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Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_997_23

Effects of training nursing process using the concept map on caring self-efficacy of nursing students in pediatric departments

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Abstract:

BACKGROUND: Self-efficacy is task-specific, and Professional self-efficacy has been introduced as a factor affecting providing quality nursing care. This study aimed to determine the effects of training the nursing process using the concept map on the caring self-efficacy of nursing students in pediatric departments.

MATERIAL AND METHODS: This quasi-experimental study was conducted on 82 undergraduate nursing students in the second semester of 2021–2022 with a design of two groups before and after training. The samples were selected by census and divided into two experimental and control groups by simple random allocation. The data collection tool was Nursing Caring Self-Efficacy Scale in pediatric departments. The students of two groups in the pediatrics course were trained in the nursing process for nine sessions in three weeks using the concept map. Data were analyzed by descriptive statistics (frequency and percentage, mean and standard deviation) and inferential tests (Wilcoxon, Mann–Whitney, exact Fisher’s) using SPSS 23.

RESULTS: The study results showed no statistical difference between the two groups of students regarding demographic information and pre-test scores. The concept map group’s post-test score of caring self-efficacy increased significantly compared to the pre-test ($P < 0.001$). The comparison of the post-test scores in the groups showed that the caring self-efficacy score in the intervention group of students was significantly higher than the control group ($P = 0.014$).

CONCLUSION: According to the study results, it is suggested instructors use the concept map as a metacognitive intervention has increased the caring self-efficacy of nursing students in pediatric departments, which will lead to more accurate performance of nursing students in the future.

Keywords:

Caring, self-efficacy, nursing, nursing process, pediatrics, students

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Received: 09-07-2023
Accepted: 26-08-2023
Published: 29-04-2024

Introduction

Nurses in pediatric departments suffer more stress than other departments when providing complex health care to children and their family members. So the pediatric department is known as the “dumb department.”^[1] Meanwhile, professional self-efficacy has been introduced as a factor affecting providing quality nursing care in pediatric departments.^[2] Care is the essence

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of the nursing profession and performance.^[3] Understanding this ability is needed and vital for delivering nursing care to patients, not only the ability to perform nursing care but also to start the care performance.^[4] The best construct that includes the concept of power, self-awareness, self-management, ability, satisfaction, usefulness, and pride in the profession is the construct of professional self-efficacy. Professional self-efficacy reflects a person’s beliefs about his abilities to perform skilled tasks that will have inevitable consequences.^[2,5,6] Self-efficacy

How to cite this article: Alavi A, Okhovat F. Effects of training nursing process using the concept map on caring self-efficacy of nursing students in pediatric departments. *J Edu Health Promot* 2024;13:149.

plays an predictive role in professional performance in various aspects of work and professional competence of nursing students.^[5,7,8] In such a way, one of the main objectives of nursing courses, along with improving patient outcomes and developing knowledge and skills, is developing the sense of confidence and self-efficacy of nursing students with various teaching methods.^[9]

Clinical education has a unique position in the nursing education system. Because the quality of the clinical performance of nurses gives credibility to nursing science, each clinical experience is not just learning a specific practical knowledge or skill. Still, it increases students' understanding of self-efficacy and confidence in their professional abilities. nursing students' clinical performance, especially interns, always concerned teachers and clinical nurses.^[10] The concept map is a unique active learning tool for nursing education. It is a method that nurses need to facilitate the use of creative thinking, organizational skills, and information analysis. Today, promoting meaningful learning is one of the main objectives of education. Using the concept map promotes the students' understanding of the nursing process. It strengthens the diagnosis of the patient's problems and purposeful judgment regarding nursing interventions using the students' prior knowledge in basic and specialized courses.^[11] Based on Ausubel's theory of learning, the concept map teaches the learner concepts by linking new ideas to previously known images.^[12] Also, the nursing process is a purposeful scientific method for solving problems in providing children care, the core of nurses' work, and a way to analyze children's care problems and make timely and appropriate decisions. With the correct and moral implementation of the nursing process, it is possible to achieve complete and comprehensive care of patients based on scientific principles.^[13] This process is implemented as a standard of care in nursing in most health systems and developed countries. Based on the available information and studies, this systematic method is being implemented in Iran to a limited extent and inappropriately. The evidence shows that in addition to the lack of the correct and complete implementation of the nursing process by nurses working in hospitals, the implementation of this care method is unknown for nursing students and teachers.^[14,15] The most critical problems of the training nursing process are the inability of students to use it in real situations and doing professional tasks. Hence, active training methods and participants of students should be used to empower them to use the nursing process as a standard care method.^[16]

With the evolution of the nursing landscape, there is a growing demand for the development of patient care abilities, especially in pediatric departments, and the implementation of the nursing process, to which

clinical teachers can respond through clinical education approaches. Given the importance of self-efficacy in providing nursing care in a sensitive department such as pediatrics, nursing students are expected to acquire the necessary professional abilities during their studies. Based on the review of the available literature and evidence in the field of training nursing process by the concept map, the effect on variables such as critical thinking,^[10,17,18] clinical reasoning skills,^[19] nursing students' awareness,^[18] and clinical administration skills^[12] and leadership style^[20] on various medical science students including nursing students has been investigated. However, according to the researcher's investigation, no study has been conducted on the nursing process and the concept map on the care self-efficacy of nursing students in the pediatric department. So this study was conducted to determine the effect of nursing process training on the caring self-efficacy of nursing students in pediatric departments using the concept map.

Material and Methods

Study design and setting

A quasi-experimental study designed for two groups before and after training was conducted in the academic year 2021–2022. Study setting was the faculty of nursing and midwifery, Shahrekord Islamic Azad University, Iran.

Study participants and sampling

Eighty-two undergraduate nursing students of Shahrekord Islamic Azad University, who had selected the pediatrics course, were chosen by census and divided into two experimental and control groups by simple random allocation. The students were divided into ten groups of eight to nine people from the beginning of the hospital internships. Then these ten groups were randomly assigned to two controls (40 people, including five groups) and intervention (42 people, including five groups) groups. Inclusion criteria included passing the theoretical and practical units of the prerequisite internship, selecting the pediatrics nursing internship unit, having informed consent to participate in this study, and not participating in similar training courses. Exclusion criteria included unwillingness to continue the subject's cooperation and an incomplete questionnaire.

Data collection tool and technique

After obtaining the necessary permission from Shahrekord Islamic Azad University, on the first day of the pediatrics internship, both the intervention and control groups, after providing the necessary explanations to the students about the study's objectives, used Nursing Caring Self-Efficacy Scale in pediatric departments for data collection. This tool contains 51 questions in the four subscales (management of care process, communication

ability, altruism, and proficiency) on a 5-point Likert scale (disagree = 1 to agree = 5). The minimum score was 51, and the maximum score was 251. The higher the score of this questionnaire, the more caring self-efficacy will be, and vice versa. The tool was provided by Bahrami (2021) through the process of tool-making by determining face, content, criterion, and construct validity. The concurrent validity of this tool was calculated using the general self-efficacy questionnaire and was good ($r = 0.72$). Cronbach's alpha coefficient of the scale was 0.96. The stability of the questionnaire was 0.97 through retesting and using the Pearson correlation test for two weeks.^[21] In the present study, Cronbach's alpha coefficient of this scale was 0.955.

The intervention group, in the first session of the internship, immediately after the pre-test, the students were trained about the concept map and the design of the nursing process based on the concept map and practically. A case of the nursing plan was designed using the concept map to be presented by the teacher. Then, by the end of nine sessions, the students were asked to create and draw the child and family care plan based on the nursing process in the form of a concept map with the help and guidance of their teacher and take care of their patient based on the nursing process. To design a nursing process plan using the concept map, the students had to perform the following steps: comprehensive examination and knowledge of the child based on the standard stages of the nursing process, formulating the problems resulting from the data of the comprehensive review of the child, identifying the symptoms of the disease that are related to primary issues of the patient, and drawing the concept map at this stage, etiology of the patient's symptoms and problems using the knowledge acquired in basic sciences and drawing a linear illustrated model, recording and writing nursing diagnoses, resulting from comprehensive examinations of the child, drawing and prioritizing the child's problems in a hierarchical illustrated model from the most important to the least, determining and writing short- and long-term objectives and expected outcomes and nursing interventions based on the illustrated model, focusing on the nursing care plan using etiology, diagnostic, therapeutic-pharmacological and nutritional measures, evaluating the child's condition and symptoms in response to care and comparing the child's current situation with the objectives and showing the relationship between the child's problems and initial symptoms and nursing interventions based on the design and drawing of the concept map. The initial concept maps of students are examined in group discussion sessions. With the teacher's guidance and other students' opinions, the map's strengths and weaknesses are identified, and a complete concept map is provided. Then, in the final session of the internship, the post-test was done.

In the control group, the pediatrics internship was in the conventional way of clinical training. After completing the questionnaire to comply with the ethics of teaching the nursing process using the concept map, the control group of students was given in the last session.

Ethical consideration

This study was performed in line with the principles of the Declaration of Helsinki. This project was approved by the Ethics Committee of Falavarjan Islamic Azad University, Iran (Code: IR.IAU.FALA.REC.1400.063). The aims of the research study, and voluntary and anonymous contribution were explained to the participants. At the start of the questionnaire, all respondents had to indicate they had read the study information and consented to participate.

Data analysis

For data analysis, exact Fisher's and Mann-Whitney's tests were used to evaluate the differences of students in demographic variables, and Mann-Whitney's test was used to compare the mean scores of caring self-efficacy in intervention and the control groups. Mean scores of caring self-efficacy in two phases of the study (pre-test, post-test) in each group were compared using the Wilcoxon statistical test. All analyses were performed using SPSS software version 23, and a value of 0.05 was considered statistically significant.

Results

According to Table 1, eighty-two undergraduate nursing students participated in this study in two interventions ($n = 42$) and control groups. The students were 20–26 years old, and the average age (1.42) was 21.60. Most students, 54 (65.90%), were women and 80 (97.6%) were single. The results showed no significant difference between the demographic variables of the students in the intervention and control groups, based on exact Fisher's and Mann-Whitney's tests.

Table 2 demonstrates that before the intervention, no statistically significant difference was between the intervention group and the control group regarding caring self-efficacy score and domains of altruism, proficiency, communication ability, and management of the care process. According to the Wilcoxon statistical test, a significant difference is in the total caring self-efficacy score of the nursing students before and after the nursing process training in the intervention group. After the intervention, the caring self-efficacy scores in the intervention group increased in all dimensions. According to the results of the Wilcoxon test, this difference was not statistically significant, only in the domain of altruism. But a significant difference was in proficiency, communication ability, and management

of care process. According to the results of the Mann-Whitney test, after training the nursing process using the concept map, the self-efficacy score in the intervention group was significantly higher than the control group. The study results showed that the total score of caring self-efficacy and its dimensions (altruism, proficiency, communication ability, and management of care process) increased after completing the training in both the intervention and control groups, and it was statistically significant that this increase was more in the control group.

Discussion

The aim of current study was to determine the effect of nursing process training on the caring self-efficacy of nursing students in pediatric departments using the concept map. The study results showed that the increase in the caring self-efficacy scores after the nursing process training by the concept map was

Table 1: Difference between the demographic variables of the students in the intervention and control groups

Variable	Intervention (n=42)	Control (n=40)	P
Age	1.67±21.36	21.90±1.07	0/175
Sex			
Female	28	26	0/529
Male	14	14	
Marital status			
Single	41	39	0/741
Married	1	1	
Loving children			
Yes	38	37	0/528
No	4	3	
Interest in the children's department			
Yes	17	17	0/515

different in the two groups and significantly higher in the intervention group. In other words, training the nursing process by the concept map has increased the self-efficacy of nursing care of children in nursing students. In this regard, Ranjbar DM *et al.*,^[22] in a quasi-experimental study with two groups, reported that the training and implementation of the nursing process using the concept map has led to an increase in the self-efficacy of nursing students in clinical performance during extraordinary care internships. Also, Rezaei *et al.*, in a quasi-experimental study with two groups before and after training, divided nursing students randomly into intervention and control groups. The clinical training of the intervention group was done using the concept map. The study results showed that the score of post-test self-efficacy by the concept map increased significantly compared to the pre-test. Also, a comparison of scores of post-test groups showed that self-efficacy in the intervention group was significantly higher than the control group, which is consistent with the results of our study.^[23] In addition, the study results of Baskaran *et al.* and Roshanger *et al.* also showed that the academic self-efficacy of undergraduate nursing students improved after training by the concept map. In the experimental group, self-efficacy significantly differed before and after the intervention.^[24,25] In this regard, the qualitative results of the content analysis of Bressington *et al.* showed that the concept map has helped nursing students to identify their current level of understanding and that the concept map can demonstrate meaningful learning. Most nursing students in this study reported that the concept map was a practical reflective learning strategy to help them link theory and practice.^[26] Also, the Sheikhbardsiri *et al.* study results presented that educational workshop increased self-efficacy among nurses.^[27]

Table 2: Care self-efficacy score and domains in the intervention group and the control group

Scale and Subscales	Time	Intervention		Control		P
		SD±Mean	(n=42)	SD±Mean	(n=40)	
Altruism	Pre-test	6.42±51.88	39.55	5.35±52.75	43.55	0/446
	Post-test	6.74±53.55	40.12	5.50±54.18	42.95	0/590
	P		0/144		0.123	-
Proficiency	Pre-test	6.84±46.60	40.87	5.76±46.85	42.16	0.809
	Post-test	6.16±51.52	46.35	5.59±48.95	36.41	0/058
	P		<0.001*		0.035*	-
Communication ability	Pre-test	5.82±43.12	40.65	4.90±43.20	42.39	0/741
	Post-test	7.17±65.24	61.17	5.03±45.33	20/85	<0.001*
	P		<0.001*		0.010*	-
Management of care process	Pre-test	9.41±54.88	39.27	6.94±56.23	43.84	0.385*
	Post-test	7.17±56.24	49.62	7.62±60.00	32.16	<0.001*
	P		<0.001*		0.004*	-
Total care self-efficacy	Pre-test	25.39±196.38	39.46	19.56±199.03	43.64	0.428
	Post-test	22.83±220.14	47.81	21.91±208.45	34.88	0.014*
	P		<0.001*		0.006*	-

The results of the present study showed that, in addition to improving total caring self-efficacy, caring self-efficacy in the dimensions of proficiency, communication ability, and management of the care process was better than the control group. In this regard, nursing students in a study by Bilik *et al.*,^[17] reported that the concept map facilitated their learning and management of nursing processes. The study results of Alfayoumi *et al.*,^[19] with a quasi-experimental design (a group of before and after training) showed that independence in clinical reasoning, clinical judgment, and clinical reasoning behaviors of nursing students increased after the intervention, and the scores were significantly different from before the intervention. Abd El-Hay *et al.*,^[28] in a quasi-experimental study with a design of two groups, reported that nursing students' problem-solving skills improved after concept map training. More than three-quarters of students had positive perceptions about using concept maps in clinical settings. In addition, Meraji *et al.*, in the systematic review showed that, in the field of education, the concept map had been proposed as a learning-teaching strategy that promotes meaningful and deep learning. The concept map in the area of health and, in particular, nursing has led to promoting meaningful and deep understanding, improving clinical decision-making, increasing and developing critical thinking, increasing problem-solving skills, increasing interactions between students, increasing self-efficacy and cognitive strategies and training patients, increasing the level of creativity, improving the leadership style, organizing care, and facilitating the analysis of disease-related information in complex clinical settings,^[29] which confirms the results of the present study.

The pediatric departments require the double care for child, not only because of meaningful differences in anatomy, treatment response, but also because of the limited communication with patients.^[30] Also, professional self-efficacy can be strengthened and lead to positive results in the healthcare system and many researchers have suggested the potential advantages of structured interventions to enhance professional self-efficacy.^[31] The results of the present study showed that one of the ways to increase self-efficacy in the professional tasks such as caring self-efficacy with dimensions of proficiency, communication ability, and management of the care process is by using clinical care education standards, including the nursing process, by the concept map.

Limitation

One of the limitations of the present study was the possibility of exchanging opinions in the two intervention and control groups due to commuting to the hospital and college. Researchers asked the intervention group not to provide information to other groups in this study.

Conclusion

The result of the present study showed that training the nursing process using the concept map has influenced the caring self-efficacy score of nursing students, and training the nursing process using the concept map increases the caring self-efficacy of nursing students in pediatric departments. Therefore, according to the results of the studies on the effect of the nursing process and the deep gap between theoretical and practical education in nursing students, using the concept map can overcome these shortcomings. Given that a positive and statistically significant correlation is between clinical and professional self-efficacy and nursing students' clinical performance, the importance of self-efficacy in education is related to its effect on the future performance of nursing students. Acquiring knowledge and educational skills is only one of the variables affecting clinical performance. According to this study results, instructors can use the concept map as a metacognitive intervention has increased the caring self-efficacy of nursing students in pediatric departments. Therefore, it is suggested the concept map guidelines to expand for undergraduate nursing students at the level of nursing schools and teachers consider other factors, including self-efficacy, especially in the clinical courses, which will lead to a more accurate measurement of nursing students' performance in future. Given the few studies in nursing professional self-efficacy and especially clinical care, further investigation of this approach in other clinical courses and internships is recommended in future studies.

Acknowledgement

The Ethics Committee of Falavarjan Islamic Azad University, Iran, approved the study (Code: IR.IAU.FALA.REC.1400.063). We hereby express our gratitude to the research assistant of Shahrekord Branch, Islamic Azad University, Iran, for supporting and financing this project. We also thank all nursing students for their cooperation.

Financial support and sponsorship

We hereby express our gratitude to the Research Deputy of Shahrekord Branch, Islamic Azad University, for their support and funding of this project

Conflicts of interest

There are no conflicts of interest.

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