

Original Paper

Assessment of Nurses' Knowledge Regarding Neonatal Mechanical Ventilation at Neonate Intensive Care Unit: A quantitative descriptive study

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ABSTRACT

Background: The investigating of Nurses' Information about Mechanical Ventilation at Neonate Intensive Care Unit are substantial for increase nurses' awareness. This study objected to investigating the awareness among nurses about Mechanical Ventilation at Neonate Intensive Care Unit and to find out the relationship between the nurses' socio-demographic features and their level of Information about Mechanical Ventilation. **Materials and Methods:** A investigation study of quantitative descriptive study was made on Nurses' Information about Mechanical Ventilation at Neonate Intensive Care Unit in Baghdad city from the period of 3rd October 2025 to 20th March 2026. A permit obtained approval to study in administrative procedures from the Ministry of Health\ Director of Medical City. Aprobability (randomized sample) of (60) Nurse (males & females) working in Neonate Intensive Care unit\ Hospital. A questionnaire is constructed for the purpose of the study throughout a review of relevant literature, consultation from panel of experts and related studies. Content validity and internal consistency reliability are determined for the present study instrument during a pilot study. It composed of two Sections: Section one it includes demographic features concerning the Nurses like: Nurses Age, Nurses Sex and education degree; section two include Nurses' information about Mechanical Ventilation at Neonate Intensive Care Unit. **Results:** Findings of the study represent that nurses' information at Neonate Intensive Care Unit about Mechanical Ventilation are low level (45.73) of information as overall assessment, most of them are female nurse (61.7%), and (65%) of them have Diploma Degree in Nursing Education. **Conclusions:** The Neonatal Nurses' practices information and knowledge at intensive care units on mechanical ventilations in Iraq is very poor; nurses' information about mechanical ventilation (MV) is hard developing related to ministry of health polices, the defect of attention to developing nurses training on ventilators leaves the mission to idea of trial and error. In future studies should be applying an educational program on Pediatric Nurses to increase and improve knowledge and information about Mechanical Ventilation at Neonate Intensive Care Units. Sharing the nurses in variety levels of training programs about NICUs. And Survey on different level of education with large sample size and wide-range variables

KEYWORDS Nurses' Knowledge, Neonatal, Mechanical Ventilation

1-INTRODUCTION

Mechanical ventilation is an intervention plan of lifesaving for neonates suffering from challenges with respiratory problems such as respiratory distress syndrome and apnea. Though, mechanical ventilation caused lung trauma and share infection by means of contributes high level of neonate morbidity and mortality. Although more than factor of lung injury effect by mechanical ventilation are pathophysiology. Mechanical ventilation goal is to exchange of enter oxygenate for neonate and to eliminate carbon dioxide, whereas doing consequently, try to decrease damage to the respiratory system of neonate. Over all historically, ventilation of positive pressure is the best usually used ventilation technique for neonates. [1,2]

Nurses required high level of information and knowledge to playing an important role in helpful the neonates who need admitted to neonate intensive care unit to connect on mechanical ventilation due to respiratory system challenges. Nursing responsibilities cover beyond nursing maintenance, must be focus experience skills in all methods of respiratory mood ventilation, physiotherapy and focus observation for neonates [3,4].

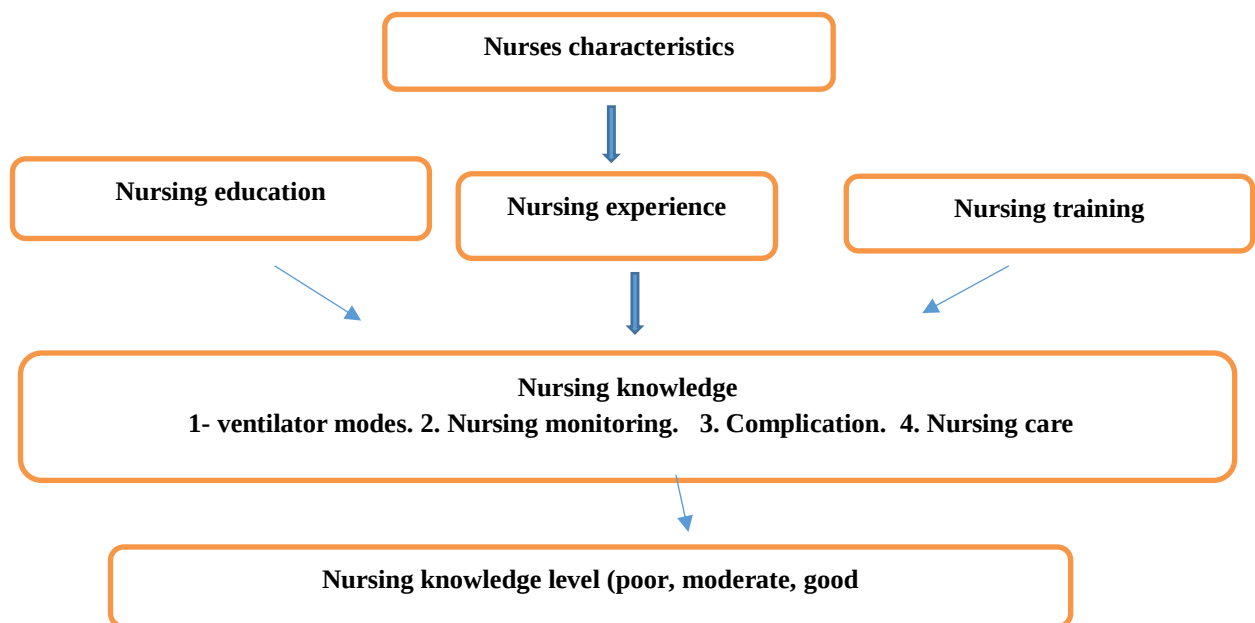
Tasked the nurses with nonstop monitoring for respiratory signs of distress, neonates require ensuring settings ventilator align, adjust of mechanical ventilation settings should be collaborating with other health care team, exchange newborns from endotracheal tube to noninvasive procedure support, expedited weaning of mechanical ventilation and supportive neonate parents emotionally and psychologically over and done with family centers care to relieve anxiety of family [5, 6].

Weaning from ventilation machine is a difficult process that needs inaccurate assessing the readiness of neonate, safe decrease of opportune to remove tubation and ventilator support. Physiological boundaries of Neonates for oxygenation and ventilation create weaning mainly challenging^[7].

Newborn nurses playing a critical goal in this procedure by checking for signs of respiratory crises instability, reading results of arterial blood gas and setup ventilator regulating as necessary. Nurses' ability to recognize signs for disconnect mechanical promptly and initiate suitable interventions is necessary in less the timing of ventilations and accompanying complications^[8,9].

Theoretical Framework:

This recent study is based on Bloom's Taxonomy theory (as conceptual framework), which categorizes nurses' information into levels of remembering, identification, and applying. The theoretical framework directs on nurses' information of neonatal mechanical ventilation, including indications, types, modes, settings, monitoring, complications, extubation, and weaning. It assumes that higher levels of nurses' information advance to suitable, protected, and sound mechanical ventilation management in the Neonate Intensive Care Unit (NICU). Figure- 1. The conceptual framework (theoretical framework) of factors related with nurses' knowledge of neonatal mechanical ventilation in Baghdad City.



The (figure- 1) demonstrated the study's theoretical framework (conceptual framework) , showing how nurses' education, training , experience may be associated with their knowledge of ventilator types, modes, patient monitoring, weaning ,complications, extubation, and nursing care in the Neonate Intensive Care Unit (NICU) in Baghdad City^[10].

This modern survey is uniquely appraising nurses' information of neonatal mechanical ventilation in the (NICU) and identifies particular nurses' information gaps. Its findings may support the development of targeted training programs to improve the quality and safety of neonatal respiratory care.

2- MATERIALS AND METHODS

Study Design: A survey study of quantitative descriptive was applied on Nurses' Information about Mechanical Ventilation at Neonate Intensive Care Unit in Baghdad city from the period of 3^{ed} October 2025 to 20th March 2026.

Setting of the study: The current research was carried out in Neonate Intensive Care Unit in Baghdad City.

Study Population and Sampling: Randomized sample(Aprobability) of (60) Nurse (males & females) working in Neonate Intensive Care unit\ Hospital of Nursing Home.

Data Collection Tools: A questionnaire is constructed specifically for the purpose of the investigation during a review of relevant published evidence, consultation from panel of experts and related novel studies. It composed of two Sections: Section one it includes demographic features concerning the Nurses like: Nurses Age, Nurses Gender and education degree; section two include nurses' information about Mechanical Ventilation at Neonate Intensive Care Unit. The present information is met directly across the expending of the study tool and the organized meeting technique (face to face paper).

Pilot Study: A pilot study was carried out for the period from 3^{ed} October 2025 to 20th March 2026, and conducted on (8) Nurse working in Neonate Intensive Care unit\ Hospital of Nursing Home in Baghdad City.

Statically Analysis:

Data of the present study have been documented and investigated through the application of descriptive statistical data analysis approach and inferential statistical data analysis method.

Ethical and official approvals:

The ethical agreement was taken from the relevant institutional scientific research ethics committee before conducting the current investigation. Informed approval was achieved from each participating nurses at Neonate Intensive Care Unit, with privacy and voluntary samples safeguarded.

3-RESULTES

This table shows that more than half of Nurses are females (61.7%) while remaining are males. The average age for Nurses is refers to 30.82 ± 6.20 years in which 35 % of them are with age group of 25.1 – 30 years. The average of Education Degree refers 5.6 ± 6.8 years in which 65 % of Nurses are having Diploma degree. An overall evaluation with situation to studied items regarding Nurses' Knowledge about main items Mechanical Ventilation at neonatal intensive care unit results shows a Low level of assessment. This table indicate that there is no significant relationship between Mechanical Ventilation Domains and Nurses gender(sex), and education degree.

Table 1: Distribution of Nurses Socio Demographic Features

No	Characteristics	F	%
1	Gender	Male	23
		Female	37
		Total	60
2	Age M±SD= 30.82±6.20	20-25	11
		25.1 – 30	21
		30.1 – 35	13
		35.1 – 40	9
		40.1- 45	6
		Total	60
3	Education Degree M±SD= 5.6±6.8	Diploma degree	39
		Bachelor's degree	19
		Postgraduate Degree	2
		Total	60

Table 2: Overall Evaluation of Nurses' Knowledge about main items Mechanical Ventilation at neonatal intensive care Unite

Main items	Fi	MS	SD	Range	RS	Ev.
Overall Evaluation	77	3.25	0.13	0.42	45.73	L

Ev.: Evaluation, L= Low (20 – 46.66), M= Moderate (46.67 – 73.33), H= High (73.34– 100), MS: Mean of Score; SD: Standard Deviation; RS: Relative Sufficiency

Table 3: The Relationship between Nurses' Knowledge about Neonatal Mechanical Ventilation and their Demographic Data Characteristics

Nurses Socio-demographic Characteristics	Contingency Coefficient (C.S.).	Mechanical Ventilation Domains
Nurses Gender	C.C.	0.417
	P-value	0.008
Nurses age	C.C.	0.041
	P-value	0.563
Education Degree	C.C.	0.392
	P-value	0.004

(*) HS: Highly Significant at $P \leq 0.01$; S: Significant at $P \leq 0.05$; NS: Not Significant at $P > 0.05$

4-DISCUSSION

A total of sixty Nurses' participated in the current study. Most were female Nurses' (61.7%), the largest age group was 25.1–30 years. The average age for Nurses is refers to 30.82 ± 6.20 years, and diploma degree holders denoted the greatest educational group (65 %). The average of education degree refers 5.6 ± 6.8 years .The findings of the study showed that participants (nurses females) more than males, an overall assessment with situation to studied items regarding Nurses' Knowledge about main items Mechanical Ventilation at neonatal intensive care unit results shows a Low level of assessment. Regarding the relationship between nurses' sample knowledge about neonatal mechanical ventilation and their demographic data features in Baghdad City. The study depicts that there is no significant association between Mechanical Ventilation Domains and Nurses participated sex, and education level.

A related a descriptive cross- sectional research design that is carried out on 90 nurses' sample who are working in Neonatal Intensive Care Unit (NICU), in Egypt. The results indicated that many of these nurses are females (96.7%), young adults aged group of 20– <30 years, have been hold a bachelor's degree, and most of them with less than five years of experience. The study showed that while nurses were poor knowledgeable about Continuous Positive Airway Pressure (60%). There was statistically significant difference in the median Mechanical Ventilation Domains knowledge score between nurses based on their countries, sex, age, years of experience and education level ($P < 0.05$). This highlights the continued for developed-service training programs focused on Neonatal Continuous Positive Airway Pressure (CPAP) at the Neonatal Intensive Care Unit (NICU).^[11] A study, we sought after to describe the newborn nurses' responsible in mechanical ventilation administration in Iraq pediatrics, neonatal intensive units. There founded malpractice and not cooperative performs and challenges notable in mechanical ventilation information, training and weaning to decision making^[12]. The present study was limited to nurses' who work in the Neonate Intensive Care Units. in the Baghdad city with a small sample size, so the conclusions can be generalized only to nurses' underlying the present research.

CONCLUSION

Based on the discussion of such review, the study concludes that, the Neonatal Nurses' practices information and knowledge at intensive care units on mechanical ventilations in Iraq is very poor. Nurses knowledge about MV is hard developing related to ministry of health polices, the defect of attention to developing nurses training on ventilators leaves the mission to idea of trial and error. With respect to the study conclusion, the study recommends that, In future studies should be applying an educational program on Pediatric Nurses to increase and improve knowledge and information about Mechanical Ventilation at Neonate Intensive Care Units. Sharing the nurses in variety levels of training programs about NICUs. Survey on different level of education with large sample size and wide-range variables.

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Authors' contribution

All investigators have substantively contributed to the improvement of this manuscript.

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