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ORIGINAL ARTICLE

Application of Prone Position for Patient with Corona Virus Disease: An Interventional Program for Nursing Staff

WISSAM QASSEM AL-BADRI[1], KHALIDA MOHAMMED KHUDUR[2]
[1]Academic Bachelor's nurse \ Wasit Health Department\ AL Zahra Teaching Hospital\ IRAQ
[2]Professor Dr \ Adult Nursing Department \ College of Nursing \ University of Baghdad
Corresponding author: Wissam Qassem AL-Badri, Email wessam.qasem1202b@conursing.uobaghdad.edu.iq

ABSTRACT

Background: The coronavirus disease (COVID19) epidemics began in Wuhan, China, in December and have since grown into a serious public health challenge for not only China but also countries around the world. Supportive therapy with advanced hypoxemic respiratory failure management has been demonstrated to improve oxygenation in COVID-19 patients, and the prone position has been proven to improve oxygenation in COVID-19 patients

Aims of the study: Assessment of nurses' knowledge toward application of prone position for patient with corona virus**,** and Assessment of an effectiveness of Educational program on nurses' knowledge toward application of prone position for patient with corona virus

Methodology: Pre-experimental study design was used with the application of pre and two post-tests approach. The study was carried out in Kut City/Wasit Province, at AL-Zahraa Teaching Hospital. A non-probability "purposive" sample had been consisted of (69) nurses were selected from at AL-Zahraa Teaching Hospital

Results: The results indicate that the nurses at the pre-test are fail at all studied items (M ≤1.66) except, the items number (1 and 21) the responses were fair (M=1.67-2.33). While, after the application of intervention program, nurses expressed significant increased knowledge scores ($p< 0.05$).

Conclusion: There were improving in nurses' knowledge and practices after posttest due to intervention program concerning application of prone position..

Keywords: barriers, nurses, emergency, pediatric, intravenous cannulation.

INTRODUCTION

The coronavirus disease (COVID19) epidemics began in Wuhan, China, in December and have since grown into a serious public health challenge for not only China but also countries around the world[1].The virus was originally known as "novel coronavirus 2019" (2019-nCoV) by the World Health Organization (WHO), but it was later renamed "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) by the international committee of the Coronavirus Study Group (CSG) and the disease was dubbed "coronavirus disease 2019" (COVID-19) by WHO[2]

Supportive therapy with advanced hypoxemic respiratory failure management has been demonstrated to improve oxygenation in COVID-19 patients, and the prone position has been proven to improve oxygenation in COVID-19 patients[3].The knowledge of mechanics associated with prone position are important in order to fully understand how and why this can be an effective treatment modality. when a patient is supine, the weight of the heart, lungs, and abdominal viscera increase the pleural pressure, reducing the pressure in dorsal lung areas. In patients with (ARDS), the ventral-dorsal pressure gradient is increased, which reduces ventilation capabilities in dependent dorsal regions[4].

For effective ventilation to occur, the alveolar pressure must be greater than the pleural pressure. ultimately, when a patient is placed in the prone position this "reduces the pleural pressure gradient from nondependent to dependent regions, in part through gravitational effects and conformational shape matching of the lung to the chest cavity[4]

METHODOLOGY

Design of the study :Pre-experimental study design was used with the application of pre and two post-tests approach**.**

Setting of the study :The study was carried out in Kut City/Wasit Province, at AL-Zahraa Teaching Hospital.

Sample of the study :A non-probability "purposive" sample had been consisted of (69) nurses were selected from at AL-Zahraa Teaching Hospital

Data collection and Educational program The implementation was carried out in the isolation unit throughout the period from January 11th to 7st February 2022 .The implementation of the program which was introduced to intervention group included the following:

In the intervention and study groups, each nurse in the al-Hayat center for coronaviruses diseases filled out a demographic data form.

A pre-test was given to all of the nurses in the study to assess their knowledge on an individual basis, the pre-test lasted (15-20) minutes.

At 10 A.m., they were summoned to the same lecture sessions to take part in an educational program.

There were (25) questions on the nurse's knowledge test. for the intervention groups were given various alternatives.

The examination was designed to evaluate the nurse's knowledge on prone position for coronaviruses diseases patient.

The post-test took the same amount of time as the pre-test

Statistical Analysis Approach: In order to statistically analyses the data collected from the study sample to arrive at the results, the researcher used the SPSS version (20) and Microsoft Excel (2010) program to analyses this data and deal with it statistically, to find the relationships between the variables, and obtain the final results of the research based on a set of statistical tests.

Administrative Arrangements: Approval from the University of Baghdad/ College of Nursing Council for the study, Official permissions from Ministry of Planning (CSO) 'Central Statistical Organization' ,Official permissions were also obtained from the Wasit Health Directorate (Training and Development Division) in order to formally access the Hospital , and Official permission have been obtained from AL-Zahraa Teaching Hospital.

Ethical consideration : Before the starting of gathering the data from the sample who are participating in the study, the researcher given a brief explanation about the scientific background of the research and the purpose of conducting it and what is the role of the nurses who participate in this study, to give them a complete and clear picture about the study to be carried out.

RESULTS

Table1: Distribution of Study Sample by their Age Groups

Age	Classification	Freq.	%
	20-29 years old	22	51.2
	30-39 years old	14	32.6
	40-49 years old	6	14.0
	50 and older	1	2.3
	Total	43	100.0
	Mean± SD	30.37 ± 8,571	

Findings show participants age, the mean age is 30, the age 20-29 years old were recorded the highest percentage (n=22; 51.2%), followed by those who are aged 30-39 years old (n=14; 32.6%) and those who are 40-49 years and ≥50 years (n=6; 14%) and (n=1; 2.3%).

Table 2: Distribution of Study Sample by their Gender

Gender	Classification	Freq.	%
	Male	27	62.8
	Female	16	37.2
	Total	43	100.0

In regard with gender, the male nurses were predominated (n=27; 62.8%) as compared with those who are female nurses (n=16; 37.2%).

Table 3: Distribution of Study Sample by their Education Level

Education Level	Classification	Freq.	%
	Nursing School	11	25.6
	Diploma Nursing	18	41.9
	Bachelors Nursing	14	32.6
	Total	43	100.0

In terms of education, the study participants expressed diploma nursing graduated (n=18; 41.9%), followed by those who are bachelors (n=14; 32.6) and those who are nursing school (n=11; 25.6).

Table 4: Distribution of Study Sample by their Years of Experience

Years of experience	Classification	Freq.	%
	<5 years	17	39.5
	5-10 years	21	48.8
	>10 years	5	11.6
	Total	43	100.0

Years of experience related findings, the nurses exhibited 5-10 years of experience (n=21; 48.8%) followed by those who are < 5 years of experience (n=17; 39.5) and those who are >10 years of experience (n=5; 11.6%).

Table 5: Distribution of Study Sample by their Training Courses

Training sessions	Classification	Freq.	%
	No	37	86.0
	Yes	6	14.0
	Total	43	100.0

In terms of training courses, it is obvious that the majority of nurses were no trained (n=37; 86%) as compared with those who are trained (n=6; 14%).

Table 6: Nurses Responses at Pre-post I tests Regarding to Knowledge about Application of Prone Position for Patient with Corona Virus Disease

Knowledge items		Pre-test		Post-test I		p-value
		M ± SD	Ass.	M ± SD	Ass.	
1	The prone position is the process of placing the patient on the left or right side	1.93±0.883	Fair	2.16±0.949	Fair	.010
2	can repeat Position prone to sick Corona several times during the day	1.65±0.686	Fail	2.37±0.845	Pass	.002
3	do you know that prone Position It does not affect the patient's stay in the hospital	1.46±0.667	Fail	2.41±0.851	Pass	.009
4	The prone position reduces the time the patient needs mechanical ventilation	1.44±0.733	Fail	2.53±0.797	Pass	.029
5	Placing a Corona virus patient in a prone position helps his recovery from this disease	1.41±0.698	Fail	2.51±0.797	Pass	.000
6	The prone position can improve breathing	1.37±0.618	Fail	2.46±0.797	Pass	.043
7	The prone position does not help remove the secretions from pneumonia	1.39±0.694	Fail	2.32±0.892	Fair	.056
8	The rate of oxygen entering the lungs is affected by the position of the patient, such as prone	1.41±0.663	Fail	2.44±0.825	Pass	.005
9	The prone position can be used in cases other than Corona	1.46±0.701	Fail	2.27±0.881	Fair	.002
10	The pressure within the alveoli increases in the prone position	1.37±0.655	Fail	2.55±0.700	Pass	.002
11	Compressed areas of the patient's body must be taken into account to avoid bed sores	1.27±0.590	Fail	2.37±0.900	Pass	.000
12	The prone position affects lung volume during breathing	1.41±0.731	Fail	2.46±0.826	Pass	.005
13	3-5 pillows are needed to place the patient in a prone position	1.30±0.557	Fail	2.534±0.766	Pass	.000
14	Must be Stop giving iv set and drainage tubes bodily fluids during the procedure prone position	1.55±0.765	Fail	2.44±0.853	Pass	.001
15	The prone position can increase pressure sores on the face, thighs, and knees	1.46±0.766	Fail	2.37±0.845	Pass	.002
16	The prone position may cause edema of the face and chest	1.58±0.763	Fail	2.62±0.690	Pass	.005
17	The prone position causes the endotracheal tube to be removed (used for breathing)	1.53±0.735	Fail	2.46±0.826	Pass	.009
18	The prone position causes vomiting and GERD	1.46±0.766	Fail	2.25±0.875	Fair	.001
19	The prone position causes circulatory instability	1.51±0.797	Fail	2.30±0.913	Fair	.002
20	The prone position cannot be used in case of arrhythmia or posture heart pacemaker	1.48±0.735	Fail	2.39±0.903	Pass	.001
21	The prone position cannot be used if the pelvis is broken	2.02±0.938	Fair	2.65±0.719	Pass	.000
22	The prone position cannot be used in case of high blood pressure	1.74±0.789	Fail	2.55±0.765	Pass	.056
23	Do not use the prone position when Modern surgery in the abdomen, chest and spine	1.41±0.663	Fail	2.65±0.686	Pass	.001
24	Do not use the prone position for pregnant women in the second and third trimesters of pregnancy	1.69±0.860	Fail	2.53±0.766	Pass	.043
25	Do not use the prone position for facial trauma or surgery	1.51±0.797	Fail	2.60±0.694	Pass	.001

Level of Assessment (Fail= 1-1.66, Fair= 1.67-2.33, Pass ≥2.34)

Findings demonstrated assessment of the study sample responses at the pre-post-tests with regard knowledge towards prone position for patient with corona virus disease. The results indicate that the nurses at the pre-test are fail at all studied items (M ≤1.66) except, the items number (1 and 21) the responses were fair (M=1.67-2.33). While, after the application of intervention program, nurses expressed significant increased knowledge scores ($p< 0.05$).

DISCUSSION

Findings show participants age, the mean age is 30, the age 20-29 years old were recorded the highest percentage, followed by those who are aged 30-39 years old and those who are 40-49 years and ≥50 years. This study is agreement with previous literature ,Which showed that a higher nursing workload during the COVID-19 period, expressed in both a higher number of patients per nurse and a higher nursing workload per nurse[5].

In regard with gender, the male nurses were predominated as compared with those who are female nurses. This study agreement with previous " Effectiveness of An Instructional Program on Nurses' Knowledge Regarding Nursing Follow Up to Weaning From Mechanical Ventilation in Intensive Care Units in Baghdad Teaching Hospitals" found the highest percentage of the participants in study group are male (60%) while only (40%) are female[6].

In terms of education, the study participants expressed diploma nursing graduated, followed by those who are bachelors and those who are nursing school. This study is agreeing with previous study "Effect of Nursing Educational Program on Nurses' Knowledge and Practices regarding Pandemic Covid-19 in Isolation Unit " found that majority had a technical institute diploma nursing[7].

Years of experience related findings, the nurses exhibited 5-10 years of experience followed by those who are < 5 years of experience and those who are >10 years of experience .This study disagreement with study which shows that majority years of experience in nursing less than five years[8].

This is disagreement with previous study which reported that More than third of the participants had fewer than five years of job experience[9].

In terms of training courses, it is obvious that the majority of nurses were not trained as compared with those who are trained. This study is agreement with study which reported \that most of the sample did not take any training session[8].

The results indicate that the nurses at the pre-test are fail at all studied items (M ≤1.66) except, the items number (1 and 21) the responses were fair (M=1.67-2.33). While, after the application of intervention program, nurses expressed significant increased knowledge scores ($p< 0.05$).

This is agreed with previous study which that solution often proposed to improve the implementation of EBP is staff education regarding the evidence supporting the change. On 2 of the COVID-19 units (1 and 4), nearly 90% of nurses identified receiving education about the self-proning protocol, Widespread education about the protocol, belief in the effectiveness of the intervention[10].

CONCLUSION

There were improving in nurses' knowledge and practices after posttest due to intervention program concerning application of prone position. Training the staff by the implementation such education program which indeed helps to develop their knowledge and practices towards application of prone position.

Recommendation: Encouraging nurses to be enrolled in training sessions to improve their knowledge and practice to keep them up to date toward COVID-19.It is recommended to recruit nurses until hospitals are saturated enough and create a system to follow and monitor staffs how they implement nursing intervention for patients with COVID-19 and give feedback for those staffs faced a problem. A manual booklet of prone position associated COVID-19 and how to perform it should be write in simple words and use attractive pictures given to the patients and family. Multisite studies especially qualitative type (to make the study more representative and to decrease bias) on nurses' attitude should be conducted

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