

Nurses' Knowledge toward Effects of Preterm Positioning undergoing Nasal Cannulation

Lubna Hasan Shamil Al-Zuhairy*

University of Baghdad/College of Nursing/ Baghdad/ Iraq

Abstract

Background: Understanding nurses' knowledge regarding therapeutic positions is crucial for stabilize the physiological parameters of premature infants undergoing nasal cannula therapy. The aimed to assess nurses knowledge toward supine and prone positions on physiological parameters in premature infant undergoing nasal cannula; and it associated socio-demographic variables

Methods: A descriptive study design was conducted at Private Nursing Home and Child Protection Hospitals in Baghdad Province, for the period of October 1st, 2023 to March 8th, 2024. The study sample consist of 50 nurses is selected according to non probability sampling approach. The questionnaire, consisting of 19-items measured on MCQ, was validated by experts and tested for reliability through a pilot study. Data collection involved self-report, and both descriptive and inferential statistical analyses were applied for data analysis.

Results: The findings indicate the average age of 29.69 ± 8.44 years, with the female group, 58%. Educational backgrounds of participants were diverse, 34.0% holding school nursing, and 32.0% working in general nursing. The majority of nurses had less than 5 years of a professional career, and about two third of them did not have any training. With regard to the nursing knowledge of supine and prone positions of preterm infants during nasal cannula, 62% of the nurses were found to have poor knowledge.

Conclusions: The study highlights that the predictive factors such as age, education level, experience, and training courses underscore the need for targeted educational interventions. The study advocates for fostering a culture of continuous learning within healthcare settings to support ongoing professional development and enhance the care provided to premature infants.

Recommendations: Integrate similar educational programs into nursing training to enhance nurses' understanding and performance in caring for premature infants in different positions were highly recommended.

Keywords: Nurses knowledge, Physiological Parameters, Premature Infant.

Introduction:

Infants who are born prematurely, this is before 37 weeks of gestation, face substantially complicated challenges with the transition into the extra-uterine environment. Therapy via nasal cannula is an essential part of caring for these fragile infants, and it's widely used to supply oxygen dietary supplements to those newborns in want [1]. The nasal cannula is a non-invasive one. It can provide the oxygen that flows with the help of the small hints that might be inserted into the preterm nostrils. At the same time, it serves the reason of assisting breathing features, which is vital within the preliminary levels of the little one's development period. The selection to start nasal cannula remedies for these preemies is based totally on a fixed of clinical examinations and monitoring of the oxygen tiers by using a nurse. When a neonate arrives in advance, the probability of having RDS signs increases due to their underdeveloped lungs and the lack of surfactant production [2]. Studies imply that RDS is a respiration disorder that is normally located in untimely toddlers, therefore, the latter needs breathing support to improve oxygenation and prevent issues like hypoxemia. Using a nasal cannula, to satisfy the exact oxygen requirements of the babies with the supply of safety towards hyperoxia and hypoxia can be dangerous and associated with bad results in preterm babies [4].

Thanks to nasal cannula remedy, as opposed to ventilation, the untimely infants receive many benefits that are specifically crucial to them. Primarily, it isn't always invasive; subsequently, it is easy to apply; and subsequently, it does not intrude with the untimely capacity to breastfeed or interact with its caregivers. It is step one of respiratory support and before mechanical air flow as an invasive intervention, therefore minimizing the problem of invasive approach in neonatal inclined patients [5]. Such as the nasal continuous effective airway strain (NCPAP) through a nasal cannula at an early level, which is used to lessen the need for invasive air flow and to enhance usual respiratory performance proved to be an exquisite treatment [6].

Nursing know-how for nasal cannula therapy management of pre-time period infants requires a total comprehension of the frame positioning effects on the physiological parameters [7]. Pre-time period babies, this is toddlers that are born earlier than 37 weeks, may additionally often want respiratory assistance to improve oxygenation and reduce respiratory distress. Selecting a supine or prone position is the maximum critical consideration whilst improving respiratory effects is the high objective in any important care scenario. The number one postures that nurses must cope with in this regard are the supine function, referred to as mendacity on their lower back, and the susceptible role, which is ready to put the little one on their belly [8].

It has been found that in toddlers of low start weight and nasal cannula assist, there may be an enormous impact of the body positioning on the breathing mechanics and oxygenation[9]. Nursing understanding properly is going to the regions of possible trouble occurrences in each function. Such as the inclined position that is related to the extended risk of strain ulcers and overheating trouble so the patient's monitoring and prevention should be continuously monitored. Nurses must stay updated with protocols and pointers that cope with body positioning within the context of preterm toddlers treated with nasal cannulas, considering every toddler's condition and medical records. Therefore, the examination aimed to evaluate nurses' expertise closer to supine and prone positions on physiological parameters in premature little ones undergoing nasal cannula, and it associated socio-demographic variables.

Methods

Design

A descriptive study design was adopted by constructed questioning individuals of the study population with the sole purpose of describing the examined phenomena in terms of its nature and degree of presence was conducted during the period from October 1st, 2023 to March 8th, 2024.

Study Setting

Private Nursing Home and Child Protection Hospitals in Baghdad Province, where that hospital was decided to be a primary place for collecting data. Non-probability Convenience sampling which is the type of sampling method considering the representativeness of the data to be collected was employed among total of 50 nurses. This sample were selected according to set of criteria include nurses who neonatal care unit, nurses who different educational attainment and those who are agree to participated in current study.

Study instruments

This questionnaire consists of two part include the socio-demographic characteristics include nurses age, sex, education level, years of experience, number of training courses and sources of information. Nurses knowledge was assessed using constructed questionnaire building according to the previous literature and studies. It comprises 19-items measured on a MCQ, yielding a potential score range of 0-19. A higher average indicates a good knowledge. The questionnaire was validated by experts and then its reliability was verified through a pilot study The Cronbach-alpha value in current was 0.87 which indicate the accepted reliability.

Data collection

The researcher interviewee the participants at their workplace, explained the instructions, answered their questions regarding the form, urged them to participate and thanked them for the cooperation. The self-report techniques was used on individual bases, and each report (15-20)

minutes after taking the important steps that must be included in the study design.

Results

Table (1): Socio-Demographic Characteristics

SDVs	Classification	No.	%
Age/ years	20 to less than 29	27	54
	30 to less than 39	10	20
	40 to less than 49	8	16
	50 to less than 60	5	10
	<i>M±SD</i>	29.69 ±8.44	
Sex	Male	21	42
	Female	29	58
Education level	School Nursing	17	34
	Diploma Nursing	16	32
	B.Sc Nursing	11	22
	Postgraduate	6	12
Years of Experience	1 less than 5	32	64
	5 less than 10	10	20
	10 less than 15	8	16
Number of training sessions about newborn position	No	34	68
	1	6	12
	2	10	20
Sources of information physiological parameters	No	18	36
	Health personal	14	28
	Internet	13	26
	Medical journals	5	10

No. = Number; %= Percentage

The findings in this way summarize the socio-demographic composition of the nursing staff. The average age was calculated at being 29.69 ± 8.44 years. Out of all nurses, females are most dominant, making up 58% of the total, while male nurses are 42% of the total. As far as educational attainment is concerned, the majority (34.0%) graduated in school nursing, followed by general nursing, which constituted 32.0% of the respondents. The professional experience of nurses were looked into: 64% of the nurses gave less than 5 years of service. The lack of training is notably obvious here as 68.0% of them didn't have training courses. While exploring the sources of information 36.0 % of the respondents did not have sources.

Table (2): Overall Nurses Knowledge

Scale	M±SD	Score	No.	%
Nurses Knowledge	0.31 ± 0.326	Poor	31	62
		Moderate	10	20
		Good	9	18
		Total	50	100

Level of Assessment of Σ mean (Poor= 0-0.33; Moderate= 0.34-0.66; Good= 0.67-1)

The study's results suggest that a significant proportion (62%) of nurses show poor knowledge regarding supine and prone positions on physiological parameters in premature infant undergoing nasal cannula as indicated by average scores (0.31 ± 0.326).

Table(3): Relationship between patients satisfaction and their clinical information

Variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Age/ years	-.308-	.053	-.399-	-5.848-	.000
Gender	-.084-	.081	-.064-	-1.033-	.303
Education level	.096	.035	.181	2.771	.026
Years of Experience	.086	.025	.281	2.311	.016
Number of training sessions	.096	.037	.381	3.722	.006
Sources of information	-.054-	.081	-.024-	-1.113-	.323

Dependent Variable: Nurses Knowledge

Simple linear regression test indicate that the nurses age ($\beta = -.399$; $p = .000$), education level ($\beta = .181$; $p = .026$), years of experience ($\beta = .281$; $p = .016$), and number of training courses ($\beta = .381$; $p = .006$) have all been identified as predict factors of nurses knowledge towards supine and prone positions on physiological parameters in premature infant undergoing nasal cannula.

Discussion

Socio-Demographic Characteristics of the Study Sample

The supplied information depicts the socio-demographic traits of the nursing group of workers which might be of outstanding significance to center attributes of this important healthcare workforce. The suggested age of nursing personnel is stated to be 29. Sixty-nine $\pm$ 8.44 years, which leads to an end that the employees of this profession are rather young. This demographic thing is surely essential because age can affect the extent of experience and the potential of adaptation to new technologies in a process this is worrying, that's the main issue of resilience. The given data in addition add to the studies that exhibit the reality that almost all of the young nurses have professed to be running in pediatric care in some centers [10].

The intercourse distribution of the nursing staff is simply a be counted of be aware right here, with women constituting the bulk (fifty-eight%) even as male nurses are 42% of the complete. This gender disproportion coincides with the old-style nature of nursing careers wherein women have always been the primary gamers. A gender distribution evaluation is important in revealing whether it contributes to the painting's surroundings dynamics, and management positions, or if it impacts the extraordinary genders' perception of nursing as a profession. It objectives to signify that globally there are more girls in nursing [11]. This specific problem, in truth, reminds us to present due importance to the gender sensitivity problems and to make certain that gender-touchy schooling publications and applications are in place so that you can deal with the troubles that lady nurses undergo in the healthcare quarter.

The educational background being a vital aspect, it guarantees the recognition of the extent of the personnel's qualifications. The records indicate that the school nursing vicinity introduced about a bigger portion (34.0%) of nurses followed by way of general nursing (32.0%) which is the most important group. Distribution of nurses with exclusive instructional backgrounds can also present the possibility of a various talent set and competence within the group as each one brings a specific angle towards fitness care. By the same token, this examination is in accord with the alternative research that has been performed in Baghdad City, which makes us aware of the reality that our techniques have to be considered and conquered if nursing interventions and education are to be efficaciously implemented in neonatal care [12].

Investigating the paintings life of nurses offers us extra factors to do not forget approximately the stableness and the feasible areas to evolve inside the group of workers. It is clear that the

majority of nurses (sixty-four%) had much less than 5 years of career, in different phrases, they're younger and much less skilled workforce. This result, in that regard, makes us recollect established mentorship applications, expertise transfer tasks, and techniques for keeping skilled nurses inside the team of workers. The equal result, however now is about the take a look at what has been achieved in Iraq in evaluating nurses' practices regarding digital nursing documentation, emphasizing the reality that nurses want to gain knowledge often since the majority of them are quick-time period people. The noted announcement reaffirms that faculty and ability development are the pillars of nursing team workers' growth, and it mainly highlights neonatal care as one of the specialized fields [13].

Staff schooling was important; of some of the workforce who spoke back, 68% had taken no education guides. Moreover, this implies that a gap in lifelong getting to know could be the issue that hinders nurses from preserving pace with new practices and technology in healthcare. In this situation, filling the space is vital to ensure the fitness care standards are upheld and to make certain the nursing workforce remains equipped. Thus, the result is consistent with the findings of the previous research that evaluated nurses' skills regarding oxygen management methods, which spotlight the mindset of a nurse in the direction of the poisoning of a child [14] and his or her abilities in endotracheal suctioning of a neonate. This is the result of a have a look at done by using a nurse and it's far a recurring subject matter that nurses are inappropriately and dangerously stepping out in their scope of practice. The loss of stability between supply and call for healthcare employees from special disciplines must be addressed, a pass that can be accomplished via the government via the reinforcement of the abilities of the healthcare employees who are specialized of their respective fields.

The adventure into the statistics resources is of the maximum importance for this research. Significantly, 36.0% of the respondent variety referred to that they did no longer have a source to identify statistics from. It is vital for nurses to be aware about the data resources to be had so that you can expand powerful communication techniques, evidence-based practice, and to boom the extent of care via providing nurses with the final studies consequences and pointers. This may be easily as compared to different findings from other massive fitness facilities consisting of Enteral feeding at crucial care units in hospitals of Al-Anbar Governorate [15] and the nurses' practices toward worrying of youngsters with febrile convulsion [16]. It stresses on the utility of different applications to fill in information gaps in the health care personnel and the advent of work pressure with good enough know-how.

Nurses Knowledge towards effects of preterm positioning undergoing nasal cannulation

The outcomes of our study are very alarming as they display an extreme lack of understanding of the nursing team of workers regarding supine and susceptible positions in terms of the effect of these positions on the physiological parameters in preterm toddlers that are being treated with the usage of a nasal cannula oxygen therapy. Firstly, the consequences, the majority of nurses (62%) have revealed that their records about this sphere are vulnerable and this truth is proved via the statistics. This deficiency is likewise shown via the take a look at of the admission ratings for the nurses which led to $0.31 \pm \text{zero}.326$. The right positioning, by all methods, is a pivotal element for neonatal care. Appropriate placement may go a long way in achieving positive results on the scientific outcomes of untimely newborns, but beside the point, one may produce critical health problems. Therefore, supine and susceptible positions which feature as the main position of regular respiratory characteristics and decrease the nurse-associated complications are the key therapy in the nasal cannula remedy. The observed understanding hole among nurses shows that the care delivered to untimely babies in such instances may not be strong enough to fulfill their anticipated outcomes.

This study's findings are in step with different studies, which assert that the continuous education and education of health care experts, particularly in regions that have an effect on the

patients without delay, is important. This factor is similarly highlighted with the aid of thinking that the prevailing professional development programs and the centered education sessions can be useful in tackling the expertise gap of some of the nurses [17]. The resultant studies point to the need for hospitals and different healthcare establishments to make academic endeavors that emphasize neonatal care practices, including right positioning throughout nasal cannula therapy. Besides, the research requires a reassessment of cutting-edge nursing curricula to make certain that the training is all-encompassing and covers all topics relating to the care of untimely infants. Integrating evidence-primarily based practices and the maximum current study's findings will assist in the improvement of expertise and competencies of nurses in neonatal care that is taught in nursing schooling. By the suggestions of the National Association of Neonatal Nurses (NANN), training is continuous and has the intention of bettering the lives of the patients as well as enhancing the general healthcare fine [18].

The nurse's knowledge of supine and inclined positioning in preterm toddlers during nasal cannula implementation turned into the challenge of the study. The look was carried out through regression analysis the usage of simple linear regression to determine predictive parameters. The results verified that there's a statistically giant terrible correlation between age of nurses and their understanding ranges. ($\beta = -.399$, $p = .000$). This shows the age of nurses as a factor within the expertise stage toward supine and prone positions on physiological parameters of premature babies because information decreases as age increases. These effects once more support those of preceding studies which posited that younger physicians are extra adaptive and open to receiving new thoughts with a next higher degree of information retention and applying the gained data of their exercise [19].

This research is concerned with the academic level of nurses and their know-how about the supine and inclined positions in untimely toddlers that are undergoing nasal cannula shipping. Simple linear regression analysis became hired on this research. Based at the consequences, the beta coefficient (β) of nurses' education stages became recorded as 0.181, and a p-value of zero.026 become found. These findings, in conjunction with their statistical effects, imply a fantastic association between the nurses' degree of training and their information about the control of untimely babies in supine and susceptible positions with the nasal cannula remedy. Nurses' education stage and information in the direction of supine and prone positions on physiological parameters tied to the impact of schooling on nursing practice is wherein literature factors to. The ranges of training excessive above influence the capacity of the nurses in addition to docs to be able, vital thinking and practice proof-based to desirable fitness care [21]. As a end result, the consequences of this have a look at have a tendency to support the idea that investing in nurses' training can be an crucial factor of their potential to carry out extra successfully in dealing with premature babies on nasal cannula therapy even as in numerous relaxation positions.

Simple linear regression analysis has been carried out to behavior the study which aims to identify the elements that have an effect on the nurses' information approximately the physiological parameters which are associated with the supine and the prone positions in untimely toddlers receiving nasal cannula treatment. Based at the statistics, the impartial variable of situation suggests a statistically giant affiliation with their stage of knowledge ($\beta = .281$, $p = .016$). The outcomes imply that the nurses, who've extra years of exercise, tend to attach extra significance to the results of susceptible and supine on nasal cannula oxygen remedy for preterm babies. This is in keeping with the formerly installed view that the scientific realistic are very important in the gaining knowledge of technique of nurses and also assist them to advantage competence and skill ability in various components of patient care [22]. Nurses who've were given prior experience would possibly understand the importance of nasal cannula positioning in untimely infants at a deeper stage, in the end, ensuing in better affected person outcomes. The reality that the high-quality path of the regression analysis is located proves the position of experiential getting to know within the improvement of nurses know-how and decision-making competencies.

The simple linear regression evaluation which was used has validated to be an crucial device that has helped us to apprehend the factors that influence the expertise of nurses closer to physiological parameters in premature infants who're undergoing nasal cannula remedy. The have a look at regression version showed a statistically great effective affiliation among the quantity of schooling courses attended by nurses and their know-how in this challenge ($\beta = .381$, $p = .006$). It is consequently glaring that an increase within the variety of guides could lead to extra expertise among nurses approximately the physiological parameters which might be tormented by supine and prone positions in premature babies. The reality that the high-quality coefficient ($\beta = .381$) indicates the greater education periods attended via the nurses, the more knowledge they get approximately the impact of supine and susceptible positions on physiological parameters in untimely toddlers These effects are in concord with the ones of the studies inside the preceding literature, which advise persevering with education and schooling for healthcare specialists to provide them with updated know-how and abilities [23-25].

Conclusions

The study highlights that the predictive factors such as age, education level, experience, and training courses underscore the need for targeted educational interventions. The study advocates for fostering a culture of continuous learning within healthcare settings to support ongoing professional development and enhance the care provided to premature infants.

References

1. vanHaren J, Delbressine FL, Schoberer M, Te Pas AB, van Laar JO. Transferring an extremely premature infant to an extra-uterine life support system: a prospective view on the obstetric procedure. *Frontiers in Pediatrics*. 2024 Feb 15;12:1360111.
2. Sardesai S, Biniwale M, Wertheimer F, Garingo A, Ramanathan R. Evolution of surfactant therapy for respiratory distress syndrome: past, present, and future. *Pediatric research*. 2017 Jan;81(1):240-8.
3. Liu L, Deng Q. Profound Effect of Pulmonary Surfactant on the Treatment of Preterm Infants with Respiratory Distress Syndrome. *Contrast Media & Molecular Imaging*. 2022 Oct 3;2022.
4. Elywy GJ, Radhi MM, Tuama AM. Determination the Causes of Neonatal Mortality during the Last 3 Years Ago in Al-Kut City. Prof.(Dr) RK Sharma. 2020 Jul;20(3):195.
5. Lavizzari A, Zannin E, Klotz D, Dassios T, Roehr CC. State of the art on neonatal noninvasive respiratory support: How physiological and technological principles explain the clinical outcomes. *Pediatric Pulmonology*. 2023 Sep;58(9):2442-55.
6. Kakibibi P. Missed Opportunity for Nasal Continuous Positive Airway Pressure (Ncpap) in Preterm Neonates With Respiratory Distress Syndrome Admitted at Kenyatta National Hospital, New Born Unit-a Mixed Method Study.
7. Moon HJ, Cho KS, An MY, Son DW. Effects of a Neonatal Supportive Positioning Training Video Program for Preterm Infants on the Knowledge and Performance of Nurses in Neonatal Intensive Care Units. *Asian nursing research*. 2022 Feb 1;16(1):25-34.
8. Cugini K, McCormick Jr FB, Mitchell C, Psencik E, Sarduy S, Masuoka I, Toruno R, Davies J. Therapy services and specialized devices for conjoined twins: Unique challenges with conjoined twins and the importance of physical and occupational therapy. In *Seminars in Perinatology* 2018 Oct 1 (Vol. 42, No. 6, pp. 361-368). WB Saunders.
9. Bhandari AP, Nnate DA, Vasanthan L, Konstantinidis M, Thompson J. Positioning for acute respiratory distress in hospitalised infants and children. *Cochrane Database of Systematic Reviews*. 2022(6).

10. Martherus T, Oberthuer A, Dekker J, Kirchgaessner C, Van Geloven N, Hooper SB, Kribs A, Te Pas AB. Comparison of two respiratory support strategies for stabilization of very preterm infants at birth: a matched-pairs analysis. *Frontiers in pediatrics*. 2019 Jan 29;7:3.
11. Mahmood WA, Khudur KM. Effectiveness of an Educational Program on Nurses' Knowledge and Practices Concerning Nursing Management of patients' with Vascular Access in Dialysis Centers at Baghdad Teaching Hospitals. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Jul 1;14(3).
12. Saeed M, Khatam AM. Effectiveness of Health Education Program on Nurses' Knowledge toward Hemodialysis at Pediatric Teaching Hospitals in Baghdad City. *Iraqi National Journal of Nursing Specialties*. 2020 Jun 30;33(1):73-84
13. Mohammed AR, Ghafel HH. Effectiveness of Educational Program on Nurse's Knowledge and Practices Regarding Management of Pregnancy with Danger Signs. *Pakistan Journal of Medical & Health Sciences*. 2022 May 11;16(03):1074-.
14. Majeed HM. Assessment of knowledge and practices of intensive care unit nurses about endotracheal suctioning for adult patients in Baghdad teaching hospitals, Iraq. *Int J Res Med Sci*. 2017 Apr;5(4):1396-404.
15. Mahmood WA, Khudur KM. Effectiveness of an Educational Program on Nurses' Knowledge and Practices Concerning Nursing Management of patients' with Vascular Access in Dialysis Centers at Baghdad Teaching Hospitals. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Jul 1;14(3).
16. Kadhim NS, Shawq AH. The Effects of Constructed Program on Nurses Practices of Poisoned Children. *Journal of Research in Medical and Dental Science*. 2023 May;11(5):39-41.
17. Jassm A, Aziz A. Effectiveness of Health Educational Program on Nurses' Knowledge toward Children Pneumonia in Al-Amara City Hospitals. *Iraqi National Journal of Nursing Specialties*. 2020 Jun 30;33(1):44-52.
18. Khudhayer HF, Adulwahhab MM. The Evaluation of Nurses' Practices regarding Electronic Nursing Documentation. *Iraqi National Journal of Nursing Specialties*. 2023 Jul 5;36(1):1-7.
19. Hussein ZA. Evaluation of Nurses' Practices toward Caring of Children with Febrile Convulsion. *Iraqi National Journal of Nursing Specialties*. 2022;35(2).
20. Ahmed M, Radha A. Nurses' Knowledge and Skills regarding Oxygen Administration Methods at Pediatric Teaching Hospitals in Mosul City. *Iraqi National Journal of Nursing Specialties*. 2020 Dec 30;33(2):40-50.
21. Ahmed AT, Hassan HB. Assessment of Nurses' knowledge about Enteral Feeding at Critical Care Units in Hospitals of Al-Anbar Governorate. *Iraqi National Journal of Nursing Specialties*. 2021;34(2):66-73.
22. Ylimäki S, Oikarinen A, Kääriäinen M, Pölkki T, Mikkonen K, Holopainen A, Kaakinen P, Kanste O, Meriläinen M, Jansson M, Immonen K. Advanced practice nurses' evidence-based healthcare competence and associated factors: A systematic review. *Journal of Clinical Nursing*. 2024 Feb 27.
23. Karami A, Farokhzadian J, Foroughameri G. Nurses' professional competency and organizational commitment: Is it important for human resource management?. *PloS one*. 2017 Nov 8;12(11):e0187863.

24. Thapa K, Amatya S, Thapa A, Greeley M. Post-pregnancy family planning in Southeast Asia with a focus on novel training techniques. *Best Practice & Research Clinical Obstetrics &Gynaecology*. 2024 Feb 14:102479.
25. Abed MT, Radhi MM, Oubaid ZO, Kadhim NK. Nurse's knowledge concerning sterile technique performance at emergency department at Babylon teaching hospital for maternal and children.