

ASSESSING KNOWLEDGE, ATTITUDE, AND PRACTICE REGARDING OXYGEN THERAPY IN THE CRITICAL CARE UNITS AMONG NURSES AT GENERAL HOSPITAL LAHORE, PAKISTAN

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Abstract

Background: Oxygen therapy is an essential component in the management of critically ill patients, and nurses play a crucial role in its safe and effective administration.

Objective: The aim of this study is to assess the knowledge, attitude, and practice regarding oxygen therapy among nurses working in critical care units at General Hospital Lahore, Pakistan.

Methods: A descriptive cross-sectional study was conducted among 109 nurses using a structured questionnaire. Data was collected and analyzed using SPSS.

Results: The findings revealed that the majority of participants had good knowledge of oxygen therapy, particularly in recognizing hypoxemia and the use of blood gas analysis. Most nurses demonstrated a positive attitude, with a large proportion rejecting misconceptions such as oxygen therapy being dangerous or indicating end-stage disease. In terms of practice, a high level of compliance was observed, including monitoring oxygen saturation before and during administration, checking equipment, and using appropriate delivery methods. However, some gaps in knowledge were identified in certain clinical situations.

Conclusion: The study concludes that nurses possess satisfactory knowledge, positive attitudes, and strong practices regarding oxygen therapy. However, continuous education and training are recommended to further improve knowledge and ensure optimal patient care.

1. INTRODUCTION

1.1 Background of the Study

Human body cells require an adequate supply of oxygen to maintain normal cellular function and prevent dysfunction, organ failure, or even death. Oxygen constitutes approximately 21% of the Earth's atmosphere and is essential for cellular metabolism and overall physiological functioning in humans. (American Thoracic Society [ATS], 2025). Oxygen therapy is the primary intervention for managing hypoxemia,

with the primary goal of increasing arterial oxygen pressure. It is especially critical in the Department of Respiratory Medicine, where patients often experience hypoxemia resulting from impaired gas exchange in the lungs. Common contributing factors include hypoventilation, ventilation/perfusion (V/Q) mismatch, intrapulmonary right-to-left shunting, diffusion abnormalities, or a combination of these mechanisms. (Tang et al., 2024).

The use of oxygen therapy is not only essential in hospital settings but is equally significant in community-based care. Therefore, it is crucial for nurses, physicians, and all members of the healthcare team to possess comprehensive knowledge of both the effective application of oxygen delivery devices and the underlying physiological and pathophysiological principles that guide their use. (Rolfe, S., & Paul, F. 2018). A study conducted in 2022 in Africa shows a significant portion of nurses and doctors had inadequate knowledge and awareness of AOT (acute oxygen therapy) guidelines, which leads to poor patient outcomes (Desalu et al., 2022).

Furthermore, studies conducted in Asia and Pakistan suggested that there is a huge gap in the research between what is known and actual practice in the clinical settings. One of them had good knowledge. There must be continual training activities for the healthcare workers, especially nurses, to update their knowledge as well as their practices regarding oxygen therapy as per international guidelines. (Rehman et al., 2023) One meta-analysis review conducted in Africa inferred that healthcare professionals (doctors, nurses, etc.) had inadequate knowledge, a lack of positive attitude, and poor practice. Because the availability of oxygen therapy guidelines affected good knowledge and positive attitude subsequently. The study also concluded that if the presence of an oxygen supply and delivery system is ensured along with monitoring, supervision, and evaluation of their performance, there will be increased good knowledge and a proficient practice routine in oxygen delivery. So, after assessing the knowledge or identifying factors, improved training on organization at 8 organizational levels ensured settings could improve health outcomes. (Aynalem et al., 2024).

Lastly, a study conducted in China provides valuable insights into the knowledge, attitudes, and practices in the field of oxygen therapy. The first multicenter KAP (Knowledge, Attitude, and Practice) of its nature helped identify gaps and guide future interventions. The study conducted on emergency nurses found that they have inadequate knowledge alongside positive attitudes and proactive

practice. For optimizing patient quality of care, several targeted educational interventions can be used to address these deficiencies in nurses. Structured education training programs should be launched to ensure evidence-based practice guidelines as well as the ESCAPE Framework. (The term 2 "ESCAPE framework" typically refers to escapED, a method for designing educational escape rooms and interactive, game-based learning.) Depending on context, it can also be an acronym like E.S.C.A.P.E. (Evidence, Source, Context, Audience, Purpose, and Execution) for evaluating information or a framework for managing emergency situations. (Zhao et al., 2025).

1.2 Problem Statement:

Oxygen therapy is a vital intervention widely used in critical care settings to manage patients with respiratory distress and hypoxemia. Safe and effective oxygen administration requires adequate knowledge, proper use of delivery devices, and continuous monitoring. Inappropriate oxygen therapy can result in complications such as oxygen toxicity, hypercapnia, delayed recovery, and increased morbidity.

Nurses play a key role in administering and monitoring oxygen therapy; therefore, their knowledge, attitude, and practice directly influence patient outcomes. In developing countries like Pakistan, limited training opportunities, resource constraints, heavy workloads, and lack of standardized protocols may contribute to gaps in nurses' competency, affecting the quality and safety of patient care. Although several international studies have examined nurses' knowledge, attitude, and practice regarding oxygen therapy, evidence from public sector hospitals in Pakistan remains limited.

Therefore, this study aims to assess the knowledge, attitude, and practice of nurses regarding oxygen therapy in the critical care units of General Hospital Lahore. The findings will help identify existing gaps and support the development of educational programs to improve patient care and safety.

1.3 Significance of the Study

Oxygen therapy is an essential component in

the management of patients with respiratory distress and hypoxemia. The study is significant as it evaluates the knowledge, attitude, and practices of healthcare professionals toward oxygen therapy, identifying existing gaps and training needs. The findings will help in designing targeted educational programs to enhance the competency of healthcare workers and promote safe clinical practices. Moreover, the study will contribute to strengthening hospital policies and standardizing oxygen therapy protocols to ensure effective and evidence-based patient care.

3.1 Methodology

3.2 Variables of the Study

3.2.1 Knowledge

Conceptual Definition: Nurses' understanding of oxygen therapy principles, administration, and safety precautions.

Operational Definition: Measured by questionnaire scores and classified as good ($\geq 75\%$), moderate (50–74%), or poor ($< 50\%$).

1.2.2 Attitude

Conceptual Definition: Nurses' beliefs and perceptions regarding oxygen therapy.

Operational Definition: Measured using Likert-scale items and classified as positive (≥ 3.5), neutral (2.5–3.4), or negative (< 2.5).

1.2.3 Practice

Conceptual Definition: Nurses' application of oxygen therapy procedures and patient monitoring.

Operational Definition: Measured using practice items and classified as good ($\geq 80\%$), fair (50–79%), or poor ($< 50\%$).

3.1.1 Research Design: The design of the study will be descriptive cross-sectional, in which data from the point of the population will be collected by convenient sampling techniques (Shakeel et al., 2025).

3.1.2 Study Duration: The study duration is six months (July 2025 to January 2026).

3.1.3 Target Population: The study will be conducted among nurses of the critical care

department in the hospital.

3.1.4 Setting: ICU, Emergency Ward, Lahore General Hospital, Lahore.

3.1.5 Inclusive criteria:

Cardiac Care Emergency, Surgical and Medical ICU, Neuro ICU, and Paed ICU Emergency Ward.

3.1.6 Exclusive Criteria:

General ward Nurses, OPD nurses, OT Nurses

3.1 Formula.

The formula is:

$$n = N / (1 + N e^2)$$

n = required sample size

N = Population size

e = Margin of error (expressed as a decimal, e.g., 0.05 for 5%) Given:

$N = 150$ (Total population), $e = 0.05$ (Margin of error = 5%)

$$n = N / (1 + N e^2) \quad n = 150 / (1 + 150(0.05)^2)$$

$$n = 150 / 1.375$$

$$n = 109$$

3.1.8 Sampling Technique:

Non-probability, convenient sampling technique.

3.1.9 Ethical Considerations:

Ethical approval for the study was obtained from the Research Review Committee.

- Permission to conduct the study was granted by the hospital administration.
- An authorization letter was prepared in accordance with UHS guidelines.
- An informed consent form was developed according to UHS guidelines.
- A supervisor acceptance letter was prepared as per UHS guidelines.
- All required documents were obtained and attached to the study.

3.1.8 Research Tool:

The questionnaire was adopted from Rehman et al. (2023). The instrument consisted of sections assessing knowledge, attitude, and

practice regarding oxygen therapy. Responses were scored according to the original author's criteria. Participants were categorized as having good or poor knowledge, positive or negative attitude, and good or poor practice based on the scoring system used in the original study

3.1.9 Data Gathering Plan:

All questionnaires will be completed, and data will be collected from Lahore General Hospital, Lahore, and permission has been taken from the corresponding author for its utilization.

3.1.10 Data Analysis:

Data analysis will be done by using the Statistical Package for the Social Sciences (SPSS 2025). Dependent and independent variables will be assessed using frequencies and percentages. MS Excel will be used to summarize data in tables and charts

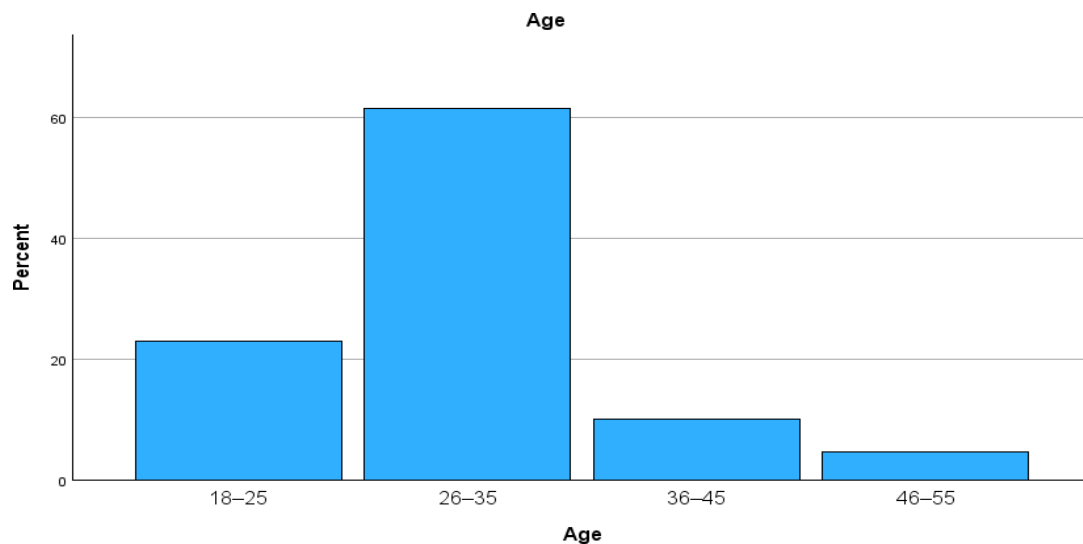
4.1 Results

Question #01: Age?

Data were collected from 109 participants. Among them, 22.9% belonged to the 18–25 age group, while the majority (62.4%) were aged 26–35 years. Additionally, 10.1% of participants were in the 36–45 age group, and the remaining 4.6% were aged 46–55 years.

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18–25	25	22.9	22.9	22.9
	26–35	68	62.4	62.4	85.3
	36–45	11	10.1	10.1	95.4
	46–55	5	4.6	4.6	100.0
	Total	109	100.0	100.0	



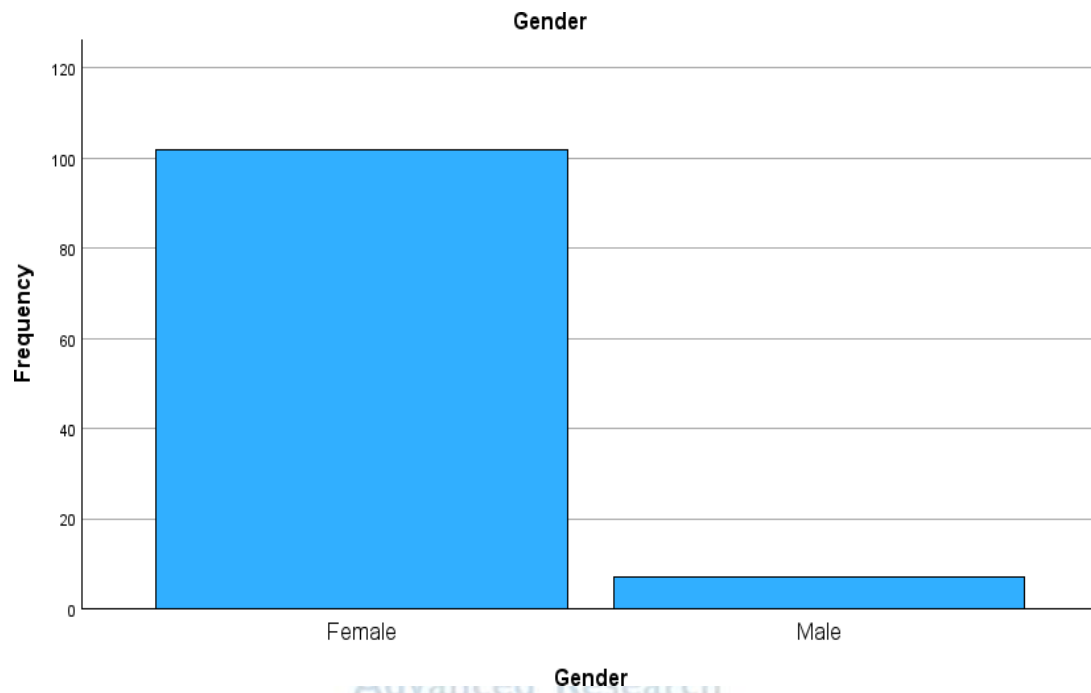
Question #02: Gender?

The data was collected from 109 participants, where 93.6% of respondents were female, while the rest, 6.4%, were males.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	102	93.6	93.6	93.6
	Male	7	6.4	6.4	100.0

Total	109	100.0	100.0
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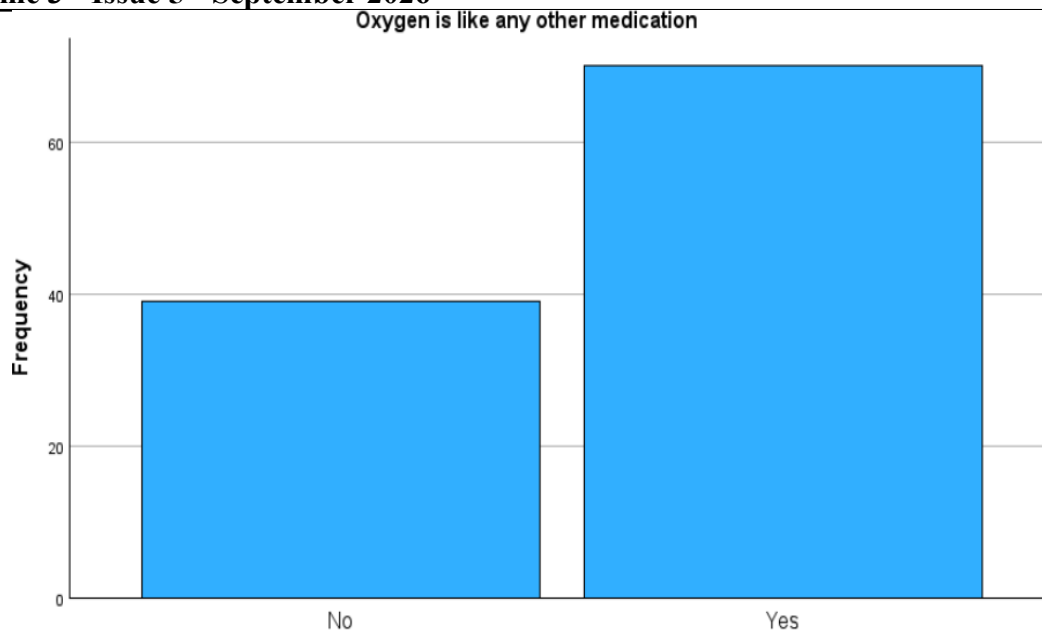


Question #03: Is oxygen like any other medication?

From the collected data, most participants, around 63.9%, believe that oxygen is like any other medication, while 36.1% don't believe so.

Oxygen is like any other medication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	39	35.8	35.8	35.8
	Yes	70	64.2	64.2	100.0
	Total	109	100.0	100.0	



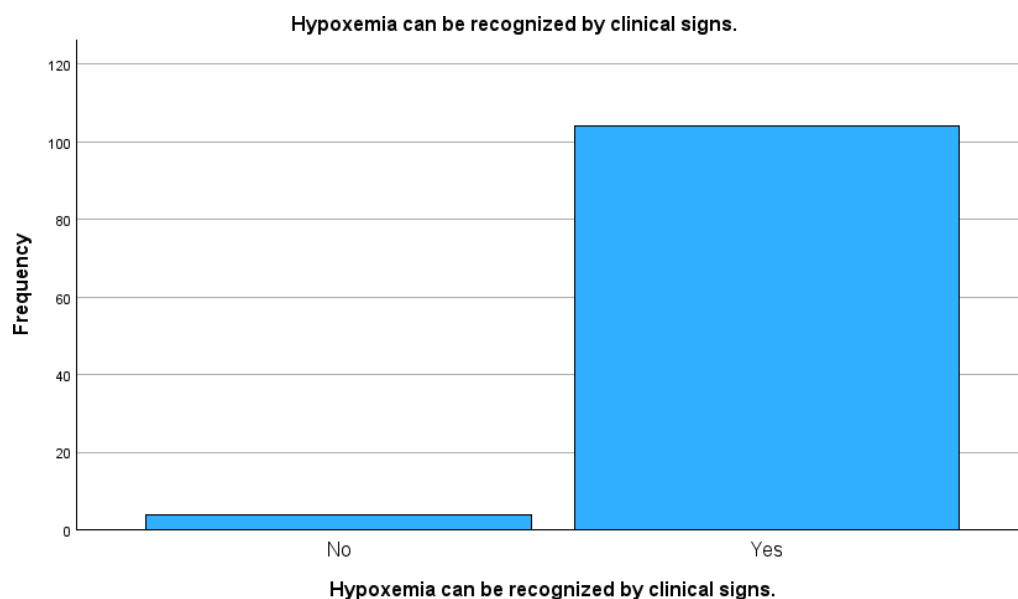
Question #04: Can hypoxemia be recognized by clinical signs?

Regarding this question, 96.3% of participants

agreed with the statement that hypoxemia can be recognized by clinical signs presented by the patient, while the rest of 3.7% were naysayers.

Hypoxemia can be recognized by clinical signs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	4	3.7	3.7	3.7
	Yes	104	96.3	96.3	100.0
Total		108	100.0	100.0	



Question #05: Is blood gas analysis useful for confirming hypoxemia?

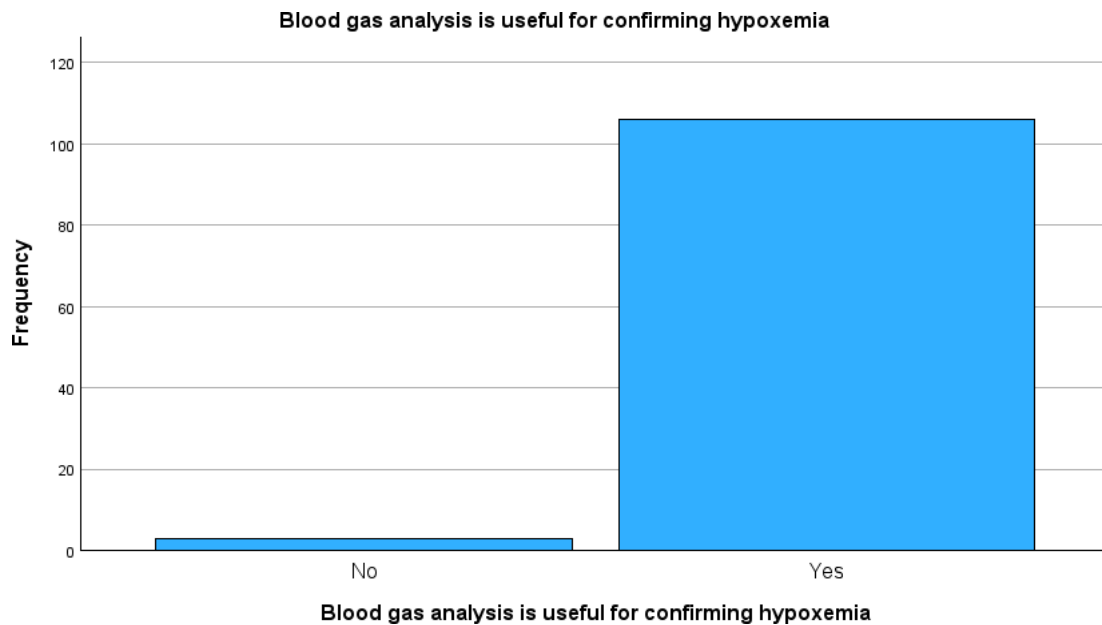
With reference to the data collected from the

mentioned sample of 109 nurses, a huge number of nurses, about 97.2%, believe blood gas analysis is significant in confirming

deficient oxygen, while the rest of 2.8% do not believe so.

Blood gas analysis is useful for confirming hypoxemia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	2.8	2.8	2.8
	Yes	106	97.2	97.2	100.0
	Total	109	100.0	100.0	

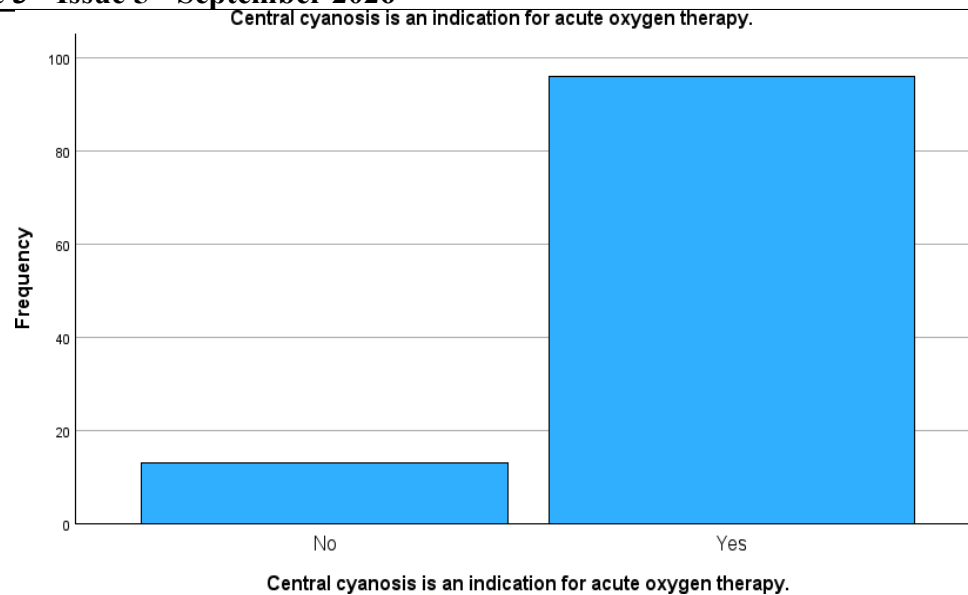


Question #06: Is central cyanosis an indication for acute oxygen therapy?

The data was collected by 109 participants, out of which 88.1% believe that central cyanosis is an immediate indication for acute oxygen therapy, while the rest of 11.9% were negative about that.

Central cyanosis is an indication for acute oxygen therapy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	11.9	11.9	11.9
	Yes	96	88.1	88.1	100.0
	Total	109	100.0	100.0	

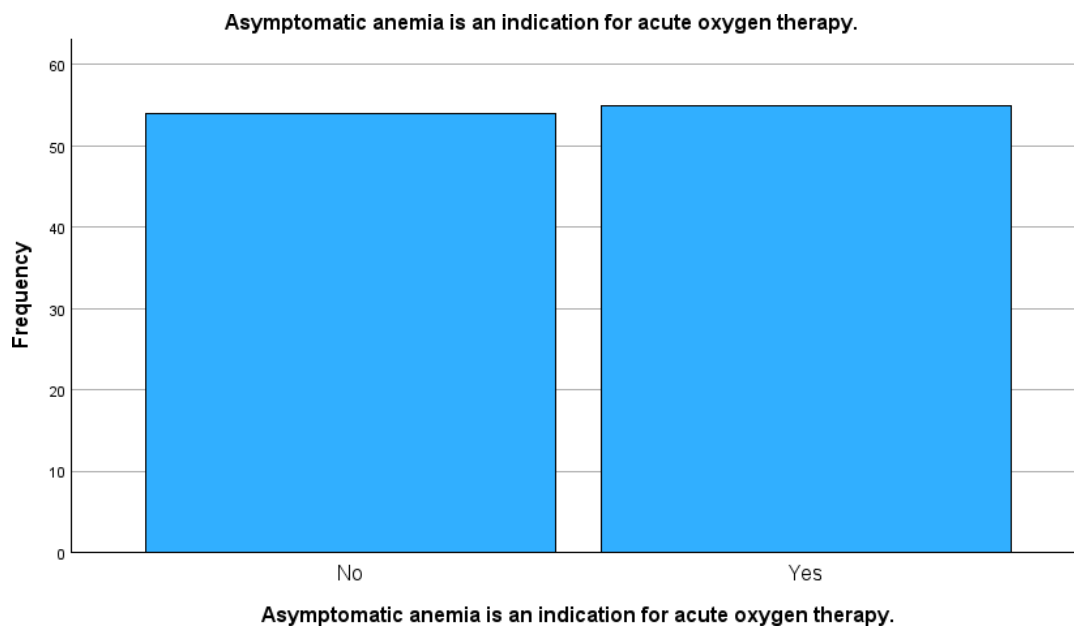


Question #07: Is asymptomatic anemia an indication for acute oxygen therapy?

While the question regarding asymptomatic anemia, there was a divided population where nearly half the participants, about 50.5%, believed that yes is an indication of oxygen therapy, while 49.5% said No.

Asymptomatic anemia is an indication for acute oxygen therapy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	54	49.5	49.5	49.5
	Yes	55	50.5	50.5	100.0
	Total	109	100.0	100.0	



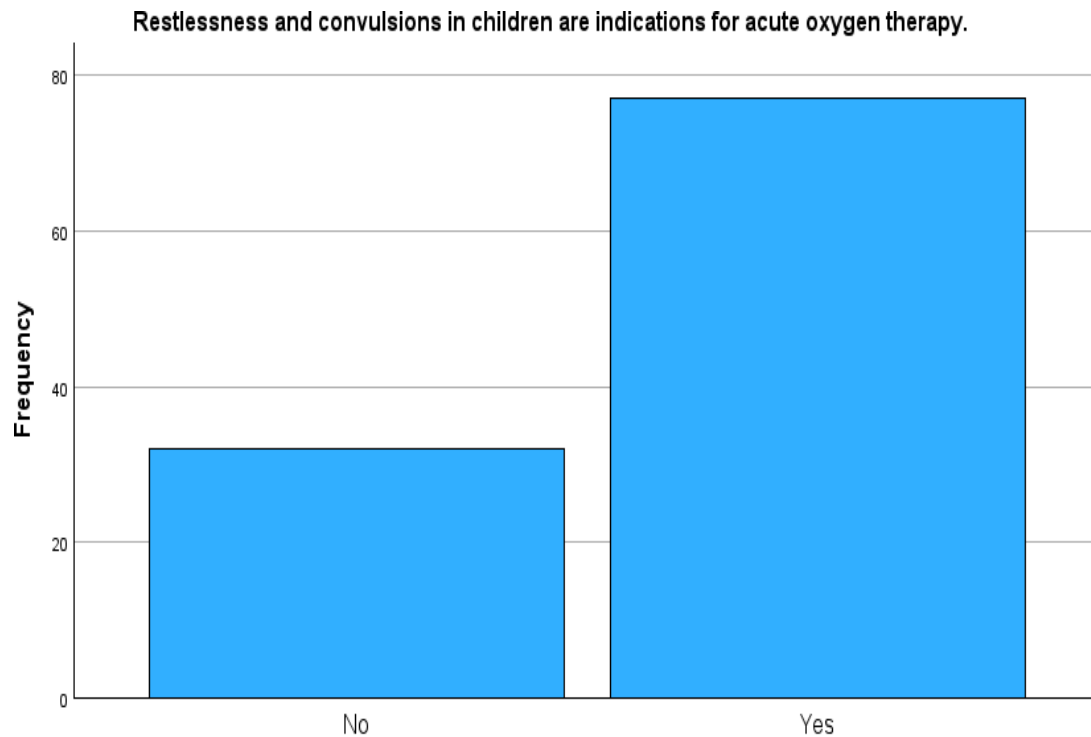
#08: Are restlessness and convulsions in children indications for acute oxygen therapy?

From the participants, about 77% of the people believed that the symptoms mentioned above are

the indications for acute oxygen therapy in children. While 29.4% of participants said no about it.

Restlessness and convulsions in children are indications for acute oxygen therapy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	32	29.4	29.4	29.4
	Yes	77	70.6	70.6	100.0
	Total	109	100.0	100.0	



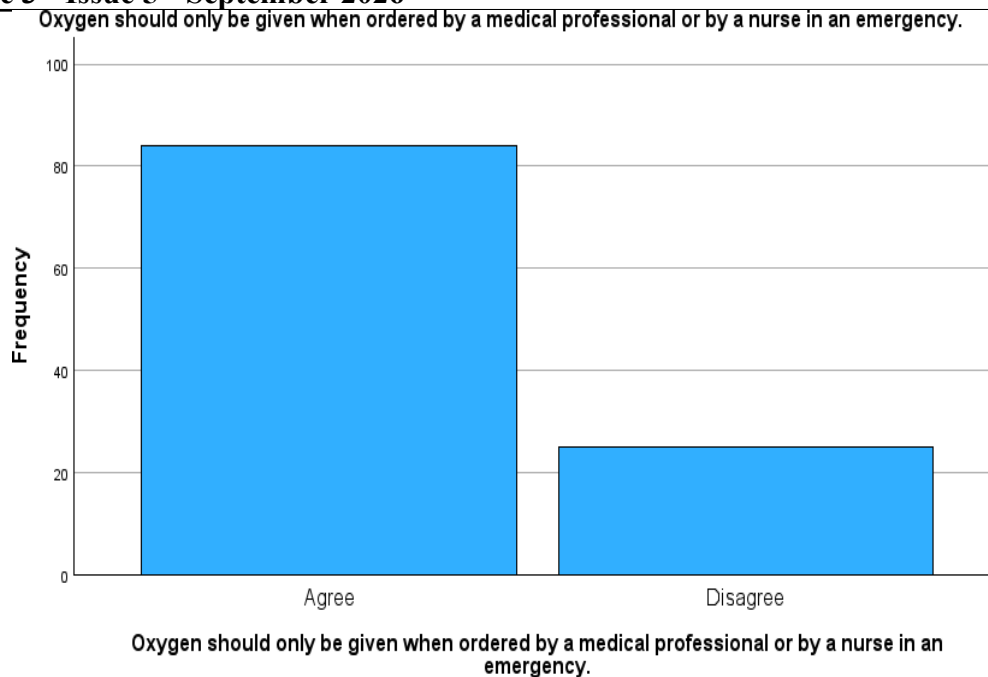
Restlessness and convulsions in children are indications for acute oxygen therapy.

Question # 09 Oxygen should only be given when ordered by a medical professional or by a nurse in an emergency?

From the total of 109 participants, 77.1% of people believed that oxygen should only be given on order by a healthcare professional, while 22.9% of participants did not believe so.

Oxygen should only be given when ordered by a medical professional or by a nurse in an emergency.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	84	77.1	77.1	77.1
	Disagree	25	22.9	22.9	100.0
	Total	109	100.0	100.0	



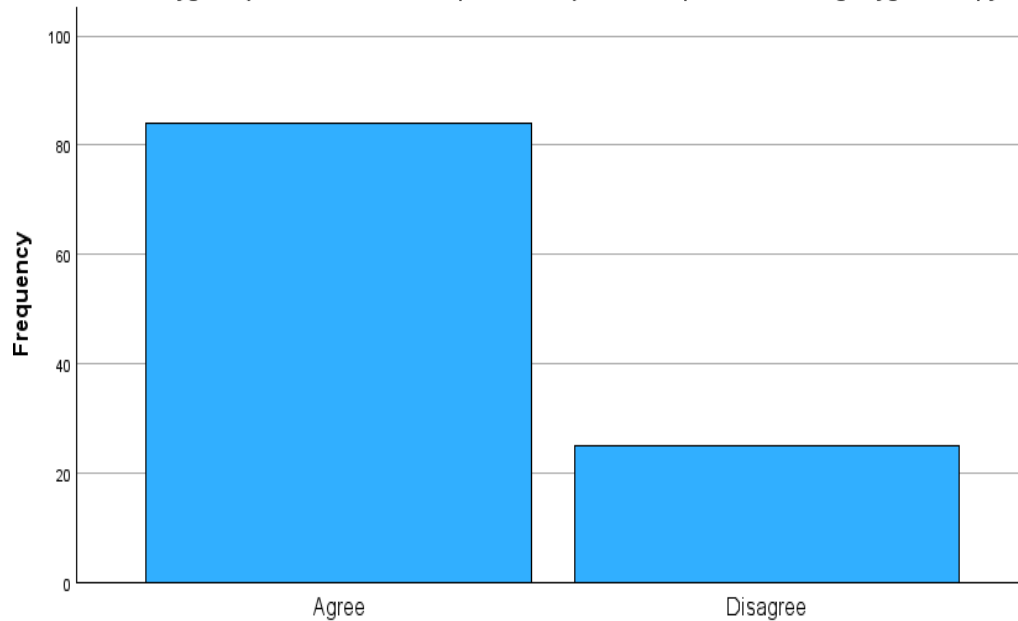
Question #10: Oral and nasal hygiene (with normal saline drops if needed) should be performed during oxygen therapy?

The collected data showed that 77.1% of participants believed that oral and nasal hygiene should be performed during oxygen therapy, while 36.1% did not believe this.

Oral and nasal hygiene (with normal saline drops if needed) should be performed during oxygen therapy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	84	77.1	77.1	77.1
	Disagree	25	22.9	22.9	100.0
	Total	109	100.0	100.0	

Oral and nasal hygiene (with normal saline drops if needed) should be performed during oxygen therapy.



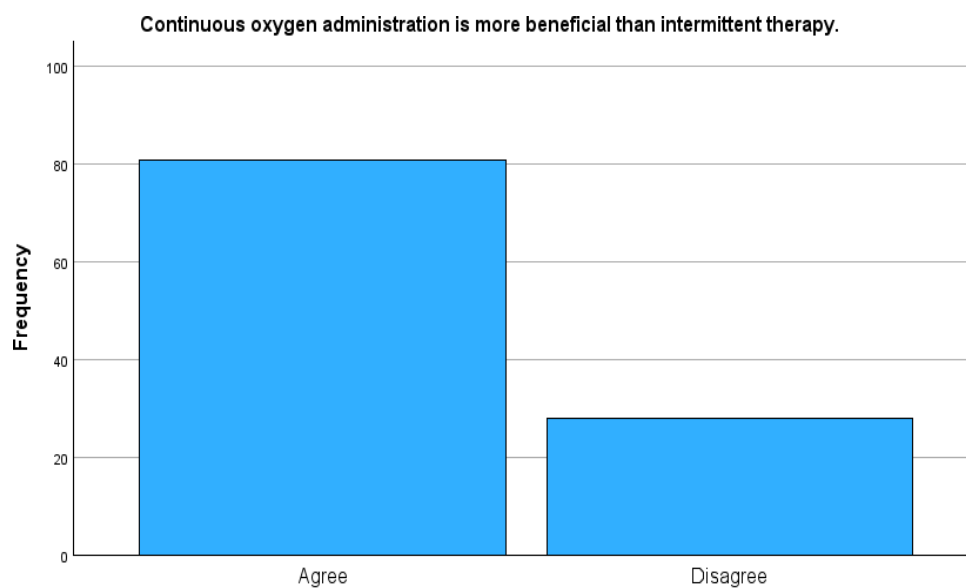
Oral and nasal hygiene (with normal saline drops if needed) should be performed during oxygen therapy.

Question # 11 Continuous oxygen administration is more beneficial than intermittent therapy?

The data was collected from 109 participants, out of which the majority, about 74.3% of people, agreed on the statement above, while 25.7% do not believe so.

Continuous oxygen administration is more beneficial than intermittent therapy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	81	74.3	74.3	74.3
	Disagree	28	25.7	25.7	100.0
	Total	109	100.0	100.0	



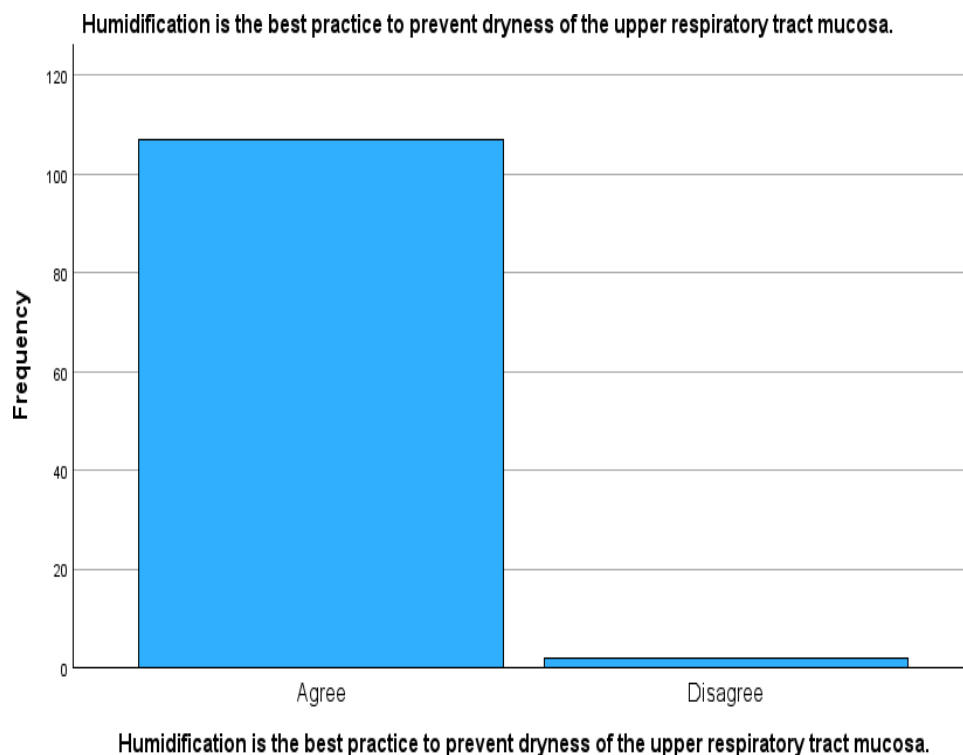
Continuous oxygen administration is more beneficial than intermittent therapy.

Question #12: Is humidification the best practice to prevent dryness of the upper respiratory tract mucosa?

Data were collected from 109 participants, of whom the majority (98.2%) agreed with the above statement, while only 1.8% disagreed.

Humidification is the best practice for preventing dryness of the upper respiratory tract mucosa.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	107	98.2	98.2	98.2
	Disagree	2	1.8	1.8	100.0
	Total	109	100.0	100.0	

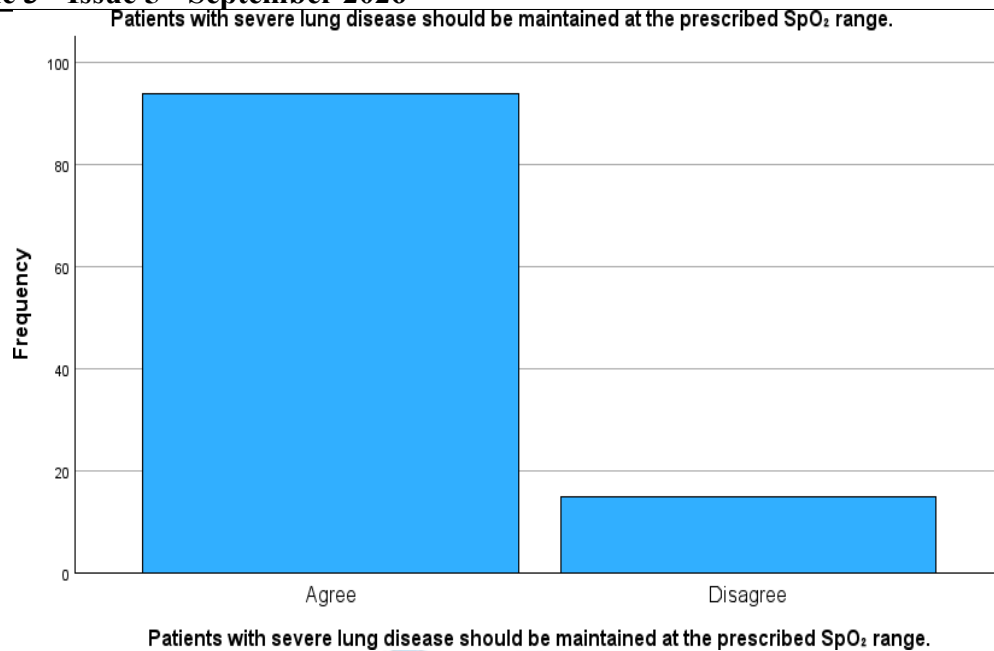


Question # 13: Patients with severe lung disease should be maintained within the prescribed SpO₂ range?

The findings indicate that a large majority of participants (86.2%) supported maintaining patients with severe lung disease at the prescribed SpO₂ range, while 13.8% did not support this statement.

Patients with severe lung disease should be maintained at the prescribed SpO₂ range.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	94	86.2	86.2	86.2
	Disagree	15	13.8	13.8	100.0
	Total	109	100.0	100.0	

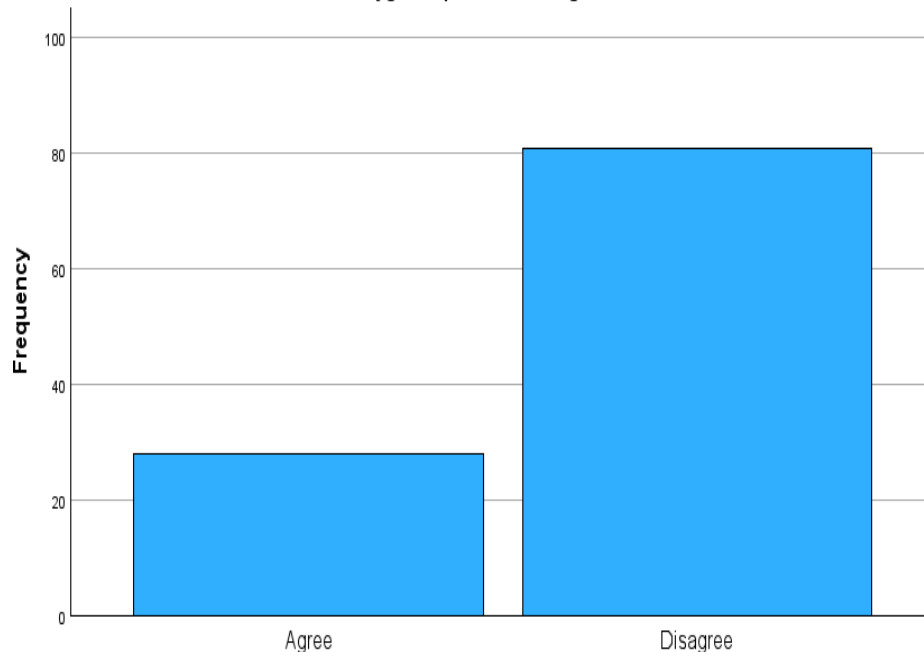


Question #14: Is the administration of oxygen to patients dangerous and unsafe? The majority of respondents (74.3%, n=81) disagreed that oxygen administration is dangerous and unsafe, while 25.7% (n=28) agreed.

Administration of oxygen to patients is dangerous and unsafe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	25.7	25.7	25.7
	Disagree	81	74.3	74.3	100.0
	Total	109	100.0	100.0	

Administration of oxygen to patients is dangerous and unsafe.



Administration of oxygen to patients is dangerous and unsafe.

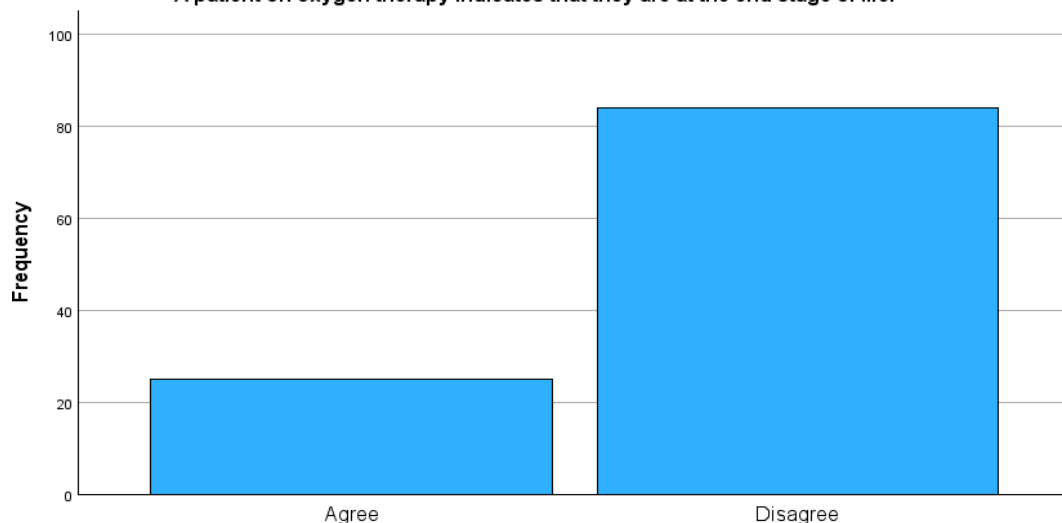
Question # 15 A patient on oxygen therapy indicates that they are at the end stage of life?

The findings reveal that a large proportion of participants (77.1%) rejected the notion that oxygen therapy signifies end-stage life, while 22.9% supported this view.

A patient on oxygen therapy indicates that they are at the end stage of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	25	22.9	22.9	22.9
	Disagree	84	77.1	77.1	100.0
	Total	109	100.0	100.0	

A patient on oxygen therapy indicates that they are at the end stage of life.



A patient on oxygen therapy indicates that they are at the end stage of life.

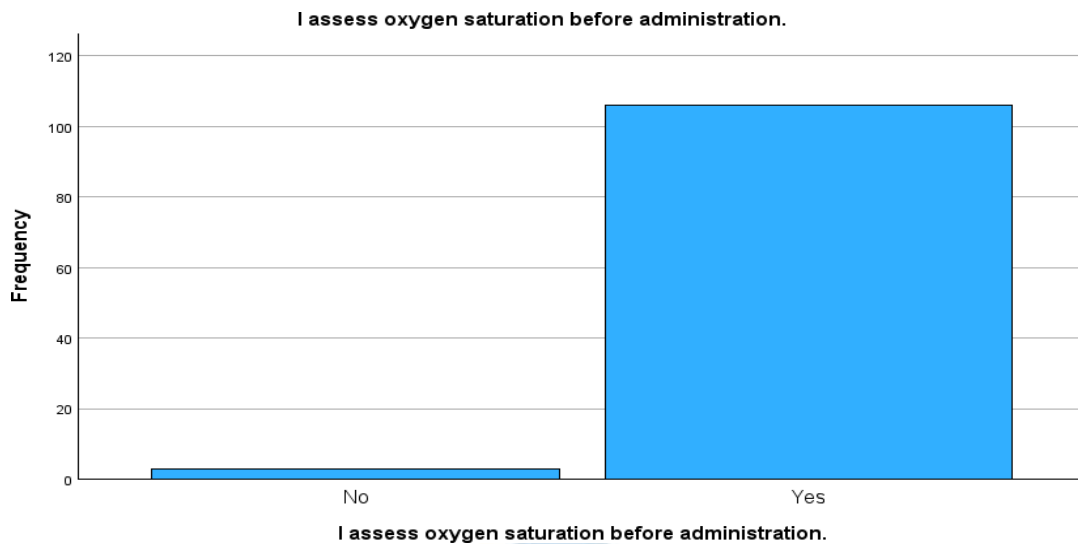
Question #16: I assess oxygen saturation before administration?

The findings indicate that the majority of participants (97.2%) reported assessing oxygen saturation

before administration, while a small proportion (2.8%) did not.

I assess oxygen saturation before administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	2.8	2.8	2.8
	Yes	106	97.2	97.2	100.0
	Total	109	100.0	100.0	

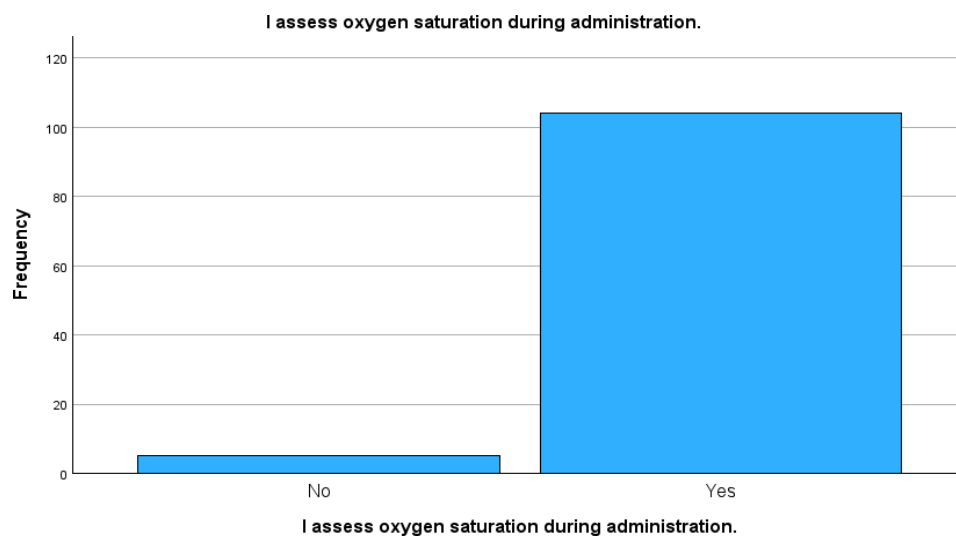


Question 17: I assess oxygen saturation during administration?

The results indicate that most participants (95.4%) assessed oxygen saturation during administration, whereas 4.6% did not.

I assess oxygen saturation during administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	4.6	4.6	4.6
	Yes	104	95.4	95.4	100.0
	Total	109	100.0	100.0	

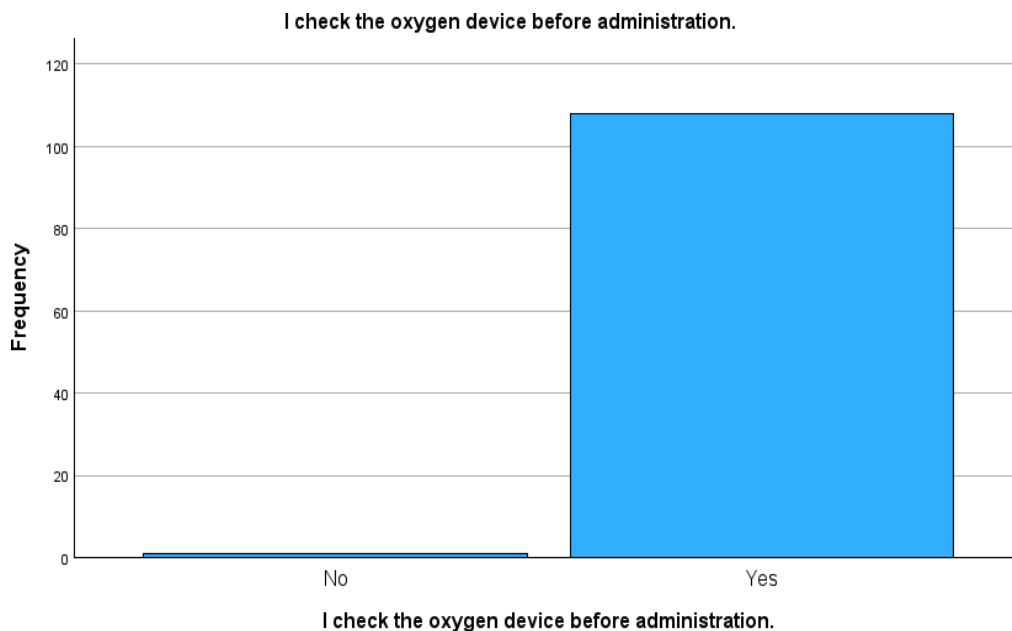


Question #18: I check the oxygen device before administration?

Nearly all respondents (99.1%, n=108) reported checking the oxygen device before administration, while only 0.9% (n=1) did not.

I check the oxygen device before administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	.9	.9	.9
	Yes	108	99.1	99.1	100.0
	Total	109	100.0	100.0	

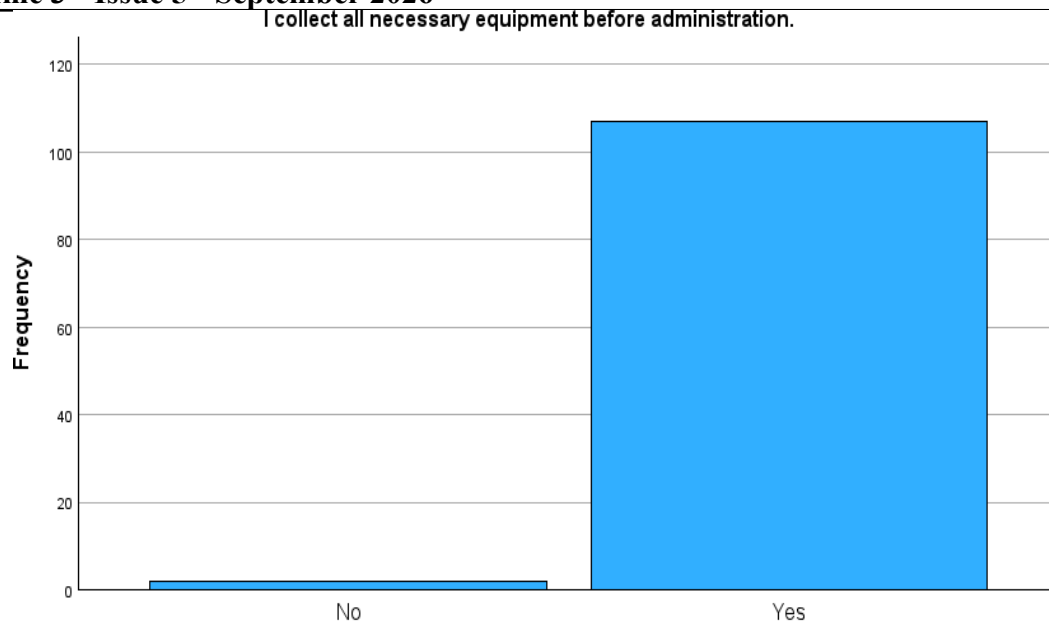


Question # 19: I collect all necessary equipment before administration?

The findings indicate that many participants (98.2%) reported collecting all necessary equipment before administration, while only a very small proportion (1.8%) reported failing to do so.

I collect all necessary equipment before administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	1.8	1.8	1.8
	Yes	107	98.2	98.2	100.0
	Total	109	100.0	100.0	



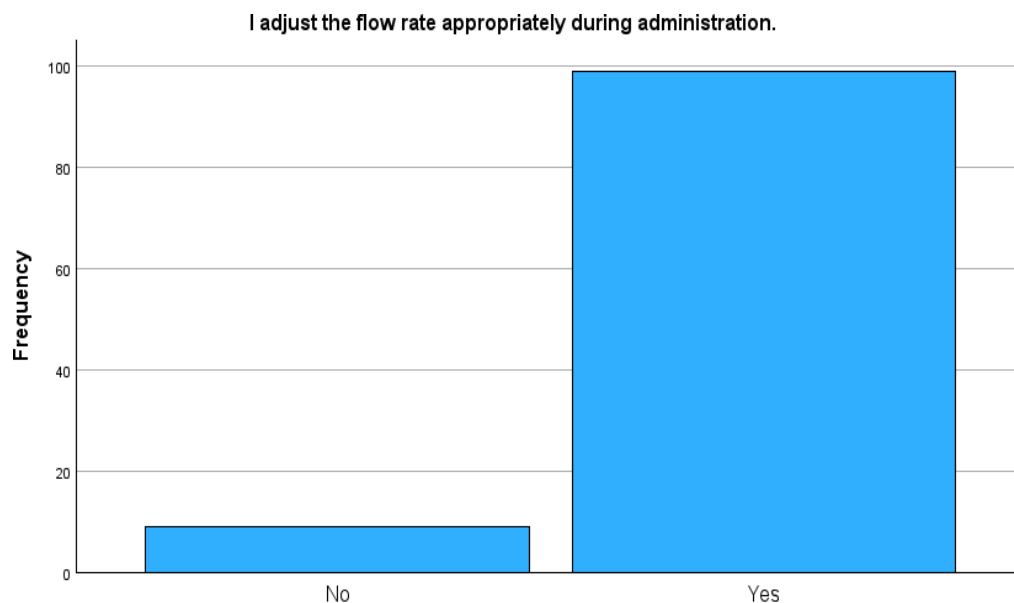
I collect all necessary equipment before administration.

Question # 20: I adjust the flow rate appropriately during administration?

The results show that most participants (91.7%) responded affirmatively, whereas 8.3% gave a negative response.

I adjust the flow rate appropriately during administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	8.3	8.3	8.3
	Yes	100	91.7	91.7	100.0
	Total	109	100.0	100.0	



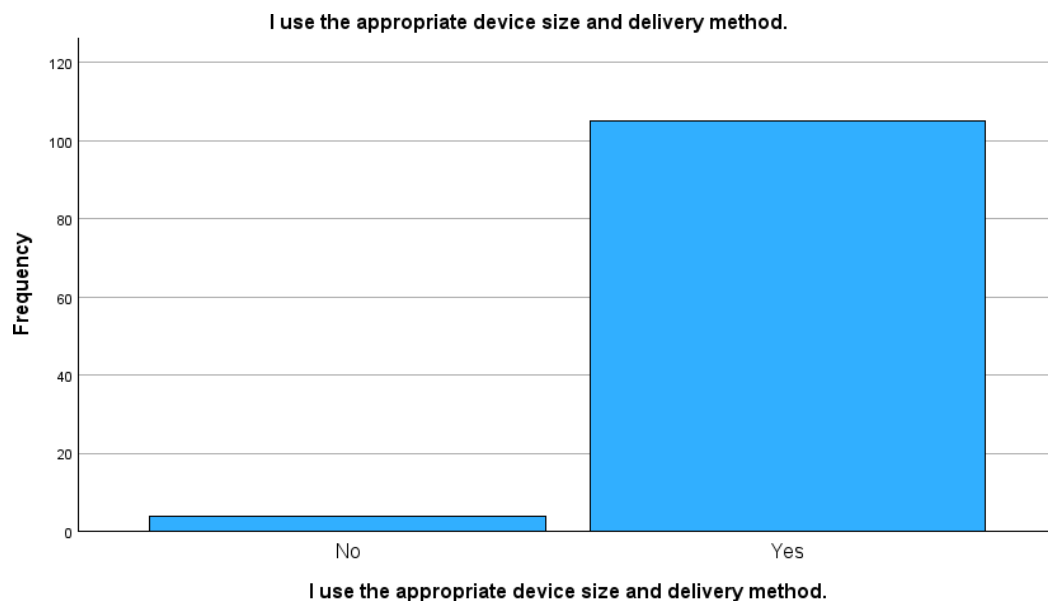
I adjust the flow rate appropriately during administration.

Question #21: I use the appropriate device size and delivery method?

From the data collected from 109 respondents, 96.3% of participants reported using an appropriate device size and delivery method for delivering oxygen, while 3.7% of people responded negatively.

I use the appropriate device size and delivery method.

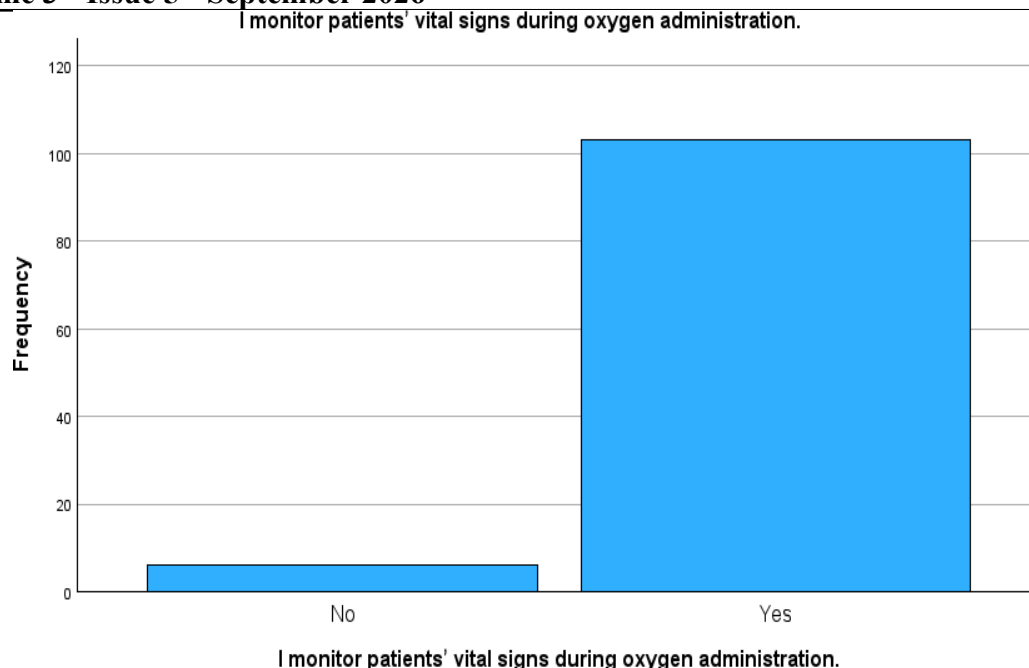
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	4	3.7	3.7	3.7
	Yes	105	96.3	96.3	100.0
	Total	109	100.0	100.0	



Question # 22: I monitor patients' vital signs during oxygen administration? The findings indicate that most participants (94.5%) responded "Yes," while a small proportion (5.5%) responded "No."

I monitor patients' vital signs during oxygen administration.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	5.5	5.5	5.5
	Yes	103	94.5	94.5	100.0
	Total	109	100.0	100.0	



5. Discussion

5.1.1 Overview of the findings:

The current study evaluated the oxygen therapy knowledge, attitudes, and practices of nurses working in critical care units at General Hospital Lahore, Pakistan. Although some knowledge gaps were found, overall results showed solid knowledge, positive attitudes, and outstanding practices. These findings are consistent with previous KAP studies in ICU settings, which also reported generally adequate nursing competence in oxygen therapy management. (Tang et al., 2024)

5.1.2 Knowledge Regarding Oxygen Therapy High Knowledge Levels

The current study showed that a majority of nurses correctly identified the following:

- The recognition of hypoxemia (96.3%)
- Blood gas analysis usefulness (97.2%)
- Oxygen therapy indication for cyanosis (88.1%)

These results are in line with a study by Tang et al. (2024), which found that ICU nurses showed moderate to good knowledge of humidification and oxygen therapy procedures, particularly in monitoring and respiratory assessment.

Similarly, another study conducted in Karachi also reported that nurses working in ICU and emergency departments had generally good

knowledge regarding oxygen therapy use and patient monitoring. (Mirzaei et al., 2023).

However, in the present study, responses regarding asymptomatic anemia as an indication for oxygen therapy were divided (50.5% vs 49.5%), indicating confusion.

These findings contrast with Mirzaei et al. (2023), where ICU nurses showed that lack of knowledge was more strongly associated with incorrect oxygen therapy decisions, highlighting the importance of structured training programs.

5.1.3 Attitude Toward Oxygen Therapy

Our study revealed that a majority of nurses demonstrated a positive attitude toward oxygen therapy. Most participants disagreed that oxygen therapy is dangerous (74.3%) and also disagreed that oxygen therapy indicates end-stage disease (77.1%). This assessment indicates a generally appropriate understanding of oxygen therapy as a therapeutic intervention.

These results align with a study by Kumar et al. (2022), which indicated that 72% of ICU nurses dismissed the notion that oxygen therapy is detrimental, and a comparable percentage acknowledged it as a safe and vital intervention in critical care environments. (Hassanzad et al., 2022)

Similarly, a systematic review and meta-analysis conducted in Ethiopia reported that 55.08% of

Nurses demonstrated a positive attitude toward oxygen therapy, indicating that nearly half of the participants viewed oxygen therapy as a safe and essential intervention when used appropriately. (Demilew et al., 2022).

However, 22.9% of the people who took part in this study thought that oxygen therapy was only for people with end-stage disease. This result indicates a continuing misunderstanding among a small number of nurses about the purpose of oxygen therapy.

Previous nursing studies have also found similar gaps in knowledge and understanding, 38 where differences in attitude and incomplete knowledge about when to use oxygen therapy were found (Tang et al., 2024). The British Thoracic Society says that oxygen therapy should be given based on the patient's oxygen saturation levels and physiological needs, not the stage of the disease or the prognosis. This shows that these ideas are not clinically correct.

5.1.4 Practice Regarding Oxygen Therapy

The current study found that oxygen therapy practices were followed very closely. For example, 97.2% of people checked their SpO₂ levels before giving oxygen, 95.4% checked their levels during treatment, 99.1% checked their oxygen devices, 98.2% gathered the necessary equipment before giving oxygen, and 96.3% used the right device. These results show that nurses in critical care units use safe and standard methods for giving oxygen therapy.

Mirzaei et al. (2023) found similar results, saying that ICU nurses did a good job of managing oxygen therapy, especially when it came to keeping an eye on patients and following clinical protocols. The study also showed that nurses' performance in giving oxygen and keeping patients safe is greatly improved by proper training and following guidelines.

5.2 Conclusion

This study evaluated the knowledge, attitudes, and practices related to oxygen therapy among nurses in critical care units at General Hospital Lahore. The results indicated that nurses possessed a proficient understanding of oxygen therapy, particularly in recognizing hypoxemia and utilizing oxygen monitoring instruments.

In general, nurses had a good attitude toward oxygen therapy and correctly rejected common myths about it, such as that it is dangerous or a sign of end-stage disease. The study also found that clinical practice was very good, with a lot of people following the rules for oxygen therapy, using the right devices, and keeping an eye on oxygen saturation. Nonetheless, certain deficiencies in knowledge were recognized in particular clinical contexts, signifying the necessity for additional enhancement.

5.3 Limitation:

The findings of this study are relatively limited because of the use of a descriptive design and convenient sampling technique. Due to resources shortage, this study was conducted in only one tertiary care hospital. No participatory observations were performed to evaluate the segregation practices. Hence, the external validity of the findings is questionable. One of the main difficulties during research is that we are novices in research.

5.4 Recommendations

It is recommended that regular training and refresher courses should be arranged for nurses to improve their knowledge of oxygen therapy, especially in less common clinical conditions. Hospitals should ensure proper implementation of standardized oxygen therapy guidelines to support safe and evidence-based practices. Continuous supervision and clinical audits should be conducted to maintain high standards of care. Further research should also be conducted in different healthcare settings to strengthen and generalize the findings.

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