

A Study to Assess the Knowledge and Attitude Regarding Prevention of Oxygen Toxicity Caused by Mechanical Ventilation Among Nurses Working in ICU of Selected Hospitals at Jaipur with A View to Develop an Information Booklet

Akhila Mohan

Lecturer, Saint Florence College of Nursing, Jaipur

Corresponding Author:

Akhila Mohan, Lecturer, Saint Florence
College of Nursing, Jaipur

E-mail:

mohansneha4@gmail.com

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Abstract

Introduction: Oxygen is vital to sustain life. However, breathing oxygen at higher than normal partial pressure leads to hyperoxia and can cause oxygen toxicity or oxygen poisoning.¹

Materials & Methods: descriptive research design was used to conduct the study. The study was undertaken at Metro Mas hospital in Jaipur, Rajasthan. A total of 60 ICU nurses on prevention of oxygen toxicity caused by mechanical ventilation were selected by using non-probability consecutive sampling. Data was collected using structured questionnaire and likert scale.

Results: This Knowledge Scores level of mechanical ventilator among ICU NURSES 27 (45.0%) had Poor knowledge score, 17 (28.3%) had Average knowledge score. 16 (26.7%) had good knowledge score, regarding Prevention of oxygen toxicity caused by mechanical Ventilator among ICU nurses in selected conditions.

reveals that Attitude scores level on mechanical ventilator among ICU NURSES 29(48.3%) had Poor Attitude score, 16 (26.7%) had Average Attitude score. 15 (25.0%) had Good Attitude score, regarding Prevention of oxygen toxicity caused by mechanical Ventilator among ICU nurses in selected conditions.

Conclusions: On the whole carrying out the present study was an enriching experience to the investigator. The study result was showed that the ICU Nurses had average knowledge and good Attitude regarding prevention of oxygen toxicity caused by mechanical ventilator. An information booklet was distributed to the ICU nurses which was useful for them.

Keywords: Assess; Knowledge and Attitude; Prevention; Toxicity; Mechanical Ventilation

Introduction: The acute oxygen toxicity manifests generally with central nervous system (CNS) effects, while chronic toxicity has mainly pulmonary effects. Severe cases of oxygen toxicity can lead to cell damage and death. Those at particular risk for oxygen toxicity include hyperbaric oxygen therapy patients, patients exposed to prolonged high levels of

oxygen, premature infants, and underwater divers.² Repeated pulmonary collapse and changes suggestive of a severe alveolar- capillary diffusion defect were observed over a period of 20 days in a patient who was receiving artificial ventilation. 8 respirator employee was found to be delivering 90% oxygen on the air - mix setting and pulmonary oxygen

toxicity was suspected. The management and prevention of this complication are discussed. high oxygen concentrations on the air-mixing setting, and the machine should therefore be driven from compressed air source unless high concentration of oxygen are essential.³

Advanced technology is a major part of the ICU and mechanical ventilation (MV) is one of the most commonly used treatment modalities in the care of the critically ill patient.⁴ Up to 90% of patients globally require mechanical ventilation (MV) during some or most part of their stay in the ICU.⁵ Mechanical ventilation (MV) is a key component in the care of critically ill and injured patients. Delays in weaning the patient from MV increase the number of complications and may lead to increased expenditure. Consequently, weaning constitutes a major challenge for the intensive care staff. It is important to wean the patient from MV as expeditiously as possible. Several studies indicate that the implementation of nurse-led, protocol-directed weaning reduces the amount of time spent on MV, the length of ICU stay, and associated costs.⁶

Mechanical ventilation is often life-saving procedures, but constitutes an expensive treatment modality which is associated with iatrogenic complications such as ventilator-associated pneumonia (VAP) and ventilator-induced lung injury, which can lead to the development of the Acute Respiratory Distress Syndrome (ARDS) and increased mortality and morbidity.⁷ The reasons for initiating MV are diverse. The most common reasons for initiation of MV are described as follows: pneumonia/acute lung injury (33.2%), chronic obstructive pulmonary disease (9.7%), cardiogenic pulmonary oedema (5.2%), neurological emergencies (16.9%), post-operative complications (24%) and cardiopulmonary arrest (11%).⁸

The time used versus time available for a new way of reporting the weaning status and process at an organizational level. Although various patient and systemic factors were linked to weaning activity, the most important factor was whether the intensive care unit nurse's made use of time available. It showed that weaning frequently was given low priority despite being an essential part of care of the mechanically ventilated patients.⁹

It is vital for intensive care nurses to deliver high quality care to the critically ill patient using relevant technologies but also incorporating psychosocial care measures. This balance is often one of the largest challenges facing by nurses in the intensive care environment. For this reason, intensive care nurses need to determine the unique interventions that will positively impact on the mechanically ventilated patient and assist in the patient's progression toward desired outcomes.¹⁰

Materials & Methods:

Research approach: A descriptive research approach was found appropriate.

Research design: descriptive research design was used to conduct the study.

Sampling techniques: by using non-probability consecutive sampling.

Population: The target population in the present study includes nurses working in ICU.

Sample size: A total of 60 ICU nurses on prevention of oxygen toxicity caused by mechanical ventilation.

Setting of the study: The study was undertaken at Metro Mas hospital in Jaipur, Rajasthan.

Data Collection: Data was collected using structured questionnaire and likert scale.

Results:

The analyzed data has been organized and presented in the following sections :

Section I : Description of demographic variables of the ICU nurses.

Section II : level of knowledge score regarding prevention of oxygen toxicity caused by mechanical ventilator among ICU nurses.

Section III : Association of knowledge score level and attitude score level regarding prevention of oxygen toxicity caused by mechanical ventilator among ICU nurses with socio- demographic variable.

A) Table no 2.1- Association between knowledge score level with socio- demographic variable.

B) Table no 2.2 - Association between attitude score level with socio-demographic variable.

Section I : Description of demographic variable of the ICU Nurses

This section describe the sample characteristics of

ICU nurses under the study. The sample consisted of 60 ICU nurses. The sample characteristics are

described in terms of frequency and percentage of personal variable.

N=60

Table 01 :Description of demographic variable of the ICU Nurses

1	Age (in years)	Frequencies	Percentage
	<30 year	6	10.0
	31-40 years	26	43.3
	41-50years	18	30.0
	>50years	10	16.7
	TOTAL	60	100.0
2	Gender		
	Male	38	63.3
	Female	22	36.7
	TOTAL	60	100
3	Professional Education Status		
	G.N.M.	27	45.0
	Post B.Sc. Nursing	23	38.3
	B.Sc. Nursing	7	11.7
	M.Sc. Nursing	3	5.0
	TOTAL	60	100
4	Duration of work in current hospital		
	<1 year	10	16.7
	1-5 year	21	35.0
	5-10 year	15	25.0
	>10 year	14	23.3
	TOTAL	60	100
5	Type of ICU in which you are working		
	Cardiac ICU	35	58.3
	Surgical ICU	11	18.3
	Medical ICU	10	16.7
	Other ICU	4	6.7
	TOTAL	60	100
6	total ICU experience		
	<5 year	20	33.3
	5-10 year	19	31.7
	10-15 year	11	18.3
	>15year	10	16.7
	TOTAL	60	100

Table-2: Frequency and percentage distribution of age of nurses working in ICU

N=60

2	Age (in years)	Frequencies	Percentage
	<30 year	6	10.0
	31-40 years	26	43.3
	41-50 years	18	30.0
	>50 years	10	16.7
	TOTAL	60	100.0

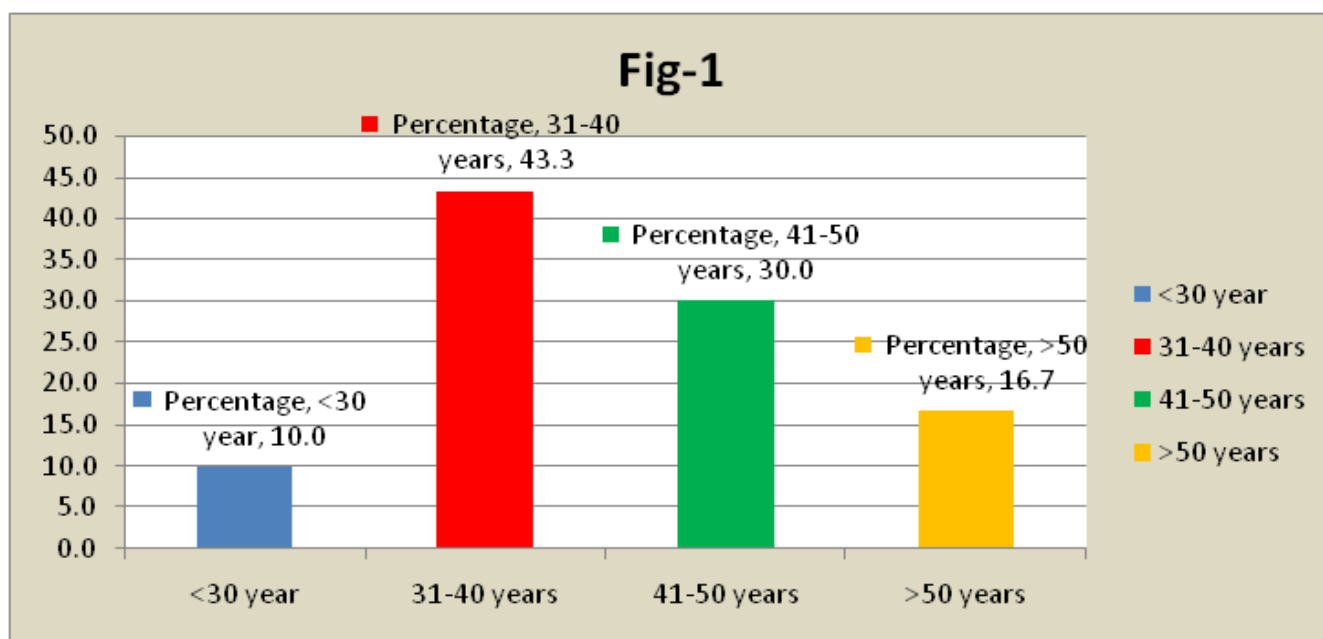


Figure-1: Bar diagram showing percentage distribution of nurses age

Table-3: Frequency and percentage distribution of gender N=60

3	Gender	Frequencies	Percentage
	Male	38	63.3
	Female	22	36.7
		60	100.0

Table-4: Frequency and percentage distribution of Professional Education Status

N = 60

4	Professional Education Status	Frequencies	Percentage
	G.N.M.	27	45.0
	Post B.Sc. Nursing	23	38.3
	B.Sc. Nursing	7	11.7
	M.Sc. Nursing	3	5.0
		60	100.0

Table-5: Frequency and percentage distribution of Duration of work in current hospital

N= 60

5	Duration of work in current hospital	Frequencies	Percentage
	<1 year	10	16.7
	1-5 year	21	35.0
	5-10 year	15	25.0
	>10 year	14	23.3
		60	100.0

Table-6: Frequency and percentage distribution of Type of ICU in which ICUnursesare working

N= 60

6	Type of ICU in which you are working	Frequencies	Percentage
	Cardiac ICU	35	58.3
	Surgical ICU	11	18.3
	Medical ICU	10	16.7
	Other ICU	4	6.7
		60	100.0

Table-7: Frequency and percentage distribution of total ICU experience

N= 60

7	Tour total ICU experience	Frequencies	Percentage
	<5 year	20	33.3
	5-10 year	19	31.7
	10-15 year	11	18.3
	>15year	10	16.7
		60	100.0

Section-II: level of knowledge score regarding Prevention of oxygen toxicity caused by mechanical Ventilator among ICU nurses

This section deals with the knowledge score regarding Prevention of oxygen toxicity caused by mechanical ventilator. It is also been analysed in term of frequency and percentage.

Table-8 : Frequency and percentage distribution of knowledge scorelevel

N= 60

Knowledge Score	Frequency	Percentage
poor	27	45.0
Average	17	28.3
Good	16	26.7
	60	100.0

Table-9: Frequency and percentage distribution of attitude level

N= 60

Attitude Score	Frequency	Percentage
Poor	29	48.3
Average	16	26.7
Good Above	15	25.0
	60	100.0

Conclusions

The calculated $X^2(14.285, .05)$ was more than the table value (12.591), which indicates the there was significant association between the knowledge level and Age (in years), of ICU nurses at 0.05 level of significance. So hypothesis is rejected

The calculated $X^2(0.583, .05)$ was less than the table value (5.991), which indicates the there was no significant association between the knowledge level and gender of ICU nurses at 0.05 level of significance. So hypothesis is accepted.

The calculated $X^2(20.862, .05)$ was more than the table value (12.591), which indicates the there was significant association between the knowledge level of Professional Education Status of ICU nurses at 0.05 level of significance. So hypothesis is rejected.

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Conflict of Interest: There are no conflicts of interest

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