

Nurses' Knowledge Toward Continuous Positive Airway Pressure Machine at Respiratory Isolation Unit

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ABSTRACT

Background: For patients with coronavirus disease(COVID-19), continuous positive airway pressure (CPAP) has been considered as a useful treatment. The goal of CPAP therapy is to enhance oxygenation, relieve breathing muscle strain, and maybe avoid intubation. If applied in a medical ward with a multidisciplinary approach, CPAP has the potential to reduce the burden on intensive care units.

Methods: Cross-sectional design was conducted in the ALSHEFAA center for crises in Baghdad. Questionnaire filled by 80 nurses who work in Respiratory Isolation Unit who had chosen by non-probability (purposive) selection collected the data. Then the researcher used an observational checklist to evaluate nurses' practice. The data was analyzed using descriptive statistics and SPSS.

Results: the study found a deficit in nurses' knowledge and practices regarding using of continues positive airway pressure machine for COVID patients

Conclusion: The nurses in this study lacked sufficient knowledge and had a low practice regarding using of continues positive airway pressure machine for COVID patients

Recommendations: Special education programs should be carried out for the medical staff and specifically for the nurses who are working in the RCU, to raise their awareness toward using of CPAP machine during infecting with COVID and prevent its complication and how to prevent and manage it. Practice guidelines should be defined and implemented.

Keywords: Continuous Positive Airway Pressure\ Knowledge\ Respiratory Isolation Unit

INTRODUCTION

Health systems around the world are being challenged by expanding request for care of individuals with Covid-19, compounded by fear, stigma, misinformation and confinements on development that disturb the delivery of health care for all conditions. When health systems are overpowered and individuals come up short to get to required care, both direct mortality from an outbreak and indirect mortality from preventable and treatable conditions increases significantly ⁽¹⁾.

In 2019, a novel coronavirus risen from Wuhan, China. This infection, called SARS-CoV-2 and its disease covid-19 spread beyond China, causing a worldwide widespread. Italy has as of late been devastated by the pandemic, coming about in crisis triage and enormous strain on resources for critically sick patients ⁽²⁾.

Individuals with COVID-19 may show a clinical presentation similar to the flu, with fever (89%), cough (68%), fatigue (38%), sputum production (34%) and/or dyspnea (19%). The seriousness spectrum of this illness changes from an asymptomatic or mild acute respiratory infection to extreme or basic with shock and hypoxic respiratory insufficiency, which could lead to death ⁽³⁾.

Severe acute respiratory tract infections such as SARS-CoV infection, Middle East respiratory disorder CoV (MERS-CoV) infection, and avian influenza A (H7N9) and A (H5N1), may lead to respiratory failure with high case fatality rates. Oxygen treatment by means of ordinary nasal cannula or face masks is imperative for managing respiratory failure in the early stage, CPAP has been broadly applied for treating hypoxemia due to acute pulmonary edema. Though, patients with SARI requiring respiratory support ought to ideally be managed in negative pressure isolation rooms for disease control purpose, patients with early respiratory distress are increasingly being treated with CPAP within the intensive care unit ⁽⁴⁾.

Continuous Positive Airway Pressure provides mild air pressure on a continuous basis to maintain the airways continuously open ⁽⁵⁾.

Noninvasive respiratory support is abasic component of critical care. Both noninvasive ventilation, with its different interface types and modes (counting head protector and face masks), and high-flow nasal oxygen (HFNO) are effectively utilized to oversee patients with ARF. Noninvasive respiratory support can lighten

respiratory distress, progress oxygenation, and possibly decrease require for invasive mechanical ventilation ⁽⁶⁾.

many nursing duties for CPAP management since nurses spend many hours caring for such patients while the specialists may go to as it were during ward rounds. Furthermore, nurses have a vital part within the management of patients requiring CPAP; this consisting of the practices accomplished by nurses such as incorporate assessment of heart rate, respiratory rate, SpO2% level, CPAP settings (water level, temperature, pressures, measure of nasal prongs/mask in use), equipment safety checks such as suction, resuscitation devices and the ventilator, intravenous syringe drivers/pump and screen alarms, blood gases ⁽⁷⁾.

METHODOLOGY

Cross-sectional design was conducted in the ALSHEFAA center for crises in Baghdad. Questionnaire filled by 80 nurses who work in Respiratory Isolation Unit. A non - probability purposive sample was randomly selected from nurses who were working respiratory isolation units were selected from the total population of RCU nurses in these hospitals.

The researcher employed a closed-ended questionnaire format to complete this section of the investigation. The format's contents were based on an examination of related literature, subjective experiences, and the researcher's understanding. Prior to completing the study, the goal of this assessment was to test the nurses' knowledge of nursing follow up for patients with coronavirus and utilizing the CPAP machine.

In order to determine the reliability of the study instruments, a pilot study was carried out on (10) nurses who were randomly selected. The nurses in the pilot study had the same criteria of the original study sample. It was conducted at Alshefaa center for crises. Participants had been exposed to pre-test and finally post-test. The sample of the pilot study was excluded from the original study sample.

The content validity of program and the study instrument was determined by the panel of (10) experts who had more than five years' experience in their field. To investigate the content of the questionnaire, those experts were provided with copy of study instruments and were asked to review and evaluate the instrument for its content clarity and adequacy. The questionnaire was

considered valid after performing the modifications that based on their responses.

The data analyzed through the use of statistical procedures and using the package of SPSS (Statistical Process for Social Sciences) version 20 application Statistical analysis system.

RESULTS

Table 1: Nurses' Socio-Demographic data. N= 60

Age groups	F	%
20 – 24 years	6	10
25 – 29 years	30	50
30 – 34 years	21	35
35 – 39 years	3	5
Total	60	100
Gender	F	%
Male	24	40
Female	36	60
Total	60	100
Level of Education	F	%
Secondary school	6	10
Diploma	40	66.7
Bachelor's	14	23.3
Total	60	100
Years of experience in RCU	F	%
1-5 years	37	61.7
6-10 years	22	36.7
11-15 years	1	1.7
Total	60	100

F= Frequency, %= percentage

The demographic characteristics of the Nurses Indicated that the majority (50%) of the age group (25 – 29 years), (60%) of the study subject were females. In relation to the educational level; the table demonstrate that (66.7%) of the nurses have Diploma degree and most of them (61.7%) have (1 -3) years of experience in the RCU with (83.3%) have no training session related to CPAP.

Table 2: Differences between pre-test and post-test of total nurses' knowledge toward CPAP

Items	Mean	Paired t Test		df	Sig. (2tailed)
		Std. Deviation	t		
Pre-test	4.5000	.90901	-29.595	59	.000
Post-test	11.3500	.86326			

Df: degree of Freedom, Sig: significance, t : calculated t value

Nurses' knowledge in the posttest were markedly enhanced as a mean differences show, so highly statistical significant differences were records in the post-test of CPAP domain.

DISCUSSION

Part I: Discussion Distributions of the Study Sample According to the Socio-Demographic Data (Table 1):

Regarding age, the majority of the participants (50%) are in age group of (25 – 29 years). These results supported by a study conducted to assess the nurse's knowledge concerning Glasgow coma scale in neuro surgical wards. a descriptive study was carried out at three hospitals (Alshaheed Ghazee Al harery, neuro science hospital and neuro surgical hospital) at 2011. Which show that about (24%) of the nurses were in the age group (28-32) years, and (16%) were in (23- 27) years age group (6).

Regarding the gender of the study participants, the results demonstrated that the highest percentage of the participants are female (60%) while only (40%) are male. These results supported by Descriptive study was carried out in Baghdad teaching hospital for the period from 122017 to 242018 aims to assess health problems for patients with goiter. A purposive (non-probability)

sample of (60) patients. the result show that a (71.7%) of participant were female (9).

Regarding the Level of education Most of the participants are graduated from institute (66.7%), followed by those who graduated from college (23.3%) and (10%) of them are graduated from secondary school. There are no significant differences between nurses' knowledge and their level of education between the study and control group (p value 0.05). The researcher discovered that there is no correlation between a nurse's knowledge of a domain of CPAP and their level of education, because the majority of the participants had never taken a CPAP machine course and the majority of the nurses do not work with CPAP machines because their hospitals' protocol places the responsibility of dealing with CPAP machines on technicians and aestheticians.

Regarding to the years of experience in respiratory care unit (RCU) majority of the participants (61.7%) respectively, are ranging in their years of experience from 1-5 years. Some studies results supported the recent study when reported that most of the sample (67.2%) had 1-5 years of experience in nursing field (10).

Regarding specific training courses in RCU's most of the participants (83.3%), have no training session regarding CPAP. These results supported by A descriptive correlational quantitative study done in Ireland at 2011 aimed to explore nurses' knowledge of family needs and to describe their current practices in meeting those needs. The study shows that about (71.4%) of respondents claimed their knowledge from clinical work in ICU and from continuing education courses (42%). The association between nurses' knowledge and the number of particular training courses they have received in critical care units is an important indicator that can help improve the quality of care delivered to critically ill patients by increasing the number of training courses on this subject (11).

Part-II: Discussion Nursing Staff knowledge (Table 2):

Regarding nurses' knowledge, the study's findings revealed that the shown there were a good change in the total knowledge from (100%) low level in pretest to (3.3%) high level (66.7%) moderate and (30%) for low level of knowledge for post-test. As the mean differences reveal the difference between pretest which it was (4.5000) and posttest were (11.3500) nurses' knowledge in the post test was much improved, resulting in highly statistically significant differences in the knowledge of CPAP domain post-test.

This results are consisting with descriptive study aimed to assess nurses' knowledge toward The Continuous Positive Airway Pressure (CPAP) Machine in Neonatal Intensive Care Unit at Al-Diwanyia City at 2017. A non-probability (purposive) sample of (24) nurses are used. The results show that regarding nursing knowledge there is a highly significant different at P < 0.01 between the initial period of pre time and post-1, then followed with a highly significant different at P < 0.01 between the initial period of pre time and post-2, and finally a highly significant different at P < 0.01 between the initial period of post-1 and post-2 (12).

CONCLUSIONS

The nurses in this study lacked sufficient knowledge and had a low practice regarding using of continues positive airway pressure machine for COVID patients.

Recommendations: Manual or booklet of educational program regarding using the CPAP machine for patients with COVID and how to manage the complications that can occur should be published and delivered to the nurses, who work in the critical care units. Special education programs should be carried out for the medical staff and specifically for the nurses who are working in the RCU, to raise their awareness toward using of CPAP machine during infecting with COVID and prevent its complication and how to prevent and manage it. RCU nursing staff should be graduated from college and master degrees and having sufficient training courses in different medical topics and specially in topics related to

RCU of nursing to provide better care and prevent complication of mechanical ventilation

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