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*University of Kufa, Faculty of Nursing*

## Nurses Performance Regarding Preterm Infants Suffering from Respiratory Distress Syndrome in Pediatric Teaching Hospitals in Mosul City

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### ABSTRACT

**Background:** Neonatal respiratory distress syndrome (RDS) continues to account for significant morbidity and mortality in the preterm infant. RDS, sometimes called hyaline membrane disease, is a syndrome due to a deficiency in production of a substance that promotes lung growth leading to structurally immature lungs in the newborn and impaired lung functions. Therefore, caring for children with respiratory distress syndrome demanding alert, skillful, and sensitive nurse.

**Objectives:** The study aimed to assess the scientific knowledge and practice of nurses regarding their care provided to premature infants with respiratory distress syndrome in pediatric teaching hospitals at Mosul city.

**Methodology:** The present study utilized a descriptive, cross-sectional design and was carried out on a sample of 120 nurses. that were selected from working in premature units and NICUs in the pediatric teaching hospitals in Mosul city from period 16th March 2025 to 25th May 2025. Data was collected using a structured interview questionnaire designed by researcher. The data was analyzed performed by Statistical Package for the Social Science (SPSS, version 25).

**Results:** The study findings shows that the majority of the study sample were female 80% and 20% of them were male, the study showed that majority of the study sample 68.3% at age range between 20-29 years, while 26.7% of them their age ranged between 30-39 years. The study showed 46.7% of the study sample had acceptable knowledge related to care for premature infants suffering from respiratory distress syndrome. 25% of the study sample had a poor knowledge related to care of premature infants suffering from respiratory distress syndrome.

**Conclusion:** The finding of the study reported that mean total knowledge score of study participants regarding the caring of the newborn with respiratory distress syndrome was 72.8%, while the level of practice in providing care of the newborn with respiratory distress syndrome was 80.4%. In additional, the research revealed significant differences in age, gender, educational level, and participants' knowledge and practice levels in caring of newborns with respiratory distress syndrome.

**Recommendation:** The study recommended that the nurses working in premature units and neonatal intensive care units should attend the training programs periodically to update their knowledge and skills in care of the neonates with respiratory distress syndrome.

**Keywords:** Nurses Performance, Preterm Infants, Respiratory Distress Syndrome.

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## INTRODUCTION

Premature birth is defined as birth that occurs before 37 weeks of gestational age, and newborns are vulnerable to numerous health-related problems, such as respiratory distress syndrome "RDS"(World Health Organization, 2017). Respiratory Distress syndrome (RDS), or hyaline membrane disease, is a disorder of respiratory insufficiency caused by fetal lung immaturity and surfactant deficiency in the newborn, insufficient development and small size of the air sacs and inadequate levels of pulmonary surfactant (Schraufnagel, 2019).

Respiratory distress syndrome is the single most important cause of morbidity in preterm infants, particularly those born before 34 weeks of gestation, and is the most common cause of mortality (Dargaville and Tingay, 2020). "Neonatal respiratory distress syndrome (RDS)" is a debilitating disease where every breath a newborn takes is a fight because they have immature lungs. It is seen more commonly in infants born prior to 34 weeks of gestation as their lungs are underdeveloped due to absence of surfactant, a requisite substance that is responsible for maintaining the air sacs in the lungs in an inflated state (Niemark et al., 2017). The disease is more common and severe in extremely premature infants and infants with very low birth weight.

Yadav et al. (2023) provide additional details on the prevalence of respiratory distress syndrome in preterm infants, noting that 98% of newborns at 24 weeks of gestation have respiratory distress syndrome, compared to 5% at 34 weeks and less than 1% at 37 weeks (Dyer, 2019). The number of cases of respiratory distress syndrome in premature babies is estimated that there are more than 150,000 cases each year worldwide.

In spite of supportive treatment, the mortality rate from acute respiratory distress syndrome is nearly 50%. In the United States, this syndrome has affected 16,268 live births. The incidence of respiratory distress in neonates delivered by cesarean section before the onset of labor is 35.5 per

1000 births compared to 12.2 per 1000 births with cesarean section with labor and 5.3 per 1,000 births with vaginal delivery. Another important reason for respiratory distress in neonates is respiratory distress syndrome (RDS) due to surfactant deficiency, mostly affecting premature infants. RDS is also seen in late preterm and term neonates, especially if the mother has poorly controlled diabetes. Maternal antenatal corticosteroids significantly reduce the incidence of RDS and mortality in preterm neonates. (Abedin, et al., 2025). Caring for infants with ARDS requires attentive, skilled, and empathic nurses. It involves review of a medical history for associated risk factors for the development of ARDS (London, et al., 2017).

Survival in the neonatal period depends not only on the quality of care that women receive during gestation, but also on the quality of care given to newborns in their first month of life. (Pillitteri, 2021). The assessment and enhancement of nursing care is one of the cornerstones of newborn healthcare. Major risk factors for premature birth amongst women were: multiple pregnancy, medical indications for preterm birth (mostly preeclampsia), placenta previa, placental abruption, previous cesarean delivery, and a pregnancy related condition (mostly hypertension), rupture of membranes (Sarhan and Anini, 2021).

## AIMS OF THE STUDY

The study aimed to assess the scientific knowledge and practice of nurses regarding their care provided to premature infants with respiratory distress syndrome in pediatric teaching hospitals at Mosul city.

## METHODOLOGY

A quantitative "descriptive" cross-sectional study was conducted in Mosul city (the largest city in northern Iraq and the second largest city in Iraq) from 16th March 2025 to 25th May 2025.

**Study sample and procedure:**

A non-probability “purposive” sampling was used to select nurses currently working in premature units and NICUs in the pediatric teaching hospitals in Mosul city at the time of data collection. The sample size of participants in the study was 120 nurses selected according to the criteria as (nurses with at least one year of experience in premature units and NICUs, nurses with differing educational qualifications, and nurses who consent to participate in the study). The study proceeded with official authorization from the Scientific and Ethical Research Committee of the College of Nursing at the University of Mosul. The participants in the study were briefed on the study's objectives and findings while safeguarding their rights to autonomy, confidentiality, and anonymity.

**Tools of Measure:**

Since there was no previously designed questionnaire about nurses' knowledge and practice regarding nursing care provided for preterm neonates with RDS, the researcher formulated a questionnaire that addressed all the study's variables that examined the knowledge and practice of nurses working in premature units and NICUs. The researcher used textbooks, previous questionnaires based on conducted research literature; globally and locally to formulate the questionnaire.

- **“Demographic data questionnaire”:**

The questionnaire consisted of the following data: Gender, age, marital status, level of education, work experience. in children's hospitals, and previous training course on premature infants with respiratory distress syndrome.

Nurses' knowledge and practice regarding premature infants with respiratory distress syndrome: This section included multiple questions, and participants who selected the correct answer to a given question were considered knowledgeable of the subject. Respondents who chose the incorrect answer to a given question were considered to have no knowledge of the subject. Knowledge assessment

system: Correct and complete answers were awarded 2 points, correct but incomplete answers were awarded 1 point, and incorrect answers were awarded 0 points. The points were then added up and converted into a percentage. Knowledge was considered poor if the percentage was >60%, reasonable if it was 60-75%, and good if it was 75-100%. The researcher also prepared the last section of the tools which assessed participants' practice toward premature infants with respiratory distress syndrome. There were three possible responses for every question in the Practice part of the questionnaires: “Never” = zero, “Sometimes” = one, and “Always” = two. Higher scores correspond to a higher degree of practice. The questionnaire items were subjected to reliability analysis to assess their correlated with each other. The pilot results were also utilized to verify reliability (test re-test reliability). The Cronbach's alpha for the questionnaire was .87. Internal consistency was high as indicated by the Pearson's correlation coefficient, which was 80.38 for all the items of the questionnaire. The validity and reliability findings indicated that the present questionnaire was an appropriate instrument for data collection in the study.

- **Statistical Analysis:**

The data were entered and analyzed using a Statistical Package for the Social Science (SPSS, version 25). Statistical analysis was performed using frequency and percentage distribution. While, The Chi squared tests were applied for relationship between variables. were used for measuring differences between variables as nurse's knowledge and other sociodemographic variables, such as, age, and years of experience in pediatric field and educational qualification.

**RESULTS**

Table (1) shows that the majority of the study sample were female 80% and 20% of them were male. Also, the table show that the majority of the study sample 68.3% at age range between 20-29

years, while 26.7% of them their age ranged between 30-39 years, and only 5% of them were aged between 40-49 years. According to the educational level, the table revealed that more than one third 38.3% of the study sample their level of education were diploma, while 40.0% were bachelor and only 21.7% were technical diploma.

Figure (1) shows that a quarter of the sample 25% of the study sample had a poor knowledge related to care of premature infants who suffer from respiratory distress syndrome, and about half 46.7% of the study sample had acceptable knowledge related to care of premature infants who suffer from respiratory distress syndrome, while about one third 28.3% of them had a good knowledge related to care of premature infants who suffer from respiratory distress syndrome.

Figure (2) shows that only 8.3% of the study sample had a poor practice regarding care of premature infants who suffer from respiratory distress syndrome, and nearly a quarter 23.3% of the study sample had acceptable practice regarding care of premature infants who suffer from respiratory distress syndrome, while about two thirds 68.3% of them had a good practice regarding care of premature newborns suffering from respiratory distress syndrome.

Chi-square ( $\chi^2$ ) was used to determine the association between different independent variables, the socio-demographic variables: (Nurses' age in years, gender, nurses' education level, number of training courses, and years of experiences) and their total knowledge levels. Table (2) showed that there was highly statistically significant difference between nurses' knowledge and their age and years of experiences at P-value (.000). While, there was not significant difference between nurses' knowledge with their number of training course and years of experiences at P-value (.287, 0.86) respectively.

## DISCUSSION:

The study included 120 nurses working in premature infant care units and neonatal intensive care units in pediatric teaching hospitals. Two-thirds of the participants were female nurses, about half had a bachelor's degree, two-thirds were between the ages of 20 and 29, and about half had less than five years of experience. These characteristics were similar to those reported by Khoza (2019), where most participants (80.7%) were nurses working in neonatal intensive care units, (45.2%) had less than 5 years of experience, and (61%) of participants were under 30 years old. In addition, about half of the study respondents reported that had received special educational training in the care of newborns with respiratory distress syndrome, more than two-thirds of participants indicated that their hospitals provide training courses and educational programs for nurses.

A study (Tiryaki and Cinar, 2016) which discussed nursing awareness and quality of care during the treatment of newborns with respiratory distress syndrome reached similar conclusions, it was found that the educational programs aimed to enhance nursing knowledge and skills have been very limited. The findings of the current study revealed that participants' working in premature infant care units and neonatal intensive care units demonstrated a lack of knowledge in several areas, such as that they could be aware that respiratory distress syndrome is a fatal pulmonary disease caused by a deficiency of surfactant in the lungs and that they were not knowledgeable regarding the signs and symptoms of respiratory distress syndrome. About half of the nurses demonstrated a moderate level of knowledge, and only 28.3% demonstrated a high level of knowledge. Overall, the results reflected a moderate level of knowledge in care of infants with respiratory distress syndrome and highlighted the necessary to develop a strategy to improve and enhance for upgrading and optimizing their knowledge. The finding is consistent with findings of "

Elbilgahy et al., (2025) and Elsayed et al., (2021), which founded a lack of knowledge between nurses caring for premature infants with respiratory distress syndrome. In additionally, they also observed that the knowledge level of pediatric nurse's was poor among more than one third of them. Furthermore, another study was consistent with the current results ("Mahaling", 2020) which founded a large number of pediatric nurses demonstrated moderate knowledge level while the others were (33.3% and 28.6%) having good and poor level of knowledge. Furthermore, the findings illustrated a high level of practice exhibited by nurses in certain domains, including frequent monitoring of the baby's color, taking measures to avoid aspiration, routinely monitoring the humidifier oxygen, and carefully observing the circulation on the Monitors.

The findings showed that most of the participants demonstrated good practice. This finding agrees with Elsayed et al., (2021) which mentioned that Majority of pediatric nurses perform their work efficiently when caring for newborns with "respiratory distress syndrome". In contrast, the findings from this study contradict those of Elbilgahy, et al., (2025) who reported that the practice level of more than half of pediatric nurses was unsatisfactory. In the opinion of the researcher, the results of the study were logical because nurses working in premature infant care units and neonatal intensive care units have the necessary knowledge and skills. This result is explained by the facts that nurses who are working in premature infant care units and neonatal intensive care units are carefully selected, qualified, and have good abilities and skills. Furthermore, in-practice training and continued educational programs "play a key role in enhancing the knowledge and skills of nurses" to keep pace with the innovations in the nursing occupations.

#### CONCLUSIONS AND RECOMMENDATIONS:

According to the results of the current study, it was demonstrated that the total knowledge among

the study subjects regarding the caring for the newborns with respiratory distress syndrome were 72.8%, and the average of practice level of caring for the newborns with respiratory distress syndrome were 80.4%. Additionally, the findings revealed that there were statistically significant differences between the age, Gender, educational level, and their levels of knowledge and practice in caring for newborns with respiratory distress syndrome. Furthermore, there were not statistically significant between the experienced and previously-training and their knowledge and practice levels in caring for newborns with respiratory distress syndrome. Nurses working in neonatal intensive care units need a periodic training program to improve their knowledge and performance in caring for newborns with respiratory distress syndrome. A standardized nursing protocol and guidelines should be provided to guide pediatric nurses in the management of high-risk newborns in neonatal intensive care units.

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## TABLES &amp; FIGURES:

Table (1): Socio demographic characteristics of the study sample (No. 120)

Socio Demographic Characteristics		No.	%
Age	20-29 years	82	68.3
	30-39 years	32	26.7
	40-49 years	6	5
	<b>Total</b>	<b>120</b>	<b>100%</b>
Gender	Male	24	20.0
	Female	96	80.0
	<b>Total</b>	<b>120</b>	<b>100%</b>
Educational Level	Technical diploma	26	21.7
	Diploma	46	38.3
	Bachelor	48	40.0
	<b>Total</b>	<b>120</b>	<b>100%</b>
Actual service in pediatric teaching hospitals	Less than 1 year	46	38.3
	1-5 years	56	46.7
	6-10 years	14	11.7
	More than 10 years	4	3.4
	<b>Total</b>	<b>120</b>	<b>100%</b>
Number of training programs	No one	44	36.7
	One session	18	15.0
	More than one session	58	48.3
	<b>Total</b>	<b>120</b>	<b>100%</b>
the hospital in which you work educational offering programs and training courses regarding the care of premature infants	Yes	92	76.7
	No	28	23.3
	<b>Total</b>	<b>120</b>	<b>100%</b>

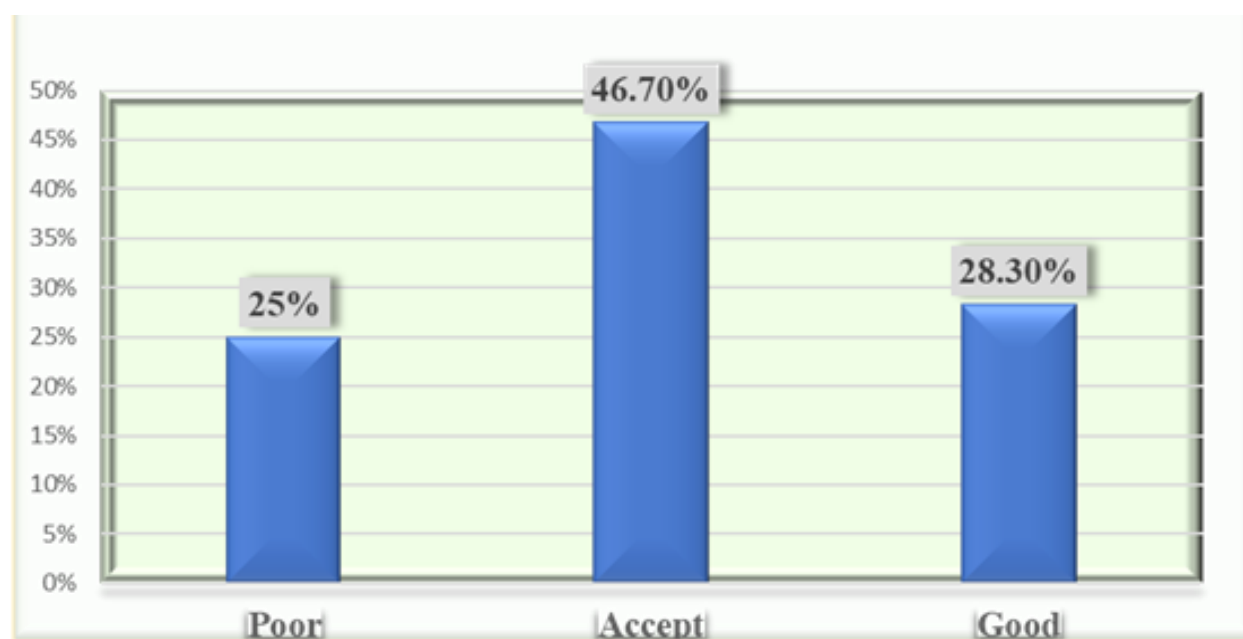


Figure (1): Levels of pregnant women's knowledge regarding folic acid

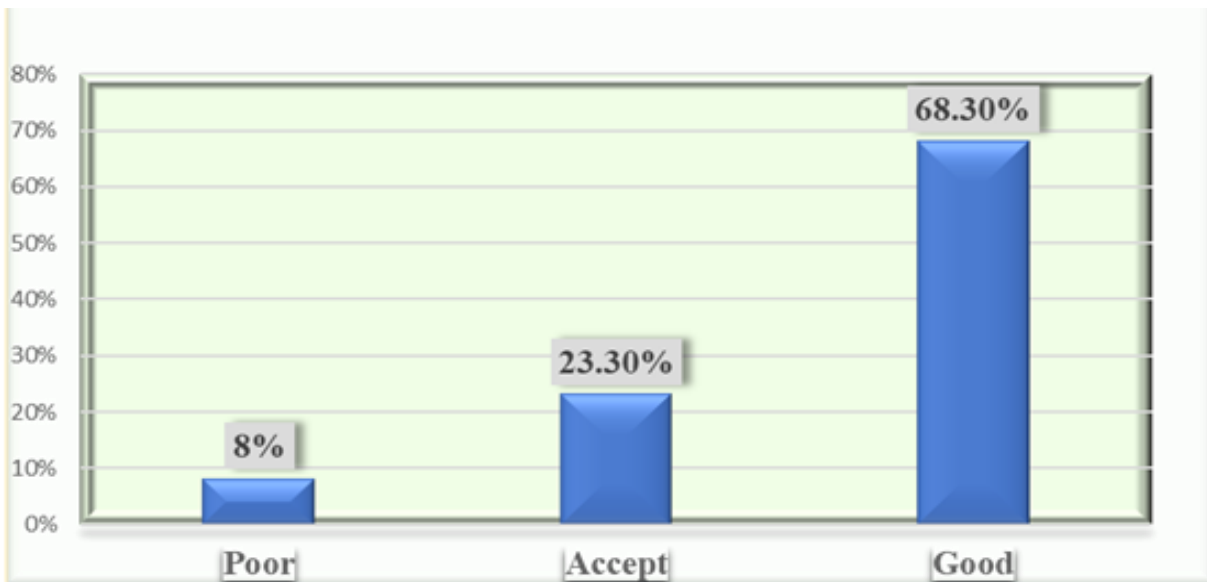


Figure (2): Distribution of the studied sample level of nurse's practice related to preterm neonates with respiratory distress syndrome

Table (2): Correlation between the studied nurse's socio-demographic characteristics and their total knowledge levels

Socio-demographic characteristics	In dependent Variables	Total knowledge		Knowledge levels (Dependent Variable)						
		Total NO.	Poor knowledge		Acceptable knowledge		Good knowledge		Chi-square	
			NO	%	NO	%	NO	%	X <sup>2</sup>	P-value
Age (years)	20-29 Years	82	14	17	42	51.2	26	31.7	69.4	.000
	30-39 Years	32	14	43.7	10	31.2	8	25		
	40-49 Years	6	2	33.3	2	33.3	2	33.3		
Gender	Male	24	8	33.3	10	41.6	6	25	33.3	0.04
	Female	96	22	22.9	46	47.9	28	29.1		
Educational Level	Technical diploma	26	8	30.7	14	53.8	4	15.3	10.3	.006
	Diploma	46	10	21.7	18	39.1	18	39.1		
	Bachelor	48	12	25	24	50	12	25		
Number of training course	No one	44	14	31.8	12	27.2	18	40.9	2.50	.287
	One session	18	4	22.2	8	44.4	6	33.3		
	More than one session	58	12	20.6	30	51.7	16	27.5		
Years of experiences	Less than 1 year	46	12	26	20	43.4	14	30.4	53.6	0.86
	1-5 years	56	10	17.8	28	50	18	32.1		
	6-10 years	14	6	42.8	6	42.8	2	14.2		
	More than 10 years	4	2	50	2	50	0	0		

N. Sig Not significant.: Sig: significant. H. Sig: High Significant.