AJPMHS GLOBAL RESEARCH NETWORK

AMERICAN Journal of Pediatric Medicine and Health Sciences
Volume 2, Issue 5, 2024 ISSN (E): 2993-2149

Assessment of Nurses' Knowledge about Umbilical Cord Care for Neonates in Neonatal Intensive Care Units

Sabreen Sabeeh Yousif
MSN, Pediatric Nursing Department, College of Nursing, University of Baghdad, Babylon, Iraq

Suad Hassoon Khudhair
Ph.D., Assist. Professor, Pediatric Nursing Department, College of Nursing, University of Baghdad, Babylon, Iraq

Abstract: Background: The umbilical cord is a coiled tube that stretches from the baby's belly button to the placenta, containing two arteries and one vein. It supports optimal development and is crucial for nurses to provide care. Specialized training in neonatal intensive care is better suited for treating complex illnesses like umbilical cord infections. Nurses must also be aware of potential complications and comorbidities and collaborate effectively with other healthcare professionals. Proper cord care is essential for newborns' health and growth trajectory, with a 3-5% prevalence in developing countries.

Objective(s): This study aims to assess nurses' knowledge about umbilical cord care for Neonates.

Methodology: A quantitative approach using a descriptive-analysis design was used in the present study in order to assess nurses' knowledge about umbilical cord care for Neonates.. The period of the study was from January 13th, 2024 to May 13th, 2024. A questionnaire was completed by 64 nurses staff from Welfare Teaching Hospital and Central Teaching Hospital of Pediatric. The sample consisted of 50 nurses.

Results: A study was conducted on 64 nurses staff at Welfare Teaching Hospital and Central Teaching Hospital of Pediatric. The questionnaire included 8 items related to gender, age, education, marital status, years of experience, and updated information about umbilical cord care for neonates. A study of nursing participants found that 70% were female and young, with a diverse educational background. Most had 1-2 years of experience, indicating they were relatively new to the profession. Most had up-to-date knowledge about umbilical cord care, but 32% lacked current information. The study found no significant correlation between knowledge levels and gender or hospital experience, but a positive correlation was noted with age and NICU experience. Marital status also correlated positively.

Conclusion: The study shows that there isn't association, between having updated knowledge about Umbilical Cord Care for Neonates in Neonatal Intensive Care Units and the overall knowledge assessment. This implies that while continuous learning is important it needs to be combined with hands on experience for impact. This supports the idea that practical reinforcement plays a role in retaining and applying knowledge as highlighted in theories.

Recommendation: Based on these findings it is suggested that nursing education programs and ongoing professional development initiatives should incorporate training in specialized areas like the NICU to improve nurses knowledge and skills. Moreover creating learning environments

tailored to nurses of all ages and life stages could be beneficial. Prioritizing practical evidence based training over qualifications alone may be more effective, in enhancing care.

Keywords: Assessment, knowledge, Nurses, Care, umbilical cord, Neonates, ICU.

Introduction

The umbilical cord is a coiled tube enclosed in the layer of the amnion [1]. It stretches from the fetus' belly button to the center of the placenta usually measuring, between 40 to 70 cm [2]. Inside there are two arteries and one vein surrounded by Whartons a tissue made up of mucopolysaccharides like hyaluronic acid and chondroitin sulfate. This mix plays a role in cushioning the blood vessels to prevent compression and ensuring circulation between the fetus and mother [3].

The umbilical arteries play a role in carrying blood filled with waste products from the fetus back to the placenta [4]. In contrast, the umbilical vein transports oxygen-rich blood packed with nutrients from the placenta to the fetus. Some of these arteries diminish after birth, while others undergo a process that turns them into ligaments [5].

Arteries are formed when the top parts of these blood vessels divide even more [6]. The vesical arteries assist in delivering blood to several organs, including the male reproductive system's seminal vesicles, vas deferens, ureters, and bladder. Within the chord, development is supported by an elaborately constructed structure and blood circulation [7].

Having information about caring for babies with cord problems is essential for nurses to provide top-notch care and improve their outcomes [8]. If they are to provide adequate care for these neonates, the nurses caring for them must be well-versed on the illness and its symptoms, diagnosis, therapy, and management [9].

When it comes to helping babies with medical issues like umbilical cord infections, research shows that critical care nurses are the best option [10]. When it comes to caring for newborns with complicated problems, research shows that nurses with intensive care training are more knowledgeable and confident [11].

Not only should nurses be knowledgeable about cord care, but they should also be alert to any problems and related health concerns that may arise when caring for neonates' umbilical cords [12].

Sepsis, omphalitis, and necrotizing fasciitis are more common in neonates who have an umbilical cord [13]. Additionally, nurses must collaborate and communicate well to guarantee care for a neonate's cord [14].

In order to coordinate applying Topical Agents such as Chlorhexidine 4% and make certain that interventions are carried out in a timely and appropriate manner, nurses need to be able to communicate effectively with other healthcare professionals, such as physicians. Nurses who are knowledge about umbilical cord can participate to the decision-making process of the healthcare team, which in turn helps support optimal outcomes for the neonate [15]

The health of neonates is greatly impacted by knowledge about cord care, which also influences the choice of cord care practices. Neglecting to take proper care of the umbilical cord can result in infection, which can affect the neonate's subsequent growth trajectory [16]. During the first few postpartum months, when improper cord care techniques could potentially cause infection in the neonate, umbilical cord care is crucial [17]. Most developing countries have a 3–5% prevalence of neonate cord infections. One of the risk factors for umbilical cord infections is improper handling of the cord, which has been linked to unsanitary cord care practices as the primary cause of the disease [18].

Methods

Selection of the Sample

A questionnaire sheet which included 8 items related to (gender, age, Educational status, and marital status, Years of experience in hospitals, Years of experience working in NICU, updated information about care of umbilical cord, and sources of updated information) were asked from 64 nurses staff to fulfil. The staff were working in Welfare Teaching Hospital and Central Teaching Hospital of Pediatric and they have met the study criteria and agreed to contribute to the study. At first (10) nurses were excluded from the original sample for being Pilot Study. Also, another (4) nurses were excluded because they didn't fill out all the questionnaire domains. Finally, the sample included in the present study is (50) nurses.

Nurses' Knowledge about umbilical cord care for neonates

knowledge about umbilical cord care for neonate according to their professional characteristics which include {19 item} rating as Poor= 0 –0.33, Fair = 0.34 – 0.66, and Good= 0.67– 1.

Knowledge scale

For the purpose of scoring instrument's items, a dichotomous scale was used for nutritional knowledge scale and scored as follows: I know (1), and I don't know (0).

The overall score of nutritional knowledge was estimated by calculating the range score for mean of total score after calculating the range from minimum score and maximum score; the range score rated into three levels and scored as follows: Poor= 0 – 9.33, Fair= 9.34 – 18.67, and Good= 18.68 – 28 .

The level of knowledge for each item in scale was estimated by calculating the cutoff point for the mean of score and rated into three levels also as follow: Poor= 0– 0.33, Fair= 0.34 – 0.67, and Good= 0.68 –1.

Results

The information presented in Table (1) provides an overview of the socio characteristics of 50 nursing participants. It shows that a large majority of the participants are females accounting for 70% of the group. This aligns, with the trend seen in the nursing field globally where there is a representation of female professionals.

Looking at the age distribution it is evident that the participants are relatively young with an age of 29 years. The majority (66%) fall within the age bracket of 20 to than 30 years. This could suggest graduates entering the nursing profession. Indicate that younger individuals find nursing appealing hinting at a promising future for this field.

In terms of education there is a mix of qualifications among the participants. The largest group holds diplomas (44%) followed by those with bachelors degrees (32%). Only a small percentage (2%) have qualifications indicating gaps in advanced clinical training and research involvement among the group.

The marital status distribution adds another layer of diversity to the sample with individuals making up a portion (58%). This may suggest a mature and possibly experienced subset, within the group. However there are also individuals (36%) and a small percentage of widowed individuals reflecting varied life experiences that can contribute to enriched perspectives in patient care.

Table (1): Distribution of Participants according to their Socio-demographic Characteristics. f: Frequency, %: Percentage, M: Mean, SD: Standard deviation.

List	Characteristics		f	%
1	**Gender**	Male	15	30
		Female	35	70
		Total	***50***	***100***
2	**Age (year) M±SD= 29 ± 7.4**	20 – less than 30	33	66
		30 – less than 40	12	24
		40 – less than 50	3	6
		50 and more	2	4
		Total	***50***	***100***
3	**Nursing qualification**	Secondary school	11	22
		Diploma	22	44
		Bachelor	16	32
		Postgraduate	1	2
		Total	***50***	***100***
4	**Marital status**	Unmarried	18	36
		Married	29	58
		Divorced	2	4
		Widowed/widower	1	2
		Total	***50***	***100***

Table 2 displays the backgrounds of 50 individuals shedding light on their work experience, in hospitals and Neonatal Intensive Care Units (NICU) well as their participation in ongoing education related to umbilical cord care—a vital aspect of neonatal healthcare.

The breakdown of hospital experience years reveals that a majority of the participants (52%) fall into the '1 to than 6 years category indicating that many are relatively new to their nursing careers. This could suggest they have received training. It may also highlight a potential need for further growth and guidance.

In terms of NICU experience 60% have between 1 to than 4 years of hands on practice suggesting a focus on involvement in this specialized area. This trend hints at a learning process where theoretical knowledge is being applied practically.

A positive finding from the data is that most participants (68%) claim to possess updated knowledge about cord care. This demonstrates a level of understanding, among nurses. Underscores the importance placed on neonatal health.However there is a portion (32%) who lack, up to date information pointing out a gap that should be filled through educational initiatives .

When investigating where they acquire their updated information from a 48% mention textbooks, the internet, academic studies or personal experience as their sources. Interestingly 28% of the respondents rely on than one source to keep themselves informed potentially broadening and deepening their understanding. This reliance on sources can be viewed as an indication of an approach to learning and staying updated which is advantageous in the ever changing realm of neonatal care.

Nonetheless the fact that 32% of participants have not tapped into updated information sources raises concerns in an area where care standards are constantly progressing. This signals an opportunity for institutions to promote a culture of learning and provide access, to educational materials.

Table (2): Distribution of Participants according to their Professional Characteristics. f: Frequency, %: Percentage, M: Mean, SD: Standard deviation.

List	Characteristics		f	%
1	**Years of experience in hospitals**	1 – less than 6	26	52
		6 – less than 11	15	30
		11 – less than 16	4	8
		16 and more	5	10
		Total	***50***	***100***
2	**Years of experience in NICU**	Less than 1	13	26
		1 – less than 4	30	60
		4 and more	7	14
		Total	***50***	***100***
3	**Updated knowledge about care of umbilical cord**	No	16	32
		Yes	34	68
		Total	***50***	***100***
4	**Sources of updated Information**	None	16	32
		Textbooks	5	10
		Internet	7	14
		Academic study	3	6
		Experience	5	10
		More than source	14	28
		Total	***50***	***100***

Table 3 shows how 50 nurses knowledge, about cord care in neonates was evaluated. The assessment indicates that most knowledge points fall under the 'Fair' category suggesting that while nurses have an understanding of this area there is room for improvement to reach a 'Good' level of knowledge.

It is worth noting that nurses appear to have a grasp of the physiological aspects of the umbilical cord with scores ranging from 0.58 to 0.60 for items such as understanding its structure and function. This foundational knowledge is crucial for providing care to neonates. However their understanding of the two arteries carrying oxygen depleted blood (Item 3b) scored lower at 0.46 albeit within the 'Fair' range. This could indicate an area where additional education may be beneficial.

In terms of knowledge about changes in the umbilical cord ratings for Items 5, through 9 consistently fall under the 'Fair' category. This suggests that nurses are aware of the healing process and understand how to care for it during this period.

The consistent fair assessment of identifying warning signs that could signal issues, with the cord (Items 16a to 16f) is reassuring as these are crucial for detection and prevention of more severe complications.

On the hand proficiency in handling disinfectants (Items 15a, 15c and 15d)'s rated as 'Poor'. This raises concerns given the significance of disinfection practices in averting infections. Scores of 0.22 for iodine use 0.18 for avoiding using disinfectants and 0.08 for alcohol highlight substantial knowledge gaps that might impact neonatal safety.

Moreover the ability to recognize indicators like life threatening inflammation in neonates (Item 17) and distinguishing fluid discharge from the umbilical region (Item 18) is notably lacking suggesting that nurses may not be adequately equipped to identify or respond to these crucial signs effectively.

Lastly the management of infants umbilical cords (Item 19) has a 'Fair' rating of 0.40 indicating a level of understanding but also signaling room, for enhanced education given the vulnerability of this patient population.

Table (3): Assessment of Nurses' Knowledge about Umbilical Cord Care for Neonate (N=50). M: Mean, Ass: Assessment. Poor= 0 –0.33, Fair = 0.34 – 0.66, Good= 0.67– 1.

List	Knowledge	M	Ass.
1	The umbilical cord is a tube (Rich with blood vessels) that connects the mother to her fetus during pregnancy	.60	Fair
2	The umbilical cord's role is to facilitate the flow of nutrients and oxygen from the mother's body across the placenta to her fetus. Additionally, it is seen as a mechanism for the fetus to eliminate its waste	.58	Fair
3	*The umbilical cord consists of:*		
3a	An umbilical vein transports oxygenated and nutrient-rich blood from the mother to the fetus	.60	Fair
3b	Two arteries that carry oxygen-depleted blood containing metabolic waste	.46	Fair
4	The umbilicus refers to the residual portion of the umbilical cord that remains connected to the baby's abdomen	.58	Fair
5	Within one to two weeks, the umbilical cord dries out and transforms into a crust that is smoothly detached	.58	Fair
6	The umbilical cord is divided in half and the portion in between is also severed. This technique prevents further hemorrhaging from occurring	.58	Fair
7	Since the umbilical cord of the neonate is devoid of nerves, it will remain without any pain	.60	Fair
8	The umbilical cord is yellow and appears slightly glossy immediately following delivery; however, it has a moist texture	.60	Fair
9	As the umbilical cord dries out and begins to slide off, it transforms from green to brown or black	.58	Fair
10	Loss of the umbilical cord is typically uncomplicated and occurs without incident	.60	Fair
11	The absence of complications associated with the prolapse of the umbilical cord is confirmed by the rapid healing and complete dryness of the affected area	.50	Fair
12	Occasional minor bleeding may occur during the separation procedure. It could be the result of the neonate's diaper friction or his movements	.58	Fair
13	Preventing frequent exposure of the umbilicus area to water or bathing is advised	.58	Fair
14	At this stage, the most suitable clothing for a neonate neonate is cotton ones	.58	Fair
15a	Iodine (Povidone).	.22	Poor
15b	Cotton	.40	Fair
15c	Avoid using two disinfectants concurrently	.18	Poor
15d	Alcohol	.08	Poor
16a	Purulent secretions.	.64	Fair
16b	Bod odor.	.60	Fair
16c	Redness.	.60	Fair
16d	Fever.	.60	Fair
16e	Umbilical cord swelling.	.60	Fair
16f	A neonate cry if the umbilicus is touched.	.62	Fair

17	Inflammation directly threatens the neonate's life.	.32	Poor
18	Very little fluid leakage from the umbilicus region is considered normal.	28	Poor
19	The premature baby's umbilical cord is cut at 7 cm to administer medication or draw a blood sample.	.40	Fair

Table 4 presents an assessment of nurses understanding of caring for neonates umbilical cords. The score distribution shows that the majority of nurses (58%) have a level of knowledge while a significant number (38%) have limited knowledge and only a small percentage (4%) demonstrate knowledge.

The average score of 12.62, out of a 28 points with a deviation of 4.571 indicates that nurses surveyed possess a reasonable grasp of umbilical cord care. The low percentage of nurses achieving a 'Good' knowledge level suggests there is room for improvement in enhancing their understanding.

The prevalence of 'Fair' ratings suggests that most nurses are familiar, with the basics but may lack knowledge required for notch neonatal care. This limited understanding could affect their ability to manage scenarios or identify signs of issues effectively.

The notable number of nurses categorized as having 'Poor' knowledge is worrisome.

It suggests that 40% of the workforce might not have the knowledge to provide even basic care, for the umbilical cord potentially leading to improper care practices and risks to newborn health.

Considering how crucial neonatal care is and the importance of cord care in preventing infections and other issues it's evident that there is a need for improved training and educational programs. There is a demand for actions that can enhance knowledge levels from 'Fair' to 'Good' and decrease instances of 'Poor' knowledge ratings, among nursing staff.

Table (4): Overall Assessment of Nurses' Knowledge about Umbilical Cord Care for Neonate

Knowledge	f	%	M	SD	Assessment
Poor	19	38	12.62	4.571	Fair
Fair	29	58			
Good	2	4			
Total	***50***	***100***			

Poor= 0 – 9.33, Fair= 9.34 – 18.67, Good= 18.68 – 28

After examination it was found that there was no connection, between the knowledge of nurses and their gender (correlation coefficient =.173, p =.231) suggesting that knowledge levels were not influenced by gender. However a significant association was observed between knowledge and age indicating that younger nurses generally possessed knowledge (correlation coefficient =.312, p =.027.)

Interestingly nursing qualifications did not show a correlation with knowledge (correlation coefficient =.123 p =.395) implying that having academic degrees did not always lead to a better understanding of umbilical cord care.

Marital status displayed a link with knowledge (correlation coefficient =.300, p =.034) suggesting that personal life experiences could impact expertise.

The number of years spent working in hospitals did not have a relationship with knowledge (correlation coefficient =..260 p =.068) hinting at the dynamics between general experience and specialized knowledge.

On the hand the years of experience in NICU were positively associated with knowledge (correlation coefficient =.344, p =.014) emphasizing the importance of specialized practice in improving proficiency.

Lastly having updated information on cord care did not significantly correlate with knowledge assessment results (correlation coefficient =.212, p= 0.140) indicating variations in nurses ongoing education and its effects, on their level of expertise.

Table (5): Relationships among Nurses' Knowledge with their Demographic Variables. rS = Spearman correlation coefficient, r*= point biserial correlation coefficient, P= Probability, Sig= Significance, N.S= Not significant, S= Significant, H.S= High significant.

Variables		Knowledge				Relationship
		Poor	Fair	Good	Total	
Gender	Male	20	14	1	35	**r^*=. 173 P-value=. 231 Sig= N.S**
	Female	2	12	1	15	
	Total	22	26	2	50	
Age (year)	20 – less than 30	13	19	1	33	**r_S =. 312 P-value=. 027 Sig= S**
	30 – less than 40	6	5	1	12	
	40 – less than 50	2	1	0	3	
	50 and more	1	1	0	2	
	Total	22	26	2	50	
Nursing qualification	Secondary school	6	5	0	11	**r_S =. 123 P-value=. 395 Sig= N.S**
	Diploma	9	12	1	22	
	Bachelor	7	8	1	16	
	Postgraduate	0	1	0	1	
	Total	22	26	2	50	
Marital status	Unmarried	9	9	0	18	**r_S =. 300 P-value=. 034 Sig= S**
	Married	12	15	2	29	
	Divorced	1	1	0	2	
	Widowed/widower	0	1	0	1	
	Total	22	26	2	50	
Years of experience in hospitals	1 – less than 6	12	13	1	26	**r_S = -. 260 P-value=. 068 Sig= N.S**
	6 – less than 11	6	9	0	15	
	11 – less than 16	1	2	1	4	
	16 and more	3	2	0	5	
	Total	22	26	2	50	
Years of experience in NICU	Less than 1	5	8	0	13	**r_S =. 344 P-value=. 014 Sig= S**
	1 – less than 4	15	14	1	30	
	4 and more	2	4	1	7	
	Total	22	26	2	50	
Information about care of umbilical cord	No	7	9	0	16	**r^*=. 212 P-value=. 140 Sig= N.S**
	Yes	15	17	2	34	
	Total	22	26	2	50	

Discussion

The studys results reveal a number of connections, between nurses' understanding of neonatal umbilical cord care and their personal characteristics particularly focusing on age and experience in the NICU.

The lack of a link between gender and knowledge (r* =.173 P =.231) aligns with research indicating that gender does not necessarily impact nursing knowledge or practices. This is in line with existing literature suggesting that both male and female nurses can excel well in pediatric care settings [19].

Age exhibited a correlation with knowledge (rS =.312 P =.027) possibly reflecting that younger nurses have been exposed to more recent educational programs incorporating updated practices in neonatal care. This finding echoes the findings of [20] which proposed that younger healthcare professionals may be more familiar with evidence based practices due to their training.

Interestingly nursing qualifications did not show a correlation with knowledge about cord care. This indicates that formal higher education may not be as impactful as the hands on experience gained by nurses in areas, like the NICU.

The results mirror the views expressed in previous study [21]indicating that practical knowledge and skills gained from working in an unit might hold more value, than academic qualifications.

An interesting observation is the correlation between status and knowledge (rS =.300 P =.034). This suggests that personal life experiences, such as those related to parenting or caregiving outside of work could impact ones knowledge base. This aligns with theories proposing that personal experiences can enhance practice as discussed by previous study [22].

Surprisingly having years of experience in a hospital setting did not necessarily equate to knowledge (rS =..260 P =.068). This finding hints that general nursing experience may not directly translate to knowledge in care. It underscores the importance of tailored training programs focusing on the requirements of care echoing the viewpoint presented by another previous study [23] advocating for targeted professional development initiatives.

Years of experience NICU experience exhibited an significant correlation with knowledge (rS =.344, P =.014) emphasizing the specialized nature of neonatal intensive care nursing. This highlights how targeted experience contributes significantly to accumulating knowledge, a recurring theme, in literature discussing specialization.

Conclusion

the study shows that there isn't association, between having updated knowledge about caring for the cord and the overall knowledge assessment. This implies that while continuous learning is important it needs to be combined with hands on experience for impact. This supports the idea that practical reinforcement plays a role in retaining and applying knowledge as highlighted in theories.

Recommendations

Based on these findings it is suggested that nursing education programs and ongoing professional development initiatives should incorporate training in specialized areas like the NICU to improve nurses knowledge and skills. Moreover creating learning environments tailored to nurses of all ages and life stages could be beneficial. Prioritizing practical evidence based training over qualifications alone may be more effective, in enhancing care.

References

1. J.R. Heil, B. Bordoni, StatPearls (2023).
2. M. Tankala, M.K. Rao, S. Senapati, S.S. Behera, Cureus 15 (2023). DOI: 10.7759/CUREUS.48959
3. A.S. Ansari, M.D. Yazid, N.Q.A.V. Sainik, R.A. Razali, A. Bin Saim, R.B.H. Idrus, Stem Cells Int 2018 (2018). DOI: 10.1155/2018/2406462
4. Y. Wang, S. Zhao, (2010).
5. M. Marty, C.C. Kerndt, F. Lui, StatPearls (2023).
6. N. Zaunbrecher, T.C. Arbor, N.S. Samra, StatPearls (2023).
7. O.E. Jensen, I.L. Chernyavsky, Https://Doi.Org/10.1146/Annurev-Fluid-010518-040219 51 (2019) 25–47. DOI: 10.1146/ANNUREV-FLUID-010518-040219

8. Kadhim N, Shawq A. Assessment of Nurses` Practice Regarding Poisoning Children. Iraqi National Journal of Nursing Specialties. 2022 Dec 30;35(2):60–7. Available from: https://injns.uobaghdad.edu.iq/index.php/INJNS/article/view/612
9. S. Yadav, B. Lee, R. Kamity, Care Planning in Children and Young People's Nursing: Second Edition (2023) 161–167. DOI: 10.1002/9781119819653.ch19
10. Maala E. Body satisfaction and depression symptoms among children with precocious puberty in Baghdad City. Iraqi National Journal of Nursing Specialties. 2019;32(1):39–46.
11. Cruz JP, Aguinaldo AN, Estacio JC, Alotaibi A, Arguvanli S, Cayaban ARR, et al. A Multicountry Perspective on Cultural Competence Among Baccalaureate Nursing Students. Journal of Nursing Scholarship [Internet]. 2018 Jan 29;50(1):92–101. Available from: https://sigmapubs.onlinelibrary.wiley.com/doi/10.1111/jnu.12350
12. Ahjil Z, Maala E. Evaluation of nurses' knowledge toward pain management of leukemic child under chemotherapy. Iraqi National Journal of Nursing Specialties [Internet]. 2018 Nov 8;25(3):50–7. Available from: https://injns.uobaghdad.edu.iq/index.php/INJNS/article/view/143
13. Mohammed A, Hattab K. Assessment of Mothers Knowledge and Practices with Hemophilic Children type A at Azadi Teaching Hospital in Kirkuk City. Iraqi National Journal of Nursing Specialties [Internet]. 2013 Sep 30;26(2):35–48. Available from: https://www.researchgate.net/publication/373465235_Assessment_of_Mothers_Knowledge_and_Practices_with_Hemophilic_Children_type_A_at_Azadi_Teaching_Hospital_in_Kirkuk_City
14. Jabbar HA, Hattab KM. Effectiveness of the Interventional Program on Nurses' Practices about Enteral Feeding Tube for Premature Neonates in the Neonatal Intensive Care Unit. Pakistan Journal of Medical and Health Sciences. 2022;16(5):544–9.
15. Mansi QH, Aziz AR. Assessment Quality of Nursing Care Provided to Neonates with Respiratory Distress Syndrome at Intensive Care Unit in AL- Nasiriyah City Hospitals. Kufa Journal for Nursing Sciences [Internet]. 2018 Jan 8;7(2):126–39. Available from: https://journal.uokufa.edu.iq/index.php/kjns/article/view/2279
16. Atshan RS, Aziz AR. Effectiveness of an Educational Program on Parents' Knowledge about Home Health Care Management to Children with Beta Thalassemia-Major at Thalassemia Center in Al-Zahra Teaching Hospital for Maternity and Children in Al-Najaf City. Pakistan Journal of Medical and Health Sciences [Internet]. 2022 Mar 31;16(3):931–4. Available from: https://pjmhsonline.com/index.php/pjmhs/article/view/710
17. Ahmed AQ, Hattab KM. Effectiveness of an Intervention Program on Nurses' Practices toward Neonatal Intubation Suctioning Procedure at Neonatal Intensive Care Unit. Pakistan Journal of Medical and Health Sciences [Internet]. 2022 May 30;16(5):650–1. Available from: https://pjmhsonline.com/index.php/pjmhs/article/view/1314
18. Mukhlif AA, Hattab KM. Assessment of Nurses' Knowledge and Practices toward Children with Nephrotic Syndrome at Pediatric Teaching Hospitals in Baghdad City. International Journal of Scientific and Research Publications [Internet]. 2016;6(8):108. Available from: www.ijsrp.org
19. Abdul Salam H, Aziz A. Effectiveness of Health Education Program on Health Care Providers' Knowledge toward Immunization of Children at Primary Health Care Centers in Kirkuk City. Iraqi National Journal of Nursing Specialties [Internet]. 2020 Jun 30;33(1). Available from: https://injns.uobaghdad.edu.iq/index.php/INJNS/article/view/408
20. M. Prosen, BMC Nurs 21 (2022) 1–11. DOI: 10.1186/S12912-022-00876-4/FIGURES/2

21. K. Ehrenbrusthoff, T. Braun, C. Bahns, L. Happe, C. Kopkow, BMC Health Serv Res 22 (2022) 1285. DOI: 10.1186/S12913-022-08682-Z

22. E. Fisher, Y.S. González, Business and Economic Research 10 (2020) 1. DOI: 10.5296/BER.V10I2.16520

23. B.S. Hansen, E. Dysvik, Nurs Forum (Auckl) 57 (2022) 1593. DOI: 10.1111/NUF.12827

24. P. Tarighi, J.E. Sherman, O. Mian, A.B. Nathens, Canadian Journal of Surgery 58 (2015) 423. DOI: 10.1503/CJS.002315