

Assessment of Nurse's Knowledge and Practice Regarding Oxygen Therapy at Teaching Hospitals in Al- Nasiriya City\ Iraq

تقييم معارف وممارسات الممرضين فيما يتعلق بالعلاج بالأوكسجين في المستشفيات التعليمية في مدينة الناصرية / العراق

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الخلاصة:

خلفية البحث: يعد العلاج بالأوكسجين الدواء الأكثر شيوعاً في علاج العديد من الأمراض التي تهدد الحياة مثل فشل الجهاز التنفسي ومرض الانسداد الرئوي المزمن وغيرها. خاصة الآن، مع انتشار فيروس كورونا، أصبح الدواء الرئيسي لإنقاذ حياة المرضى ورعايتهم. نتيجة لذلك، الممرضة يجب أن تمتلك مهارات وخبرة كافية لأداء هذا الإجراء بهدف الاستخدام الآمن والحفاظ على حياة المريض وتجنب المضاعفات المرتبطة بطرق إعطاء الأوكسجين غير الصحيحة.

الاهداف: تهدف الدراسة الى تقييم معارف وممارسات الممرضين فيما يتعلق بالعلاج بالأوكسجين في (وحدات الرعاية الحرجة)، (وحدات الطوارئ)، (وحدات الأورام) في مستشفى الحيوبي التعليمي ومستشفى الحسين التعليمي في مدينة الناصرية.

المنهجية: تم اعتماد تصميم بحث وصفي لإجراء هذه الدراسة خلال الفترة من 14 / تشرين الثاني / 2020 إلى 20 / آذار / 2021. وكانت الدراسة هي اختيار عينة هادفة (غير احتمالية) قوامها (60) ممرضا من الممرضين العاملين في (وحدات الرعاية الحرجة)، (وحدات الطوارئ)، (وحدات الأورام) في مستشفى الحيوبي التعليمي ومستشفى الحسين التعليمي في مدينة الناصرية. تم إنشاء استبيان ذاتي الإدارة من قبل الباحث لغرض جمع البيانات المتعلقة بمعارف الممرضين وممارساتهم حول العلاج بالأوكسجين. وهو يتألف من ثلاثة أجزاء: الجزء الأول يحتوي على (12) فقرة تشمل البيانات الديموغرافية، الجزء الثاني: هذا الجزء يتعامل مع معارف الممرضين ويتكون من خمسة مجالات، والجزء الثالث: (قائمة المشاهدات) حول ممارسات الممرضين أثناء إعطاء الأوكسجين، يحتوي على (26) فقرة. بدأت الدراسة بعد طلب الإذن لاستخدام الأداة. تم تحديد صدق أداة الدراسة (الاستبيان) من قبل خبراء، لديهم خبرة أكثر من خمس سنوات في مجالاتهم لتحديد وضوح وكفاية الاستبيان لتحقيق أهداف الدراسة: وهم (8) من أعضاء هيئة التدريس من كلية التمريض / جامعة بغداد، (1) من أعضاء هيئة التدريس من كلية التمريض / جامعة كربلاء، (1) عضو من أعضاء هيئة التدريس من كلية التمريض / جامعة ذي قار، (2) طبيب متخصص في أمراض الصدر و (2) بورد تخدير وعناية مركزة. وقد وضع الاستبيان في صيغته النهائية بعد استخدام الدراسة التجريبية لاختبار الأداة، وكانت نتائج موثوقية الاستبيان هي موثوقية المعارف كانت $r=0.832$ وموثوقية الممارسات من خلال (الملاحظة البينية) كانت $r=0.821$ التي اعتبرتها ضمن النطاق المقبول وكان للاستبيان مستوى كاف من الاتساق الداخلي وقابلية قياس التكافؤ. تم تحليل البيانات من خلال تطبيق البيانات الوصفية والاستدلالية من خلال تطبيق الحزمة الإحصائية لبرنامج العلوم الاجتماعية (SPSS) الإصدار 23.0.

النتائج: تشير تحليل البيانات إلى أن عينة الدراسة قدمت مستوى منخفض من المعارف في جميع المجالات الخمسة المتعلقة ب (المعرفة العامة للعلاج بالأوكسجين ومعارف الممرضين حول نقص الأوكسجين في الدم، دواعي استعمال الأوكسجين في الحالات الطارئة، وصفة الأوكسجين، وممارسات توصيل الأوكسجين). بينما فيما يتعلق بالممارسات، قدمت العينة مستوى منخفض من الممارسات في كلا المجالين (قبل إعطاء العلاج بالأوكسجين وأثناء العلاج بالأوكسجين)، في حين قدمت مستوى معتدل من الممارسات في مجال (التدخلات التمريضية بعد إعطاء العلاج بالأوكسجين).

الاستنتاج: معارف الممرضين وممارساتهم حول العلاج بالأوكسجين كانت غير كافية.

التوصيات: إجراء دورات تدريبية لتحسين أداء الكادر التمريضي على الاستخدام الصحيح للعلاج بالأوكسجين. نوصي الباحثين بإجراء أبحاث مكثفة في المستقبل حول موضوع العلاج بالأوكسجين، بما في ذلك برنامج تعليمي.

الكلمات المفتاحية: تقييم، الممرضين، المعارف، الممارسات، العلاج بالأوكسجين.

ABSTRACT:

Background: Oxygen therapy is considered the most common drug in the treatment of many life-threatening diseases such as respiratory failure, chronic obstructive pulmonary disease, and others. Particularly now, with the spread of the Coronavirus outbreak, it has become the main drug to save the patients' lives and care for them. As a result, the nurse should have more skills and experience to performing this procedure in the aim to maintain the patient's life safe and avoid complications associated with incorrect oxygen administration technique.

Aims of the study: To assess nurses' knowledge and practice regarding oxygen therapy in (critical care units), (emergency units), (oncology units) at Al-Haboby Teaching Hospital and Al-Hussein Teaching Hospital in Al-Nasiriya City.

Methodology: A descriptive research design was adopted to conduct this study during the period from (14 November 2020 to 20 March 2021). The study was purposive (non-probability) sample of (60) nurses who are working in (critical care units), (emergency units), (oncology units) at Al- Haboby Teaching Hospital and Al-Hussein Teaching Hospital in Al- Nasiriya City. A self-administered questionnaire was constructed by the researcher for the purpose of data collection regarding nurse's knowledge and practice about oxygen therapy. It consisted of three parts: **Part I:** Part one contains (12) item including demographic data, **Part II:** This part deals with nurse's knowledge and consists of five domains, and **Part III:** Observational Checklist about nurse's practice during oxygen administration, it contains (26) items. Study began after requested permission to use the tool. The validity of the study instrument (questionnaire) are determined by experts, who have more than five years' experience in their fields to determine the clarity and adequacy of the questionnaire to achieve the study objectives. They are (8) faculty members from College of Nursing / University of Baghdad, (1) faculty members from College of Nursing /University of Karbala, (1) faculty member from College of Nursing /University of Thi-Qar, (2) specialized physician in Thoracic diseases and (2) Board anesthesia & intensive care. The questionnaire

was finalized after the pilot study was used to test the instrument, the results of the reliability for the questionnaire were the reliability of knowledge was $r=0.832$ and the reliability of practice by (intra observation) was $r=0.821$ it considered within the acceptable range and the questionnaires had an adequate level of internal consistency and equivalence measurability. The data were analyzed by applying descriptive and inferential data by application of statistical package for social science program (SPSS) version 23.0.

Results: show that, the study sample was presented a low level of knowledge at all five domains related (general knowledge of oxygen therapy and recognizing hypoxemia, indications for acute oxygen therapy, oxygen prescription, and oxygen delivery practices). While in relation to practice, the sample presented low level of practice at both domains (before administering oxygen therapy and during administering oxygen therapy), while presented moderate level of practice at domain (nursing intervention after administering oxygen therapy).

Conclusion: The nurses' knowledge and practices about oxygen therapy were inadequate.

Recommendations: Conduct training sessions to improve the performance of the nursing staff on the correct use of oxygen therapy. We recommend researchers to do extensive research in the future on the subject of oxygen therapy, including an educational program.

Keywords: Assessment, Nurses, Knowledge, Practice, Oxygen Therapy.

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INTRODUCTION

The application of O₂ as a medical intervention for many medical conditions is known as oxygen therapy. In most cases, determining the need for O₂ is the responsibility of the nurse. O₂ treatment is routinely and independently managed by critical care nurses. Despite the significance of O₂ therapy, there is no data to guide or affirm critical care nurses' O₂ therapy activities ⁽¹⁾.

The word "oxygen therapy" refers to the therapeutic use of supplemental oxygen. It is recommended for patients suffering from severe hypoxemia. It is one of the most popular hospital drugs used in secondary care. It is also an essential component of resuscitation, acute medical treatment, basic life support, anesthesia, and postoperative care, and is known to be an important medication required for hypoxemia management; (PaO₂ less than 60 mm Hg or SaO₂ less than 90 percent) and for others with symptoms of chronic hypoxemia or increased cardiopulmonary workload, it is provided to any patient with suspected or known tissue hypoxia, as well as a variety of other diseases characterized by hypoxic conditions, including a variety of pulmonary and non-pulmonary diseases, for a definitive, supplementary, or palliative role ⁽²⁾.

Oxygen is the medication of choice in life-threatening conditions such as acute myocardial infarction, stroke, cardiac arrest, and certain life-threatening respiratory conditions such as COPD, asthma, congestive heart failure, pulmonary edema, etc. ⁽³⁾.

Oxygen therapy is effective when administered at an appropriate dosage, but, in addition to its therapeutic properties, it has significant adverse side effects when done incorrectly. Hypoventilation, atelectasis, pulmonary oxygen toxicity, retrolental fibroplasia, inflammation, pain, and infection are amongst these adverse effects ^(4,5).

Increased hospital stays length, higher referral rates to high dependency facilities, and an increased risk of death are all the result of inadequate administration of oxygen therapy ⁽⁶⁾. The production of O₂ toxicity is the most adverse consequence of inhaling high concentrations of O₂. It can occur in any patient who breathes more than 50 percent of O₂ for longer than 24 hours ⁽⁷⁾.

Members of the health team play a very curious role while administering oxygen therapy, as it should be delivered in the presence of a doctor or nurse. In this regard, nurses have a very important role because they should monitor patients linked to oxygen therapy carefully and regularly. Initial investigations such as ABG, Hgb, or Hct, and An X-ray of the

chest should be taken on a regular basis and evaluated carefully based on a physician's recommendation. PR, BP, RR, level of consciousness, and pulse oximetry must all be monitored. The nurses should be aware of the physician's prescription for oxygen therapy and check it in, which should include an indication, target oxygen level, oxygen delivery system, range of oxygen flow or percentage of inspired oxygen, and when oxygen is to be administered. The doctor should also sign and date the prescription ⁽⁸⁾.

AIMS OF THE STUDY

To assess nurses' knowledge and practice regarding oxygen therapy in (critical care units), (emergency units), (oncology units) at Al-Haboby Teaching Hospital and Al-Hussein Teaching Hospital in Al-Nasiriya City.

METHODOLOGY

A descriptive research design was adopted to conduct this study. The study was purposive (non-probability) sample of (60) nurses who are working in (critical care units), (emergency units), (oncology units) at Al- Haboby Teaching Hospital and Al-Hussein Teaching Hospital in Al- Nasiriya City. For the present study, a questionnaire was conducted by the researcher depending on extensive review of available related literature and studies about oxygen therapy. It consisted of three parts:

Part I: contains (12) item about demographic data which includes: age, gender, Area of work (unit), the category of profession, number of years of active service in nursing, number of years of active service in (units), participate in an oxygen therapy training course, the number of Sessions, course duration, course place, updating information on the topic of oxygen therapy, and sources of information).

Part II: This part deals with nurse's knowledge and consists of five domains which include: general knowledge of oxygen therapy, recognizing hypoxemia & tissue hypoxia, indications for oxygen therapy, oxygen prescription, and oxygen delivery practices. The questionnaire which adopted from scale (Desalu) (6), Study on the scale began after requested the permission to use the tool.

- The questions were rated and score with (1) True and (0) False. therefore, the mean of score of the level of knowledge explained by the following:

- = (0.50 \geq) Low level
- = (0.75-0.51) Moderate Level
- 0.76)and more) = High Level.

Part III: Observational Checklist about Nurse's Practice during Oxygen Administration: To evaluate the nurse's practices during oxygen administration, the researcher observes and checks for correct or incorrect performance, by using an assessment tool (observational checklist), which adopted from (Browne) (9), it was used by the researcher to assess nursing care for patients before, during and after administering oxygen therapy. It contains (26) items as follows; 8 items should be done before administration of oxygen therapy, 13 items should be done during the administration of oxygen therapy, and 5 items should be done after administration of oxygen therapy.

- The items were rated and score with (3) for correct done, (2) for incorrect done and (1) for not done. therefore, the mean of score of the level of practice explained by the following:

- (1-1.66) = Low Level
- = (2.33-1.67) Moderate Level
- = (3.00-2.34) High Level

The study began after requested permission to use the tool. The validity of the study instruments (questionnaire) are determined by experts, who have more than five years'

experience in their fields to determine the clarity and adequacy of the questionnaire to achieve the study objectives. The questionnaire was finalized after the pilot study was used to test the instrument, The reliability of the internal consistency was estimated by determining of the Pearson correlation were the reliability of knowledge was $r=0.832$ and the reliability of practice by (intra observation) was $r=0.821$ it considered within the acceptable range and the questionnaires had an adequate level of internal consistency and equivalence measurability.

RESULTS:

Table (1): Distribution of the critical care units, oncology and emergencies Nurses by Demographic Characteristics of the study sample (N= 60 Nurses)

Demographic Characteristics	Variables	Study sample (n=60)	
		F	%
Age group (Years)	20 – 29 years	46	76.7
	30 – 39 years	9	15.0
	40 – 49 years	5	8.3
Gender	Male	16	26.7
	Female	44	73.3
Area of work (unit)	Critical care units	42	70.0
	Emergency	8	13.3
	Oncology	10	16.7
Your category of profession	Secondary Nursing School	24	40.0
	Nursing institute	21	35.0
	Nursing College	15	25.0
Number of years of active service in nursing	1 – 3 years	18	30.0
	3 – 6 years	27	45.0
	6 – 9 years	5	8.3
	>= 10 years	10	16.7
Number of years of active service in (units)	1 – 3 years	37	61.7
	3 – 6 years	14	23.3
	6 – 9 years	3	5.0
	>= 10 years	6	10.0
Participate in an oxygen therapy training course?	Yes	12	20.0
	No	48	80.0
If the answer is yes to participate, Select the number of Sessions	One	8	13.3
	two or more	4	6.7
	Never	48	80.0
study Course duration	2 weeks	4	6.7
	1 month	4	6.7
	2 months or more	4	6.7
	not participate	48	80.0
Course place	inside Iraq	12	20.0
	not participate	48	80.0
Do you take the task of updating your information on the topic of oxygen therapy	Yes	13	21.7
	No	47	78.3
If yes / select sources of information	Online (social networking sites)	5	8.3
	Colleagues	5	8.3
	Nursing and medical books	3	5.0
	No	47	78.3

Table (1) shows there were 60 nurses were included, the high percentage (76.7%) of nurses are within the age group (20-29 years) and more than two-thirds (73.3%) of nurses are females.

Figure (1): Level of Nurse's Knowledge and Practice Regarding Oxygen Therapy

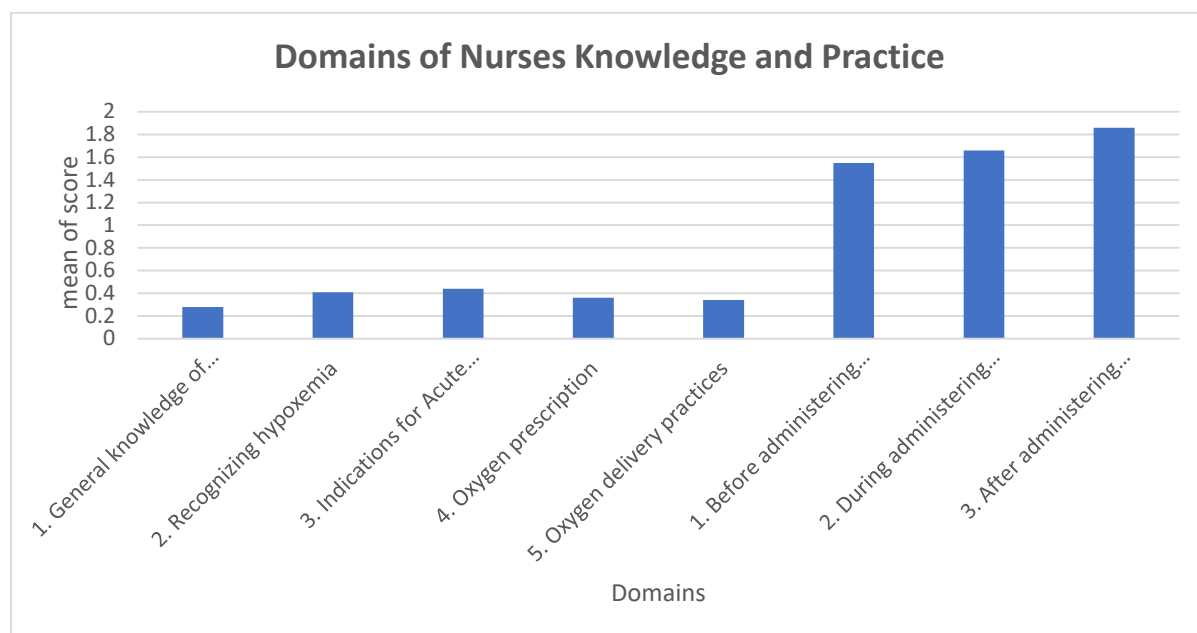


Figure (1) shows that mean of score 0.5 for knowledge and mean of score 2 for practice

Table (2): Level of Nurse's Knowledge Regarding Oxygen Therapy at (critical care units), (emergency units), (oncology units).

Domains of nurse`s Knowledge toward Oxygen Therapy	Study sample (N=60)		
	M.S	S.D.	Ass.
1. General knowledge of oxygen therapy	0.28	0.917	L
2. Recognizing hypoxemia	0.41	1.346	L
3. Indications for Acute Oxygen Therapy	0.44	1.212	L
4. Oxygen prescription	0.36	0.947	L
5. Oxygen delivery practices	0.34	1.073	L

M. S= mean of score, S. D=Standard Deviation, Ass=level of assessment: (Less than 0.50) = Low level, (0.51-0.75) = Moderate Level, (0.76and more) = High Level.

Table (2) analysis of data shows that, the study sample was presented a low level of knowledge at all five domains related (general knowledge of oxygen therapy and recognizing hypoxemia, indications for acute oxygen therapy, oxygen prescription, and oxygen delivery practices).

Table (3): Level of Nurse's Practice Regarding Oxygen Therapy at (critical care units), (emergency units), (oncology units).

Domains of Practice	Study sample (N=60)		
	M.S	S.D.	Ass.
1. Before administering oxygen therapy	1.55	1.749	L
2. During administering oxygen therapy	1.66	2.599	L
3. After administering oxygen therapy	1.86	1.145	M

M. S= mean of score, S. D=Standard Deviation, Ass=level of assessment, Level of assessment:(1-1.66) = Low; (1.67-2.33) = Moderate; (2.34-3.00) = High.

Table (3) shows the study sample were presented low level of practice at both domains before administering oxygen therapy and during administering oxygen therapy), while presented moderate level of practice at domain (nursing intervention after administering oxygen therapy).

DISCUSSION

Table (1) in the present study there were 60 nurses were included, the high percentage (76.7%) of nurses are within the age group (20-29 years) and more than two-thirds (73.3%) of nurses are females. Two-fifth of nurses graduated from secondary nursing school and working in Critical care units. More than two-fifth (45%) of the nurses have (3-6) years of active service in nursing. In addition, this study reported that the majority (80.0%) of the studied sample had not attended any previous training course, in my opinion, the reason for this may be that the hospitals lack to education program (Table 1).

These findings are in the same line with the previous study⁽¹⁰⁾ who mentioned that, the majority (88%) of the studied sample was female and one-half (50%) of them their age ranged between 20 to 30 years. Also, another study⁽¹¹⁾ indicated that most of the studied nurses had 20 years and less than 30 years (86.0%). As regard years of experience about half of them had three to five years of experience (46.0%). More than half of the studied nurses said that they did not have any previous training courses.

Figure (1) show that mean of score 0.5 for knowledge and mean of score 2 for practice.

Table (2) analysis of data shows that, the study sample was presented a low level of knowledge at all five domains related (general knowledge of oxygen therapy and recognizing hypoxemia, indications for acute oxygen therapy, oxygen prescription, and oxygen delivery practices) (Table 2). This result was supported by Abd Alla⁽¹²⁾ who revealed that more than half (57.1%) of nurses had fair knowledge of the definition of oxygen therapy, (14.3%) had a good knowledge, the majority (84.3%) of nurses had poor knowledge about the indication of oxygen therapy, and (7.1%) had good knowledge about that. In addition to⁽¹³⁾ illustrates that the level of knowledge of the nurses regarding oxygen therapy has lower than expected and their knowledge is particularly inadequate in terms of oxygen therapy application methods.

Table (3) in our study, the study sample were presented low level of practice at both domains before administering oxygen therapy and during administering oxygen therapy), while presented moderate level of practice at domain (nursing intervention after administering oxygen therapy) (Table 3). These results were supported by⁽¹⁰⁾ who stated that, only (18.7%) of the sample studied had completed all nursing interventions before administering oxygen therapy completely. These results are similar to those of⁽¹⁴⁾ evaluating adherence to oxygen therapy by nurses in Neonatal Intensive Care Units (NICU), the results reveal that, the observance of the standards before oxygen therapy in (90%) of cases was poor. In addition, (84%) of them had moderate performance during o2 therapy and (99.2%) had poor performance after oxygen therapy. Also,⁽¹⁵⁾ which assess models of awareness, beliefs and practice regarding oxygen therapy in pre-hospital management of respiratory emergencies among EMS professionals in Pune / India, reported that most of the respondents (76.2) were not clear on the nursing care provided during oxygen therapy.

This result was supported by⁽¹⁶⁾ who said that a remarkable finding related to the questions about assessment before oxygen administrations were only (29.2%) and for special monitoring patient response. which is to follow the oxygen administration protocol only (12.3%) were managed to provide good response.

CONCLUSIONS

The nurses' knowledge and practices about oxygen therapy were inadequate.

RECOMMENDATIONS:

1. Conduct training sessions to improve the performance of the nursing staff on the correct use of oxygen therapy.
2. We recommend researchers to do extensive research in the future on the subject of oxygen therapy, including an educational program.
 - **Ethical Clearance:** All experimental protocol was approved under the College of Nursing, University of Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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