



Full Length Research Article

AN EXPLORATORY STUDY TO ASSESS THE KNOWLEDGE RELATED TO OXYGEN THERAPY AMONG THE STAFF NURSES IN A SELECTED HOSPITAL, LUDHIANA, PUNJAB

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ABSTRACT

Oxygen is used as a medical treatment in both chronic and acute cases, and can be used in hospital, pre-hospital or entirely out of hospital, depend on the needs of the patient and the views of the medical professional advising. Ensuring that oxygen is administered in a timely and appropriate way using the right device is an important aspect of patient care. Selecting the right device can be difficult as there are a variety to choose from and a lack of practical information on selection. Therefore an exploratory study to assess Knowledge related to oxygen therapy among the staff nurses in selected hospital of Ludhiana was undertaken with the objectives: to assess the knowledge related to oxygen therapy among staff nurses, to analyze knowledge with selected variables, to find out the deficit areas of knowledge. A non-experimental, exploratory study was conducted on staff nurse of CMC hospital, Ludhiana, Punjab. The study sample consisted of 60 staff nurses. Data was analyzed by inferential statistics and presented through tables and figures.

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INTRODUCTION

Oxygen is a physiologic requirement for normal cellular function (energy production through aerobic metabolism), and is vital to sustaining human life. A failure to maintain adequate blood oxygen levels can results in the progressive deterioration of the patient, beginning with cell death, and if prolonged, organ failure and ultimately body system failure and death. Early clinical signs and symptoms of hypoxaemia are shortness of breath (dyspnoea), alteration in respiratory rate (bradypnoea or tachypnoea), anxiety and agitation. Oxygen is widely used in emergency medicine, both in hospital and by emergency medical services or advanced first aiders. In the pre-hospital environment, high flow oxygen is definitively indicated for use in resuscitation, major trauma, anaphylaxis, major haemorrhage, shock, active convulsions and hypothermia. Ensuring that oxygen is administered in a timely and appropriate way using the right device is an important aspect of patient care. Selecting the right device can be difficult as there are a variety to choose from and a lack of practical information on selection. The Consumer Protection Act (1987) and Medication Act (1968), require that in accordance with the directions of an appropriate practitioner

the; right medicine is given, with the right dose, to the right patient, at the right time, through right route. To achieve this, the legal framework draws together four separate areas of accountability to protect patients from the harmful effects of medicines while allowing them to benefit from their therapeutic properties. A nurse as a professional assumes responsibility and accountability for all nursing care delivered. Responsibility refers to execution of duties associated with a nurse's particular role. When administering a medication, nurse is responsible for assessing the client's needs for drug, giving it safely and correctly and evaluating the response to it. Accountability is being answerable for one's own action. A nurse is accountable to self, the client, the profession, the employing institution and society.

A study conducted to record oxygen use in seven hospitals located in a large district city of Greece, included 105 head nurses (HNs). Data was collected after interviewing each HN using a questionnaire and completing an anonymous data form. Finding reports that 41% of HN believed oxygen is a gas that improves patient's dyspnea. The majority of the nurses (88.6%) stated that there was no protocol for oxygen therapy in the departments in which they worked. They found that oxygen therapy was commonly started, modified, discontinued by nurses in the absence of a medical order. Oxygen therapy was commonly not guided by arterial blood gas (ABG)

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analysis. They also found that there are no guidelines to prevent oxygen therapy interruption during intra-hospital transportation, and few measures were taken to prevent oxygen explosion. Results indicate that educational programmes, nursing protocols and guidelines are becoming mandatory in our country in order to ensure the proper use of oxygen therapy. Steven Hickey, (2007) reported that Oxygen therapy can be a life-saving intervention, which is widely available and commonly prescribed by medical staff. Patients often receive oxygen therapy in hospital but, like any other drug, oxygen can be dangerous when given in the wrong concentration. Only 8 out of the 100 patients (8%) receiving oxygen had oxygen prescribed in their medication chart, and the majority (75%) of the oxygen prescriptions were inadequate with respect to recommended guidelines for safe oxygen prescription.¹ As a result, only 2 of the 100 patients (2%) receiving oxygen had an adequate oxygen prescription. Fourteen of the 100 patients (14%) receiving oxygen had oxygen therapy listed in their initial medical plan. The level of oxygen that was administered during the study varied between 1–5 L/min. Out of the 92 patients receiving oxygen without prescription, 14 had a previous diagnosis of chronic obstructive pulmonary disease, with 5 of these patients having previously documented carbon dioxide retention on arterial blood gas analysis. Oxygen therapy can be life-saving; treatment of hypoxaemia is essential. Oxygen is a drug, however, and should be prescribed as it can have detrimental effects. He concluded that current rates of oxygen prescribing remain unsatisfactory despite doctors being made aware of the audit findings.

MATERIALS AND METHODS

Research Approach: An exploratory research approach was adopted for the present study as it aimed at exploring the knowledge related to oxygen therapy among the staff nurses.

Research Design: To achieve the stated objectives, non experimental research design was utilized

Independent Variables: Age, Professional Qualification, Training Institution, Area of Work, Professional Experience and In-Service Education

Dependent Variable: Knowledge of staff nurses related to oxygen therapy

Selection and Description of the Field for Study: The study was conducted at the Medical, Surgical and Emergency Units of Christian Medical College & Hospital, Ludhiana, Punjab.

Population: The target population for the study comprise the registered staff nurses working in medical, surgical and emergency units of Christian Medical College and Hospital, Ludhiana, Punjab.

Sample and Sampling Technique: The sample of the study consists of 60 staff nurses administering oxygen via face mask or nasal prongs in medical, surgical and emergency unit. Purposive sampling technique was used to select the subjects for the sample which included all staff nurses who were administering oxygen via face mask or nasal prongs in all three shifts - morning, evening and night.

Development and Description of Tool: A structured questionnaire on knowledge was constructed to assess the knowledge of staff nurses regarding oxygen therapy. Tool was prepared after extensive review of literature, experts opinion the suggestions of the members of research panel and the researchers professional experience in the critical areas provided basis for the construction of the structured questionnaire on knowledge.

Parts of Tool:- Tool was divided into two sections

Section – I Demographic Data: This section consists of six items for obtaining demographic data of the research subjects i.e. age, professional qualification, training institution, working area, professional experience and in-service education.

SECTION – II Structured Questionnaire on Knowledge

This section consist of 50 items and divided into two parts.

Part – I Knowledge Questionnaire

It consist of 30 items. In this 10 items were related to anatomy and physiology of respiratory system and 20 items were related to oxygen administration. Multiple choice questionnaire was used with one correct answer. Maximum score was 30, Minimum score was 0.

Part – II Practice Questionnaire

The practice questionnaire was categorized in 3 phases of giving oxygen therapy i.e. preparation of the patient, environment and articles; procedure and after care of the patient and articles. First phase consists of 12 items, second and third phase consist of 4 items each and a total 20 items. Each item was having 04 options with only one correct answer. Maximum score was 20, Minimum score was 0.

Criterion Measures

Structured questionnaire on knowledge consist of 50 items. Each correct response on the knowledge and practice questionnaire was scored 1 and incorrect 0. Maximum score was 50 and minimum score was 0.

The knowledge score was categorized as

Levels of knowledge	Score	Percentage
Excellent	≥ 40	≥ 80%
Good	33 – 39	65% – 79%
Average	25 – 32	25 – 32
Below Average	< 25	< 50%

Content Validity of the Tool

Content validity of the tool was determined by expert's opinion and suggestions on relevance of items. The tool was given for validity to twelve experts from the field of medical surgical nursing, paediatric nursing, community health nursing, psychiatric nursing, maternal and child care nursing. Initially the tool started with 60 items i.e. 30 multiple choice questions and 30 true and false. As per the suggestions from the experts all true and false items converted into multiple choice questions and number of items reduced to 50. So as per

the guidance and suggestion from the experts, needed amendments were made in the questionnaire.

Reliability of the tool

Reliability of tool i.e. structured questionnaire on knowledge was computed by odd verses even, split half method using Karl Pearson’s coefficient of correlation and thereafter by Spearman Brown’s prophecy formula, was 0.8.

Ethical Consideration

With the view of ethical consideration the researcher discussed the type and purpose of study with Nursing Superintendent and written permission was obtained, also an informed verbal consent was obtained from each study subject. It was ensured that treatment of patient was not interfered. Confidentiality and anonymity was ensured.

Plan of Data Analysis

Analysis and interpretation of data was done in accordance with the objectives of the study. The data analysis was done by using descriptive and inferential statistics such as percentage, mean, mean percentage, standard deviation, ‘t’ test and analysis of variance (ANOVA). The level of significant chosen was $p < 0.05$, $p < 0.01$ and $p < 0.001$. Bar graphs were used to depict the findings.

ANALYSIS OF DATA AND INTERPRETATION

Analysis and interpretation of data was done in accordance with the objectives laid down in the study. The data was analyzed by calculating the score in the terms of mean, mean percentage standard deviation, ‘t’ test and ANOVA related to variables i.e., age, professional qualification, training institute, working area, professional experience and In-service education received in relation to oxygen therapy.

Objective - 1

To assess the knowledge related to oxygen therapy among staff nurses

Table 1. Frequency & Percentage Distribution of Staff Nurses According to the Level of Knowledge Score Related to Oxygen Therapy

Level of Knowledge	Score	Knowledge Score	
		n	Percentage
Excellent	≥ 40	10	17
Good	33 – 39	29	48
Average	25 – 32	18	30
Below Average	< 25	03	05

N = 60
Maximum Score = 50
Minimum Score = 0

Table 2 & Fig. 3 shows that only 29 (48%) staff nurses had good knowledge, 18 (30%) staff nurses had average knowledge, followed by 10 (17%) staff nurses had excellent knowledge & 3 (5%) staff nurses had below average knowledge. Hence, it was concluded that maximum staff nurses had good knowledge related to oxygen therapy.

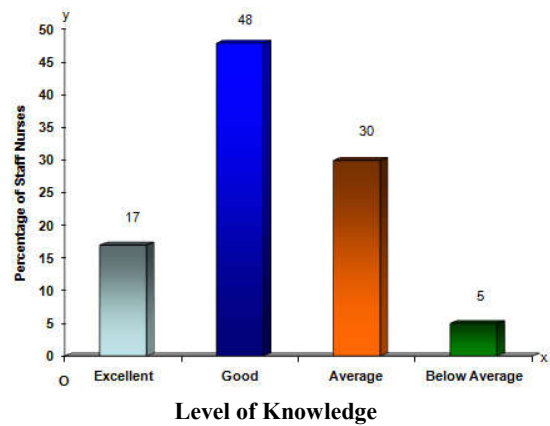


Fig. 3. Percentage Distribution of Staff Nurses According to the Knowledge Score Related to Oxygen Therapy

Objective - II

To analyze knowledge related to oxygen therapy with selected variables such as age, professional qualification, training institution, area of work, professional experience and in-service education.

Table 2. Mean Score of Knowledge and Practices Related to Oxygen Therapy Among Staff Nurses According to Training Institution

Training Institution	n	Knowledge score		df	t
		Mean	SD		
CMC	48	34.66	4.25	58	2.39*
Non CMC	12	32.91	5.48		

* Significant at $p < 0.05$ level
Knowledge score
Maximum score = 50
Minimum score = 0

Table 4 (b) & Fig. 7 – depicts that staff nurses trained at CMC & Hospital had higher mean score of knowledge i.e., 34.66 as compared to those trained at other institutions mean knowledge score 32.91. This difference was statistically significant at $p < 0.05$ level.

Hence, it was concluded that training institution of staff nurses had an impact on knowledge score of staff nurses related to oxygen therapy.

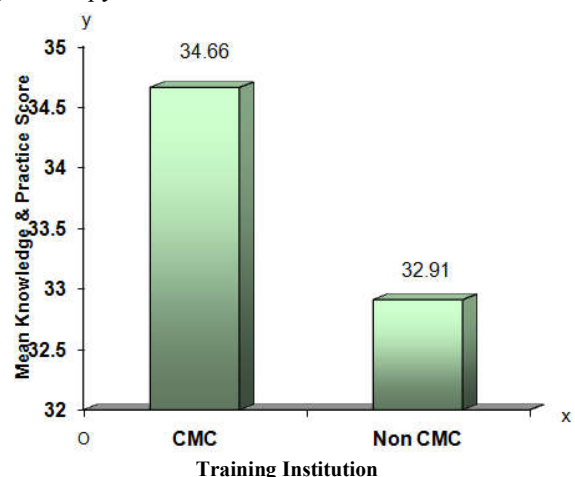


Fig. 2. Mean Knowledge Score of Staff Nurses Related to Oxygen Therapy According to Training Institution

Objective -III

To find out the deficit areas of knowledge related to oxygen therapy among staff nurses

Table 3. Mean Percentage of Knowledge Score Related to Oxygen Therapy Among Staff Nurses According to Deficit areas in Questionnaire

Areas	Knowledge Score			Rank Order
	Max Score	Mean	Mean Percentage	
Anatomy & Physiology of Respiratory system	10	6.48	64.82	2
Oxygen Administration	20	16.28	81.41	5
Preparation	12	7.96	66.33	3
Procedure	4	3.03	75.75	4
After care	4	2.08	52	1

N = 60
Maximum Score = 50
Minimum Score = 0

Table 5 (a) & Fig. 12 – shows that maximum deficit was found in the area of after care of the patient and the articles 52%, followed by anatomy physiology of respiratory system 64.82%, preparation of the patient, environment and articles 66.33%, procedure i.e., 75.75% and oxygen administration 81.41%. Hence, it indicates that staff nurses found deficit in the area of after care of the patient and the articles in questionnaire.

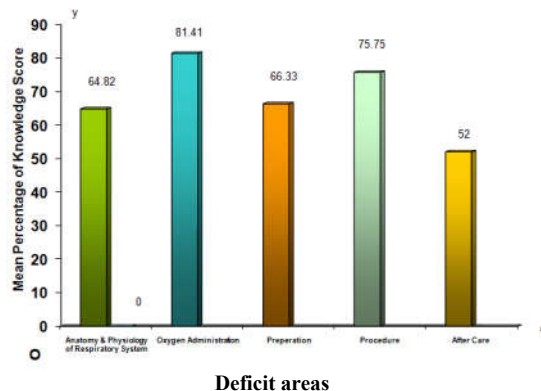


Fig. 3. Mean Percentage of Knowledge Score of Staff Nurses Related to Oxygen Therapy According to Deficit areas in questionnaire

DISCUSSION

- The findings of the study revealed that out of 60 staff nurses, only 10 (17%) staff nurses had excellent knowledge followed by 29 (48%) had good knowledge, 18 (30%) had average knowledge and 3 (5%) staff nurses had below average knowledge.

They may have less clinical exposure to respiratory procedures or depending on patient availability. This situation create a gap in the knowledge base and practices of nurses.

- Present study revealed that staff nurses trained at CMC & Hospital had higher mean knowledge score 34.66 as compared to those trained at other than CMC, the difference in knowledge score was statistically significant at $p < 0.05$ level.
- The study shows that in questionnaire maximum deficit was found in knowledge score of staff nurses related to after care of the patient and articles i.e. 52% and least deficit area was oxygen administration i.e. 81.41%. The lowest in mean percentage rank one.

Conclusion

Overall knowledge related to administration of oxygen by staff nurses were lower than the expected standard and therefore they need improvement to reach upto the expected standards. The deficit area was found in the knowledge of oxygen therapy was, after care of the patient and articles.

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