

The Effect of Teaching Clinical Skills Through Social Networks on Nursing Students' Clinical Skills in Crisis Handling: A Quasi- Experimental Study

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Research Article

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Abstract

Background: When a crisis occurs, nurses are at the forefront of providing care to patients in emergency rooms. The need for skilled nurses is increasing due to the crises and disasters that are occurring around the world. The aim of the study was to determine whether teaching clinical skills through social networks can affect nursing students' clinical skills in crisis handling.

Methods: This study was done in Iran in 2021. One hundred nursing students were selected by simple random sampling and divided into control and intervention groups. Nursing clinical skills in crisis questionnaires were used before and after intervention in two groups. Distance learning through social networks was done for a month. SPSS version 15 was used for data analysis. The significance level was 0.05.

Results: There was no significant difference between the control and intervention groups before the intervention ($P > 0.05$). The mean score of clinical skills in the control group increased from 60.82 before the study to 62.75 after the study, which was not statistically significant ($P > 0.05$). The mean clinical skills of the intervention group increased from 58.02 before the intervention to 82.52 after the intervention, which was statistically significant ($P < 0.001$).

Conclusions: This study showed nurses' clinical skills are low during crises. Education through social networks can improve them and should be part of nursing education. The application of this low-cost and inexpensive method is recommended for improving clinical skills in nursing.

Background

Caring is one of the main duties of nurses. Care has long been one of the duties of nurses and will continue in the future. The purpose of nursing care is to create well-being in patients [1]. Nurses need both knowledge and skills to perform good care. In fact, science and practice are the two wings of nursing care [2].

The need for skilled nurses is increasing due to the crises and disasters that are occurring around the world. Nurses should have the essential knowledge and abilities to work in a crisis. World Health Organization (WHO) recommends that all countries should organize healthcare workers for disasters and crises, but most nurses are not ready for them because of lack of experience [3, 4].

Usher believed that education of disasters and crises was neglected in the undergraduate nursing curriculum in Australia and there was inadequate attention in addressing this issue in the nursing curriculum. [5].

Iran is exposed to many natural disasters due to its geographical location. Iran is located in the Middle East with a population of about 83 million people and an area of about 1648 million square kilometers. Crises affect the health system, for example, in Bam (2003) and Zarand (2005) earthquakes, most

hospitals in Kerman province were filled with patients [6]. Therefore, nurses and other members of the health team must be fully prepared to care for patients. Preparing nurses to care for patients is one of the tasks of nursing schools, but unfortunately, there are not many units in the nursing curriculum to prepare nurses for crises.

The world's population is growing and the number of people using the Internet and social networks is constantly increasing [7]. Social media is one of the educational methods that is held online and it is an interactive method between teachers and students. Media can be played through a blog, website or network [8]. On the other hand, during Covid-19, there are concerns for student safety and nursing schools have postponed classroom-based education, and face-to-face training gave way to virtual training [9], so the social network is a good way to educate a nursing student. The different studies have shown the role of social networks in disaster management [10-12].

The purpose of this study is to determine whether teaching clinical skills through social networks can effect on nursing students' clinical skills in crisis handling.

Method

This quasi- experimental study was done in Kerman, Iran from September 2020 to January 2021. In the study, 100 nursing students were selected by simple random sampling. There were almost 500 nursing students in the School of Nursing affiliated to Kerman University of Medical Sciences. The sample size was determined based on previous studies [13] by using the formula for comparison of two averages and considering the following:

$$n = \frac{2(z_{1-\frac{\alpha}{2}} + z_{1-\beta})^2 \sigma^2}{d^2}$$

$$d = 0.15 \quad \beta = 0.80 \quad \alpha = 0.05$$

There were 50 nursing students in each of the intervention and control groups. The study could detect at least a 15 percent difference in clinical skills between the two groups, with a power of 80 percent.

To run simple random sampling, the researchers first listed the study population, gave numbers to the units, found random numbers on the table and selected their samples from the random number table. Finally, 50 nursing students were selected for each group. Passing at least two semesters in nursing was an inclusion criterion. Students, who participated in courses related to crisis skills were excluded from the study. Therefore, second and third-year students were included in the study (Third to fifth-semester students) Fig. 1.

Intervention and Data collection

The students were divided into two groups. initially, the purpose of the study was explained to the students. The two groups completed the questionnaires related to demographic information and nursing clinical skills during crises before and after the intervention. Participants of the intervention group became members of a social network (whats App). The researcher taught first aid and crisis management with instructional videos, text files, recorded audio, and pre-prepared scenarios during a month. Each part of the training files was sent once every two days. A reminder text message was sent once a day. The researchers didn't send any files to the control group. The content of the training file included the following:

1- Definition of crisis and its types

2- The structure of the emergency department

3- Nursing principles in crisis and application of the nursing process in crisis

4- Definition of triage, principles of triage, and the role of the nurse in triage

5- Safety, rescue, and relief in natural disasters

6- Cardiopulmonary Resuscitation (CPR)

7- Nursing skills in emergencies (bandage, fracture reduction, and fixation techniques, transfer and relocation of the injured, etc).

In this study, the researchers used two questionnaires: 1) demographic questionnaire, including students' age, sex, semester, and grade point average, 2) Nurses' clinical skills in the face of crisis.

Nurses' clinical skills in crisis questionnaire designed by Shahabinejad et al. is an instrument for evaluating nurses' clinical skills in a crisis. The Questionnaire contains 30 items, each of which is graded from 1 to 4 based on the Likert scale. Score one represents "I have no skills" and score four represents "I am fully skilled". The range of scores is between 30 and 120 points. Scores less than 80 are considered poor skills, 80-100 show moderate skills, and 100-120 show good skills. Shahabinejad reported reliability of 0.95 for this questionnaire [13]. This study was single-blinded, soonly the statistician did not know the sample allocation to the intervention and control groups.

SPSS15 was used for data analysis. T-test and chi-square tests were used to evaluate the difference between the intervention and control group in terms of demographic characteristics before the study. A paired t-test was used to compare the mean pre-test and posttest scores of the nursing skills in each group. T-test was used to compare the mean score of the nursing skills between the two groups. The significance level was 0.05.

Results

One hundred students participated in the study, with 50 individuals in each of the control and intervention groups. Table 1 shows the demographic information of the students in both the intervention and control groups. There were no statistically significant differences between the interventional and control groups in the demographic characteristics ($p < 0.05$).

Table 1

Demographic characteristics of the students

	Intervention group (N=50) N(%)	Control group(N=50) N(%)	Test statistic Value χ^2	P value
Age (Year)				
20-25	42 (84.0)	40 (80.0)		0.89
26-30	7 (14.0)		0.03	
>30	1 (2.0)	8 (12.0) 2 (4.0)		
Marital Status				
Married	6 (12.0)	7 (14.0)		
Single		42 (84.0)	0.47	0.1
Others	43 (86.0)	1 (2.0)		
	1 (2.0)			
Academic semester				
The third semester				
The fourth semester	18 (36.00)	19 (38.0)	1.04	0.08
The fifth semester	20(40.0)	19 (38.0)		
	12 (24.0)	12 (24.0)		
student's grade point average				
<14	3 (6.0)			0.06
14.1-16	23 (46)	4 (8.0)	2.18	
16.1-18	21 (42)	20 (40)		
>18	3 (6)	22 (44.0) 4 (8.0)		

According to table 2, there was no significant difference between the control and intervention group in nurses' clinical skills during crises before the intervention ($P > 0.05$).

Table 2 shows that the mean score for clinical skills in the control group increased from 60.82 before the study to 62.75 after the study, which was not statistically significant ($P > 0.05$). The mean clinical skills of the intervention group increased from 58.02 before the intervention to 82.52 after the intervention, which were statistically significant ($P < 0.001$).

Table 2

Comparing the mean scores of nurses' clinical skills during crises in intervention and control groups before and after the intervention

Time	Control group	Intervention group	t	P-value
Before	60.82±12.39	58.02±14.71	2.87	0.1
After	62.75±12.69	82.52±9.89	-7.38	0.001
z	-53.48	-39.95		
P-value	0.66	0.001		

Table 3 compared responses of the two groups regarding nursing clinical skills. Items "methods of protection of self and patients against NBC (Nuclear, Biological, Chemical) agents" and "provision of nursing care to the injured with NBC" obtained the lowest scores before and after the intervention, respectively. The intervention group obtained the highest score in the item "Evaluating your clinical knowledge to provide care during a crisis" after the intervention .

Table 3

Comparison of responses between two groups regarding nursing clinical skills

Nurses' clinical skills itmes	Control group		Intervention group	
	before	After	before	After
Performing the triage process correctly during crises	2.1±.76	2.1±0.76	1.74±.80	2.66±0.55
Using clinical skills to help victims during a crisis	2.34±0.65	2.34±0.69	2.20±0.72	2.86±0.67
Providing services to an injured person with cardiac arrest during a crisis	2.12±0.82	2.12±0.82	2.00±0.92	2.64±0.77
Providing services in unexpected situations caused by the crisis	2.16±0.81	2.18±0.80	2.14±0.83	2.82±0.67
Assessing and caring of patients with multiple trauma during crises	2.020±0.71	2.04±0.69	1.80±0.88	2.82±0.66
Recognizing the types of shocks a person can face during a crisis	2.10±0.83	2.10±0.83	2.00±0.72	2.84±0.71
Providing services independently during a crisis if there is no supervisor	2.06±0.73	2.14±0.75	1.86±0.83	2.78±0.73
Providing essential care for a person with life-threatening injuries	2.00±0.75	2.00±0.75	1.78±0.70	2.66±0.68
Evaluating the patient and performing the CAB (Circulation, Airway, and Breathing) process to save the life of an injured person	2.28±0.80	2.34±0.82	2.04±0.92	2.82±0.71
Implementing fluid therapy protocol in burn patients during a crisis	2.08±0.82	2.20±0.83	1.74±0.72	2.74±0.72
Caring for blood transfusion during a crisis	1.86±0.78	1.84±0.79	1.62±0.75	2.68±0.76
Providing prenatal and postnatal care during a crisis	2.04±0.90	2.06±0.89	1.86±0.83	2.88±0.59
Controlling common infections during and after the crisis	1.96±0.72	2.00±0.71	2.04±0.85	2.84±0.73
Providing care to victims of poisoning and bites during a crisis	1.92±0.92	1.96±0.94	1.64±0.69	2.92±0.80
Providing care to patients suffering from	2.12±0.93	2.14±0.94	1.58±0.73	2.82±0.71

frostbite or heat stroke during a crisis				
Using endotracheal intubation during a crisis	1.84±.84	1.87±0.87	1.36±0.59	2.48±0.76
Providing essential training to patients experiencing stress due to injury	2.16±0.81	2.16±0.81	2.02±0.89	2.70±0.78
Performing nursing care when wearing a mask and protective cover in NBC attacks	1.96±0.72	1.94±0.71	1.78±0.76	2.46±0.67
Using methods of protection of self and patients against NBC agents	1.70±0.83	1.74±0.82	1.62±0.77	2.28±0.64
Providing nursing care to the injured with NBC	1.82±0.87	1.82±0.84	1.72±0.85	2.42±0.64
Providing consecutive and long-term nursing care without rest to victims during crises.	2.34±0.84	2.40±0.83	2.16±1.01	2.69±0.69
Managing stress when providing care to patients and injured patients during a crisis	2.64±0.74	2.64±0.74	2.34±0.82	2.72±0.72
Controlling the mental and emotional damage of the survivors of a crisis	2.48±0.88	2.46±0.90	2.24±0.87	2.82±0.74
Working with medical equipment (electroshock, suction, ventilator, electrocardiography, etc.) during a crisis	2.48±0.70	2.48±0.73	2.20±0.87	2.76±0.72
Collecting and recording clinical information (reporting, etc.) during a crisis	2.96±2.97	2.94±2.97	2.28±0.85	2.84±0.76
Recognizing the position, role and responsibilities of a healthcare worker during a crisis	2.56±0.81	2.56±0.81	2.22±84	2.84±0.65
Recognizing the level of authority required for appropriate action during a crisis	2.44±0.76	2.44±0.76	2.00±0.75	2.76±0.65
Providing care to the victims of natural disasters	2.36±0.77	2.36±0.77	1.98±0.74	2.96±0.63
Providing physical examination of the injured due to the crisis	2.46±0.61	2.46±0.61	2.02±0.82	3.00±0.63
Evaluating your clinical knowledge to provide care during a crisis	2.46±0.64	2.54±0.61	2.04±0.90	3.18±0.62

Discussion

The present study aimed to determine the effect of teaching clinical skills through social networks on nursing students' clinical skills in crisis handling in Iran. The result showed that participants who received clinical skills training in crisis had higher clinical skills scores. The clinical skills of the nursing students were low before the intervention. Since then nurses have been playing a key role in managing crises and caring for patients during crises, and patient's mortality will increase if nurses fail to function properly during crises. Shahab et al. showed that the clinical skill of nurses was moderate during crises [13]. Yin (2011) considered intravenous insertion and patient observation and monitoring as vital skills for nurses [14], but the present study showed that both groups obtained low scores in methods of protection of self and patients against NBC agents. These findings were consistent with previous studies in other countries. Azeemi (2019) showed that health care providers in Pakistan were not prepared for the NBC incidents [15], and O'Sullivan showed that nurses in Canada were not prepared to respond to NBC disasters [16]. The difference between the present study and Yin's study can be use of different questionnaires.

In the present study, virtual education was used to educate nursing students. The present study also showed that education through networks improved clinical skills. Triola et al. showed no difference between virtual and live education in performance and diagnosis [17]. The teaching method has changed in countries during the COVID-19 pandemic,, and face to face education gave way to virtual education [18]. Cunningham et al. in a review study demonstrated that professional networks increased the transfer of information in the health system and interpersonal interactions [19], which is in line with the present study. Furthermore, Mesquita et al. showed several benefits of social networks such as what's app and Twitter for nurses[7]. Sigalit demonstrated that social networking improved personal and group resilience among nursing students [20]. Najafi Ghezalje (2019) observed that learning through social networks increased the nurses' knowledge of disaster [21]. Kaplan et al. showed that simulation education and scenarios increased nurses' abilities in handling an emergency situation and clinical skills [22]. Chan et al. studied nursing students' competencies in disasters and showed an increase in their competencies after learning [23]

Conclusion

Nurses in Iran play a critical role in crises, disasters, and emergency situations. the mean score for clinical skills in the nurses is low. training and education through social networks increases the mean score for clinical skills. Education through social networks improves nurses' clinical skills and prepare them for the crises. Clinical skills during crises and disasters should be part of undergraduate nursing curricula. The present study had some limitations. This study was conducted on the nursing students, and the researchers were not sure whether the students in the intervention group provided the training to the control group or not.

Implications for Practice

It is predicted that this method can improve the clinical skills of nurses in crises if the virtual education infrastructure in the country is well provided. The application of this low-cost and inexpensive method is recommended for improving clinical skills in nursing.

Abbreviations

Cardiopulmonary Resuscitation (CPR)

Statistical Package for Social Sciences(SPSS)

Nuclear, Biological, Chemical agents (against NBC)

Declarations

Declaration of conflicting interests

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Kerman University of Medical Sciences with the code of ethics No. (IR.KMU.REC.1398.580). Written informed consent was completed by all the participants. The educational files were given to the control group after completion of the study. All the methods were performed in accordance with the relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and material

The questionnaires used and datasets used or analyzed during the study are existing from the corresponding author on reasonable request. The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Competing interests

The authors state that they have no competing interests.

Funding

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Authors' contributions

This study was the result of the cooperation of all team members. Author RM designed the study, wrote the proposal, and led data collection and analysis. The author MZ Conducted data collection and analyzed the data, and the Author MM wrote the final draft of the manuscript. All authors have read and approved the manuscript

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Figures

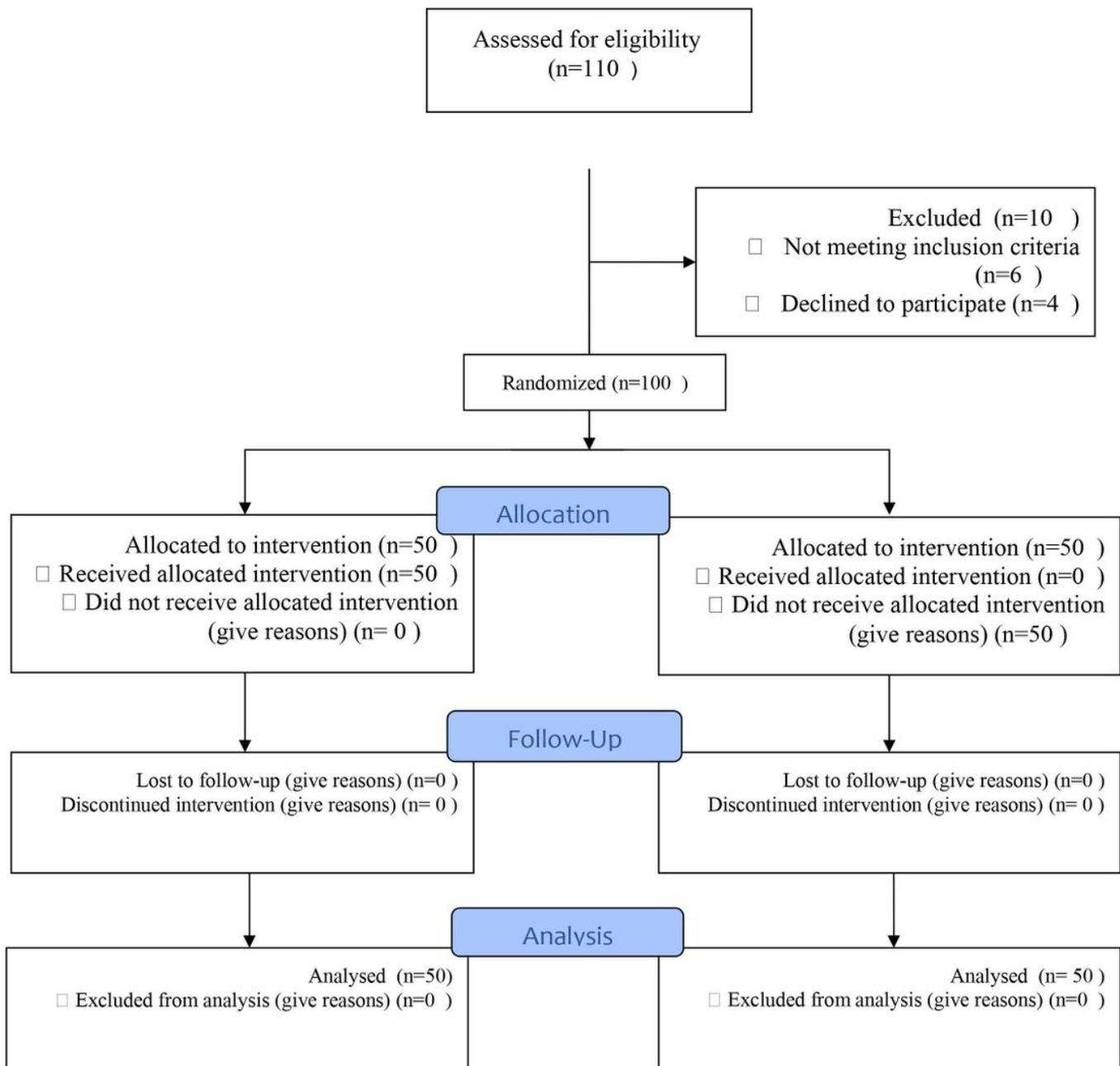


Figure 1

Standard flowchart for entry of participants