Nurses' Knowledge and Skills regarding Oxygen Administration Methods at Pediatric Teaching Hospitals in Mosul City

معارف ومهارات الممرضيين فيما يتعلق بطرائق إعطاء الأوكسجين في المستشفيات التعليمية للأطفال في مدينة الموصل

Mohammed Ahmed Sultan Al-Wily, PhD*

Afifa Radha Aziz, PhD**

*** Instructor, Pediatric Nursing, department College of Nursing, University of Mosul, e-mail: mohammed.ahmed@uomosul.edu.iq**

**** Professor, Pediatric Nursing, , department College of Nursing, University of Baghdad, e-mail: afifa50@yahoo.com**

المستخلص

الهدف: تقييم مستوى معارف والمهارات المتعلقة بطرائق إعطاء الأوكسجين في المستشفيات التعليمية للأطفال في مدينة الموصل.

المنهجية: تم تطبيق دراسة وصفية في المستشفيات التعليمية للأطفال (مستشفى الخنساء ومستشفى ابن الأثير) في مدينة الموصل من 8 أكتوبر 2018 حتى 29 مايو 2019. اختيار العينة كان غير احتمالية (مقصودة). اشتملت هذه العينة على (52) ممرض وممرضة. حيث تم إنشاء الاستبيان الذي يتكون من ثلاثة أجزاء. تم تنفيذ صلاحية الاستبيان من خلال لجنة من الخبراء. بينما تم تقييم موثوقية الأستبانة إحصائيًا ، حيث تم تطبيق الدراسة التجريبية خلال الفترة من 20– حتى -31 يناير / 2019.تم اختيار الممرضيين بطريقة غير العشوائيات وعددهم (6) من مستشفى ابن سينا التعليمي ، ارتباط معامل بيرسون ($r = 0.798$) وهي مهمة عند مستوى $p \leq 0.05$ تم استخدامها لتقريب المقياس (اختبار - إعادة اختبار) باستخدام SPSS الإصدار 25.

النتائج: اظهرت نتائج الدراسة ان المعرفة والمهارات للممرضيين فيما يتعلق بطرائق اعطاء الأوكسجين للأطفال ، وأن نتائج المعرفة هي 84.6٪ (44) منهم بمستوى غير مقبول ، ونتائج المهارات 65.4٪ (34) منهم أيضًا بمستوى غير مقبول . حيث لا توجد علاقات ذات دلالة إحصائية بين نتائج المعرفة والمهارات وجميع المتغيرات الديموغرافية ماعدا المهارات مع الدورات التدريبية فقط توجد علاقات ذات دلالة عند $p \leq 0.05$.

التوصيات: دورة تدريبية وورش عمل للممرضيين في المستشفيات التعليمية حول طرائق اعطاء الأوكسجين

الكلمات المفتاحية: معارف الممرضيين، مهارات ، طرق إعطاء الأوكسجين

Abstract

Objective: To assess knowledge and skills level regarding oxygen administration methods at p

ediatric teaching hospitals in Mosul City.

Methodology: A descriptive study was applied at pediatric teaching hospitals (Al-Kansaa, and Ibn Al-Atheer) in Mosul City from 8 of October / 2018 till 29 of May / 2019. The selection of the sample was non- probability (Purposive). This sample involved of (52) nurses. The questionnaire was constructed which consists of three parts and provided for nurses. The questionnaire validity was carried out through a panel of experts. To evaluate statistically the reliability of instruments, the pilot study was applied through period from 20– till –31 of January / 2019. Non-randomly (6) nurses from Ibn Sina teaching hospitals, the correlation of Pearson's coefficient result are ($r= 0.798$) and are significant at $p \leq 0.05$ level was used to approximation the scale (test – retest) by using SPSS version 25.

The Result show statistical knowledge and skills results for nurse's in concerning the oxygen administration methods for pediatric, that knowledge results are 84.6% (44) of them at not acceptable level, and the skills results are 65.4 % (34) of them also at not acceptable level. There are not significant relationships between the knowledge, skills results and all the demographic variables except the skills results with training courses only there are significant relationships at $p\leq 0.05$.

Recommendations: Training course and workshops for nurses of teaching hospitals regarding oxygen administration methods

Keywords: Nurses' knowledge, Skills, Oxygen Administration Methods.

Introduction

Oxygen could also be a colorless, odorless, boring gas that is utilized by body for breath, gas has contended a significant half in metastasis care, and effective in treating low level of oxygen in the body however is usually thought of as a form treatment, when varied an extended time of belief, we've got learned an awe-inspiring cut-price of the advantages and potential likelihood of this capable drug, nowadays gas is affordable, broadly speaking accessible, and simple to manage , gas conveyance gadgets shift in taken a toll from a variety of cents for a simple nasal tubing to $25-$50 for a number of humidified frameworks[(1)].

The strategy for administration of oxygen that gives at concentrations higher than gas in the environment, moreover the oxygen moves forward metabolism of cellular and progresses the cardiopulmonary work, at clinical settings, oxygen ought to be considered as a medicine; in this way, prudent measures must be checked amid oxygen administration management [(2; 3)]

The supplied oxygen usually with the aid of a number of methods, mask grants greater oxygen awareness than cannula, nasal cannula gives low average oxygen awareness (22% - 40%), oxygen tent helps in achievement of decrease oxygen attention (Fi O2 up to 0.3 – 0.5), oxygen hood helps in achieving high oxygen concentration (Fi O2 up to 1.00), the mode of transport is chosen on the basis of the attention needed and the child's ability to cooperate in its use, the awareness of oxygen delivered be regulated in accord to the child's requirements[(4;5;6)]

The Importance of the Study:

The administration oxygen remedy is the most necessary element of supportive care in the management of a significantly ill child, and modalities of remedy for youth with hypoxemia and hypoxia to forestall death, the pediatric nurses' knowledge, exercise and abilities of oxygenation is a key to the desirable oxygen therapy, toddler Patient on oxygen therapy wishes close monitoring and observation, generally about Five million children die each 12 months in the world, that 98% of the deaths in the producing states result from oxygen mismanagement that neonatal more loss of life is due to asphyxia, deficiency or misuse of oxygen with the children (20%) [(7)].

Every year, above than 5.9 million usually die at early stages of life furthermost from illnesses that topically simply to curable, 95% of them in developing countries, low level of oxygen is the core motive of death in pediatric at age below 5 years that usually accountable for greatest of 18% of all die in this stage [(8; 9)].

The Objectives of the Study:

1. To assess the nurses' knowledge levels regarding oxygen administration methods at pediatric teaching hospitals in Mosul City.

2. To measure the nurses' skills levels regarding oxygen administration methods at pediatric teaching hospitals in Mosul City.
3. To find out the relationships between the socio-demographic variables and the nurses' knowledge level and skills regarding oxygen administration methods at pediatric teaching hospitals in Mosul City

Material and Methods:

Design of the study: A descriptive study was carried out at pediatric teaching hospitals in Mosul City to assess the teachers' knowledge level and skills regarding oxygen administration methods 8 of October / 2018 till 29 of May / 2019.

Sample of the study: the selection of the sample was using the non-probability (Purposive) sample that chosen for the current study. The study sample consisted of (52) nurses, (26) nurses working in the Al-Kansaa Teaching Hospital and (26) nurses working Ibn Al-Atheer Teaching Hospital from Mosul City.

Study tool: The questionnaire was constructed and provided for nurses to assess the knowledge and skills which consists of three parts. The first part concerns the demographic information, while another part was contained the nurses' knowledge regarding oxygen administration methods and contains five sections. The last third part was contained the nurses' skills regarding oxygen administration methods and contains five sections. The estimate evaluation of the nurses' knowledge and skills are failure = (0-1) answer knowledge score, not acceptable = (2) answer knowledge score, acceptable = (3) answer knowledge score, good = (4) answer knowledge score, Excellent = (5) answer knowledge score. But the estimate for total knowledge and skills are failure = (0-5) answer knowledge score, not acceptable = (6-10) answer knowledge score, acceptable = (11-15) answer knowledge score, good = (16-20) answer knowledge score, excellent = (21-25) answer knowledge score.

Validity of the study: The validity of the questionnaire tool was established through a panel of experts whom specified the content clarity, relevancy, and adequacy.

Reliability of the study: To evaluate statistically the reliability of instruments (the questionnaire tool), the pilot study was carried out during the period from 20– till –31 of January / 2019. Non-randomly (10) nurses from pediatric teaching hospitals in Mosul City (this sample was excluded from the original study sample).The Pearson's coefficient of correlation result are (r= 0.798) and are significant at $p \leq 0.05$ level was used to estimate the scale (test – retest) by using SPSS version 25

Data collection: The data were collected from pediatric teaching hospitals in Mosul City. The study sample consisted of (52) nurses, (26) nurses working in the Al-Kansaa Teaching Hospital and (26) nurses working Ibn Al-Atheer Teaching Hospital, the period from 11 of March – till – 26 of April / 2019.

Ethical Considerations

The Institutional Review Board (IRB) at the University of Baghdad, College of Nursing approved the study to be conducted. The study protocol meets both the global & the Committee on Publication Ethics(COPE) standards of respecting humans subjects' rights.

Results:

Table (1): The Demographic Variables of the Respondents in the Study

	Demographic Variables	Items	F.	%
1.	Age	(20-29)	**23**	**44.2**
		(30-39)	27	51.9
		(40-49)	2	3.8
		(50-59)	0	0.0
2.	Gender	Male	25	48.1
		Female	**27**	**51.9**
3.	Level of education	School Stage	1	1.9
		Junior Stage	14	26.9
		Institute Stage	**19**	**36.5**
		Graduate Stage	14	26.9
		Master Stage	4	7.7
4.	General employments period	(1-5)	**20**	**38.5**
		(6-10)	16	30.8
		(11-15)	13	25.0
		(16-20)	2	3.8
		(21-25)	1	1.9
5.	The period in the current unit	(1-5)	**35**	**67.3**
		(6-10)	14	26.9
		(11-15)	2	3.8
		(16-20)	1	1.9
6.	Training courses	No	**35**	**67.3**
		Yes	17	32.7
7.	Reading Source	No	**34**	**65.4**
		Yes	18	34.6
	The Total		**52**	**100.0**

F. =Frequency, %=Percentage

The table (1) presents the demographic characteristics of the study sample, that 51.9% (27) of the sample at age (30-39), 51.9% (27) of the sample are female, 36.5% (19) of the sample at institute stage of educational level, 38.5% (20) of the sample at (1-5) years of general employments period, 67.3% (35) of the sample at (1-5) years of the period in the current unit, 67.3% (35) of the sample not having training courses related to study subject, and 65.4 % (34) of the sample not having reading source

Table (2): Statistical Knowledge Results for Nurse's in Concerning the Oxygen Administration Methods for Pediatric

	Knowledge	Estimate	F.	%
1.	General knowledge and purpose or aim of use	Fail	1	1.9
		Not Acceptable	**23**	**44.2**
		Acceptable	25	48.1
		Good	3	5.8
		Excellent	0	0.0
2.	The normal values and nursing consideration	Fail	**37**	**71.2**
		Not Acceptable	14	26.9
		Acceptable	1	1.9
		Good	0	0.0
		Excellent	0	0.0
3.	The clinical manifestation of the children during oxygen administration	Fail	19	36.5
		Not Acceptable	**27**	**51.9**
		Acceptable	6	11.5
		Good	0	0.0
		Excellent	0	0.0
4.	Influencing factors and methodology for selecting the appropriate method	Fail	**38**	**73.1**
		Not Acceptable	12	23.1
		Acceptable	2	3.8
		Good	0	0.0
		Excellent	0	0.0
5.	The oxygen humidification and complications of oxygen using	Fail	19	36.5
		Not Acceptable	**30**	**57.7**
		Acceptable	3	5.8
		Good	0	0.0
		Excellent	0	0.0
	The Total		**52**	**100.0**

Failure = (0-1) answer knowledge score, **Not acceptable** = (2) answer knowledge score, **Acceptable** = (3) answer knowledge score, **Good** = (4) answer knowledge score, **Excellent** = (5) answer knowledge score. **F**=Frequency, **%**= percentage

The table (2) shows the statistical knowledge results for nurse's in concerning the oxygen administration methods for pediatric, that general knowledge and purpose or aim of use are 44.2% (23) of them at not acceptable level. The normal values and nursing consideration are 71.2% (37) of them at fail level. The clinical manifestations of the children during oxygen administration are 51.9% (27) of them at not acceptable level. The Influencing factors and methodology for selecting the appropriate method are 73.1% (38) of them at fail level. The oxygen humidification and complications of oxygen using are 57.7 % (30) of them at not acceptable level.

Table (3): Statistical Skills Results for Nurse's in Concerning the Oxygen Administration Methods for Pediatric

	Skills	Estimate	F.	%
1.	Face mask procedure	Fail	**36**	**69.2**
		Not Acceptable	14	26.9
		Acceptable	2	3.8
		Good	0	0.0
		Excellent	0	0.0
2.	Nasal cannula procedure	Fail	24	46.2
		Not Acceptable	**26**	**50.0**
		Acceptable	2	3.8
		Good	0	0.0
		Excellent	0	0.0
3.	Tracheostomy procedure	Fail	22	42.3
		Not Acceptable	**24**	**46.2**
		Acceptable	6	11.5
		Good	0	0.0
		Excellent	0	0.0
4.	Continuous Positive Airway Pressure (CPAP) procedure	Fail	**37**	**71.2**
		Not Acceptable	15	28.8
		Acceptable	0	0.0
		Good	0	0.0
		Excellent	0	0.0
5.	The amount of oxygen flow and it's complications	Fail	**31**	**59.6**
		Not Acceptable	19	36.5
		Acceptable	2	3.8
		Good	0	0.0
		Excellent	0	0.0
	The Total		**52**	**100.0**

Failure = (0-1) answer knowledge score, **Not acceptable** = (2) answer knowledge score, **Acceptable** = (3) answer knowledge score, **Good** = (4) answer knowledge score, **Excellent** = (5) answer knowledge score. **F**=Frequency, **%**= percentage

The table (3) presents the statistical skills results for nurse's in concerning the oxygen administration methods for pediatric. That the facemask procedure are 69.2% (36) of them at Fail level, the nasal cannula procedure in pre-test are 50.0% (26) of them at not acceptable, the tracheostomy procedure are 46.2% (24), the continuous positive airway pressure (CPAP) procedure are 71.2 % (37), lastly the amount of oxygen flow and it's complications are 59.6% (31) of them at fail level.

Table (4): Statistical Total Knowledge and Skills Results for Nurses in Concerning the Oxygen Administration Methods for Pediatric

	Items	Estimate	F.	%
1.	Knowledge	Fail	5	9.6
		Not Acceptable	**44**	**84.6**
		Acceptable	3	5.8
		Good	0	0.0
		Excellent	0	0.0
2.	Skills	Fail	18	34.6
		Not Acceptable	**34**	**65.4**
		Acceptable	0	0.0
		Good	0	0.0
		Excellent	0	0.0
	The Total		**52**	**100.0**

Failure = (0-5) answer knowledge score, **Not acceptable** = (6-10) answer knowledge score, **Acceptable** = (11-15) answer knowledge score, **Good** = (16-20) answer knowledge score, **Excellent** = (21-25) answer knowledge score. **F**=Frequency, **%**= percentage

The table (4) shows the statistical total knowledge and skills results for nurses in concerning the oxygen administration methods for pediatric. The knowledge results are 84.6% (44) of them at not acceptable level, and the skills results are 65.4 % (34) of them also at not acceptable level.

Table (5): Statistical Relationships of Nurses between the Demographic Variables with Results of the Knowledge and Skills

	The Demographic Variables	Knowledge		Skills	
		P.value	Sig.	P.value	Sig.
1.	Age	0.46	NS	0.712	NS
2.	Gender	0.17	NS	0.844	NS
3.	Level of education	0.23	NS	0.36	NS
4.	General employments period	0.72	NS	0.77	NS
5.	The period of working in the current hospital	0.53	NS	0.45	NS
6.	Training courses	0.8	NS	**0.05**	**S**
7.	Reading Source	0.21	NS	0.46	NS

Relationship is significant at P.value ≤ 0.05 level, NS= Non Significant, S=Significant

The Table (5) presents the statistical relationships of nurses between the demographic variables with results of the knowledge and skill. There are not significant relationships between the knowledge results and all the demographic variables, but there are significant relationships between the skills results and Training courses only and not significant relationships with other the demographic variables at P.value ≤ 0.05 level

Discussion

Part (1): The Demographic Variables of the Respondents in the Study

The table (1) presents the demographic characteristics of the study sample, that 51.9% (27) of the sample at age (30-39), 51.9% (27) of the sample are female, 36.5% (19) of the sample at institute stage of educational level, 38.5% (20) of the sample at (1-5) years of general employments period, 67.3% (35) of the sample at (1-5) years of the period in the current unit, 67.3% (35) of the sample not having training courses related to study subject, and 65.4 % (34) of the sample not having reading source.

In a study conducted in Vidarbha Region to assess the effectiveness of Self Instructional Module (SIM) on knowledge regarding life style modification among Myocardial Infarction patients admitted in selected hospitals that find that 38.4% were from age group of 35-45 years, 53.3% were male.41.7% of the subject were secondary and graduates, 38.3% of subjects were doing the government job([10]).

Part (2):

1. **Statistical Knowledge Results for Nurse's in Concerning the Oxygen Administration Methods for Pediatric**

The table (2) shows the statistical knowledge results for nurse's in concerning the oxygen administration methods for pediatric, that general knowledge and purpose or aim of use are 44.2% (23) of them at not acceptable level. The normal values and nursing consideration are 71.2% (37) of them at fail level. The clinical manifestations of the children during oxygen administration are 51.9% (27) of them at not acceptable level. The Influencing factors and methodology for selecting the appropriate method are 73.1% (38) of them at fail level. The oxygen humidification and complications of oxygen using are 57.7 % (30) of them at not acceptable level. In a study conducted in Nellore to assess the knowledge regarding paediatric oxygen administration done by and nursing students at narayana medical college and general hospital that shows among 30 sample of nursing students 5 (16.7%) have inadequate knowledge, 15 (50%) have moderately adequate knowledge regarding and, 10 (33.3%) have adequate knowledge regarding pediatric oxygenation([11]).

2. Statistical Skills Results for Nurse's in Concerning the Oxygen Administration Methods for Pediatric

The table (3) presents the statistical skills results for nurse's in concerning the oxygen administration methods for pediatric. That the facemask procedure are 69.2% (36) of them at fail level, the nasal cannula procedure in pre-test are 50.0% (26) of them at not acceptable, the tracheostomy procedure are 46.2% (24), the continuous positive airway pressure (CPAP) procedure are 71.2 % (37), lastly the amount of oxygen flow and it's complications are 59.6% (31) of them at fail level. In a study conducted in Riyadh to assessment of knowledge, attitude and practice regarding oxygen therapy at emergency departments that shows and conclude in the study was practices 4.55±1.76, the main factors which were associated with poor practice were workload and lack of local guidelines[12].

3. Statistical Total Knowledge and Skills Results for Nurses in Concerning the Oxygen Administration Methods for Pediatric

The table (4) shows the statistical total knowledge and skills results for nurses in concerning the oxygen administration methods for pediatric. The knowledge results are 84.6% (44) of them at not acceptable level, and the skills results are 65.4 % (34) of them also at not acceptable level. In a study conducted in UTHK to assess knowledge, attitudes and practice among nurses toward oxygen administration to the critically ill patients that shows among 73.8 % of the nurses' sample had a level of knowledge classifiable as poor, 21.1% moderate and 3.1% good. Also that explained that nurses' sample had in adequate nurses' knowledge regarding oxygen administration[13].

Part (3): Statistical Relationships of Nurses between the Demographic Variables with Results of the Knowledge and Skills

The Table (5) presents the statistical relationships of nurses between the demographic variables with results of the knowledge and skill. There are not significant relationships between the knowledge results and all the demographic variables, but there are significant relationships between the skills results and Training courses only and not significant relationships with other the demographic variables at P.value $\leq$ 0.05 level. In a study conducted in Vidarbha Region to assess the effectiveness of Self Instructional Module (SIM) on knowledge regarding life style modification among myocardial infarction patients admitted in selected hospitals that explains in his study there was non-significant association between ages, gender, with the result of the study[10].

Recommendations:

According to the results and conclusion of the present study, the researcher recommends the following:

1. Ministry of health, Nineveh Health Directorate to enhance future policies and interventions aimed at understanding, assisting and supporting children with oxygen administration
2. Increasing the number of nurses especially those who hold Bachelor degree in nursing to work at pediatric teaching hospitals for their ability and background.
3. Training course and workshops for nurses of the pediatric teaching hospitals in Mosul city regarding oxygen administration methods
4. The head nurses of the pediatric department an application of educational posters in nurse's office related to oxygen administration methods for increasing knowledge and skills of the nurses.

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