



Original Article

Assessment of Knowledge, Attitude and Practices of Oxygen Therapy among Health Care Professionals

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ABSTRACT

Oxygen is one of the most critical component of life. **Objective:** To access the knowledge attitude and practice regarding oxygen therapy among health care professionals. **Methods:** Cross-sectional study was conducted using purposive sampling technique. A structured questionnaire from literature was used to collect the data. Responses of the participants as good/bad knowledge, positive/negative attitude, and good/bad practice were recorded. The data was collected from Services Hospital Lahore of 140 healthcare professionals. The doctors, RTs, and nurses available at the workplace were included in the study. **Results:** The mean age and standard deviation is 27.09 ± 4.184 . There were 61 males representing 43.6% of total population and there were 79 female participants which representing 56.4% of total population. There are 76 doctors which were 54.3% of population, 40 nurses which were 28.6% and 24 respiratory therapists of 17.1% of total population. Our study shows that 77.9% population had good knowledge and remaining 22.1% population had no knowledge, 82.9% population had positive attitude and remaining 17.1% population had negative attitude. And out of 140 participants, 92.9% population had good practice and remaining 7.1% population had bad practice regarding oxygen therapy. **Conclusions:** The study concluded that majority of the studied participant had good level of knowledge about oxygen therapy and adequate level of practice of oxygen therapy but a significant number of participants had average level of knowledge about oxygen therapy and practice of oxygen therapy. Therefore, regular training of healthcare workers should be encouraged to update their knowledge and practice of oxygen therapy.

INTRODUCTION

Oxygen is one of the most critical component of life [1]. The 21% of oxygen in the atmosphere that is necessary for human body cells to function and survive. Death, organ failure, and cellular malfunction can be brought on by insufficient blood oxygen [2]. Different methods have to access knowledge, attitude and practice of oxygen therapy. Update knowledge is necessary otherwise it will harm the patient. Oxygen therapy is a vital component in the treatment of hypoxic patients and its wrong use can influence patient's condition. The reason for this study is how much medical Service experts in our clinics and how well they practice right utilization of oxygen treatment with universally standard guidelines. There are the holes in

medical services supplier preparing and absence of conventions on the most proficient method to screen oxygen use and when to stop it and when and how to give oxygen [3]. High oxygen treatment has been demonstrated to affect the surfactant in the aspiratory alveoli, making the alveolar surface undermine and cause atelectasis. Dry and cold oxygen treatment can evaporate emissions and harm the aviation route mucosal layers, making patients feel drier and awkward [4]. In United States, above than 1.5 million grown-ups are utilizing oxygen treatment to stretch out endurance and to work on their personal satisfaction and for a scope of pneumonic illnesses. There are reports of conflicting suggestive and utilitarian advances from

oxygen in patients with interstitial lung illness (ILD) and persistent obstructive pneumonic sickness making it trying for clinicians to arrange which patients will acquire advantage from oxygen treatment. Supplemental oxygen is involved by more than 1.5 million people in the United States to upgrade their personal satisfaction and drag out their lives because of a scope of respiratory sicknesses [5]. The high flow nasal cannula (HFNC) treatment was first portrayed as a kind of respiratory help for untimely babies, yet treating intense respiratory disappointment in more seasoned newborn children and children is presently generally utilized. It involves breathing in O₂ at a rate higher than the patient's pinnacle inspiratory stream rate through a nasal cannula. The gas is warmed and humidified to match the internal heat levels, clearing the nasopharyngeal dead space, producing mucociliary clearance, positive pressure, and, subsequently, a decrease in breathing work [6]. If more than fifty percent concentrations of oxygen are administered for a long time, there may occur O₂ toxicity. Health care professionals should not appear to use oxygen therapy experimentally without having sufficient knowledge of dosage, indication, side effects, and intoxication [7]. Patients with ongoing obstructive lung illness and restlessness, extreme hypoxemia benefit from long term home oxygen therapy. This benefit might apply to those with other constant pneumonic circumstances. Patients with long lasting obstructive lung infection are the probably going to require long term oxygen treatment (COPD) [8]. In the treatment of hypoxemic acute respiratory failure, oxygen therapy is the first-line treatment (ARF). Throughout the course of recent many years, different oxygen gadgets have opened up, including low-flow oxygen devices (nasal cannula, straightforward facemask, non-rebreathing repository veil) and high-oxygen devices (Venturi cover). The seriousness of the hypoxemia, the basic systems, and the patient's breathing example and resilience all impact the choice of a particular gadget in the administration of ARF. Basically, sick patients often times require high-stream oxygen gadgets to meet their oxygen requirements [9]. A typical pharmacologic treatment for COPD is long term oxygen therapy (LTOT). Locally situated LTOT has been displayed to further develop endurance in patients with COPD and extreme resting hypoxemia. During action and exercise, oxygen treatment has been displayed to alleviate side effects and keep up with blood vessel oxygen immersion, yet not to work on long term results. In COPD intensifications, oxygen treatment can be both useful and unsafe. For doctors composing medicines, study clinical gear providers, guardians, and patients, LTOT innovation presents a challenge [10]. For providing and monitoring home oxygen treatment, a variety of equipment are available [11]. In

children with persistent respiratory problems, home oxygen treatment is frequently necessary [12]. For powerful conveyance of home oxygen treatment to proper patients with persistent obstructive aspiratory sickness (COPD) and interstitial lung infection, proof-based rules are required (ILD) [13]. Constant respiratory disappointment (CRF) is a late-stage component of a few ongoing lung sicknesses, including persistent obstructive pneumonic illness (COPD), aspiratory fibrosis, and cellular breakdown in the lungs, yet it is likewise found in various heart and neuromuscular circumstances. Constant respiratory disappointment is characterized by an ongoing powerlessness to become soaked with O₂, bringing about extreme dyspnea, particularly during exercise. Besides, patients who habitually depend on fixed or weighty cylinders seem to battle to stick to the utilization of LTOT for 15 hours out of each day and, thus, have a lower personal satisfaction. Patients in a Dutch report referred to "limited independence" and "feeling embarrassed" as purposes behind rebelliousness, notwithstanding secondary effects straight forwardly connected with the utilization of the gadgets. To resolve these issues, more versatile gadgets like fluid O₂ holders and, specifically, little battery-controlled oxygen concentrators have been created lately. These gadgets have been displayed to give oxygen supplementation practically identical to heavier cylinders, further developing execution in the 6-minute strolling test as well as immersion and shortness of breath when contrasted with patients breathing air [14]. A report was conducted in 2021 by Hussein Kadhim and Juma AL-Rudha on the assessment of nurses' knowledge toward oxygen therapy administration for patients with COVID-19 at the Intensive Care Unit and Isolation Unit in AL-Hussein Teaching Hospital in AL-Smawa City, Iraq. Non probability convenient sampling technique was used. There was a sample size of 50 participants. Self-designed questionnaire was used to collect data. The study concluded that the knowledge of nurses' was poor knowledge; also there is no relationship between knowledge regarding oxygen therapy for patients with covid-19 and age and educational level [15]. In 2021, descriptive research was conducted by Ashwaq Yassin and Khalida Mansour under the title Assessment of Nurses' Knowledge and Practice Regarding Oxygen Therapy at Teaching Hospitals in Al-Nasiriya City, Iraq". A purposive sampling technique was used. A self-structured questionnaire was used for data collection. The questionnaire was divided into three sections: section 1 had twelve items; section 2 had five domains; and section 3 had twenty-six items. According to the study conclusion, nurses' knowledge and practices regarding oxygen therapy were inadequate [16].

METHODS

To access the knowledge attitude and practice regarding oxygen therapy among health care professionals. Cross-sectional study was conducted by using purposive sampling technique. The data was collected from Services Hospital Lahore. A structured questionnaire from previous literature was used to collect the data [17]. There was Sample size of 140 patients which was calculated on the basis of prevalence. The doctors, RTs, and nurses available at the workplace were included in the study. Nurses who will not be directly involved in bedside patient care such as nurse supervisor will be omitted from the study. The questionnaire was based on the previous studies and expert opinion. In our questionnaire attitude section was contain seven questions, knowledge contain six and practice section was contain seven questions. Approval was obtained from the University of Lahore. Permission was obtained from the Services hospital Lahore. Participants were interviewed with the help of questionnaire. The data collected was first transferred to SPSS spreadsheet. Statistical analysis was done using SPSS version 24.0 package. The frequency and percentage analysis were used to measure the good and bad knowledge and others variables. Knowledge score <50% were considered as poor or no knowledge, 50-75% score were considered as moderate knowledge, >75% score were considered as good knowledge. A positive score indicates a positive attitude, while negative and zero scores indicate negative attitudes. A practice score of >80% was considered as good practice and <50% was considered as inadequate practice.

RESULTS

Table 1 shows that the mean age of participants is 27.09 and standard deviation is 4.184. In this study there were 61 males representing 43.6% of total population and there were 79 female participants which representing 56.4% of total population. There are 76 doctors which were 54.3 in population, 40 nurses which were 28.6% and 24 respiratory therapists of 17.1% of total population.

Age	N=140
Mean	27.09
Standard Deviation	4.184
Gender	N (%)
Male	16(80)
Female	44(67.6)
Total	
Profession	
Doctor	76 (54.3%)
Nurses	40 (28.6%)
Respiratory Therapist	24 (17.1%)
Total	140(100.0%)

Table 1: Frequency and percentages of Demographic Variables

Table 2 study shows that 77.9% population had good knowledge and remaining 22.1% population had no knowledge, 82.9% population had positive attitude and remaining 17.1% population had negative attitude. And out of 140 participants, 92.9% population had good practice and remaining 7.1% population had bad practice regarding oxygen therapy.

(Total score of knowledge Category) Response	N (%)
Good knowledge	109 (77.9%)
Bad knowledge	31 (22.1%)
Total	140 (100%)
(Total score of attitude Category) Response	
Positive attitude	116 (82.9%)
Negative attitude	24 (17.1%)
Total	140 (100.0%)
(Total score of practice Category) Response	
Good practice	130 (92.9%)
Bad practice	10 (7.1%)
Total	140 (100.0%)

Table 2: Frequency and percentages of total score of knowledge attitude and practice category

There were 115 participants, of which 82.1% received oxygen therapy in an emergency situation ordered by a medical professional, and 26 participants, of whom 17.9% did not receive oxygen therapy in an emergency situation ordered by a medical professional. There were 103 participants considered to have oral and nasal hygiene that should be done with oxygen therapy, while 37 participants were not considered to have oral and nasal hygiene that is necessary during oxygen therapy. There were 97 participants, or 69.3%, who considered continuous O₂ administration more beneficial, while 43 participants, or 30.7 %, did not consider continuous O₂ administration beneficial. There are 133 participants who consider humidification the best practice to prevent dryness of the mucous membrane of the upper respiratory tract, and 7 participants do not consider humidification the best practice to prevent dryness of the mucous membrane of the upper respiratory tract. There are 131 participants (93.6%) who considered the prescribed SpO₂ range maintained in severe lung disease, while 9 participants (6.4%) did not consider the prescribed SpO₂ range maintained in severe lung disease. There were 26 participants, or 18.6% of the total population, who considered the administration of O₂ to patients very dangerous, while 114 participants, or 81% of the population, considered the administration of O₂ to patients safe. There were 23 participants, or 16.6% of the total population, who were considered to believe that the oxygen therapy indicates that the patient is at the end stage of life, and 117 participants, or 83.4 % of the total population, were considered to believe that the oxygen therapy is not an indication that the patient is at the end stage of life. There

were 133 participants, or 95.0 percent of the total population, considered to assess oxygen saturation during administration, and 7 participants, or 5.0% of the population, were considered to not assess oxygen saturation during administration. There were 136 participants, or 97.1% of the total population, who were considered to check the device before oxygen administration, and 3 participants, or 2.1% of the total population, were not considered to check the device before oxygen administration. There were 135 participants, or 96.4% of the total population, considered to have collected all the necessary equipment before administration, while 5 participants, or 3.6% of the total population, are not considered to have collected all the necessary equipment before oxygen administration. There were 136 participants, or 97.1% of the total population, who considered adjusting the flow rate appropriately during administration, compared with 4 participants, or 2.9 % of the total population, who did not consider adjusting the flow rate appropriately during oxygen administration. There were 136 participants, or 97.1% of the total population, who thought using an appropriate device size and method was important during oxygen therapy, while 4 participants, or 2.9 % of the total population, did not consider using an appropriate device size and method during oxygen therapy. There were 135 participants, or 94.1 percent of the total population, considered to follow patients' vital signs during administration, while 5 participants, or 3.6 percent of the total population, were considered not to follow patients' vital signs during administration. There were 59 participants, or 42.1% of the total population, who considered oxygen like other medicines, while 81 participants, or 57.1% of the total population, did not consider oxygen like other medicines. There are 130 participants, or 92.9 percent of the total population, who believe hypoxia can be detected through clinical signs, while 10 participants, or 7.1% of the total population, do not believe hypoxia can be detected through clinical signs. There were 134 participants, representing 95.7% of the total population, who considered blood gas analysis useful for confirming hypoxemia, while there were 6 participants, or 4.3% of the total population, who did not consider blood gas analysis useful for confirming hypoxemia. There were 102 participants, or 72.9 percent of the total population, who considered central cyanosis an indication for acute oxygen therapy, while 38 participants, or 27.1% of the total population, did not consider central cyanosis an indication for acute oxygen therapy. There were 59 participants, or 42.1% of the total population, who considered asymptomatic anemia an indication for acute oxygen therapy, and 81 participants, or 57.1% of the total population, who did not consider asymptomatic anemia an

indication for acute oxygen therapy. There are 92 participants, or 65.7% of the total population, who consider restlessness and convulsions in children to be indications for acute oxygen therapy, while 48 participants, or 34.3% of the total population, do not consider restlessness and convulsions in children to be indications for acute oxygen therapy.

Questions About Knowledge	Good Knowledge	No knowledge
Oxygen is like any other medication?	58(41.4%)	82(58.6%)
Hypoxemia can be recognized by clinical signs	130(92.9%)	10(7.1%)
Blood Gas Analysis is useful for confirming hypoxemia	134(95.7%)	6(4.3%)
Central cyanosis is an indication for acute oxygen therapy	102(72.9%)	38(27.1%)
Asymptomatic anemia is an indication for acute oxygen therapy	59(42.1%)	81(57.9%)
Restlessness and convulsion in children are indications for acute oxygen therapy	92(65.7%)	48(34.3%)
Questions About Attitude	Positive Attitude	Negative attitude
O2 is given only when ordered by a medical professional, or a registered nurse-initiated order in an emergency situation.	112(80.0%)	28(20.0%)
Oral and nasal hygiene and normal saline drops as necessary should be done when giving OT	103(73.65)	37(26.4%)
Continuous O2 administration is more beneficial than intermittent OT	97(69.3%)	43(30.7%)
Humidification is the best practice to prevent dryness of mucus membrane of upper respiratory tract	133(95.0%)	7(5.0%)
Persons with severe lung disease need to be maintained at the prescribed SpO2 range	131(93.6%)	9(6.4%)
Administration of O2 to patients is not safe and it is very Dangerous	24(17.1%)	116(82.9%)
A patient on OT indicates that the patient is at the end stage of life	20(14.3%)	120(85.7%)
Questions About Practice	Good Practice	Bad practice
Assess oxygen saturation before administration	102(72.9%)	38(27.1%)
Assess oxygen saturation during administration	111(79.3%)	29(20.7%)
Check the device before administration	114(81.4%)	26(18.6%)
Collect all necessary equipment before administration	113(80.7%)	27(19.3%)
Adjust flow rate appropriately during administration	116(82.9%)	24(17.1%)
Use appropriate device size and way	116(82.9%)	24(17.1%)
Follow patients' vital signs during administration	112(80.0%)	28(20.0%)

Table 3: Frequency and percentages of Responses to knowledge, Attitude and practice questions by Health Care Professionals

DISCUSSION

In contrast previous study conducted in 2022 at South Gondar zone hospitals. The title of study is Knowledge, attitude, and practice of health professionals for oxygen therapy. The results of the contrast study were shows that participant's responses for the knowledge questions range from a maximum score of 93.1% to a minimum score of

33.5% from all questions. The most correctly answered question was indications of oxygen therapy followed by conditions that affect the pulse-oximetry reading. The least answered question was components of arterial blood gas analysis measures to detect respiratory problems. The result of our study shows that knowledge was assessed by six questions. The results of study shows that there are 140 participants, which show 77.9% population had good knowledge and remaining 22.1% population had no knowledge [18]. In contrast previous study conducted in 2019 by Amairah Fahad Aloushan et al shows that 324 participants (72.9%) show positive attitude and 75(16.9%) participants shows negative attitude regarding oxygen therapy in emergency situation ordered by a medical professional. The results of this study shows that 112(80.0%) participants show positive attitude when oxygen therapy in emergency situation ordered by a medical professional & 28 participants which were in 20.0% shows negative attitude when oxygen therapy in emergency situation ordered by a medical professional [16]. In contrast previous study 69.8% was positive and 9.3 participants were negative attitude regarding oral and nasal hygiene should be done with oxygen therapy. In contrast previous study 27.0% participants show positive and 38.3% have negative attitude related to continuous O2 administration beneficial than intermitted oxygen therapy. The results of current study show 103(73.6%) participants shows positive attitude and 37(26.4%) participants have negative attitude regarding oral and nasal hygiene should be done with oxygen therapy [19]. In contrast previous, cross-sectional study conducted in 2021, on "Nurses' Supplemental Oxygen Therapy Knowledge and Practice in Debre Tabor General Hospital" by Shegaw Zeleke and Demewoz Kefale. The result of that study was 30.5% participants have good practice and 69.5% have poor practice regarding device check before oxygen therapy administration. The results of current study shows that 81.4% participants have good practice and they check the device before oxygen therapy administration [20]

CONCLUSIONS

The result of the study concluded that majority of the studied participant had good level of knowledge about oxygen therapy and adequate level of practice of oxygen therapy but a significant number of participants had average level of knowledge about oxygen therapy and practice of oxygen therapy. Therefore, regular training of healthcare workers should be encouraged to update their knowledge and practice of oxygen therapy.

Conflicts of Interest

The authors declare no conflict of interest

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