnaire and patients were allowed to withdraw or stop at any time during the study. The research assistant was present throughout the administration of the questionnaires to answer any questions that the participant had. Appropriate support, which included support from the attending physician, was provided in a timely manner if the patient experienced emotional distress.

Data analysis

All statistical analyses were performed using SPSS version 22.0 (IBM Corporation, Armonk, NY, USA). Descriptive statistics were used to present variable distributions, which included frequencies, scores, percentages, means, and standard deviations. Inferential statistics were used for the correlation analysis between the independent variables, such as sociodemographic and clinical characteristics, and the dependent variable, a sense of dignity. These tests included an independent *t*-test, one-way analysis of variance, Pearson's correlation, and receiver operating characteristic (ROC) curve.

Results Participant's demographics

A total of 267 participants were included in the study. Demographic data and disease characteristics of the participants are shown in $^{\text{Table 1}}$. The mean of PDI-MV total score was 35.69 (range = 25–93). Regarding demographic and clinical characteristics, the following groups had the mean of PDI-MV total scores higher than the mean of the whole sample: patients who aged 65 years or older (M = 37.65, t = 3.13, *p* = .002), patients who were demoralization (M = 47.12, t = 8.93, *p* p Table 1).

Bivariate correlations with dignity

Bivariate correlations were used to examine the relationship between ratio variables and dignity. Significant correlations were found between dignity and age (r = .14, *p* = .021), demoralization (r = .55, *p* p Table 1). Specifically, patients aged 65 or older having demoralization and depression were more likely to have lower dignity.

Mean item scores of the PDI-MV

The PDI-MV items with the highest mean scores were item 8 ‘‘worrying about my future,’’ (M = 1.78, SD = 0.97), item 3 ‘‘experiencing physically distressing symptoms,’’ (M = 1.73, SD = 0.83), item 7 ‘‘feeling uncertain about my illness and treatment’’ (M = 1.67, SD = 0.81), and item 18 ‘‘feeling that I am a burden to others’’ (M = 1.67, SD = 0.82) ($^{\text{Table 2}}$).

Cut-off point of the PDI-MV

$^{\text{Figures 1 and 2}}$ show the receiver operating characteristic (ROC) curve and area under the curve (AUC) of the PDI-MV (total score) for detecting the presence of demoralization and depression. The results show that when the best cut-off point of PDI-MV was at 36, the AUC, sensitivity, and specificity for demoralization (DS-MV ≥ 30) were .86, 84.8%, and 79.1%, respectively. When the best cut-off point was 35, the AUC, sensitivity, and specificity for depression (PHQ-9 ≥ 10) were .77, 73.8%, and 70.9%, respectively ($^{\text{Table 3}}$).

Discussion

This study examined the dignity of patients with cancer in Taiwan and related psychological distress factors. We found that the higher the PDI-MV aggregate score, the lower the sense of dignity and the greater the problem—the PDI-MV average aggregate score was 35.69 and the average itemized score was 1.43. These scores are higher than those obtained in a study conducted in Italy (M = 21.01) [[29]] and lower than those obtained in studies conducted in Germany (M = 51.60) [[14]], Spain (M = 38.80) [[39]], and Iran (average itemized score = 1.94) [[40]]. The patients with cancer studied in those studies were similar to the present study's participants in terms of the disease's basic attributes, type, stage, and treatment methods. Notably, previous studies have pointed out that when the Patient Dignity Inventory itemized scores were greater than 3, this indicates that the patient has dignity-related issues [41]. In the present study, none of the itemized scores were greater than 3, but the aggregate score showed a significant correlation with demoralization and depression. Therefore, we recommend looking at aggregate scores along with itemized scores to understand the overall state of patient dignity, and this should minimize the possibility of psychological distress in patients from being overlooked. Dignity scores might differ across countries due to varying cultural backgrounds, social structures, and contextual expression [42,43]; nonetheless, it can be concluded from previous studies that dignity-related issues in patients with cancer have garnered much attention.

The present study also found that dignity and age were significantly correlated, which is in line with the findings of the studies conducted in Italy [29] and Iran [40]. In the present study, two groups were observed: patients with cancer aged below and above 65. We found that patients with cancer aged above 65 had significant dignity-related issues. Previous studies have mentioned that elderly people feel that they have nothing to contribute and are not valued if they have cancer or any other disease or weakness, so they feel a greater lack of recognition and even being ignored, with these self-perceived behaviors posing the greatest threats to dignity in elderly patients with cancer [44]. It is therefore crucial to maintain the dignity of elderly patients with cancer in healthcare settings, be it through the healthcare professionals paying attention to their language, attitude, and behaviors, or the environment and facilities. The key is to ensure that the elderly patients with cancer feel valued and recognized and see their life as meaningful.

In the present study, the top three PDI-MV questions with the highest itemized scores were Q8 (worried about the future), Q3 (experiencing physical discomfort), and Q7 (feeling uncertain about the disease and treatment). The results are similar to those of the studies conducted in Germany [31], Spain [39], and Italy [29]. As medicine continues to advance, the odds of cancer survival are also increasing. Having cancer is no longer considered a hopeless and fatal situation. That said, patients with cancer will still feel anxious and uncertain about their future; the pain they experience is not limited to the physiological condition. Accordingly, we recommend that healthcare professionals share the disease progression and treatment process with the patients in detail and also encourage them to express their views about the future. This will help reduce their uncertainty and psychological distress and boost their hopes for the future.

Furthermore, the present study came to a similar conclusion as have most studies on dignity, demoralization, and depression: the dignity of patients with cancer is significantly correlated with demoralization and depression [29,30]; it even went a step further, discovering that at a threshold of 36, the sensitivity and specificity for demoralization (DS-MV ≥ 30) were 84.8% and 79.1%, respectively, and when the threshold was 35, the sensitivity and specificity for depression (PHQ-9 ≥ 10) were 73.8% and 70.9%, respectively. Previous studies lack in-depth analyses on the dignity threshold scores for demoralization and depression, and therefore, no comparison can be made; moreover, these studies merely point out that patients suffer from dignity-related issues when each itemized score is equal to or greater than 3 (a problem) [41] and do not analyze the aggregate score. Although the PDI-MV cut-off point of 35 and 36 in the present study did not reach the “a problem to overwhelming problem” level (>75–125), these cut-off points had higher sensitivity and specificity for depression and demoralization in patients with cancer in Taiwan. This is an important finding. We hope that the PDI-MV can be used to detect early signs of dignity-related issues in patients with cancer and also be applied as a preventive screening tool for psychological distress. For healthcare professionals, diagnosing demoralization or depression is challenging, especially because the side effects of cancer treatments are similar to the symptoms of demoralization and depression. We recommend that healthcare professionals pay more attention toward patients with cancer with a PDI-MV aggregate score of 35 or more as they may have developed psychological distress due to dignity-related issues (such as demoralization or depression); implementing additional psychological assessments or counseling for such patients will allow healthcare professionals to better understand their psychological state and offer appropriate treatment and care.

Negative associations such as perceiving cancer as fatal and equating growing old with nearing the end of life, can directly threaten patient dignity. If healthcare professionals share such negative attitudes, they will not be able to provide dignified care to patients. Therefore, the dignity of patients with cancer should receive greater educational attention and social recognition in the healthcare sector. Healthcare professionals have to advocate for a dignified healthcare environment. This applies to their language, attitude, and behaviors, as well as medical and care facilities.

Limitation

This study had several limitations. First, a cross-sectional design was used, making causal inferences impossible to determine. Second, although an effective sample size was used for the analysis, there were insufficient samples for understanding and comparing dignity for every type of cancer diagnosis. Third, we only included cases from one medical center, and the collected data were from a period of time indexed 5 years ago (2017); therefore, the study results cannot be generalized to all patients with cancer.

Conclusion

This study found that dignity in patients with cancer was correlated with age, demoralization, and depression. Healthcare professionals could use the PDI-MV to routinely monitor dignity changes in patients with cancer, understand how they view dignity and dignity-related distress, encourage them to speak out regarding their personal views, and provide suitable care measures based on local backgrounds and cultural habits. This will increase dignity in patients, alleviate dignity-related distress, and reduce adverse outcomes. Future studies should examine dignity in chronic diseases, major illnesses, terminal illnesses, and long-term care to enable clinical caregivers or competent authorities to better meet the needs of the patients.

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Conflict of interest

No conflict of interest has been declared by the authors.

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Variable	n (%)	M ± SD	t/F/r	P
Dignity (PDI-MV) (mean ± SD = 35.69 ± 12.30, range 25–93)				
Gender			−0.42	.674
Men (reference)	137 (51.3)	35.38 ± 13.02		
Women	130 (48.7)	36.02 ± 11.54		
Age (mean ± SD = 57.43 ± 11.51, range 21–87)			.14	.021
≥65 (reference)	153 (57.3)	37.65 ± 12.85	3.13	.002
<65	114 (42.7)	33.06 ± 11.05		
Marital status			−0.45	.655

Married (reference)	198 (74.2)	35.49 ± 12.32		
Single	69 (25.8)	36.26 ± 12.30		
Children			0.01	.993
Yes (reference)	141 (52.8)	35.71 ± 12.62		
No	126 (47.2)	35.66 ± 11.96		
Education			1.97	.050
College or above (reference)	55 (20.6)	38.58 ± 14.43		
Below college	212 (79.4)	34.94 ± 11.60		
Occupation			0.86	.392
Yes (reference)	70 (25.5)	37.10 ± 13.96		
No	197 (74.5)	35.21 ± 11.68		
Monthly income (NTD)			1.07	.293
>40000 (reference)	31 (11.6)	38.58 ± 16.53		
≤40000	236 (88.4)	35.31 ± 11.62		
Cohabitation status			0.39	.698
Live with family (reference)	240 (89.9)	35.79 ± 12.25		
Alone	27 (10.1)	34.81 ± 12.96		
Religious belief			0.67	.501
Yes (reference)	223 (83.5)	35.91 ± 12.62		
No	44 (16.5)	34.55 ± 10.58		
Tumor site			2.00	.812
Breast	38 (14.2)	37.84 ± 12.90		
Reproductive	36 (1.9)	35.42 ± 9.21		

Leukemia	16 (5.2)	36.50 ± 14.77		
Digestive tract	115 (41.6)	34.67 ± 11.96		
Lung	22 (7.9)	31.23 ± 6.89		
Urology	12 (11.2)	32.75 ± 7.71		
Head and neck	24 (8.6)	42.79 ± 17.60		
Others	4 (9.4)	34.50 ± 15.02		
Cancer stage			−0.07	.941
I-II stage (reference)	78 (29.2)	35.60 ± 13.12		
III-IV stage	189 (70.8)	35.72 ± 11.98		
Disease characteristics			0.68	.497
Initial diagnosis (reference)	170 (63.7)	36.08 ± 12.76		
Recurrence	97 (36.3)	35.01 ± 11.49		
Demoralization (DS-MV) (mean ± SD = 23.84 ± 10.37, range 0–68)			.55	<.001
Scoring ≥30 (reference)	66 (24.7)	47.12 ± 12.69	8.93	<.001
Scoring <30	201 (75.3)	31.94 ± 9.57		
Depression (PHQ-9) (mean ± SD = 5.65 ± 4.52, range 0–24)			.49	<.001
Scoring ≥10 (reference)	62 (23.2)	43.66 ± 12.79	5.57	<.001
Scoring <10	205 (76.8)	33.28 ± 11.10		

Number	Item	M ± SD	Rank
1	Not being able to carry out tasks associated with daily living	1.26 ± 0.69	21
2	Not being able to attend to my bodily functions independently	1.20 ± 0.59	22

3	Experiencing physically distressing symptoms	1.73 ± 0.83	2
4	Feeling that how I look to others has changed significantly	1.40 ± 0.68	11
5	Feeling depressed	1.59 ± 0.80	9
6	Feeling anxious	1.62 ± 0.82	6
7	Feeling uncertain about my illness and treatment	1.67 ± 0.81	3
8	Worrying about my future	1.78 ± 0.97	1
9	Not being able to think clearly	1.34 ± 0.67	17
10	Not being able to continue with my usual routines	1.43 ± 0.76	10
11	Feeling like I am no longer who I was	1.60 ± 0.83	8
12	Not feeling worthwhile or valued	1.37 ± 0.76	15
13	Not being able to carry out important roles	1.39 ± 0.68	14
14	Feeling that life no longer has meaning or purpose	1.36 ± 0.70	16
15	Feeling that I have not made a meaningful and lasting contribution during my lifetime	1.29 ± 0.68	20
16	Feeling I have unfinished business	1.61 ± 0.86	7
17	Concern that my spiritual life is not meaningful	1.40 ± 0.74	12
18	Feeling that I am a burden to others	1.67 ± 0.82	4
19	Feeling that I don't have control over my life	1.63 ± 0.93	5
20	Feeling that my illness and care needs have reduced my privacy	1.33 ± 0.73	18
21	Not feeling supported by my community of friends and family	1.06 ± 0.39	24
22	Not feeling supported by my health care providers	1.05 ± 0.33	25
23	Feeling like I am no longer able to mentally fight the challenges of my illness	1.40 ± 0.67	13
24	Not being able to accept the way things are	1.33 ± 0.60	19

25	Not being treated with respect or understanding by others	1.19 ± 0.50	23
Total score		35.69 ± 12.3	
Range		25–93	

Item	AUC	Cut-off points	Sensitivity	Specificity	SE	p	95% CI	Cronbach's α
Demoralization (DS-MV ≥ 30)	.86	36	84.8	79.1	0.03	<.001	0.81–0.92	.91
Depression (PHQ-9 ≥ 10)	.77	35	73.8	70.9	0.03	<.001	0.70–0.83	.85

DETAILS

Subject:	Cancer; Patients; Quality of life; Validity; Cross-sectional studies; Disease; Medical personnel; Mental disorders; Questionnaires; Review boards; Mental depression; Likert scale; Suicidal behavior; Human rights; Self esteem; Consent
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Reviewer acknowledgment

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FULL TEXT

At the conclusion of Volume 16 of the Asian Nursing Research, the Editors wish to express gratitude and appreciation for the support of so many colleagues who have dedicated their time for ANR this year. They evaluated the research that was submitted to the journal and shared their insights about the papers’ strengths and weaknesses. This enabled us to make the right decisions and it helped our authors to further improve their work. At the end of this year, we would like to take an opportunity to openly acknowledge all those reviewers who have contributed to the journal’s success. Their names of those who completed one or more reviews between January 1st, 2022 and November 30th, 2022 are listed as below. We would like to warmly thank them for their hard work and dedication and would like to extend a special thanks to those who completed their reviews on time as good and timely peer review is absolutely essential for the success of the ANR.

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Effect of a Nursing Comprehensive Skill Training Course (NCST-C) on Nursing Students' Metacognitive Awareness: A Quasi-experimental Study

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ABSTRACT (ENGLISH)

SummaryPurpose

This study explored the effect of a nursing comprehensive skill training course (NCST-C) on the metacognitive awareness of nursing students to provide a scientific foundation for improving metacognitive awareness.

Methods

This study used a quasi-experimental two-group matched pretest, post-test, and follow-up test. Ninety-six junior nursing students were recruited using convenience sampling and assigned to two groups by drawing lots with odd and even numbers in a nursing school at Huzhou University. The control group received a traditional skill-training course. The intervention group received NCST-C. Nursing students' metacognitive awareness inventory (MAI) was evaluated at the baseline, 16-week, and 20-week follow-up points. A repeated-measures analysis of variance and a simple effect test was used to compare each outcome measure of the two groups three times.

Results

The NCST-C resulted in greater benefits for nursing students' metacognitive awareness as well as various dimensions (knowledge of cognition and regulation of cognition) in the intervention group. Combined with a simple effects test, the MAI and dimension scores of those in the intervention group significantly improved at 16 weeks after the baseline ($F = 9.78–44.03$; all *p*s $< .01$). The sustainable effect of NCST-C lasted 1 month after the intervention ($F = 14.24–62.36$; *p*s $< .01$), reaching statistical significance ($p < .05$).

Conclusions

The NCST-C effectively developed metacognitive awareness among nursing students. Its design provides a new type of experimental course for improving metacognitive awareness.

Trial registration

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FULL TEXT

Introduction

Rapid developments in science and technology have had positive effects on the quality of education [1]. Online courses have facilitated student-centered education and the innovative development of diversified teaching models [2]. Construction of online courses is both a challenge and an opportunity. Research shows that the construction and implementation of online courses cannot meet the needs of contemporary students' learning, and students call for returning to classroom learning [3]. The view that high-quality resource construction of online courses and free learning environment beyond space are auxiliary carriers of classroom teaching has been recognized by scholars [4]. Therefore, exploring the design of online and offline hybrid courses, integrating the advantages of online platforms and the original motivation of classroom teaching is the focus of research to adapt to social and professional development. Recent study has shown that these all require the drive of students' metacognitive awareness [5]. Metacognitive awareness includes knowledge of cognition and regulation of cognition, it has been defined as the ability to reflect upon, understand, and control one's learning [6]. Knowledge of cognition can help students recognize their strengths and weaknesses, and then affects learning motivation and interest [7]. Regulation of cognition includes planning, implementing, monitoring, debugging, and evaluating strategies and it is a trigger for evaluating and adjusting students' learning strategies [4,8]. Knowledge of cognition and regulation of cognition are interrelated, but not simply compensatory [9]. Studies show that students with higher knowledge of cognition have shown better test performance. However, if their regulation of cognition ability decreases, students will show unreasonable planning and self-debugging, thus affecting their exam results [10,11]. Recent studies have shown that metacognitive awareness contributes to the development of critical thinking and positive learning [12,13]. Students with low metacognitive awareness often adopt ineffective learning strategies and fail to use critical thinking or to develop practical skills to overcome learning challenges [14]. Therefore, focusing on metacognitive awareness as a means to adjust learning motivation, positive learning ability, and professional thinking can be considered important for improving the quality of nursing education.

Evidence suggests that active learning can improve students' metacognitive awareness [15,16]. Active learning is defined as a process in which learners play an energetic and dynamic role in their education [17]. Examples of active learning modes include mixed online and offline teaching modes and cooperative learning [18]. Mixed online–offline teaching modes involve multi-spatial teacher–student interaction. Here, teachers need to design online teaching content and methods while also designing offline classroom teaching methods and content [19,20]. Studies have suggested that the design of the teaching method before, during, and after class is the key content of hybrid online–offline teaching [20]. Cooperative group learning is another online–offline teaching mode that can promote learning interaction and knowledge exchange among students [21]. Research has shown that the instructional design of cooperative group learning is an important technical aspect of successful teaching [22,23]. Thus, whether cooperative group learning in mixed online–offline teaching can successfully replace traditional teaching depends on the course content and the feasibility of the teaching design.

Undergraduate nursing education in China has been subject-oriented, with a strong emphasis on theoretical knowledge and technical competence [24]. Mixed online–offline teaching with cooperative group learning has been found to achieve good results in nursing theory courses but not research in skill training courses [25,26]. Previous studies have shown that mixed online–offline and cooperative group learning needs to be guided by case problems, the integration of diversified teaching methods, and scientifically feasible teaching design [27]. Research suggests that undergraduate nursing education should focus on the high-level development of skill training content and assessment courses [28]. Therefore, this study aimed to develop students' metacognitive awareness by using online–offline teaching and cooperative group learning that integrated experimental technology curriculum content and a multi-station nursing skill examination design.

In 2021, China's National Nursing Skills Competition adopted a new form of multi-station nursing skill examination (Ministry of Education of China). This consists of both personal operation and team cooperation. The number of test stations can be set to three or eight. Starting from the first test station, each student conducts nursing assessment, preparation, planning, and integration using an advanced simulation model to implement individual or team skill operations [29,30]. Each station requires 6 or 10 min to complete all case operations. Scoring is done using a combination of computer scoring and manual scoring. Multi-station nursing skill examination establishes higher standards for nursing students' skill operation accuracy.

A comprehensive course can move beyond existing traditional disciplinary frameworks, re-integrate internally related content, and form new courses [31]. For this study, we constructed a comprehensive nursing skill training course, which includes integrate medicine nursing, surgical nursing, and emergency and critical care experimental content, design online–offline teaching model, use cooperative group learning methods, design multi-station skill assessment examination to evaluate the course's effect on students' metacognitive awareness.

We hypothesized that nursing students who participated in the NCST-C would have a better performance on metacognitive awareness than the control group. We further hypothesized that there were differences in short-term and long-term effect outcomes between a tailored integrated nursing comprehensive skill training course intervention and traditional teaching skill training course.

Materials and methods Study design

This study used a two-group matched pretest, post-test, and follow-up test designs which utilized a quasi-experimental study.

Ethical considerations

Huzhou University's Ethics Committee review board approved our study (no. 202012-JG01), and the study complied with the Declaration of Helsinki. All participants were informed of the study's objectives, procedures, and potential risks, and informed that they have the right to withdraw at any time. Written consent was obtained from the participants.

Sample and setting

The participants were recruited from junior-year nursing students at Huzhou University, Zhejiang Province, China. G*Power 3.1 was used for sample size calculations. Repeated-measures analysis of variance (ANOVA) was selected, there were three measurements and two groups. With a power (1-β) of .80 fests, the effect size was .25, error probability value was .05. Based on per-experimental data, we established a correlation among the repeated measures of .50. Consequently, the total sample consisted of 96 people, 48 in the experimental group and 48 in the control group.

The inclusion criteria were as follows: (1) nursing students in the second semester of the third year in University; (2) voluntary course selection; (3) informed consent, willing to cooperate. The exclusion criteria were as follows: (1) not interested and (2) research objects who are participating in other teaching reform.

Sampling and recruitment method

Our research team conducted publicity and knowledge lectures on the curriculum teaching reform project among the nursing students in the third year of the University. According to the interests and with informed consent, the students were recruited in the form of voluntary registration. After that, nursing students applied to join through the curriculum registration network system. The computer randomly assigned the students to the experimental group and control group according to cardinal and even number of the submission system sequence. Students participating in the project will be taught in an independent laboratory. The nursing students in the experimental group joined the online course platform through personal application and the course administrator agree. According to the principle of equality, nursing students in the control group were informed that after the course was completed, they would join the course platform and learn freely.

Intervention Control group

Traditional teaching skill training course methods comprised a total of 64 class hours, offline teaching in the laboratory. Curriculum content included 27 items single experiment technology. Part of the content as shown in Figure 1 , course chapter content included basic nursing experiment technology, internal nursing experimental technology, surgical nursing experimental technology, and experimental techniques of emergency nursing. Teaching method and assessment were based on teacher demonstration, students practice by themselves, and one-way technical examination. Teaching organization was under the guidance of two teachers, a total of 16 weeks of course teaching was completed in the form of classroom teaching (Figure 2).

Intervention group

- **(1)**Curriculum content

According to the independence and team-based nature of the technology application, the integrated nursing experiment technology included 30 items, as shown in Figure 1.

- **(2)**Curriculum design

The curriculum involved a three-module, mixed online–offline teaching mode. It comprised a total of 64 class hours: 16 h online and 48 offline. One class "hour" was 45 min. Module one, during the first week, included 2 h online and 2 h offline; it covered the curriculum introduction and learning method training. Module two lasted 12 weeks, with a unit module every 2 weeks (2 h online, 6 h offline), for a total of six unit modules. This covered online problem-oriented self-learning skills, classroom guidance and training skills, and multi-station examination. Module three (3 weeks; 2 h online and 10 h offline) covered online team skill self-learning, in-classroom multi-station examination guidance and exercises, team multi-station examination, and a nursing practice module.

- **(3)**Teaching method

Online teaching adopted a task-oriented approach that included 1 h of video learning, 15 min of online practice, 10 min of discussion and interaction, and 1000 words of operation process writing. Offline teaching adopted cooperative group learning methods, including group scenario simulation, and group discussion. After class, students completed post-learning tasks on the online teaching platform.

- **(4)**Teaching organization

Online teaching was organized and managed by a teacher, who would post online videos, tasks, assignments, and interactions. In-class teaching used the form of cooperative group learning. First, before class started, students were randomly divided into four groups of 12. Second, matching of teachers and student groups was determined by lottery for each lesson. All four teachers conducted collective lesson preparation and training before class.

- **(5)**Course assessment

Course assessment adopted a combined online–offline form. The curriculum design included 30 learning tasks, seven multi-station nursing skill examinations, and three nursing practices. Based on the tasks published online, online course assessment involved calculating a total score using a big data platform. Offline course assessment involved the skill learning and multi-station assessment of teams and individuals. Each multi-station examination included three stations, individual examinations were 6 min per station, and team examinations were 10 min per station.

Instruments Demographic information

General demographic information was collected, including age, gender, only child or not, and family location.

Metacognitive awareness inventory

Metacognitive awareness inventory (MAI) consists of knowledge of cognition (17 items) and regulation of cognition (35 items), a total of 52 items [7]. Knowledge of cognition includes declarative knowledge, procedural knowledge, and conditional knowledge. Regulation of cognition includes planning, information management, monitoring, debugging, and evaluation. Each item is scored on a 5-point Likert scale. Total scores ranged from 52 to 260. The higher the score, the stronger the metacognitive awareness. To revise the MAI for nursing students in China, we carried out translation, back translation, expert consultation, and exploratory factor analysis (EFA). The Cronbach's α of the scales and subscales were .96 and .87–.99, respectively. The KMO measure was computed to be .84, the C-WAI (52 items) had a eight-factor solution, accounting for 89.4% of the total variance, and the content validity index at the scale level (S-CVI) was .912. The questionnaire was demonstrated good reliability and validity. Our study used the total scale on knowledge of cognition comprehensively observe the changes of metacognitive knowledge.

Data collection

Data collection were conducted at 3 time intervals, which were evaluated at the baseline (T0), 16-week (T1), and 20-week follow-up points (T2). No nursing student dropouts during the experiment. All investigators participated in one-day training before the survey, they were independent of the research team. The same investigators completed the collection, inspection, and analysis of the scales, with a recovery rate of 100%.

Statistical analysis

SPSS 21.0 was used for data analysis. Descriptive analysis was used to describe the collected demographic data, normal distribution, and MAI scores at T_0, T_1, and T_2. A repeated-measures analysis of variance was used to compare the MAI between the two groups. The statistical significance was established at *p*-value less than 0.05. Cohen's d was used to calculate the effect sizes post-intervention, mainly using the mean and combined standard deviation of the conditional measures (less than 0.33 was small, 0.33–0.55 moderate, and 0.56–1.2 large) [31].

Results Participant characteristics

Participants' mean age was 21.07 ± 1.03 years. Table 1 shows that there were no significant differences in demographic information between the two groups of students (*p* > .05).

Intervention efficacy

The data of the intervention group and the control group were normally distributed (*p* > .05). Table 2 shows that the results of metacognitive awareness and subcategory measures of Mauchly's identity matrix test showed significant (X(2,96)2 = 5.02–95.34; all *p*s (2, 96) = 11.43–50.30; all *p*s (1, 48) = 4.93, *p* = .032) and evaluation ($F_{(1, 48)}$ = 9.60, *p* = .013). Significant group factors were found for other subcategory outcome measures ($F_{(1, 48)}$ = 14.87–23.10; all *p*s (2, 96) = 15.52–64.20; all *p*s **Simple effect test on interaction effects for metacognitive awareness**

Table 3 shows that at the T_0 level, the group factor had no effects on metacognitive awareness and subcategory outcome measures ($F_{(2, 96)}$ = 0.01–0.16; all *p*s > .05). This means that there were no significant differences between the two groups at the baseline. At the T_1 level, two groups had significant effects on metacognitive awareness and the subcategory outcome measures ($F_{(2, 96)}$ = 9.78–44.03; all *p*s 2 level, two groups had significant effects on metacognitive awareness and the subcategory outcome measures ($F_{(1, 48)}$ = 14.24 – 62.36; all *p*s 0.56).

Each group was compared at three time points as seen in Table 3. The intervention group results revealed that before and after the intervention for all outcome measures had statistically significant differences ($F_{(1, 48)}$ = 17.83–79.85; all *p* s (1, 48) = 0.24–2.87; all *p*s > .05).

Discussion

This study found that nursing students' metacognitive awareness significantly improved in the intervention group, but there was no statistically significant difference in the control group. This indicates that traditional skill training courses do not cultivate students' metacognitive awareness. The intervention group results, meanwhile, showed that the NCST-C could improve metacognitive awareness. This may be partially attributable to our study's three-module online–offline design and multi-station examination design [32]. Mansueto's research emphasizes that a maximum learning effect occurs when individuals are reinforced metacognitive beliefs and receive timely feedback [33]. NCST-C provides periodic feedback in the three dimensions of online data feedback, classroom skill examination, and practical service testing. Students can observe their performance in real time, gaining a sense of satisfaction and accomplishment, which can stimulate internal learning motivation and affect metacognitive awareness [34].

The intervention group had a significant improvement in its knowledge of cognition scores at 16 weeks compared with the control group. This improvement was long-lasting (over 1 month; Cohen's d = 1.31) and almost identical to what Gholami found in problem-based learning intervention [35]. Studies on metacognition have shown a positive relationship between students' knowledge of cognition and their problem-solving ability, in this regard, case-based blended learning modules can act as a catalyst for improving the knowledge of cognition in nursing students [21]. Adding case questions to the NCST-C individual and team examinations is the key point to improve the knowledge of cognition on nursing students in this study. A recent study showed that guided reciprocal peer questioning improved nursing students' knowledge of cognition [16]. This is similar to our study in that NCST-C stimulated students to think about how to use online learning resources and cooperative group learning, adapt to a new type of examination, and smoothly complete the cooperative group experimental course. This process promotes the accumulation of declarative, procedural, and conditional knowledge contained in knowledge of cognition.

The intervention group showed a significant improvement in the regulation of cognition scores compared with the control group. This included improvements in students' planning, information management, monitoring, debugging, and evaluation abilities. This could be because metacognitive awareness is a multi-dimensional process that involves individual awareness in recalling and thinking about information and transforming it into behavior [36]. Previous research has shown that more examination setting and team-based learning can improve students' information, time management skills, and enhances students' metacognitive awareness [37]. The NCST-C focused on multi-station nursing skill examination, cooperative group learning, and experiential online resources. The classroom teaching component focused on group teaching, which inspires students to use teamwork to solve problems together. These placed higher requirements on students' planning, information management, team monitoring, and self-debugging abilities. In addition, developing such capabilities would likely take 16 weeks in a university learning environment, which the NCST-C can achieve. The results of the one-month follow-up showed that these abilities were maintained.

The students' adherence rates and open-ended comments indicated that the NCST-C was well-planned, flexible, and acceptable, and students appreciated the teaching and learning environment. The adherence rate of the intervention group was 100%. Our approach was acceptable to the nursing students because it fits in with the current Chinese culture and educational development. First, this high adherence rate may be attributable to the integrated learning and teaching methods. Module one mainly covered learning and teaching methods content, and students were familiarized with the new curriculum and learning forms [38]. Second, we use cooperative group learning methods, integrate experimental content design online–offline teaching mode, and use individual and team multi-station skill assessment were key to controlling teaching quality and enhancing students' interest in learning [12]. The smooth implementation of the NCST-C can also be attributed to the efforts of our course team teachers to course resources and provide professional guidance.

Limitations

Due to time and conditions limitation, our study has some limitations. First, this was a quasi-experimental study and administered in only one school. The limitations of this design include its small sample size, potential desirability bias, selection bias, and limited external validity. Future studies should be tested in other schools and explore the effects of NCST-C using larger and more diverse samples. Second, self-reported questionnaires have inherent limitations, inability to deeply analyze the emotional experience of participating in the course. Future studies should consider adding qualitative interviews to explore students' subjective feelings about participating in a course. Third, given the positive effects on the metacognitive awareness and 1 month long-term effects, future studies could examine its effects on other aspects and explored beyond 1 month long-term effects.

Conclusion

This study demonstrated that the NCST-C effectively developed metacognitive awareness among nursing students. Its design provides a new type of experimental course for improving metacognitive awareness. We hope the findings can specifically inform multi-dimensional structural design in nursing curricula reform while providing a practical basis for nursing curricula development.

Contributions

Shasha Li: conceiving, designing the study and writing the paper. Minerva de Ala: design direction. Dandan Mao: data survey and analyzing the data. Afeng Wang and Congwen Wu: implementation of teaching. The authors gave final approval of the version to be published.

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Conflict of interest

The authors declare that they have no conflicts of interest.

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Sociodemographic characteristics	Invention Group (n = 48)	Control Group (n = 48)	T or Chi square - Value	p
Age, mean (SD)	21.20 ± 1.60	20.99 ± 1.01	0.77	.444
Gender, n (%)			0.33	.563
Men	6 (12.5)	8 (16.6)		
Women	42 (87.5)	40 (83.4)		
An only child in a family, n (%)			0.42	.838
Yes	25 (52.1)	26 (54.2)		
No	23 (47.9)	22 (45.8)		
Family location, n (%)			0.04	.838
Rural area	24 (50.0)	23 (47.9)		
Town	24 (50.0)	25 (52.1)		

Outcome measures	Measure Time			Mauchly 's identity test		Group Factor		Time Factor		Interaction Effect	
T0 (Mean T SD)	T1 (Mean T SD)	T2 (Mean T SD)	X^2	p	F	p	F	p	F	p	Metacognitive knowledge
					17.30	.000	59.12	.000	47.09	.000	Experimental group (G1)
66.56 ± 6.40	74.46 ± 6.90	74.95 ± 5.80	17.89	.000							Control group (G2)
67.00 ± 7.18	67.75 ± 5.11	67.23 ± 4.64	95.34	.000							Regulation of cognition
					20.81	.000	49.36	.000	34.86	.000	Experimental group (G1)

130.92 ± 29.86	165.23 ± 29.08	167.50 ± 24.29	17.89	.000							Control group (G2)
132.73 ± 34.43	135.63 ± 29.06	136.77 ± 22.47	5.02	.000							Planning
					15.86	.000	57.89	.000	44.82	.000	Experimental group (G1)
26.58 ± 5.91	33.77 ± 5.36	34.54 ± 4.81	18.69	.000							Control group (G2)
27.06 ± 7.04	27.79 ± 5.97	27.37 ± 5.08	44.69	.000							Information management
					21.11	.000	93.17	.000	46.19	.000	Experimental group (G1)

37.50 ± 5.80	45.97 ± 6.17	46.16 ± 4.99	9.90	.007							Control group (G2)
37.10 ± 6.99	39.29 ± 5.13	39.12 ± 4.76	30.82	.000							Monitoring
					23.10	.000	64.20	.000	50.30	.000	Experimental group (G1)
26.56 ± 5.81	34.94 ± 6.07	35.35 ± 4.96	9.95	.007							Control group (G2)
27.00 ± 7.18	27.31 ± 5.15	27.71 ± 4.51	67.07	.000							Debugging
					4.93	.032	30.80	.000	11.43	.000	Experimental group (G1)

18.58 ± 6.35	23.91 ± 6.17	24.31 ± 4.96	17.14	.000							Control group (G2)
19.12 ± 6.89	20.29 ± 5.14	20.62 ± 4.60	65.46	.000							Evaluation
					9.60	.013	15.52	.000	13.80	.000	Experimental group (G1)
21.68 ± 6.37	26.62 ± 6.09	27.12 ± 5.41	16.87	.000							Control group (G2)
21.91 ± 7.45	22.25 ± 4.96	21.93 ± 4.16	59.26	.000							Metacognitive awareness
					14.87	.000	53.80	.000	32.90	.000	Experimental group (G1)

197.48 ± 36.05	239.69 ± 35.48	242.64 ± 29.18	18.89	.000							Control group (G2)

Source of variation	Metacognitive knowledge			Metacognitive regulation			Planning			Information management			Monitoring			Debugging			Evaluation			Metacognitive awareness		
F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	F	Value	Cohen's d	G WITHIN T0
0.01	.753	−0.06	0.00	.979	−0.06	0.13	.722	−0.07	0.01	.924	0.06	0.11	.743	−0.07	0.16	.694	−0.08	0.03	.875	−0.79	0.04	.831	−0.04	G WITHIN T1
29.28	.000	1.11	38.32	.000	1.02	26.62	.000	1.05	33.36	.000	1.17	44.03	.000	1.36	9.78	.000	0.64	14.88	.000	0.78	26.51	.000	1.05	G WITHIN T2

51.95	.000	1.47	56.75	.000	1.31	50.22	.000	1.45	49.99	.000	1.44	62.36	.000	1.61	14.24	.000	0.77	27.72	.000	1.07	44.16	.000	1.36	TWITHING1
63.54	.000	–	54.75	.000	–	63.31	.000	–	79.85	.000	–	73.86	.000	–	24.69	.000	–	17.83	.000	–	51.34	.000	–	G1(T0v.T1)
		−0.37			−1.16			−1.27			−1.41			−1.41			−0.85			−0.79			−1.18	G1(T0v.T2)
		−0.40			−1.34			−1.48			−1.60			−1.63			−1.01			−0.92			−1.38	G1(T1v.T2)

		−0.08			−0.08			−0.15			−0.03			−0.07			−0.07			−0.09			−0.09	TWITHING2
1.30	.282	–	0.69	.514	–	1.05	.352	–	2.87	.064	–	0.59	.562	–	1.64	.202	–	0.24	.781	–	0.81	.448	–	G2(T0v.T1)
		−0.12			−0.09			−0.11			−0.32			−0.05			−0.19			−0.05			−0.15	G2(T0v.T2)
		−0.04			−0.14			−0.05			−0.31			−0.12			−0.26			−0.01			−0.14	G2(T1v.T2)

DETAILS

Subject:	Laboratories; Cooperative learning; Emergency medical care; Students; Classrooms; Active learning; Nursing education; Teaching methods; Curricula; Cooperation; Experiments; Instructional design; Knowledge; Quasi-experimental methods; Online instruction; Educational technology; Metacognition; Critical thinking; Nursing skills; Teachers; Cognition &reasoning; Variance analysis; Consent
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Roles and Effects of Peer Recovery Coach Intervention in the Field of Substance Abuse: An Integrative Literature Review

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ProQuest document link

ABSTRACT (ENGLISH)

SummaryPurpose

There are ongoing public initiatives to help substance abusers by involving peer recovery coaches (PRCs) in the field of substance abuse worldwide. This study examines the contents and delivery methods of PRC intervention programs and their effects from the participants' standpoint.

Methods

An integrative literature search was conducted in seven electronic databases using English and Korean search terms. Two researchers independently reviewed the extracted papers and rated their quality based on predetermined inclusion and exclusion criteria, resulting in the selection of nine papers.

Results

Research on PRC participation in substance abuse treatment were predominantly US-based, and all articles derived were quantitative studies. The main roles of PRCs included liaising between treatment and community resources, assisting with stress management and coping skills, counseling and case management, and recovery and recurrence prevention education. In addition, the PRC-delivered intervention was tested with various outcome variables. It reduced participants' substance use and enhanced their treatment adherence rates, self-efficacy, quality of life, and stress control.

Conclusions

This study confirmed the need to extend existing studies by testing the effects of PRC-delivered intervention through multidisciplinary efforts in more regions and establishing PRCs' role definition and concretization. The results of this study will serve as significant basic data in developing and applying for nursing intervention programs with PRCs in clinical and community nursing settings in the future.

FULL TEXT

Introduction

Substance use disorder (SUD) refers to an individual's continuous substance use despite its negative consequences

[1]. As of 2019, more than 2.0% of the world's population was dependent on alcohol or illegal drugs [2], and 11.7% of US adolescents and adults (aged ≥12 years) use illegal drugs [3]. Furthermore, as of 2021, arrests for drug offenses reached 16,153 cases [4]. SUD is characterized by losing control of substance use, physical dependence, social problems, and hazardous use [1]. It causes health problems and social and school maladaptation in adolescents [5] and a high relapse rate and has a difficult recovery process [6]. Recovering from addiction is a continuous process of developing a healthy and productive life by overcoming various life problems, rather than simply a cessation of addictive substances or returning to the state before addiction [7]. Hence, SUD is treated as a chronic disease [8] and necessitates continuous community-level management.

A variety of community-level health services have been developed and implemented to prevent the relapse of SUD. After adopting the chronic disease concept of SUD management, more emphasis has been placed on substance abuse recovery support programs delivered by peer recovery coaches (PRCs) [9]. PRCs are experts and mentors specifically trained to help individuals successfully recover from SUD by leveraging their own experience of recovery from SUD and other mental illnesses [10,11]. PRCs provide a wide variety of services, such as instilling hope for recovery in people with similar experiences, accompanying them through the recovery process, setting recovery goals, supporting the roadmap development process, and helping to gain access to necessary resources [11]. Such activities of PRCs not only help the addicts recover but also help them maintain their own recovery [12]. PRCs provide services in various formats, including one-on-one and group sessions [13,14]. These services can be delivered to different groups in various settings such as churches, prisons/jails, probation/parole programs, HIV/AIDS and other social service centers, and substance abuse and mental health treatment facilities [15]. According to the related literature, PRC programs enhance self-esteem and self-confidence [16], improve self-control [17], increase self-care participation, reduce symptoms of mental disorders and hospital admission rates [17], and increase social function participation [18]. However, these studies explore the effects of PRC programs on patients with mental disorders, with only a few studies evaluating the effects of PRC programs on SUD patients. Furthermore, the existing PRC-related literature covers either alcohol or substance abuse [9], and literature review studies lack systematic frameworks [19], conducting reviews of therapeutic interventions other than PRC programs. Given this background, this study examines the effects of PRC programs applied to SUD patients by comprehensively reviewing papers on PRC programs applied to SUD patients thus far. The integrative review performed in this study can serve as a meaningful basis for providing the rationale and direction for nursing intervention programs with PRCs for SUD patients in clinical and community settings.

Methods Study aims

To provide the basic information for the development of nursing interventions with PRCs, this study identified the roles of PRCs in program operation and analyzed the main contents, operation methods, and effects of the programs with PRCs.

Research design

This integrative literature review was conducted according to the five steps of Whittemore and Knafl's integrative literature review model: specifying the research question, searching the literature, evaluating the literature, analyzing the literature, and presenting the results [20].

Research question

The PICO (population, intervention, control, and outcomes) of this study was as follows: P: SUD patients, I: PRC interventions, C: none, O: effects of peer support interventions. The research question of this study is, “What are the attributes and effects of PRC intervention for SUD patients?”

Literature search

Two independent researchers performed the entire literature selection process, and differences of opinion were resolved through a consensus reached in research team meetings. First, before the literature search, the research team set literature selection criteria based on coordinated opinions. Inclusion criteria were (1) articles related to the effects of PRC programs on SUD patients, (2) articles sharing full-text access, and (3) articles published in Korean or in English until March 25, 2022. Exclusion criteria were (1) articles on non-PRC interventions (e.g., pharmacotherapy); (2) dissertations, letters to the editor, conference presentation papers, and reviews; and (3) articles that have not been published in Korean and English. Two independent researchers conducted the literature search from March 25 to April 5, 2022. In South Korea, PRCs are also working, and there was a possibility that published Korean papers about the effects of their participation existed. Therefore, the articles searched were related to PRC interventions (programs) for SUD patients and published in Korean and English academic journals. Seven databases were searched: three Korean (Research Information Sharing Service [RISS], Korean studies Information Service System [KISS], and Data Base Periodical Information Academic [DBpia]) and four international (CINAHL [Cumulative Index to Nursing &Allied Health Literature], EMBASE, PubMed, and PsycINFO). Search terms were selected based primarily on the Medical Subject Headings (MeSH) and on English titles and keywords of previous studies to find out the most frequently occurring keywords. As a result, the following search formula was established: ("Substance-Related Disorders" OR "Substance Related Disorder" OR "Substance Abuse*" OR "Substance Dependence" OR "Substance Addiction" OR "Substance Use Disorder") AND ("Consumer Provider" OR "Addiction Recovery Counselor" OR "Recovery Activist" OR "Peer Recovery Coach" OR "Peer Support" OR "Peer Recovery Specialist") AND (Program OR Intervention) (Supplementary file 1). Therefore, databases such as CINAHL, EMBASE, PubMed, and PsycINFO were searched using the search formula, and all cases for each combination of terms were substituted and correspondingly searched in the Korean databases. The articles retrieved from the databases were cataloged using the bibliographic management software (EndNote 20.2.1) and then reviewed and classified. No eligible article was found in the Korean databases, and the 870 English articles found in the international databases underwent the following screening process: First, 628 articles were extracted after removing duplicates. Second, in the review of titles and abstracts, 149 articles that did not meet the selection criteria were removed, leaving 93 articles. Third, an article that was not full text was deleted from the full-text review. Fourth, through the researcher's meeting, five articles in which participants were not SUD patients or had other mental disorders other than SUD were excluded, along with 80 articles that did not perform peer support intervention. Furthermore, 13 additional articles were searched for relevant literature during the full-text review, and eight articles were additionally analyzed through a search in Google Scholar. After removing one non–full-text article, six not including SUD patients, five without peer support intervention, and seven review articles not for intervention studies were removed. Finally, nine articles were selected for analysis at the researcher's meeting (Figure 1).

Quality evaluation of the literature

The selected papers went through quality evaluation based on the Joanna Briggs Institute (JBI) checklists, which were separately applied to randomized clinical trials [21], quasi-experimental trials [22], and cohort studies [23]. The number of items and their contents of the JBI questions were applied differently depending on the study design, and each checklist is presented in Supplementary files 2–4. Each item is structured to be answered with “yes” (Y), “no” (N), “unclear” (UC), or “not applicable” (N/A). “Yes” indicated that the JBI quality evaluation standard was met. When evaluating the quality of articles using the JBI Quality Assessment Checklist, two researchers separately evaluated and compared them. In the case of disagreements, they were jointly evaluated by these researchers to reach a consensus. Table 1 presents the quality evaluation results for the nine articles selected.

Analysis of the literature

The general characteristics of the selected articles were analyzed in the order of the country of study, year of publication, and research design and the PRC programs applied to SUD patients in the order of the program participants, type, content, results, and effects. Two independent researchers analyzed the literature. They reviewed the entire literature independently of each other and integrated their analysis results. Differing opinions were resolved through intensive discussions and reviews until a consensus was reached.

Presenting the results

Nine studies were included in this study, and their results are presented in the following section. The results of the integrative literature review are presented in the order of the general characteristics of the literature, the contents and implementation formats of the PRC programs, the role of the PRC, and the effects of the PRC programs.

Ethical considerations

This study was approved by the Institutional Review Board of G University (IRB No. GIRB-G22I**24).

Results General characteristics of the literature

Table 2 outlines the general characteristics of the selected articles. All nine selected articles for analysis were US studies published in 1985 (1 article) and between 2008 and 2021 (8 articles). Randomized clinical trial was the most common research design (n = 4, 44.5%), followed by cohort study (n = 3, 33.3%) and quasi-experimental study (n = 2, 22.2%). The effects of the programs applied in these articles were identified by comparing pretest-posttest design or cohort groups.

PRC program contents and implementation formats

Table 3 presents the PRC program types provided in each of the nine selected articles. The PRC programs were provided in face-to-face (offline) and contact-free (phone/messaging) formats. Four programs [24–26] used only face-to-face format, and four programs [28–31] used both formats. Only one program [32] exclusively used the contact-free format, which included phone calls, text messages, and email. A PRC ran one program [27], and two or more PRCs were involved in five studies. Each session ranged between 20 and 120 minutes, and the program applied in Ray et al. [27] was flexibly operated based on the participants' needs or preferences.

PRC's role

The roles played by PRCs in program operation were derived as follows. First, they recommended participation in a therapy program for SUD patients to be treated by specialists or encouraged attendance in a therapeutic intervention [25,28,29,31,32]. That is, they played the role of “navigator” for patients in their combat against SUD, enhancing their motivation for alcohol and drug abstinence and encouraging them to participate in self-help groups and therapeutic intervention programs. Second, they helped SUD patients better manage their stress [26] and control substance use by guiding them through practicing effective coping strategies in their living environment. Third, they sought to prevent substance abuse and relapse by providing SUD patients with emotional support [24], counseling, and case management services [27,31]. Fourth, they educated SUD patients about SUD recovery and recurrence prevention, explored community resources to help them with rehabilitation, and encouraged them to achieve their goals [30].

Effects of PRC programs

The variables used to identify the effects of PRC intervention were the extent of using substances such as alcohol and drugs [26–29,31,32], program participation rate [24,25,28–31], therapy motivation [27], self-efficacy [26,27], quality of life [28], stress [26], alcohol and drug abstinence [24], and the number of intensive care unit admissions due to substance use [29].

Table 3 presents the outcomes of PRC programs. Their effects can be summarized as follows. First, PRC programs had a positive effect on reducing substance abuse. PRC intervention significantly impacted opioid overdose and regular intake of alcohol and substances and positively affected adherence to 7-day abstinence after discharge [24,28,29,32]. In some studies, however, the effect of reducing alcohol and illicit drug abuse declined over time, from 30.0% at the baseline to 16.0% over 6 months [27]. However, no statistical evidence was presented regarding the level of substance use reduction [32]. Second, PRC programs enhanced the treatment adherence rate. SUD patients made efforts for treatment by attending self-help programs or complying with rehabilitation programs [24]. SUD patients adhered more to treatment participation from referral to treatment. They also completed their treatment plans and did not miss treatment sessions [25]. Furthermore, they readily attended medical appointments [30], drug court engagement [31], and showed higher motivation for treatment [27]. However, statistically significant improvements could not be maintained [30]. Third, PRC programs effectively increased self-efficacy [26,27] immediately after the program and at the 1-year follow-up. Fourth, PRC programs improved the quality of life [28]. Fifth, they also positively affected stress control [24].

Discussion

This study was conducted to provide useful data for developing and applying PRC-delivered programs for SUD patients in South Korea and abroad by examining their contents, methods, and effects.

No Korean studies were encountered in the literature search for articles analyzing the effects of PRC programs, and foreign studies derived were predominantly US studies. Regards research design, they were all quantitative studies. In South Korea, there are a few studies on PRC-delivered intervention in the field of social welfare. However, their focus was on the standpoints of PRCs or practitioners, and the research itself is in its incipient stage [33–35]. This may be attributable to a complex interaction of multiple factors associated with the immature PRC business model, such as a lack of PRC's role definition, unstructured work profile [36,37], distrust in the professionalism associated with the involvement of ex-addicts, and insufficient financial support [12]. Some qualitative studies aim to confirm the effectiveness of PRC participation in SUD. However, they revolve around interviews with practitioners or PRCs, not with SUD patients [38,39]. Given the importance of in-depth exploration and understanding of the changes and effects experienced first-hand by SUD patients, it is necessary to conduct further qualitative research to confirm the effects of PRC programs from the standpoint of SUD patients.

Regarding program delivery methods, PRC participation programs were mostly provided using hybrid formats of face-to-face and contact-free methods. The main reasons for adopting a contact-free approach by extending the existing face-to-face method include providing convenience and flexibility to compensate for accessibility constraints and mitigating the problems of shame and stigma by ensuring the participants' anonymity [40–42]. The recent difficulties encountered due to social distancing measures to cope with the COVID-19 pandemic have led to temporary suspension or delay of SUD services and subsequent increases in relapse risk [40,43]. This highlighted the need to develop efficient contact-free SUD intervention programs, including PRC participation programs, in preparation for the current and future pandemics. Along with the diversification of program delivery methods, the involvement of two or more PRCs was advantageous over a single PRC participation. The substance abuse recovery process is self-directed, and each individual recovering from substance abuse is exposed to a unique experience of the withdrawal process. Therefore, it is necessary to adopt an approach emphasizing the pursuit of a personal agenda in conducting PRC programs [9,12]. For example, each US state has its coherent system of training and certifying PRCs [19], and a similar system is being adopted in South Korea [35]. In this context, particular care should be given to the coherency of the PRC education system to avoid confusion in defining PRC's roles, qualifications, and competency areas due to interregional and international differences.

This study confirms various roles of PRCs in preventing SUD relapse and recovery from SUD. This finding is supported by previous studies that report that PRCs can help SUD patients through their roles as emotional supporters, information providers, educators, liaisons between treatment and resources, role models, and mentors [39,44–46]. Furthermore, PRCs have experienced addiction problems themselves and continue to make efforts to prevent recurrence and maintain recovery in daily living. Therefore, this is a great strength in assuming their roles by providing SUD patients with efficient and concrete coping strategies based on an in-depth understanding of their situations [47]. However, the PRC model is faced with challenges such as role definition, personnel recruitment, and fundraising necessary for PRCs' activities at home and abroad [46,48]. For PRCs to act as an entity providing practical help to SUD patients by leveraging their strengths, it is necessary to establish a concrete and consistent role definition, policy approach, and multidisciplinary cooperation, including nursing.

In the articles reviewed, the effects of the programs provided with PRC involvement were evaluated through various outcome variables. Previous studies reported positive effects of PRC involvement in reducing participants' substance use [9,49] and enhancing the referral to treatment, self-efficacy [50,51], stress control [50], and quality of life [50,52]. However, there are also reports of contrary effects in different PRC participation studies, such as no significant difference in the participants' quality of life [53]. Some of the articles analyzed in this study reported no significant differences in the reduction of substance use or maintenance of treatment [27,30,32] and decrease in the effects [27]. Based on these discrepancies, we additionally attempted to perform the meta-analysis (Supplementary file 5) for three outcome variables (substance use, treatment participation rate, and self-efficacy) common to two papers, all three outcome variables had I^2 values of 70 or higher, indicating that they were not homogeneous. In the analysis for effect size (effect size [95% confidence interval]), “reducing substance abuse” was found to be insignificant (1.03 [0.09, 12.44]). This might be because two studies reporting contradictory results were included in the analysis. Contrarily, “treatment participation rate” and “self-efficacy” were significant (4.51 [1.29–7.74] and 3.29 [1.11–5.48], respectively), and these can be interpreted that the PRC programs have the significant effects on “treatment participation rate” and “self-efficacy” for SUD subjects. However, the test included only the studies that presented all the necessary data for meta-analysis, so only some papers were analyzed (2 papers per each variable). Therefore, the meta-analysis results are likely biased. The research on PRC involvement programs is in a nascent stage and are few relevant studies. In addition, the outcome variables and methods applied to verify the effects of the programs are diverse. Based on the results of this study, follow-up studies applying meta-analysis are proposed to analyze the systematic and quantitative effects of the programs if more papers on the same topic are published in the future. In addition, depending on the existence of heterogeneity, analyzing the causes of the heterogeneity such as subgroup analysis and meta-regression would be needed.

Given the complexity of personal problems associated with substance abuse, various approaches are required to address SUD patients' recovery [54]. For evidence-based interventions with proven efficacy in substance abuse, including PRC involvement, to be actively used, interdisciplinary endeavors and cooperation are required in clinical and community nursing settings. A previous study identified the negative attitudes of mental health experts as one of the major barriers to PRC involvement [12]. Nurses are in an ideal position to provide leadership in promoting the roles of PRCs in the clinical and community settings [12]; therefore, these barriers should be addressed by concerted efforts to verify the efficacy and improve the perceptions of PRCs' activities in the nursing arena. Development and application of nursing intervention programs with PRCs involvement based on PRC's activities and empirical research results will improve participants' mental health, diversify the approach in the related nursing practice in Korea, and improve the competency of nursing practitioners.

This study provides basic data and a rationale for developing nursing interventions that can create synergy effects with PRCs by presenting results regarding the contents, methods, and effects of PRC involvement in programs in the substance abuse fields. The results of therapeutic use of the lived experiences of PRCs related to relapse prevention and recovery maintenance provide opportunities for nursing students to understand addicts in greater depth; in addition, meaningful information can be provided for the students to plan nursing interventions and educational programs with PRCs. By identifying the roles of PRCs and examining the effectiveness of the PRC involvement programs, it is also possible to reduce prejudice and promote understanding by health professionals.

Despite the significance of this study, there are also limitations. First, the articles selected for analysis are regionally concentrated in a specific country, which affects the generalizability of the results drawn in this study in applying them to the entire SUD patients participating in PRC-delivered intervention programs. Second, by analyzing the effects of PRC programs from the standpoint of SUD patients, the perspectives of practitioners and PRCs involved could not be considered. Therefore, an integrative analysis of the effects of PRC participation programs in different fields is necessary to expand the research scope.

Conclusions

This study was conducted to identify the main contents, methods, and effects of the PRC-delivered intervention in the field of substance abuse from the participants' standpoint through an integrative literature review. This literature analysis confirmed the need to conduct research in different countries using various research designs to address the problems of regional concentration of research activities in the US and the methodological predominance of quantitative research. It was also found that face-to-face and contact-free intervention programs used a wide range of contents and approaches to the treatment of and recovery from substance abuse in addressing the complexity of substance abuse issues, which may serve as basic data useful in preparing for the current and future pandemics. In addition, PRCs' roles in linking treatment and resources, stress management and coping, emotional support, counseling, and case management, and PRCs' positive influence reduced substance use and improved participants' referral rates to treatment and psychosocial help. These research findings are expected to provide important primary data and guidelines for developing and implementing intervention programs with PRC involvement in clinical and community nursing settings in the future. Specifically, they might also present the necessary direction and rationale for attempting continuous changes in South Korea, which is in its incipient stage of research on examining the application and efficacy of PRC participation programs.

Conflict of interest

The authors declare no conflict of interest.

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Design/citation	Critical appraisal												
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	RCTs
Kirmil-Gray et al. (1985)	Y	Y	Y	Y	UC	Y	Y	Y	Y	Y	Y	Y	Y
Winhusen et al. (2020)	Y	Y	Y	UC	UC	Y	Y	Y	Y	Y	Y	Y	Y
Belenko et al. (2021)	Y	Y	Y	Y	UC	Y	Y	Y	Y	Y	Y	Y	Y
Ray et al. (2021)	Y	Y	Y	Y	UC	Y	Y	Y	Y	Y	Y	Y	Y
Quasi-experimental studies													
Ashford et al. (2019)	Y	N/A	N/A	N/A	Y	UC	Y	Y	Y	–	–	–	–
Cos et al. (2019)	Y	Y	N/A	N/A	Y	Y	N/A	Y	Y	–	–	–	–
Cohort studies													
Blondell et al. (2008)	Y	Y	Y	UC	UC	Y	Y	Y	Y	UC	Y	–	–
James et al. (2014)	Y	Y	Y	Y	Y	Y	Y	Y	Y	UC	Y	–	–
Mills Huffnagle et al. (2021)	Y	Y	Y	Y	Y	Y	Y	UC	UC	UC	Y	–	–

Category	Content	n	%
Country	USA	9	100

Published year	1985	1	11.1
2008	1	11.1	2014
1	11.1	2019	2
22.2	2020	1	11.1
2021	3	33.4	
Research design	RCT	4	44.5
Quasi-experimental study	2	22.2	Cohort study

Authors (yr)	Participants									Program contents	Significant outcomes
Exp. group		Ctr. group		Program type					n	Mean age (yr)	n
Mean age (yr)	Contact method	No. of PRCs	No. of sessions	Time per session	Periods (wk/mo)	Kirmil-Gray et al. (1985)	6	48.00	6	52.00	Face-to-face

2	12	120 mins	12 wk	(1) Providing daytime stress treatment: merged the brief consultation treatment with direct instruction in specific skills to reduce physical tension and review mental arousa	All-night home polysomnographic recordings:(1) Latency to sleep onset (p = .04) (2) Total wake time (p = .04) (3) Sleep efficiency (p = .04) (4) Total dark time (p = .04) Self-efficacy: Limit early awakenings (p < .01) Stress: Novaco Anger Scale (p = .04)	Blondell et al. (2008)	20	40.00	99	38.00	Face-to-face

				l and group meetings and peer support for behavior change. (2) (a) Relaxation exercise: 10–15 mins. (3) (b) Reported on the quality of sleep, medication use, and ho							

				me work completed during the previous week. (4) (c) New skills were presented followed by exercises that required participants to apply these skills to situations							

				in their own lives (5) (d) Assignments to try out new skills in everyday situations during the coming week							

2	N/A	30–60 mins	N/A	Providing emotional support to patients hospitalized for detoxification To enhance the patient's motivation to maintain abstinence To encourage the patient to attend me	Abstinent for 7 days after discharge (p = .06) Initiated rehabilitation services (p = .06) Attended self-help program meeting (p = .05)	James et al. (2014)	681	28.63	681	28.57	Face-to-face

				etings of self-help groups and initiate professional chemical dependency treatment after hospital discharge Explain involvement in self-help programs.							

N/A	N/A	N/A	N/A	Providing outreach and engagement to parents recently referred to the program Served as “navigators” as the preferred parents initiated treatment for substance	Days from referral to assessment (p < .01) Days from referral to first service (p < .01) Completed treatment plan (p < .01) Other reasons for closure (p < .01) Discontinued participation (p < .01)	Ashford et al. (2019)	205	39.94	N/A	N/A	Face-to-face, phone call, text message

				use disorders							

N/A	N/A	N/A	N/A	Referrals to a distinct level of care (e.g., withdrawal management, inpatient residential rehabilitation, recovery residence) Community-based referrals (e.g., mutual-aid	Multiple peer specialist engagements and regular alcohol use were significant Response to initial peer engagement and substances regularly used were significant	Cos et al. (2019)	350	47.30	N/A	N/A	Face-to-face, phone call

				support groups)							

3	N/A	N/A	9 mo	To connect new patients to the FQHC and the peer specialist program include street outreach in high drug use locations, presentations at local shelters, recove	Substance use outcomes Care and service utilization outcomes Behavioral health outcomes Quality of life, criminal justice system involvement, and infectious disease outcomes	Winhusen et al. (2020)	23	40.30	21	38.00	Phone call

				ry homes, and intensive outpatient treatment programs Conducted via phone and in-person visits to connect with clinic patients who had not contacted the medical							

				clinic or peers in over 3 mo							
4	N/A	20 mins	N/A	Encouraging participants to enroll in MOUD	Self-reported opioid overdose (p = .03)	Mills Huffnagle et al. (2021)	47	35.00	230	37.60	Face-to-face, phone call, text message, email

N/A	Weekly, gradually increasing or decreasing touchpoints as stages of recovery (	N/A	N/A	Providing education related to substance use disorder and the recovery process Development of long-term sustainable recovery through community resources Nav	Medical appointments (p = .02)	Belenko et al. (2021)	39	28.20	37	26.70	Face-to-face, phone call

	M ± SD = 14.0 ± 18.2)			igation through managed care systems Connections to appropriate resources Modeling a recovery lifestyle Empathizing with cravings to use or a return to use Developin							

				g use prevention plans Empowering participants to succeed in their identified goals							

3		N/A	9 mo	Encourage participation in rehabilitation and treatment. PRC to have their first face-to-face contact with their client within five business days of the initial contact, foll	Drug court engagement (p = .02)	Ray et al. (2021)	46	39.00	54	38.50	Face-to-face

				owed by a minimum of three face-to-face meetings and one phone contact each month							

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Combating with Compassion Fatigue: The Perspective of Family Caregivers of People with Schizophrenia

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ABSTRACT (ENGLISH)

summaryPurpose

The purpose of this study was to explore the coping processes used by family caregivers of individuals with schizophrenia to deal with compassion fatigue (CF).

Methods

Grounded theory was used in this study. For recruitment, purposive and theoretical samplings were used to recruit participants. Data were collected from 29 family caregivers through in-depth interviews and field notes. Data were analyzed using constant and comparative methods.

Results

The study revealed a core process for dealing with CF as “Combating with compassion fatigue” that comprised three dynamic phases: strengthening attachment with the care recipient to increase willpower, learning how to deal with the illness, and self-empowerment to fight to the physical and mental fatigue.

Conclusions

Family caregivers of people with a diagnosis of schizophrenia use various strategies to fight to CF. These combine the past experiences of strategies that work and new approaches. Our research will allow mental health professionals to provide basic strategies to family caregivers of people with a diagnosis of schizophrenia to help them to cope with CF.

FULL TEXT

Introduction

Schizophrenia is a chronic condition, and a large group of disorders fall within the schizophrenia spectrum; these are characterized by the disturbances of thought, mood, and behavior [1]. Schizophrenic individuals may exhibit strange behaviors and delusional beliefs, and often experience hallucinations [2]. While schizophrenia can be controlled with medication, the majority of sufferers experience relapse [3,4]. Family caregivers have limitations in caring for schizophrenic patients at home, which include lack of understanding about schizophrenia and its treatment, and communication with health professionals. In addition, family caregivers have poor assessment follow-up and guidance for medication compliance with respect to their schizophrenic patients [5,6]. Those limitations can cause the family caregivers to feel overburdened and overwhelmed and to experience stress, health problems, and a deterioration in quality of life [3,7,8].

Caregiving, whether it is over a long period or for an individual with an acute or severe illness, can lead to compassion fatigue (CF). CF occurs when the caregiver experiences strong empathy with his or her charge, resulting in a deep psychological response that may progress to physical, mental, social, or spiritual exhaustion [9]. Previous studies have demonstrated the prevalence of CF among family caregivers [9–11]. CF manifests a range of emotions and behaviors, including helplessness, disappointment, stress, a feeling of endless hard work, guilt, uncertainty, social isolation, dissatisfaction, and reduced ability [10]. CF is also seen in professional caregivers such as primary care nurses in long-term care situations like mental health or cancer care [9,12–15]. It has been found that patients' suffering can affect caregivers despite their professional health backgrounds and the requisite ability to provide high-quality care.

Previous research on CF has primarily been conducted in the context of professional health care provision [15–17,19]. However, a few studies have focused on CF among family caregivers [10,11,18]. For instance, a literature review on CF in family caregivers by Blair and Perry [10] showed that most family caregivers feel a strong duty of care due to their emotional attachment to their care recipient and gain satisfaction from providing this care. However, caregivers also experience feelings of guilt, helplessness, disappointment, uncertainty, and dissatisfaction in the face of the ongoing and extensive needs of the care recipient. Day and Anderson [20] reviewed the literature on CF among family caregivers of individuals with dementia. The results revealed that most caregivers experience CF, and this manifests in the feelings of disappointment, helplessness, and a lack of interest and positive intentions toward their charges. This ultimately results in the avoidance of caregiving duties of the family caregivers.

Previous research has also found that family caregivers experience problems such as depression, stress, feeling overburdened, impaired relationships with other persons, and health problems. Those problems also lead to poor care provision or the termination of caregiving [10,11,20]. In addition, a qualitative study revealed that family caregivers of schizophrenic patients experienced CF, the characteristics of which include living with stress for long periods, physical, or mental exhaustion or both, being disheartened, anxiety and uncertainty, and having difficulty sleeping [21]. No effective ways of coping among family caregivers have yet been found. Nurses need to be attentive to the needs of family caregivers. Hence, there is a growing need to identify strategies that will help family caregivers to mitigate the negative effects and cope with CF.

There is little known about such strategies for coping with CF, especially among family caregivers of people with a diagnosis of schizophrenia in Thailand. In view of this lack of basic knowledge, this study aims to explore the coping processes used by family caregivers of individuals with schizophrenia to deal with CF. The findings can benefit health professionals, provide effective intervention to reduce or prevent CF in family caregivers of people with schizophrenia. Our findings can also potentially be used to improve and expand mental health services that assist family caregivers in the ongoing provision of care to family members with schizophrenia. The authors hope the findings will also be beneficial for international readers who hope to learn more about coping with CF in family caregivers.

Methods

This paper is a part of a larger research project entitled “Coping with compassion fatigue among family caregivers of persons with schizophrenia” that comprises two sub-studies. The first sub-study is “Compassion fatigue among family caregivers of schizophrenic patients” [21]. This current study was the second sub-study that uses grounded theory to explore how family caregivers deal with CF. The main purpose of grounded theory is to explore basic processes and generate theory from real-world situations and the perspectives of members of a given society. Grounded theory methodology explores the richness of human experience to generate and develop substantive theories. The approach allowed the researchers to explore, conceptualize, and generate substantive knowledge concerning the dealing with CF among family caregivers of persons with schizophrenia. The theories that emerge from such research in nursing frequently focus on behavioral concepts such as caring, coping, and parenting. In addition, these theories are helpful in their application to nursing practice [22,23].

Participants and ethical issue

The study was approved by the Research Ethics Review Committee for Research Involving Human Research Participants, Group 1. Chulalongkorn University (Approval no. 106.1/63). Approval was received before data collection began. Measures were taken to protect the anonymity of participants. Further, all participants who had experienced CF were made aware of their right to withdraw from the study at any time, and informed consent was obtained. The participants were selected using purposive and theoretical sampling to ensure complete and reliable data. The inclusion criteria were (1) the participants must be primary caregivers who provide care for schizophrenic patients over 20 years of age; (2) the participants must be family members (not hired for caregiving) with the main duties of looking after schizophrenic patients directly for at least two or more years without receiving any compensation; (3) the participants could explain their experience of coping with CF due to caring for schizophrenic patients; (4) they were able to communicate through Thai language their willingness to participate in this research. The first author conducted interviews in a private room of each hospital. Data saturation was reached at 29 interviews. All of the participants (24 females and 5 males) were interviewed about the strategies they use to cope with CF. The mean age of the participants was 51.5 years; 21 participants were married; 16 participants were educated to primary school level, and some participants had no formal education. The length of time 12 participants had been caring for a relative with schizophrenia ranged from 2 to 5 years, and 13 participants were mothers of the patients. Other demographic details were also presented in the first sub-study [21].

Data collection

Data collection took place at a psychiatric hospital and a general hospital from August to December, 2020. Data were collected using in-depth interviews with 29 family caregivers who met the inclusion criteria. In order to maintain consistency, only the first author, who had more experience in in-depth interviewing in qualitative research, conducted the interviews with the participants after written consent was obtained. The first author used open-ended questions to encourage participants to share their experiences of coping with CF in the course of caring for their patients. The major questions used for gaining data with the family caregivers were how did you provide caregiving with schizophrenic patients at home? and how did you deal with your CF that was happening such as stress, physical, and mental exhaustion, being disheartened, anxiety, and uncertainty? The question was designed to invite the informants to answer freely and provide as many details as possible. During the interviews, the interviewer also mainly used layperson's language and empathic expressions in order to build rapport, trust, and to stimulate the participants to speak about their experiences of coping with CF. The duration of each interview was approximately 60 minutes. All interviews were audio-recorded and transcribed before data analysis. Field notes were also taken about facial expressions, tones of voice, and posture of the participants. Other details of data collection were explained in the first sub-study [[21]].

Data analysis

Data analysis using constant comparative method [[24]] was carried out alongside data collection during the research process. Data analysis comprised three stages. The first stage was open coding, in which the first and the second author independently read the transcribed conversations with each participant thoroughly and repeatedly. They then produced substantive theory code for each conversation. This incorporated consideration of the types of situations, activities, and behaviors were described by participants. Simultaneously, the authors compared the data relating to each situation, activity, and behavior extensively and developed categories for each type. The second stage of data analysis was selective coding. During this stage, the previously defined substantive codes were reduced to obtain variables or recurring issues and identify major categories through coded information classification. Those conversational units with the same or similar meaning were classified into the same group. Subsequently, the authors named all of the categories and sub-categories. The third stage was theoretical coding. The authors mutually agreed upon the relationships between categories and sub-categories, and these were then linked with theoretical codes to map the social process of coping with CF in family caregivers of people with schizophrenia.

Trustworthiness

Regarding grounded theory, Glaser and Strauss [[22]] stated that the proper criteria for judging the credibility, fittingness, and stability of findings are based on flexible research. The credibility was evaluated through the vividness and faithfulness of the description of a phenomenon of coping with CF such as triangulation-method triangulation-in this study, selecting the appropriate participants who had the ability to tell their CF during care for people with schizophrenia. Semi-structured interviews and field notes were conducted by only the first author. The authors' background in qualitative research helped her to provide details and thick description to increase transferability. Then, peer debriefing with co-author and audit trail were employed to enhance stability of finding.

Results Combating with CF

The core process with which family caregivers cope with CF while providing care for individuals with severe mental illness was found that was called “Combating with compassion fatigue.” The process was comprised of strengthening attachment to the care recipient to increase willpower, learning how to deal with the illness, and self-empowerment to fight the physical and mental fatigue.

Category 1: strengthening attachment to the care recipient to increase willpower

Family caregivers strengthen attachments with care recipients to increase their willpower using three strategies: recognizing the care recipient as a good person to increase willpower, maintaining love and sympathy, and engaging in shared activities with the care recipient. The strategies helped caregivers to maintain their desire to care for the care recipients. Three sub-categories were identified, as follows.

Recognizing the care recipient as a good person

Most participants believed their care recipient to be a good person. The believe liked this could help them to have more power and encouragement. The participants shared positive behaviors they had seen in their care recipient such as abstaining from cigarettes and alcohol, doing the housework, and going to the temple to do good things. Other care recipients helped with home maintenance and repairs and worked to earn money. The good nature of a care recipient encouraged their caregiver to continue providing care despite physical and psychological exhaustion. Participants said:*"He still has auditory hallucinations. He always tells me about that. However, he does not use cigarettes or alcohol. Besides, he is a good person. He likes to go to the temple to make merit every week. He helps me to do housework. He cooks and cleans the house." (P 29)"He is a good guy. He takes care of his father and mother in everything. He buys food for his mother and father. He reconstructed the house. Before he was diagnosed with schizophrenia, he worked to earn money to help the family with things such as paying for a car. I understand his illness." (P 12)*

Recognizing the care recipient as a good person was an important strategy with which the participants strengthened their connection with the care recipients. The participants had positive thinking by acknowledging of the goodness of the care recipient invited them to be willing to continue caring.

Maintaining love and sympathy

In caring for people with a diagnosis of schizophrenia for a long period, the participants experienced physical and mental exhaustion. However, they continued providing care because of their love and sympathy for the care recipients. Many of the participants would remind themselves that they love their care recipient. Care recipients are often a significant other, child or close family member of the caregiver. They expressed their love to the care recipients verbally but also non-verbally through their caregiving. Despite not knowing when the care recipients would recover from their illness, the participants understood that they must be patient and provide indefinite ongoing care. The participants said:*"I could say that I am very physically and mentally exhausted. I tell myself that he is my son. I love him. I must fight. If I do not, who will care for my son? I also work so hard every day to earn money and buy food. I prepare food for the patient when he cannot do it for himself. When I take a break at noon, I come back home to care for him." (P 24)"I was very tired. But I do it because I love her. I tell myself that she is my wife. I love her so much; I would do anything for her. I want her to get better. She might not do any work. It's alright by me. I am always ready to care for her. She might do many things when she is better." (P 2)*

Engaging in shared activities

Engaging in activities together was another method used to strengthen the bond between caregivers and the individual for whom they cared. Most participants said that they invite the care recipients to join in activities with them such as going to the temple and going on weekend trips. The participants also found that shared activities were a good way to allow them to engage more as a family. In addition, activities with the care recipients could be a source of relaxation for both. One of the participants said:*"Usually, our family likes to do activities together such as making merit, meditation, and travelling. One day, I went to a temple in another province. I invited him and my husband. We took meditation. I think that it's helped us relax. I like to invite him to activities. We are comfortable doing that." (P 5)*

Another participant shared their feelings of love and sympathy for their son with schizophrenic. The participant encouraged their son to do exercise and housework every day.*"I live alone with my son who was ill. We do not have any relatives. I love him and sympathize. I often invite him to exercise with me. Some days, I invite; some days the patient invites me. I am very happy, comfortable, and more bonding. I felt that. I want him to get well." (P 26)*

Strengthening the attachment to the care recipient to increase willpower was seen as a good way to cope with CF. When the participants felt physical or mental exhaustion or were otherwise suffering, they would recall nice experiences and their positive relationship with the care recipient. Their love and sympathy helped to maintain good feelings and a willingness to continue caring for the care recipients. Later, the participants' CF could be decreased.

Category 2: learning how to deal with the patient's illness

Learning how to deal with the patient's illness was the second stage of the coping process. The participants not only provided love and sympathy to their care recipients but also tried to learn how to deal with them. This way helped the participants to be able to care for and manage the patient's illness. One important thing that associated with CF was lack of knowledge to care for the schizophrenic patient. This was achieved in two ways: understanding the care recipient's conditions and finding information about caring for them. Learning care strategies improved participants' competence at care provision. It also increased the participants' well-being and decreased the caregiving burden as well as CF. Two sub-categories were identified, as follows.

Understanding the condition

Understanding the care recipient's disturbance was a further strategy that the participants used to deal with the care recipients' illness. The understanding also helped the participants to have more power and confidence to provide continuous care. The participants used various self-devised strategies to achieve this, including observing the care recipient's symptoms, the effects of the medicine, and other behaviors. Learning by observation improved understanding of the illness and how to care for their charges. As one participant said,*"I live with my ill brother, so I have time to observe his symptoms. In the beginning, I did not know or understand what was happening to my brother. After a while, I began to know what the patient needed. For instance, I tactfully monitor his symptoms and delusions. I know that it's not real. The delusions are a symptom." (P 18)*

Another method used to improve understanding of the illness of the participants was to ask the care recipient about their symptoms and experiences. The questions asked by the participants primarily focused on the medicine and its side effects. One participant said,*"I always ask him about taking medicine. I remind him to take medicine. I knew that if I don't ask, he won't take it. I asked him about the side effects and it helped me understand why would want to remain abnormal. It is because of the side effects of the medicine." (P 9)*

Finding information about caring for people with schizophrenia

Finding information about caring for schizophrenia was a strategy used by the participants to learn how to deal with the condition. Most of the participants had told sought knowledge about schizophrenia and how to care for schizophrenic people by asking mental health nurses. Family caregivers had telephone numbers for the mental health nurses involved in their relatives' treatment. They called the nurses to talk about the care recipients' symptoms and disturbances, how to deal with refusal to take medication, and how to manage the care recipient's behaviors. They also discussed health outcomes. Receiving such information helped the participants to learn how to care for their care recipients appropriately. The participants said:*"I called the nurse and asked her what to do when the patient forgot to take their medicine. The nurse was very nice and kind to me and the patient." (P 20)*

"Sometimes, he has delusions. he walks around the home and runs away from home. I did not know what to do so I called the nurse. I asked the nurse what to do, how to care for the patient. The nurse gave me some preliminary advice and then she came to my home." (P 14)

The participants used understanding the care recipient's disturbances and finding care information to improve their ability to deal with the care recipient's illness. After the participants could provide effective care for their care recipient to be better, the participants would be fine as well. This was found to be a good way of helping the participants to cope with CF.

Category 3: Self-empowerment to fight the physical and mental fatigue

The participants used self-empowerment to cope with CF. This was achieved using three strategies: maintaining hope the care recipient will get better, believing that the caregiving is their responsibility, and finding ways to release stress. These strategies gave the participants strength and confidence, and strengthened their resolve to continue caring for the care recipients. Three sub-categories were identified, as follows.

Maintaining hope that the care recipient will get well

Maintaining hope that the care recipient will get well was a strategy used for personal empowerment by the caregivers in this study. Most participants expressed this hope and said that their hope increased when the care recipients' symptoms lessened. This reduction of psychotic symptoms in the care recipient gave participants more energy to care for their relatives with schizophrenia. One participant said:*"I hope that he keeps doing well. In the beginning, he could not stop smoking and drinking alcohol. He often went out drinking with his friends. Then, he had active symptoms many times. However, he went to see the doctor and took the medicine he was prescribed. He got better and stopped having psychotic symptoms; This makes me hope that he will get better again and then I feel more able to care for him." (P 25)*

Another participant talked about their care recipients increased ability to undertake tasks and activities such as housework. The participant felt good and was optimistic about the care recipient's improved condition. The participants said:*“I told the patient to do housework. He can do it by himself and when I saw that, I felt so good and I thought that he will be better or recovered from the disease soon. I understand him. I also sympathize with him. He might feel lonely. I hope that he will get better.” (P 27)*

Believing that the caregiving is a responsibility

Another strategy used for empowerment was to regard caring for the care recipient was as a responsibility. The participants would often tell themselves that caring for the care recipients was an important duty. This was particularly so because of their close familial relationships with the care recipients. When participants found themselves physically and mentally exhausted, they would remind themselves of the importance of their responsibility and feel empowered to continue caregiving. The participants said:*“I must care for him. If I did not, no one would care for him. He is my only brother. I take him to the hospital. I must. When I think like that it gives me the strength to keep caring for him.” (P 29)“I am so tired. But I must be patient and fight for our family. she is my mother. I must care for her. I am her son. It is a responsibility that I must uphold. Sometimes, I go out to relax for a few hours. I come home because I must make sure my mom takes her medicine. I want to see my family members happy.” (P 4)*

Finding ways to release CF

Another means participants used to cope with CF was to find the outlets for CF release. Methods used to achieve this included spending time with other people, spending time working hard, undertaking regular religious activities, and engaging in exercise and hobbies. These strategies that could help the participants to decrease the CF were identified, as follows.

Spending time with other people

Most participants had found positive ways to relieve stress. Stress as a characteristic of CF happening with the participants. The participants used time with other people such as family members and friends to talk about the care recipients' illness and treatments and about methods of caregiving. After talking with others, they felt more able to provide care, more relaxed, and less stressed and anxious. One of the participants said:*“When I am stressed, I go out to talk with my friends. We talk about the patient behaviors and drink alcohol. My friends, they always listen to me. I need to do this because I am so stressed. My friends also find jobs for me. So, I feel better and get the jobs.” (P 4)*

Hard work

Participants spent time working hard to forget distresses from CF. Busying themselves with jobs provided a distraction from tension or suffering. Participants found that they enjoyed doing the jobs and forgot their troubles. *“Sometimes, I am exhausted. I am disheartened because I care for the patient alone. I also have difficulty sleeping. I must do more jobs to forget things. I do housework such as cooking, washing clothes, and cleaning the house. I am then comfortable and can carry on.” (P 26)*

Religious activities

Undertaking religious activities in daily life was another strategy that helped the participants to let go, relax, and increase their understanding of life. The participants could let negative consequences due to CF. The religious activities that participants incorporated into their daily lives included chanting, meditation, and good works. Some participants practiced dharma through acts such as offering food to monks each morning. One participant said:*“I practice dharma every day. I liked to give alms to the monks in the morning. I do this every day. I invite my son who was ill to do it with me. Sometimes, he does but sometimes does not. I meditate every week, which helps me to feel better. Sometimes, I am so stressed and this makes it better.” (P 23)*

Exercise and hobbies

The participants accepted that caring for the care recipients could be hard. They engaged in exercise and hobbies such as gardening, jogging, and walking to help themselves to relax and unwind and relieve stress. One participant said:*“I am very tired. I tell myself that I must fight. When I have a little time, I walk or jog around my home, which* *helps me to feel better. I invite him to exercise, but he does not like to." (P 11)*

In this study, coping with CF was found to be a basic process that occurred between family caregivers and care recipients. It is also a dynamic process. The participants strengthened their attachment with the care recipient to increase willpower in providing care by using three sub-strategies: recognizing the care recipient as a good person, maintaining love and sympathy, and sharing activities with the care recipient. At the same time, the participants used the strategy of learning how to deal with the care recipient's illness through understanding the care recipient's disturbances and finding information about caring for people with a diagnosis of schizophrenia. This phase, the participants could improve their ability to deal with the care recipient's illness. The participants also used another strategy of self-empowerment to fight the physical and mental fatigue, with three sub-strategies: maintaining hope that the care recipient will get well and regarding caregiving as an important responsibility, and finding positive outlets for CF release. When the time passed, the participants can move back and forth to use the strategy of strengthening attachment with the care recipient to increase willpower or finding ways to deal with the care recipient's illness again. The relationships between the three phases can be conceptualized as circular and iterative, as shown in Figure 1.

Discussion

Schizophrenia is recognized as a severe mental illness requiring long-term treatment need [25]. Taking care of a schizophrenic family member can be a tremendous burden upon the caregiver who must deal with stigma, misunderstanding, damaged and disturbed relationships, negative effects on their own mental health, and difficulty coping [26–28]. The resulting CF can cause health problems and a reduced quality of life of family caregivers [3,7]. Our findings highlight the strategies used by family caregivers to cope with CF that were called "*Combating with compassion fatigue*". These strategies comprise three stages: strengthening attachment with the care recipient to increase willpower, learning how to deal with the care recipients' illness, and self-empowerment to fight to the physical and mental fatigue. Lazarus and Folkman [29] have defined coping as a process that uses cognition, decision making, planning, and support-seeking to manage problems and life. Our participants availed themselves of both emotion and problem-focused coping strategies.

Emotion-focused coping strategies included recognizing the care recipients as good people, maintaining love and sympathy, sharing activities with the care recipient. These strategies manage and minimize negative emotions and maximize positive emotions [29]. Strengthening attachments helped the participants to communicate and have more positive relationships with the care recipients. They also encouraged participants to continued caregiving and improved overall well-being. A strong attachment to the care recipient helped our participants to cope with the negative emotion that are manifestations of CF. This finding also is consistent with a study by Blair and Perry [10] that revealed the family caregivers feel a strong duty of care due to their emotional attachment to the care recipient. Besides, the family caregivers gain satisfaction from providing this care.

The participants also used problem-focused coping strategies to fight to the CF. These focused on looking for ways to manage the care recipient's illness. This was achieved through understanding the care recipients' disturbances and finding information about caring for people with schizophrenia. Sub-strategies of this included observation of the care recipients' symptoms, other behaviors, and their medicine and its effects to increase their understanding. This is regarded as part of the role of a family caregiver [30]. The participants sought ways to manage the problem inherent in caring for their charges and dealing with their care recipients' active symptoms. Thus, some participants took their lead from health professionals through informal health assessment and data analysis that informed their caring activities. These problem-focused coping strategies and autodidactic processes helped to build the caregivers' knowledge about the illness and caregiving skills, leaving them better equipped to cope with the caregiving burden [31,32].

Self-empowerment to fight the physical and mental fatigue was another way that was performed by participants. Taking care of the afflicted family member for long periods at home impacted the participants' physical and psychological health and quality of life. The less able the caregiver felt, the greater the negative effects and CF [5,9,33]. The participants described methods they used for self-empowerment while providing care to fight to their physical and mental fatigue. These included maintaining the belief that the care recipient was a good person and the use of distracting activities. The strategies used demonstrate that the participants engaged in cognitive self-adjustment. Participants also made emotional adjustments such as spending time with friends, meditation, doing good works, exercise, and hobbies. They also attempted to modify their daily routines to allow for their caregiving duties. These strategies gave the participants more energy to continue caring for the care recipients. Previous research with primary caregivers of elderly individuals with dementia showed a similar self-empowerment, that including enhancement of care ability, emotional management, and life management [33].

Limitations

In this qualitative study focused on an in-depth exploration of the experiences of a small sample of family caregivers of people with a diagnosis of schizophrenia and only two hospitals. It may therefore not be generalizable to family caregiving with other types of care recipients.

Conclusions

Caring for schizophrenic patients can be difficult for family caregivers. The family caregivers who participated in this study used numerous strategies to cope with CF. We found that the family caregivers of schizophrenic patients in Thailand engaged in a specific coping process. The findings can be used to provide guidelines for family caregivers who are suffering from CF. Health care professionals, including mental health nurses and psychologists can apply this coping process to family caregivers with CF. Each stage of the process can be adapted for greater efficacy and flexibility. In addition, the process can be applied to help family caregivers who dealing with patients with aggressive behaviors or poor medication adherence. Mental health policymakers may consider our findings as a foundation upon which to build strategies that empower family caregivers via mental health facilities. Further research should look for factors influencing to CF among family caregivers. In addition, the effective interventions should be developed.

Data availability statement

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

Ethical statement

This research received ethical approval from the Office of the Research Ethics Review Committee for Research Involving Human Subjects: The First Allied Academic Group in Health Sciences, Chulalongkorn University. The research project number is 106.1/63.

Author contributions

Data were collected and analyzed, and the manuscript was written, by RU and WS.

Conflict of interest

The authors have no conflict of interest to declare.

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School Nurse–Parent Partnership in School Health Care for Children with Type 1 Diabetes: A Hybrid Method Concept Analysis

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ABSTRACT (ENGLISH)

SummaryPurpose

To define school nurse–parent partnerships in school health care for children with type 1 diabetes (T1D) and determine its attributes using a hybrid model.

Methods

This method involves a three-phase process: theoretical, fieldwork, and analytical. A literature review was conducted during the theoretical phase. A literature search of articles from January 1991 to February 2020 was conducted using relevant electronic databases. Eighty-three articles that met the inclusion criteria were completely read. Fieldwork data were collected through individual interviews from February to July 2019 in South Korea. In the fieldwork phase, interviews were conducted individually with 22 mothers of students with T1D and 20 school nurses recruited by purposeful sampling. Inductive content analysis was conducted. The findings from the theoretical phase were integrated with those from the fieldwork phase, and the final concept was derived.

Results

School nurse–parent partnership in school health care for children with T1D has been defined as an interactive process of maintaining a balanced responsibility and providing tailored care to meet needs by establishing trusting relationships and communicating transparently and openly. This analysis yielded four attributes: trusting relationships, transparent and open communication, balanced responsibility, and providing tailored care to meet needs—this entails providing nursing actions by advocating for students and performing a negotiated role together or individually for student and family.

Conclusion

The findings of this study add to the importance of an attribute of balancing responsibility for partnership in school health care. The results show that this partnership could contribute to the development of a scale, theory, and nursing intervention in school health care for children with T1D.

FULL TEXT

Introduction

In the USA, approximately 40.0% of school-age children and adolescents are reported to have one or more chronic conditions, such as asthma, obesity, or diabetes. The health care needs of children and adolescents with such chronic diseases include the daily management of the disease and the resolution of potential emergencies [[1]]. To increase the independence and self-management of school-aged children and adolescents with chronic diseases, care coordination through partnerships between families and school nurses is essential [[2]]. Family engagement in school is key to the health care of school-aged children and adolescents with chronic disease, which can help their successful transition into independent young adults [[3]]. The Centers for Disease Control and Prevention (CDC) presents family engagement as an important component of the whole-school, whole-community, and whole-child models to address health problems in the school setting [[4]].

Currently, school-based interventions for children with chronic conditions have been implemented [5], and type 1 diabetes (T1D) self-management has become much easier with the introduction of advances in technology, such as continuous glucose monitoring or artificial pancreas system [6]. However, it is not known whether the development of school-based interventions or technologies using devices has strengthened collaboration between each party or reduced the need for collaboration. Moreover, the ratio of school nurses to students is correlated with the HbA1c of students with T1D. This finding suggests that this change in the level of collaboration may be applied in the calculation of the ideal staffing level of school nurses [7]; however, there is currently no scale to measure it, and above all, no concept analysis has been conducted. Several scales applied concepts regarding partnership have been developed in children's hospital and long-term care facility settings; however, it has not been revealed whether the conceptual attributes of partnership in school health care are the same as that in these settings or if it includes other attributes.

Background

The most common health conditions requiring school health care were asthma, attention deficit disorder/attention deficit hyperactivity disorder, and severe allergies, but the most common health care procedure by school nurses was related to all diabetes care, such as glucose monitoring, insulin injections, and glucagon injection in the USA [5]. The previous study noted that there was an increase in blood glucose monitoring and insulin injections and decrease in nebulizer treatment and oxygen saturation checks during care by the school nurse. This result is consistent with research on the increase in T1D in the USA; the estimated T1D prevalence per 1000 youths for those 19 years or younger increased significantly from 1.48 in 2001 to 2.15 in 2017 [8]. In a review study on the perception of school health care among parents of children with chronic diseases from 2010 to 2020, 60.0% were identified related to diabetes, which was twice as high as asthma [9]. Otherwise, in a national survey on confidence in school health care, 42.0% of school nurses reported that they were confident in diabetes management, which was lower than in the case of anaphylaxis (82.0%), asthma (73.0%), eczema (57.0%), and epilepsy (58.0%) [10]. These results suggest that diabetes is one of the health problems that should be preferentially dealt with in school health care. Additionally, mothers are the primary caregivers for children with T1D, and only 5.0% of children had a father or grandparent as the primary caregiver [11]. In addition, compared to fathers, mothers of children with T1D reported significantly greater parenting stress [12], perceived burden, and emotional distress [13].

In school, children with T1D not only need skills but also the ability to make decisions about the need for tests and medications and dosing for proper blood sugar control, but school-aged children are far from perfect. A previous study of students aged 6 to 9 (1st to 3rd grades) reported that parents frequently received calls from the school or were requested to visit school [14]. Furthermore, 56.5% of children aged 6 to 9 required assistance in administering insulin injections; even 15.6% of older children (aged 10 to 12) did not have the skills to determine the type and dose of insulin [15]. Even if adolescents have self-medication skills, it does not mean that they do not need help in acquiring information about medication. Only 8–9.0% of adolescents aged 13 to 15 with diabetes needed help with self-care at school [16], but 36.5% of adolescents obtained information about self-medication from their parents [17].

In 2016, the National Association of School Nurses (NASN) released “21st Century School Nursing Practice,” a new framework moving beyond basic care management to a systems-level approach for delivery of school health care [18]. A key element in the application of this framework is care coordination, including direct treatment and communication throughout the system. Care coordination includes case management, chronic disease management, collaborative communication, direct care, education, interdisciplinary teams, motivational interviewing/counseling, nursing delegation, student care plans, student-centered care, student self-empowerment, and transitioning planning [19].

Students’ health status has a positive correlation with academic achievement and lifelong well-being [20,21]. School nurses, who occupy the largest portion of school health services, have a direct and lasting relationship with students. School health care is team-based care that works collaboratively with patients, family caregivers, school nurses, and primary and community health care providers [22]. Specifically, school-based intervention for children with chronic diseases emphasizes the partnership with the school nurse or child/youth and family [23].

Similarly, the partnership between family and the school nurse is emphasized in school health care for children with T1D; however, both parents and school nurses recognized various interpersonal obstacles pertaining to school health care for children with chronic diseases [9,24]. Although advances in technology for children with chronic diseases have recently been developed, there is no quantitative comparative study on how these developments affected the collaboration between families and schools in school health [25]. A scale examining partnerships with pediatric nurses in hospital settings has been developed [26]; however, a concept analysis of partnerships in the context of school health care has not been conducted. It is necessary to analyze the concept and develop scales for partnership with families in school-based care.

Partnerships in child care are different from partnerships with patients or clients as they include parental participation and parents as experts regarding the developmental aspects and health statuses of children [3,27]. Family-centered care (FCC) is used as a surrogate term for partnership in care and its attributes, including parental participation in care, development of a respectful and trusting partnership, and information sharing [28].

To improve the quality of school health care for students with chronic conditions, it is necessary to identify commonalities and differences between the ambiguous concepts of partnerships between school nurses and parents in school health care settings and clarify conceptual attributes. Concept analysis promotes understanding of a specific phenomenon with a concept that is poorly defined or has inconsistencies between the definition and its use in research, which aims to clarify, recognize, and define [29]. In a hybrid model of concept development, analysis from the literature review is closely integrated with the empirical data collected in the clinical setting and precedes the measurement of a concept [30]. The school nurse–parent partnership in school health care for managing T1D can provide a theoretical basis and an understanding of key elements to develop a scale and school-based intervention. This concept analysis aims to evaluate the school nurse–parent partnerships using a hybrid model.

Methods

This study analyzed the concept of school nurse–parent partnerships in school health care for children with T1D using a hybrid model. This method involves a three-phase process: theoretical, fieldwork, and analytical.

Theoretical phase

A literature review was conducted during the theoretical phase. The keywords and synonyms related to “school nurse,” “family,” and “partnership” were used, employing four databases—PubMed, Embase, Cumulative Index to Nursing and Allied Health Literature, and Web of Science (supplementary file). The inclusion criteria were as follows: (1) published in English, (2) peer-reviewed articles published from the beginning of database until February 2020, and (3) primary reviews and descriptive studies, including attributes of partnership in school health care. Of the total 704 articles initially obtained from the search, the titles and abstracts of 432 studies were reviewed after the duplicates were deleted. Eighty-three articles that met the inclusion criteria were completely read. Finally, 19 articles were selected for the analytical phase (Figure 1, Table 1).

The literature was reviewed as follows: What is the nature of the partnership between school nurses and families of children with T1D? How has the partnership been defined? How has the partnership been conceptualized? How has the partnership been measured? For data analysis, the authors repeatedly read the selected articles to extract relevant meaning units, which were coded. Codes were identified and classified, which were integrated as subcategories and categorized.

Fieldwork phase

In the fieldwork stage, in-depth interviews were conducted with 22 mothers of students with T1D and 20 school nurses (Table 2). The inclusion criteria were mothers who had: (1) children with T1D, (2) children aged between 6 and 12 (primary school age), and (3) children who experienced school health care for one year after the first diagnosis. The inclusion criteria of school nurses were as follows: (1) more than one year of experience. Purposeful sampling was used to recruit participants through an online self-help group of parents of children with T1D and school nurse groups in two districts in South Korea. Those who voluntarily agreed to participate in the interview following the introduction of the purpose, process, and implications of this study were selected. The participants were sampled until the responses to the interview questions reached saturation and no new codes emerged, and then data collection was terminated [31].

The individual interviews were conducted between February and July 2019, in consideration of the participant's preferred schedule (school nurse: 5 months; parents: 4 months), mainly at the participants' home. However, if this was unfeasible, a rented private space near the home was used temporarily to conduct interviews. Interviews with parents and school nurses lasted for 57.64 ± 11.74 and 53.33 ± 20.55 minutes, respectively. The interviews were based on a semi-structured interview guide. The interview questions included experiences of cooperating with the parents or school nurses and perceived components of partnership. The interviews were recorded and transcribed. Inductive content analysis was conducted [32].

The collected data were analyzed according to the inductive approach to qualitative content analysis procedures suggested by Elo and Kyngäs, comprising open coding, coding sheets, grouping, categorization, and abstraction [33]. For data analysis, the researchers read the transcripts repeatedly to find important sentences or phrases, grasped the meaning, and created codes. The codes, subcategories, and categories were developed using the NVivo (Release 1.5.1) [34]. Meaningful units and initial codes were extracted through repetitive line-by-line reading. Similar codes were formulated and grouped into subcategories, and categories were formed by integrating them. Conflicting opinions were discussed until a consensus was reached.

Analytical phase

After extracting the categories regarding school nurse–parent partnership in school health care for children with T1D in the theoretical phase, the categories at the theoretical level were compared and contrasted with those at the field level. The findings from the theoretical phase were integrated with those from fieldwork phase, and the concept regarding school nurse–parent partnership in school health care was expanded, and consequently, the final concept was derived.

Ethical considerations

This study was approved by the Institutional Human Research Board (IRB No. 1041386-202101-HR-75-01). Interviews were conducted after the approval of IRB on qualitative research through interviews with school nurses and mothers (IRB No. DHUMC-D-19001-PRO-01 and DHUMC-D-19002-PRO-01). Participants who voluntarily consented to participate in the qualitative phase through interviews were included.

Rigor

Field notes were taken for rich descriptions. Member checks, peer debriefing, and referential adequacy were conducted for credibility [35]. Credibility, which is equivalent to internal validity in quantitative research, is an evaluation of whether the analyzed results are reasonably derived from the data obtained from the participant and whether the participant's original point of view is accurately interpreted [36]. Member checking includes systematic feedback from participants on data, categories, interpretations, and research conclusions to reduce the risk of misinterpretation [37]. There was no significantly meaningful change in interpretation and categories by member checking. Peer debriefing is a kind of external evaluation regarding the research process by peer researchers [37].

Results Theoretical phase Dictionary definition of partnership

A partnership is defined as a relationship between individuals or groups characterized by mutual cooperation and responsibility to achieve a specific goal [38].

Attributes of partnership from other disciplines

Partnerships have been used in a variety of areas, including business and administration, public service, education, health, and social care. Its dimensions in business and administration include commitment, coordination, interdependence, and trust [39]. In the public service context, the partnership includes sharing power, work, support, and/or information with others in the achievement of joint goals and/or mutual benefit [40]. Partnerships with family have been used extensively in education. Its dimensions include commitment, respect, communication, and professional competence [41]. Staff or families are required to have capacities, such as capabilities (skills and knowledge), connections (networks), cognition (belief, values), and confidence (self-efficacy) [42].

Attributes of partnership in nursing

The nature of partnerships with a client in the health field reflects its attributes in nursing. This relationship has the characteristics of a working alliance [43]. In the health visiting context, attributes include a genuine and trusting relationship, honest and open communication and listening, praise and encouragement, reciprocity, empathy, sharing and respect for the other's expertise, working together with negotiation of goals, plans and boundaries, participation and involvement, support and advocacy, information giving, and enabling choice and equity [44]. Common key attributes of partnership in nursing are information sharing, participation, collaboration, power sharing, and negotiation [45,46]. Partnership in caring for the accident and emergency environment included three attributes, namely negotiation and equality of care, parents as equal partners, and shifting of care responsibility [47]. Partnership within the relationship between health care providers and patients included eight attributes: shared decision-making, relationship, professional competence, shared knowledge, autonomy, communication, participation, and shared power [46].

Partnerships in children's health care include understanding children's health issues in a family and respecting them as experts [48]. Partnerships with parents include assessing their as well as their children's needs, sharing care with families, encouraging parental involvement, keeping them informed, and respecting, empowering, and collaborating with them [49]. Pediatric nurse–parent partnership included seven attributes—reciprocity, professional knowledge and skills, sensitivity, collaboration, communication, shared information, and cautiousness [26].

Definition of partnership in school health care

Partnership in school health care is intended to form a supportive circle for children in collaboration with health care faculty in schools and the community [50]. It was defined as collaboratively looking for opportunities to teach skills, sharing disease knowledge, and providing support to empower students toward self-management [51]. Kakumanu et al (2017) defined partnerships in school health care for children with chronic diseases as shaping a child-centered supportive circle, comprising clinicians, school nurses, and families around children with chronic disease [52].

In the theoretical phase of this study, seven attributes were identified: building a rapport, transparent and open communication, negotiation, clear role delineation, using the nursing process, advocating, and empowering parents.

Fieldwork phase

In this phase, primary codes were extracted and grouped into attributes of school nurse–parent partnership in school health care for children with T1D.

Attributes

The extracted attributes were classified into 7 categories, 23 subcategories, and 222 codes (102 of parents and 120 of school nurses). The fieldwork phase analysis results were identified with seven attributes similar to those of the theoretical phase: (1) respectable and reciprocal relationship, (2) sharing health information, (3) mutual agreement on the roles of each party, (4) shared responsibility, (5) providing personalized care, (6) protection from discrimination, and (7) empowering parents.

- **(1)**Respectable and reciprocal relationship

Participants recognized “respectable and reciprocal relationship” as a subcategory of reciprocity, mutual respect, trust, cautiousness, and politeness as important attributes of partnership in school health care. Most parents and school nurses recognized the importance of trust and respect for each other. In particular, it was not an effort by one party, but reciprocal features were emphasized. They said that it was necessary for parents to trust the school nurse as the sole health care professional in school, and for the school nurse to recognize the parent as another expert in the health care area. They also said that the rapport formed through this was a way to make cooperation easier. In this process, they pointed out the importance of each other's cautiousness and respectful attitude. *“The school nurse should respect parents, and it would be inappropriate to teach children's parents.” [school nurse4] “I believe that a little politeness between the school nurse and parents and caution during the introduction are needed.” [parent8] “There's a great difference between saying ‘I'm worried about my child's situation’ and asking, ‘If something happens to my child, will the school nurse take responsibility? Isn't that what they have to do?’” “They must be considerate of each other.” [school nurse13*].

- **(2)**Sharing health information

Both parties shared students' health information and opinions to solve students' health conditions. For this, participants had periodic contact between themselves and exchanged information for the child's condition. They recognized that timely contact and regular meetings were needed, rather than frequent meetings or contacts, due to the time limitations of either parents at work or the school nurse. Parents informed the health status of their children to the school nurse in detail so that the school nurse could prepare and respond in advance. The school nurse also informed parents of students' health problems at school so that the parents could receive active treatment at a hospital or discuss any problem with the parents to immediately solve it.*"A connection is needed, whereby we can send and receive short text messages about the child's condition when the child goes to school sick." [parent9] "When we talk, the school nurse tells me to solve things I did not think of." [parent17] "I am in touch to see how I can keep this child healthy by sharing opinions." [school nurse12]*

- **(3)**Mutual agreement on the roles of each party

The subcategories of the third attribute, mutual agreement on the roles of each party, included verifying needs and requests, and compromising. It means that the school nurse verifies what kind of demands the parents had from school health care, and the parents also request to learn about the kinds of school health care that they want from the school nurse. In this process, as parents are in the position to request the school nurse for specific roles, and the school nurse is in a position to receive requests from the parents, it is important to find a midpoint between each other's needs so that both the mother's needs and the school nurse's work situation can be considered simultaneously. In other words, while parents should not make unreasonable demands from the school nurse beyond the legal scope, school nurses too should consider the situation of the student's family and try to find ways and means to help parents as much as possible rather than drawing a clear line on parental requests. *"I told the school nurse that I should be able to call you if the pump is clogged, or the machine is malfunctioning." [parent15]* "*It would be good to have an in-depth discussion about the child, and the school nurse would like to talk about their position and what school nurse can and cannot do. First, I would request you to help as much as possible regarding childcare.*" *[parent11]* "*I think it is right to open up gradually while communicating with the mother because they [mothers and school nurses] have different expectations for each role.*" *[school nurse3] "We have to find the center point among the needs of the school nurse and parents." [school nurse5*].

- **(4)**Shared responsibility

Shared responsibility includes three subcategories: mutual understanding, shared duties, and working together. It means that school nurses and parents faithfully share responsibility to achieve the common goal of optimal health outcomes for students. For this, parents and school nurses need to know the scope of each other's roles well and to have agreed role descriptions for specific situations. There is no written agreement on the roles of each, but the roles that each of them plays individually or together are partly subdivided.*"The school nurse works with me to adjust the insulin amount to match the child's blood sugar." [parent3] "First, I think we should know each other well… about the extent of demands and how the school nurse can help." [parent8] "We need to properly determine what we can do together and individually." [school nurse12*].

- **(5)**Providing personalized care

This refers to taking an interest in students' health care and providing supportive care and includes providing personalized care to meet the students' individual needs. The attributes are educating and strengthening students' self-care, counseling and psychological care, providing nursing interventions, and parental participation in care. Both parents and school nurses said that it was necessary to educate students so that they can take care of themselves from an early age. In addition, parents and school nurses each perform their own negotiated tasks; the school nurse performs health care for children with chronic diseases in addition to basic tasks, and parents participated in school health care as the school nurse could not fulfill the tasks of their own volition.*"We need to work with the school nurse and parents to make the child independent." [school nurse16] "This should be tailored to the child's characteristics." [parent10] "I tried to apply the nebulizer because of the difficulties of peer problems other than the health of the child." [school nurse18] "These things cheer up the child. First, I can take good care of their physical health: Although I do not want the school nurse to do a great deal, I want them to provide the best possible care and psychological* support*." [parent9*].

•**(6)**Protection from discrimination

This category is to protect a student's illness from becoming a weakness and help the student be considered a regular student by school staff and peers. Parents want their children to experience a normal school life without discrimination through effective disease management rather than receiving special treatment at school. The participants recognized the need to protect privacy so that the child's disease does not become a weakness at school, to consider the students for effective disease management, and to give the child as much attention as desired. *"I think school nurse should protect children's own rules." [school nurse20] "I'm just trying to be a guard on the kid so she won't be withdrawn in school." [parent3] "I think it's a concern for a child who needs care." [school nurse6] "I hope school nurses would raise awareness about diseases among their peers." [parent13] "I* made *it easy for my child to rest in the health room and then go back to the classroom." [school nurse3*].

•**(7)**Empowering parents

Participants state that supporting parents and linking them with the resources they need is important. They believed it was important to advocate for parents with relevant resources. Some school nurses perceived cooperation with parents as providing a counseling program for parents to resolve their psychological distress or introducing financial support through national funding programs.*"The school nurse told me about the* funding *project supported by the government." [parent2] "I am working on paperwork to ensure that the child can receive medical help." [school nurse6*].

Final analytical phase

The school nurse–parent partnership in school health care for T1D was analyzed in the final analytical phase. In this, attributes were confirmed by a comparative analysis of the theoretical phase results and fieldwork phase results. School nurse–parent partnership in school health care for children with T1D has been defined as an interactive process of maintaining a balanced responsibility and providing tailored care to meet needs by establishing trusting relationships and communicating transparently and openly.

The four attributes of school nurse–parent partnership in school health care for T1D are as follows: (1) trusting relationships: this refers to establishing mutually trusting and respectful relationships between the school nurse and parents, (2) transparent and open communication: this means communicating openly and consistently to share and solve students' health problems, (3) balanced responsibility: this means compromising each other's needs, sharing roles, and working together to pursue a common goal, and (4) providing tailored cares to meet needs: this means providing nursing actions through advocating students and performing a negotiated role together or individually for student and family (Figure 2).

Discussion

The purpose of this concept analysis was to analyze the school nurse–parent partnership in school health care for

T1D using the hybrid model. In this study, four attributes (trusting relationship, transparent and open communication, balanced responsibility, and providing tailored care to meet needs) of this partnership were derived. Previous literature regarding partnership in school health care related to asthma found the attributes of forming supportive relationships and communication, which were similar to those found in this study; however, attributes like implementation according to an action plan and assessment of asthma-triggering factors differed from this study [52]. In a previous concept synthesis regarding FCC and partnership in care for children with chronic disease, the domains were similar to this study and included the following: valuing parents' expertise and knowledge about their child; forming a trusting relationship with the child and family; and facilitating the child and family to participate in care delivery through negotiation, empowerment, and shared goal setting [53]. However, the differences between attributes in this synthesis and the current study is that the provision of specific services in FCC, such as providing support to patients and families, providing special knowledge to parents, facilitating parental involvement, and involving parents in care rounds, participation in care, and specific roles [27,53,54], is more pronounced. The attributes extracted in this study had a larger emphasis on the reciprocity, such as “mutual exchange of information” and “mutual agreement,” of partnership than those of FCC [53]. As T1D often affects children from early childhood [55,56], the participants perceived that parents were already experts in their child's care; hence, the provision of special knowledge by school nurses or the dependence on the school nurse for specific care may have been found to a lesser extent in this study.

Relationship is an attribute that accounts for the largest proportion of partnership attributes [46]. In the present study, establishing a trusting relationship is similar to reciprocity [26] and relationship [57] derived as an attribute in other conceptual analysis studies on partnership. This means that parents and school nurses have mutual respect and trust to achieve a common goal. Respect has been recognized as an attribute of FCC for children with chronic disease, a counterparty to valued contributors. Trust to support children's interests is another attribute of FCC [58]. Establishing trusting relationships is a theme to facilitate in a challenging context for youth with T1D [59]. Building rapport, developing trust, and increasing familiarity are needed to facilitate communication with children when there is low utilization of school-based health services [60]. Parents and school nurses emphasized reciprocity in mutual collaboration [61].

Communication is an attribute equally mentioned in the extant literature [26,46]. Communication between parents and school personnel is essential for establishing individualized care plans in school health care for students with T1D [62]. When a child has a specific health problem, parents sometimes hide the disease [63]. Therefore, honest and open communication has been emphasized in the literature [64,65], and “open” has been included as it becomes a channel through which information is regularly exchanged in this study. Specifically, parents, school nurses, and primary care providers (PCP) should cooperate in school health care for chronic diseases [66]. However, if PCPs have not been involved in school health care, it may be important to closely communicate and cooperate with parents and school nurses for decision-making to solve children's health problems. It is necessary for the school nurse and parents to set a common goal that can bring the most desirable results to students [67,68]. Moreover, school nurses can bridge the gap as a stepping stone through communication between teachers, students, and parents and can mediate relational conflicts among them.

Partnership between parents and pediatric nurses in hospitals did not have attributes, such as negotiation or shared responsibility, because the given responsibilities of staff nurses were clear, and nurses would not feel like sharing their assigned roles [26]. Balanced responsibility was a unique concept in partnership for school health care with unclear responsibilities. Compared with another conceptual analysis study in partnership between staff and family in a long-term care facility, it is similar to the inclusion of negotiation and shared responsibility [57]. Role negotiation is a tenet concept for partnership between health professionals and the family in child health nursing [69]. Parents with knowledge and experience of chronic disease could negotiate appropriate support to achieve collaborative care [70]; participants in this study also seemed to seek balanced roles in school health care through effective communication. Effective negotiation needs a clear delineation of roles and mutual agreement of participation in care [71]. In the USA, a care or action plan in school is written in collaboration with the parent and the school, and is based on, and consistent with, the written school-based medical management plan [72]. This is also related to clear role delineation and is distinguished from the attributes of other partnerships by understanding the responsibilities of the role according to consensus. However, in cases where there are no legal standards or guidelines for the scope of practice, such as injections and blood sugar tests, although parents make such requests, school nurses either accept or reject them. When both demands did not find a balance or a midpoint, the subjects eventually perceived a lack of cooperation, and either the school nurse or parents, mostly mothers, had no choice but to take care of the child. Hence, these problems resulted in parental dissatisfaction with school health care as a consequence in the analysis of this study. Conversely, the consequences also revealed that mothers who found a compromise and shared duties with the school nurse expressed satisfaction with the school health care. Regarding a school health environment where there is no action plan for institutional reasons, specifying and documenting role responsibilities may help improve the partnership.

The final attribute is providing tailored care to meet needs. For the students' optimal health outcomes, it means providing care that meets the needs of students by planning or teaching skills to perform self-care, performing negotiated roles, and advocating for students. This includes what a school health professional implements according to an action plan for a child with diabetes [52]. In the USA, school nurses are responsible for coordinating and overseeing medical management and safety during school hours and all school-sponsored activities [72]. They play an important role, including direct care such as testing and medication administration, education for stakeholders, and organization of care for children with chronic disease [73]. The scope of direct practice of school nurse could be limited because of legal limitations and the absence of a similar action plan [24]. The administration of medication and blood sugar testing depended heavily on parental care in this study, which is similar to the literature from some countries [14,74]. To supplement this, school nurses in this study particularly emphasized the cooperative role of self-care for children. Supporting students' self-care is an important attribute of partnership on the trajectory to self-management, which includes teaching skills, sharing knowledge, and providing support to empower students on the trajectory of self-management [14,51]. In advocating, mothers in this study wanted them to participate in school activities like other children without discrimination and socialize with their peers without isolation rather than receiving extra special school services. They also wanted to be a pioneer in peer education and awareness improvement by school nurses so that their children's diseases would not be stigmatized. This finding is consistent with that of parents of children with T1D perceiving stigma surrounding T1D [75] and adolescents with T1D perceiving stigma of varying severity as a social barrier for self-care [76] in other studies. In this context, the school nurse should continuously strive for knowledge and skills for the well-being of students by providing tailored care and playing the role of an advocate.

The implications of this study are as follows: first, the attributes identified through this study can be linked to further nursing research, including scale development, and contribute to the development of practical theory [29]. Second, nursing intervention can be developed to promote partnership in school health care for school nurses and parents based on these attributes in the nursing education area. Third, a scale based on this concept can contribute to further quantitative research on the effect of the level of partnership between school nurses and parents with children with chronic diseases on the perception of school nurse, students' health outcomes, school nurse-to-student ratios, and parental satisfaction in school health care, which can contribute to the policy development of school health care. This study has some limitations. The participants' interviews in the qualitative study were conducted in one country. Moreover, interviewees in the field phase were limited to mothers of children with T1D among chronic diseases. Therefore, it is necessary to compare the results of studies conducted in various countries with those of parents of children with various chronic diseases.

Conclusion

The partnership between school nurses and parents is a prerequisite for providing high-quality school health care to students with T1D. However, there is limited understanding of the school health care setting because of the multidimensional properties of the concept and the diversity of the contexts in which the concept is used. The concept analysis in this study highlights the importance of trusting relationships, transparent and open communication, balanced responsibility, and providing tailored care to meet needs in partnership with the school nurse and parent. Based on the definition and attributes of school nurse–parent partnership identified through the results, it can be used as basic data for future scale development and various intervention programs for school nurses and parents.

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Ethics approval

This study was approved by the Institutional Review Board at the Pukyong National University (1041386-202101-HR-75-01).

Data availability

The datasets analyzed during the current study are not publicly available due to ethical restrictions but are available from the corresponding author on reasonable request.

Conflict of interest

There are no conflicts of interest to declare.

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Authors would like to express our deepest gratitude to the mothers of SugarTree and school nurses who sincerely participated in the interview.

Appendix A Supplementary data

The following are the Supplementary data to this article:**Multimedia component 1**Multimedia component 1

Appendix A Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.anr.2022.11.001.

Author (Published year)	Subcategories	Attributes
Mäenpää, Paavilainen, &Åstedt-Kurki (2013) Maenpaa &Astedt-Kurki (2008a) Erickson, Splett, Mullett, Jensen, et al. (2006) Rouse (2012)	Respect	Building a rapport

Maenpaa &Astedt-Kurki (2008a) Erickson, Splett, Mullett, Jensen, et al. (2006) Murdock, Robinson, Adams, Berz, &Rollock (2009)	Trust and confidence	Maenpaa &Astedt-Kurki (2008a)
Familiarity	Rouse (2012)	Reciprocity
Murdock, Robinson, Adams, Berz, &Rollock (2009)	Contact availability	Transparent and open communication
Maenpaa &Astedt-Kurki (2008a)	Honesty, openness, confidentiality	Guilday (2014) Erickson, Splett, Mullett, &Heiman (2006)
Open and effective communication	Mäenpää, Paavilainen, &Åstedt-Kurki (2013) Kakumanu, Antos, &Lemanske (2017) Maenpaa &Astedt-Kurki (2008a) Maenpaa &Astedt-Kurki (2008b) Bullard, McAlister, &Chilton (2020) Lavalle (2002) Erickson, Splett, Mullett, Jensen, et al. (2006) Rouse (2012)	Mutually exchange information about the children’s health status
Mäenpää, Paavilainen, &Åstedt-Kurki (2013)	Problem-based communication	Lavalle (2002)
Assessing the needs of the parent	Negotiation	Holmström, Häggstrom, &Söderberg (2018)
Responsiveness to individual needs of students and parents	Agreements on addressing the situation	CDA (1999)
Clarifying the roles and responsibilities of school nurses and parents in school health care	Clear role delineation	Lavalle (2002)
Understanding the roles and responsibility of the team	Mäenpää, Paavilainen, &Åstedt-Kurki (2013) Maenpaa &Astedt-Kurki (2008b) Guilday (2014) AADE (2016)	Assessing, knowing, and monitoring children's health

Using nursing process	Jackson &Albanese-O'Neill (2016) Strawhacker (2001) NASN (2016)	Supporting self-care practices: teaching skills, sharing knowledge, and empowerment
Mäenpää, Paavilainen, &Åstedt-Kurki (2013)	Respect for child’s privacy in decision-making	Mäenpää, Paavilainen, &Åstedt-Kurki (2013)
Helping with problematic situations	NASN (2016) Kakumanu, Antos, &Lemanske (2017) Lavalle (2002) AADE (2016)	Implementing management plans
Bobo, Kaup, McCarty, &Carlson (2011) Murdock, Robinson, Adams, Berz, &Rollock (2009) Rouse (2012)	Parental participation in care	Kakumanu, Antos, &Lemanske (2017)
Ensuring safety	Advocating	Bobo, Kaup, McCarty, &Carlson (2011)
Applying flexible rules within the school	Kakumanu, Antos, &Lemanske (2017)	Enhancing school staff awareness and education
Maenpaa &Astedt-Kurki (2008b) Bobo, Kaup, McCarty, &Carlson (2011)	Understanding the family situation	Empowering parents
Erickson, Splett, Mullett, &Heiman (2006)	Supporting the family to care for themselves	Maenpaa &Astedt-Kurki (2008a) Freeman (2011)

Characteristics	Categories	n (%) or M±SD
Parent (n = 22)		
Gender	Female	22 (100.0)
Male	0 (0.0)	Age (years)

	42.77 ±3.94	Education
High school	5 (22.7)	Bachelor’s degree
11 (50.0)	≥ Master’s degree	6 (27.3)
Employed	No	9 (40.9)
Yes	13 (59.1)	Child’s age (years)
	11.00 ±1.72	Duration of disease onset (months)
	36.00 ±27.30	Child’s school type
Public	21 (95.5)	Private
1 (4.5)	School nurse (n = 20)	
Age (years)		47.60 ±7.26
Career as school nurse (months)		210.05 ±109.61
Education	Bachelor’s degree	15 (75.0)

DETAILS

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Document 13 of 14

Prevalence and Risk Factors of Postdialysis Fatigue in Patients Under Maintenance Hemodialysis: A Systematic Review and Meta-Analysis

You, Qian; Ding-xi, Bai; Chen-xi, Wu; Chen, Huan; Chao-ming Hou; Gao, Jing

ProQuest document link

ABSTRACT (ENGLISH)

summaryPurpose

Despite the high prevalence of postdialysis fatigue (PDF) in maintenance hemodialysis patients, no meta-analysis on the prevalence and risk factors of PDF has yet been published. This study aimed to identify the prevalence of PDF and explore its related factors.

Methods

PubMed, Embase, CENTRAL, Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and the four Chinese databases (National Knowledge Infrastructure [CNKI], Chinese Biomedical Literature database [SinoMed], Wanfang Digital Periodicals [WANFANG], and Chinese Science and Technology Periodicals [VIP] database) were searched from inception up to July 2022. This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines. The articles were independently searched by two reviewers, and the relevant data were extracted. The Agency for Healthcare Research and Quality was used to assess the quality of the included studies.

Results

Thirteen articles with 2,118 participants were included. The pooled prevalence was 60.0%. The meta-analysis results revealed that the ultrafiltration volume, mean arterial pressure after dialysis, and good sleep quality were potentially associated with PDF, whereas only good sleep quality (odds ratio 0.24, 95% confidence interval 0.19–0.30) was significantly associated with PDF.

Conclusion

PDF is common in maintenance hemodialysis patients, which is related to the ultrafiltration volume, sleep quality, and mean arterial pressure after dialysis. However, the mechanism underlying the risk factors and PDF remains unknown. Further research is warranted to investigate the risk factors, intervention, treatment, and mechanism in maintenance hemodialysis patients.

FULL TEXT

DETAILS

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Development and Evaluation of a Mobile Web-based Food Allergy and Anaphylaxis Management Educational Program for Parents of School-aged Children with Food Allergy: A Randomized Controlled Trial

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ProQuest document link

ABSTRACT (ENGLISH)

SUMMARYPurpose

This study aimed to develop a mobile web-based food allergy (FA) and anaphylaxis management educational program for parents of school-aged children with food allergies and evaluate its effectiveness.

Methods

A mobile program was developed based on a web-based teaching-learning system model. Its effectiveness was subsequently evaluated using a parallel, randomized controlled pre- and post-test design. This study included 73 parents of school-aged children with food allergies. These parents were randomly assigned to either the experimental (n = 37) or control (n = 36) groups. The experimental group participated in a 2-week mobile web-based educational program that covered major topics in FA and anaphylaxis management. These topics included an understanding of food allergies and anaphylaxis, learning techniques for using an epinephrine auto-injector, and developing an emergency action plan. An educational booklet was provided to the control group. Participants completed a pre-test and two post-test questionnaires to evaluate the impact of the program. The assessment tools were the Food Allergy Knowledge Test, Food Allergy Self-Efficacy for Parents, and Food Management and Adaptation Scale. The data were analyzed using descriptive statistics, a test of homogeneity for the pre-test, an independent t-test, and repeated measures ANOVA.

Results

The experimental group experienced greater improvement in the knowledge of FA (post-intervention t = 14.51, $p < .001$; 2 weeks post-intervention, t = 16.15, $p < .001$), FA self-efficacy (post-intervention t = 77.99, $p < .001$; 2 weeks post-intervention, t = 76.09, $p < .001$), and practice behavior in FA management (post-intervention t = 28.10, $p < .001$; 2 weeks post-intervention, t = 27.98, $p < .001$) after web-based FA education.

Conclusion

This study revealed improvements in the knowledge, self-efficacy, and practice behaviors of parents regarding FA and anaphylaxis management. Therefore, the mobile web-based educational program can contribute to the effective management of food allergies and anaphylaxis for parents of school-aged children. CRIS registration: KCT0007491.

FULL TEXT

DETAILS

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Lee, S. E., Dahinten, V. S., Ja-Kyung Seo, Park, I., Mi, Y. L., & Hye, S. H. (2023). Patient safety culture and speaking up among health care workers. Asian Nursing Research, 17(1), 30-36. doi:https://doi.org/10.1016/j.anr.2023.01.001

SUMMARYPurposeAlthough previous research showed the importance of safety culture on health care workers' speaking up behaviors, it is not clear how particular safety culture domains are associated with the speaking up behaviors of hospital staff. Also, researchers have suggested that health care workers’ speaking up behaviors vary by profession, but there has been limited research into such differences. Thus, this study examined differences in perceptions of patient safety culture and the promotive and prohibitive speaking up behaviors of health care workers by profession and investigated the relationships between patient safety culture and the two types of speaking up behaviors.MethodsA descriptive correlational study was conducted using secondary data collected through an online survey of health care workers at a private, nonprofit, tertiary-level teaching hospital in South Korea. The sample (N = 831) consisted of nurses (54.0%), physicians (13.0%), and other licensed and unlicensed hospital personnel (33.0%). Analyses of variance were conducted to examine differences in study variables by profession. Hierarchical regression analyses were conducted to evaluate the effects of the seven patient safety culture factors on promotive and prohibitive voice after controlling for tenure and profession.ResultsPerceptions of safety culture and promotive voice behaviors were higher for physicians compared with nurses. Communication openness, reporting patient adverse events, and unit supervisors' and hospital managements’ support for patient safety were significant predictors of both types of voice behaviors.ConclusionHospital administrators and unit managers should create a supportive environment where staff feel free to voice their concerns and suggestions. They should also pay attention to the varying perspectives held by different groups of hospital workers and their different voice behaviors. Knowing which dimensions of patient safety culture are most strongly related to health care workers’ voice behaviors can guide patient safety improvement activities in health care organizations.

Wei-Wen, W., Cheng-Shi, S., Chia-Chun, T., Shiann-Tang Jou, & Huey-Ling, C. (2023). The moderated mediating effects of nutrition and physical activity between fatigue and quality of life in childhood cancer survivors. Asian Nursing Research, 17(1), 23-29. doi:https://doi.org/10.1016/j.anr.2022.12.003

SummaryPurposeThe aim of this study was to investigate the associations between nutrition, physical activity, fatigue, and quality of life (QoL) among childhood cancer survivors. The specific purpose was to examine whether nutrition mediated and physical activity moderated the relationship between fatigue and QoL in this population.MethodsA pooled sample of 120 childhood cancer survivors was recruited at pediatric oncology wards and ambulatory settings between August 2020 and May 2021. We collected data on participants’ demographic characteristics, fatigue, nutritional status, physical activity, and QoL. We then adapted Hayes Process Macro to examine the mediating and moderating effects of nutrition and physical activity on the relationship between fatigue and QoL.ResultsIn models adjusted for age and sex, (1) the simple mediation analysis identified the mediating effect of nutrition on the relationship between fatigue and QoL; and (2) the mediation and moderation analysis identified that the direct effect of nutrition between fatigue and QoL was significant when adding (a) physical activity and (b) fatigue × physical activity. There were significantly decreasing trends in physical activity at 1 standard deviation below the mean and at the mean, but not at 1 standard deviation above the mean.ConclusionsOur findings demonstrate that nutrition mediated and physical activity moderated the relationship between fatigue and QoL. This highlights an opportunity to enhance QoL among childhood cancer survivors through healthy lifestyle interventions. To ensure that future interventions address children's needs and promote the greatest impact, such interventions should include nutrition and physical activity components that involve nurses, pediatric oncology physicians, nutritionists, and physical therapists.

Saiki, M., Takemura, Y., & Kunie, K. (2023). Relationship between unit-level nurses' expectations from nursing assistant roles and individual nursing assistants’ information-sharing behaviors: A multilevel mediation analysis. Asian Nursing Research, 17(1), 1-7. doi:https://doi.org/10.1016/j.anr.2022.11.003

summaryPurposeThis study aimed to investigate the relationship between the expectations of unit-level nurses from nursing assistants (NAs), frequency of individual NAs' information-sharing behaviors with nurses, and the effect of NAs' self-perceived roles on this relationship. NAs provide patient care along with nurses, and their information-sharing behaviors with nurses may be influenced by the expectations of the nurses.MethodsNurses and NAs from 104 integrated community care (sub- and postacute) units were included in this Japanese cross-sectional study conducted from July to September 2018. Nurses' expectations from NAs and the NAs' self-perceived roles and information-sharing frequency were measured. Multilevel mediation analysis was performed for NAs' information-sharing behaviors, such as expressing, asking, providing linguistic responses, and providing feedback.ResultsUnit-level nurses' expectations from NAs were associated with the frequency of NAs' asking and responding behaviors with nurses ($p < .05$), mediated by the NAs' self-perceived roles. The frequency of NAs' expressing behaviors and feedback were also associated with their self-perceived roles ($p < .001$).ConclusionsHigh expectations of unit-level nurses from NAs led to better perception by NAs of their roles and led to better information-sharing behaviors. Educating nurses on NAs' roles may improve information-sharing between nurses and NAs that leads to safe and appropriate care to patients.

Hwang, J. M., & Su, J. C. (2023). Early sedation depth and clinical outcomes in mechanically ventilated patients in a hospital: Retrospective cohort study. Asian Nursing Research, 17(1), 15-22. doi:https://doi.org/10.1016/j.anr.2022.12.002

sum maryPurposeThis study aimed to identify the early sedation depth in the first 48 hours of mechanical ventilation and its relationship to clinical outcomes to promote the transition to light sedation.MethodsThis retrospective single-center cohort study was conducted in two medical intensive care units (MICUs) at a general tertiary hospital, using a standardized sedation protocol. To investigate the early sedation depth, the Sedation Index was used, which can indicate changes over the first 48 hours. Patients were divided into three groups based on tertiles of Sedation Index. The primary outcome was mortality at 30, 90, and 180 days. The secondary outcomes included length of stay in the ICU and ventilator-free days. Kaplan-Meier analysis and multivariable Cox regression were conducted to compare factors influencing mortality.ResultsThis study included 394 patients. The deepest sedation group showed more severe illness, delirium, and deeper sedation at admission ($p < .001$). The survival curve decreased as sedation increased, even within the light sedation levels. In the deepest sedation group, 30-day mortality (hazard ratio HR] 2.11, 95% confidence interval CI] 1.33–3.34), 90-day mortality (HR 2.00, 95% CI 1.31–3.06), and 180-day mortality (HR 1.77, 95% CI 1.17–2.67) increased. The length of stay in the ICU and ventilator-free days did not show statistical differences.ConclusionsThese results indicate that early deep sedation is a modifiable factor that can potentially affect mortality. The protocol for inducing the transition into light sedation must comply with recommendations to improve clinical outcomes.

Chieh-An Shih, & Man-Hua, Y. (2023). Effect of animal-assisted therapy (AAT) on social interaction and quality of life in patients with schizophrenia during the COVID-19 pandemic: An experimental study. Asian Nursing Research, 17(1), 37-43. doi:https://doi.org/10.1016/j.anr.2023.01.002

SummaryPurposeMost patients with schizophrenia exhibit low willingness to return to society because of negative social experiences. The COVID-19 pandemic led to severe social isolation for schizophrenia patients. However, animal-assisted therapy (AAT) can improve individuals' empathy, social functions, and quality of life. The study aimed to evaluate the effectiveness of AAT in improving social interactions and quality of life in patients with chronic schizophrenia during the COVID-19 pandemic.MethodsAn experimental study was conducted, with six institutions for psychiatric rehabilitation in Taiwan as the case institutions. Patients in these institutions were randomly allocated to the experimental group, which received 60 minutes of AAT once a week for 12 weeks, or the control group, which engaged in routine discussion groups and watched short films about animals. Comparisons between the two groups were made before and after the intervention on social function, social adaptive function, and quality of life. Data were collected before the intervention (T1), immediately after the intervention (T2), and 3 months after the intervention (T3).ResultsComparison between groups showed that social functioning was significantly higher in the experimental group than in the control group at T2. However, there was no sign of improvement in social adaptive functions of the experimental group. The experimental group exhibited significantly higher quality of life than the control group at T2 and T3.ConclusionsThere was an impact of COVID-19 on the studied effects. AAT improved social functioning and quality of life in patients with chronic schizophrenia. The effect on quality of life lasted only up to 3 months after the intervention. AAT should be promoted for use as a community-based rehabilitation tool in patients with chronic schizophrenia.Trial registrationChinese Clinical Trial Registry, ChiCTR2200061715. https://www.chictr.org.cn.

Lee, T., Su, J. L., Yea, S. Y., Ji, H., Yoon, S., SangA, L., & Ji, Y. (2023). Personal factors and clinical learning environment as predictors of nursing students' readiness for practice: A structural equation modeling analysis. Asian Nursing Research, 17(1), 44-52. doi:https://doi.org/10.1016/j.anr.2023.01.003

SummaryPurposeIt is essential to ensure the readiness for practice among undergraduate nursing students since the purpose of such education is to cultivate competent nurses who deliver high-quality and safe nursing. Astin's theory of student involvement suggests that this is affected by their personal factors and learning environment.MethodsWe conducted a cross-sectional study between November 16, 2020 and December 21, 2020 which examined personal factors and aspects of the clinical learning environment among senior nursing students (n = 838) enrolled across 54 nursing schools in Korea. The participants were asked to fill out a self-administered online survey, which assessed demographic characteristics, self-esteem, depression, work-life balance, clinical learning environment, anxiety during clinical practicum, and readiness for practice. Readiness for practice was measured using the Casey-Fink Readiness for practice survey. We used structural equational modeling to test our hypothetical model.ResultsThe nursing students' readiness for practice was significantly affected by their self-esteem, work-life balance satisfaction, and clinical learning environment. Anxiety during clinical practicum directly influenced their readiness for practice.ConclusionIncreasing self-esteem and work-life balance satisfaction, and improving their clinical learning environment by providing sufficient educational and clinical support, could help facilitate the transition from nursing schools to real-world practice for nursing students.

Yu-Chi, L., Yin-Hsun Feng, Shu-Ching, M., & Wang, H. (2023). Dignity and related factors in patients with cancer: A cross-sectional study. Asian Nursing Research, 17(1), 8-14. doi:https://doi.org/10.1016/j.anr.2022.12.001

SummaryPurposeDignity is a basic human right that is related to psychological distress factors in patients with cancer such as depression and demoralization. Hence, the dignity issue is of great importance to healthcare professionals. The present study aimed to advise healthcare professionals regarding the related distress factors of dignity in patients with cancer by investigating its relationship with patients’ demographics, disease characteristics, and psychological distress.MethodsThis was a cross-sectional study design. A convenience sample of 267 patients with cancer from a medical center was recruited into this study. Each patient completed demographics and disease characteristics questionnaires, the Patient Dignity Inventory Mandarin Version, the Demoralization Scale Mandarin Version (DS-MV), and the Patient Health Questionnaire-9 (PHQ-9). Data were analyzed with SPSS 22.0 software.ResultsDignity was significantly correlated with age, demoralization, and depression. Cancer patients aged 65 or above were more likely to have a lower sense of dignity. In the present study, the sensitivity and specificity of the Patient Dignity Inventory Mandarin Version for demoralization (DS-MV≥30) were 84.8% and 79.1% and for depression (PHQ-9≥10) were 73.8% and 70.9% in patients with cancer with an aggregate score of 35 or above.ConclusionsDignity is significantly correlated with personal demographic characteristics and psychological distress in patients with cancer. The results provide reference data for healthcare professionals to understand and enable dignity in patients with cancer and aid in the development of methods that promote their dignity.