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Assess Nurses' Knowledge and Practices about Immediate Care Bundle Protocol for Neonates

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1.ABSTRACT

Background: Concerns about NICU mistreatment have arisen as a result of rising NICU admissions, longer gestational ages, greater birth weights, and slowly decreasing disease acuity. To lower neonatal mortality in low- and middle-income nations, hospitals must provide better treatment. **Aim**: To assess nurses' knowledge and practices about immediate care bundle protocol for neonates. **Method**: A descriptive research design including fifty nurses and fifty full-term newborns was carried out in the delivery room, surgery room, and neonatal care unit at Mansoura New General Hospital.Using Tool I; A Structured Questionnaire sheet for nurses, and Tool II; Nurses Observational checklists for nurses. **Results**: It was observed that the studied nurses had total mean score of Knowledge by 24.78±4.79 and total mean score of observational checklist was 47.48±10.83 about immediate care bundle protocol for Neonates. **Conclusion:** It concluded that all graduate nurses had insufficient knowledge and unsatisfactory performance immediate care bundle protocol for Neonates. There was also a strong positive correlation between knowledge and achievement levels. **Recommendation**: There is a need to establish in-service training programs related to well-designed immediate care packages for childcare and maternity care providers to develop caregiver knowledge, attitudes and practices and adapt them to new concepts of care. there is. Nursing curricula should incorporate current technology and update knowledge of recent advances as emergency care packages for pediatric nurses.

Keywords: *knowledge, practices, immediate care bundle protocol, nurses, Neonates*

2.Introduction:

The mother and the members of the family typically experience great suffering when their newborn is hospitalized in the NICU. With rising NICU admissions, rising gestational ages, rising birth weights, and declining disease severity over time, there is potential for NICU abuse. (Haidari et al.2021).

According to a 2020 study by Algamel, Elhawary, Amin, and Abd Elmenem, 26.7% of term babies in Egypt are admitted to the neonatal intensive care unit (NICU) annually. Around the world, 2.5 million of her newborns perished in 2017. (Muhe et al., 2019). In 2019, 2.4 million infant deaths occurred, or 6,700 infant deaths per day. Nearly three-quarters of newborn deaths take place within the first week of life, and around one-third within the first day of life (Kamala et al., 2021; Qu, et al., 2022). A critical time is the first week of life, when 73% of neonatal deaths occur. Although the majority of these deaths are preventable, progress in lowering neonatal mortality has slowed behind that in lowering child and maternal mortality, thus neonatal deaths now make up a larger percentage of all child fatalities (Bee, Shiroor & Hill, 2018).

There is proof that her more than 20 perinatal and neonatal health practises are beneficial in lowering neonatal mortality. The majority of these procedures are part of the Essential Newborn Care package of recommendations made by the World Health Organization (WHO) (ENC). The ENC standards have been adopted by numerous health authorities as their national standard of treatment (Perez et al., 2018). Clean umbilical cord care, which involves cutting and tying the umbilical cord using sterile tools and threads, thermal treatment, and other essential neonatal care (ENC) procedures help prevent infant morbidity and mortality (drying the newborn immediately after birth, wrapping, delaying the first birth). the arrival of a baby). nursing within the first hour of birth and bathing for at least 6 hours or several

days to lower the risk of hypothermia. ENC aims to address poor nursing procedures as soon as possible after birth (Ayele et al., 2022).

To lower neonatal mortality in low- and middle-income countries (LMICs), hospital treatment must be improved . (Gathara and others, 2020) For neonates to survive, the first few hours after birth require critical and vital neonatal care. However, the ability of medical professionals to offer the necessary emergency newborn care is crucial to their survival. The majority of healthcare professionals are nurses, who constitute the foundation of the industry. Pediatric nurses are crucial in providing neonates with safe and efficient care (Imam, Gathara, Aluvaala, Maina & English, 2022).

2.1 Significance of the study:

The majority of current studies on birth concentrate on the management of preterm or low birth weight newborns. They mention the necessity for humane delivery methods for healthy term newborns very briefly or in passing. In addition, studies reveal that invasive treatments are applied much more frequently than these operations (Schott et al. 2022)

The preterm and perinatal mortality rates are rising year after year, and the perinatal mortality rate she reached was 5.30%. As a result, neonatal clinical care is subject to increasing demands from both parents and medical personnel. Therefore, fostering healthy growth and development in babies is crucial in order to increase the quality of neonatal care. Professional and organised nursing teaching is also required. Eldin, Metwalli, Aly, Soliman, and Massih (2022).

When a baby is admitted to the NICU, regular life, wellbeing, and family dynamics are disrupted. When it comes to adjusting to their parental responsibilities and interacting with their kids, parents frequently confront difficulties. Zhao and others, 2022

2.2Aim of the study:

this study aimed to assess nurses' knowledge and practices about immediate care bundle protocol for neonates.

2.3Research questions:

1- What are mean scores of nurses' knowledge about immediate care bundle protocol?
2- What are mean scores of nurses practice about immediate care bundle protocol?

3.Method

3.1Research Design

The descriptive research design was used to achieve the aim of the current study.

3.2Study Settings

This study was conducted in the delivery room, operating theatre, and Neonatal Care Unit at Mansoura New General Hospital (MNGH) Mansoura, Egypt.

3.3Subjects:

A convenient sample consisting of all nurses (N=50) in immediate care of term infants (N=50) who were available during the data collection period. The following inclusion criteria.

Inclusion criteria

- **Born between 37 to 42 weeks of gestation through vaginal delivery or cesarean section**
- **Weighing 2.5 Kg to 4 kg at birth.**
- **With APGAR score of 7 and 10 at 1, 5 minutes.**

3.4Tools for data collection

Data were collected through using the following two tools**:**

Tool I: A Structured Questionnaire sheet for nurses

It was designed by the researcher in a simple Arabic language after reviewing the related literature with the guidance of **(Abd, Negawa, & ElDein, 2012).**

Part 1): It addresses the characteristics of the nursing staff surveyed, such as age, gender, and level of education.

Part 2): Newborn characteristics such as gender, gestational age, and Apgar score are covered in his 1 and 5 minutes.

Part 3): Address caregiver knowledge of the Immediate Care Bundle Protocol. This was used to assess the nurse's knowledge of her immediate care package her protocol. It consisted of 55 multiple-choice questions. (nurse's knowledge of delivery of the newborn on the mother's stomach (2 points), dryness and irritation of the newborn (8 points), assessment of breathing and coloration of the newborn (8 points), tightening of the umbilical cord (4 points), initiation) breastfeeding (9 points), eye care (3 points), vitamin K (4 points), newborn vaccination (5 points), newborn assessment (12 points). A total score of surveyed nurses' knowledge was obtained (55), with an estimated median score of (65), taken as an intercept, and surveyed nurses' knowledge to the median score classified as correct Based on this, 1 point was given for this and 0 for wrong, missed or unclear answers.

Sufficient knowledge if the obtained score was equal to 84.6% and more

Insufficient knowledge if the obtained score was less than 84.6%

Tool II: Observational checklists of immediate care bundle protocol for nurses:

This tool was developed by the researcher

after reviewing recent national and international literatures **(Essential Newborn Care Course published by WHO, 2010; Standards of Performance of the Immediate Neonatal Nurses Care)** to evaluate nurses' practice of immediate care bundle protocol after delivery. This checklist consisted of 66 steps covering immediate care bundle protocol**: Part (1)** total nurses observational checklists about immediate care bundle protocol (46 scores) and **Part (2)** direct nurses observational checklists about immediate care items which divided into six categories (preparation of the delivery room (10 scores), applying infection control practice (10 scores), newborn dryness & stimulate (14 scores); breathing assessment (10 scores), cord care (18 scores), & breast feeding (24 scores).**Scoring system:** The score of each step of the practices rang from two score for correctly done step, one score for incorrectly done step, and zero for missed or not done step. The total scores of the studied nurse's practices (66 step) was estimated according to median score into

- **A satisfactory level** of performance (≥85%)
- **Unsatisfactory level** of performance (<85%).

3.5Validity and Reliability:

Data collection tools are checked for content validity by five experts in the field of pediatric nursing. Reliability was also performed using the Alpha Cronbach test.

Tool 1 was highly reliable with r = 0.976 and Tool II was highly reliable with r = 0.776.

3.6Ethical considerations

Oral consent was gained from the nursing staff before the study started after being explained the aim and nature of the study. The study was voluntary, and each participant had the option of terminating it whenever they wanted to, risk-free, according to the researchers. The study ensured the privacy and confidentiality of the data acquired, and the data were just used for research.

3.7Pilot study

To demonstrate the viability and applicability of the tools and assess the time needed for data collection, a pilot study was carried out on the 10% of the total sample size (5 nurses and 5 newborns). Those who participated in the pilot study were excluded from the study sample.

3.8Fieldwork:

Data collection lasted for five months, from March 1, 2020, to the end of July 2020. In response to a formal letter from the Faculty of Nursing at Mansoura University regarding specific details of the study objectives, timing of data collection, and securing cooperation during the data collection process, formal approval was obtained from the Research Ethics Committee at Mansoura Faculty of Nursing as well as the head Nurse of the delivery room, operating room, and neonatal unit, Mansoura New General Hospital.

Three days a week, for six hours a day, data was collected. Nursing students were initially introduced to the researchers, who then gave a brief description of the study's objectives and methodology. Each principal nurse gave their verbal consent for the study to be conducted. Individual interviews were conducted with study nurses who satisfied the sampling requirements and agreed to take part in the study.

It starts with the researcher introducing themselves, explaining the purpose of the research and using all the research tools to collect the necessary data. This study assessed a nurse's demographics and occupation using Tool I (Part 1), and an assessment of a graduate nurse's knowledge of Immediate Care Her Package Her Protocol using Tool I (Part 3). The Observation Checklist then asked the nurses of the immediate postpartum care package protocol in the area to stand on the corner of the floor, trying to see how each nurse would behave in setting up the delivery room. Rotated in relation to practice. Newborn Dryness and Irritation, Respiratory Assessment, Umbilical Cord Care, and Breastfeeding, Using Tool II (Parts 1 and 2) Nurse's Immediate Care Protocol Her Bundle Observation Checklist.

3.9Statistical analysis

The Social Science Statistics Package (SPSS) version 20 was used to examine the data. For data that was ordinarily distributed, descriptive statistics used arithmetic mean (X) and standard deviation (SD) along with counts and percentages to describe and summarise the data. The correlation between two quantitative variables that are normally distributed was examined using Pearson's correlation coefficient.

4.Results:

Table 1 illustrate that 66.0% of the studied nurses aged from 20 to less than 30 years constituted, and only 2.0% were 40 years and above and the age of the studied nurses ranged from 19 to 50 years, with a mean age of 28.42±7.51 years.

In relation to level of education, Technical diploma was prevailing among studied nurses and constituted 42.0% of the studied nurses, while only (8.0%) had Post graduate affiliation.

Regarding the studied nurses' years of experience in NICU, it was observed that 44.0% were had experienced < 1 year, 36.0% had experienced from 1 year - < 5 years, and only 8.0% for those who experienced from 5 years - < 10 years.

This table also, illustrate that 68.00% of the

studied nurses stated that didn't previously attend any programs about care of newborn, and 32.0% of them reported that they previously attend programs about care of newborn.

Table 2 illustrate that 62.0% of the studied newborns were male, while 38.0% of them were female. In relation to weight, height, and head circumference of the studied newborns it was notices that they had mean of 2.88±0.25kg, 49.30±1.84cm and 33.26±0.44cm respectively. Regarding vital signs; it was found that all of the studied newborn had normal range of the respiratory rate with mean of 56.24±2.75 c / m. Temperature with mean of 36.60±0.20c. also, heart rate was in normal range with mean of 144.42±6.35 b / m. The same table also, represent that the majority of newborn had normal colour (98%).

Table (3) illustrate that all of the studied nurses had insufficient knowledge about deliver the baby onto the mother's abdomen.. Regarding nurses' knowledge about assess the baby's breathing and colour the same table also , show that non of the nurses had sufficient knowledge. Also, illustrate that 88% of the studied nurses had insufficient knowledge about cord clamping. Slightly less than two thirds of the studied nurses had insufficient knowledge about breastfeeding initiation and vitamin K (62% for each). The same table also represented that non of them had insufficient knowledge about eye care. Regarding nurses' knowledge about newborn immunization & newborn assessment the same table, also represents that the mean score of nurses knowledge was 1.94±0.73, & 4.66±1.30 respectively with total mean score of nurses knowledge was 24.78±4.79.

Table (4) show that non of the studied nurses had satisfactory performance regarding direct nurse observation about the immediate care bundle protocol, regarding preparation of the delivery room , applying infection control practices and newborn dryness, Nurses' observational checklist of Breathing assessment of the newborn, Cord care of the newborn, and Breastfeeding. (0.0% for each).

Table 5 show correlation between total knowledge and performance about immediate care bundle. It was found that there was strong positive correlation between performance about immediate care bundle and total knowledge of the studied nurses as r=0.366, and p- value = 0.001

5.Discussion:

It's best to start breastfeeding during the first hour of birth. Other procedures referred to as essential newborn care (ENC) that reduce neonatal morbidity and death include clean cord care, which involves cutting and tying the cord with sterile tools and threads, thermal care, and postnatal care (birth care). the newborn's first bath until at least 6 hours or several days to avoid the risk of hypothermia), drying and wrapping the neonate right away after delay, and umbilical cord care. ENC will work to correct any subpar maintenance practices as soon as possible following delivery, (Ayele et al., 2002).

According to the current study's findings about the personal characteristics of university nurses, more than half of them are between the ages of 20 and 30. The average age of university nurses is 28.42 7.51.

These findings are in line with research by Shrestha, Petrini, Turale, et al., (2013) as well as Gavine, MacGillivray, McConville, Gandhi, and Renfrew (2019), whose participants ranged in age from 18 to 59 years, with around half of them in their 20s and 30s. A study by Negussie, Hailu, and Megenta (2018) titled "Awareness and practise of essential newborn care and related factors among nurses and midwives working in a health centre in Jimazon, Ethiopia" also includes the current findings. It is in line with earlier studies, which found that the age range of respondents was 22–51 years, with a mean of 28.86 (SD = 5, 78) years. The biggest percentage of respondents were 25–29 years old, while the smallest percentage was 40–44 years old. Additionally, this study agreed with Abdu, Gebrselassie, Abdu, Mare, Tadesse & Liben's (2019) finding that the average age of the study nurses was 29.9 ± 3.4 years.

In terms of gender, it is currently known that all nurses are female. This can be explained by the fact that Egyptian nurses have long had a traditional working environment and job description, and that up until a decade ago, they still exceeded men in the nursing profession. Additionally, nursing is unquestionably a woman's profession, and traditionally, these women have represented a competitive advantage in the field. It turns out that women make up the majority. On the other side, a 2019 study by Abdu, Gebrselassie, Abdu, Mare, Tadesse, and Liben examined how well midwives and nurses in public health institutions in the Afar area of northern Ethiopia knew and used immediate newborn care. Nearly equal numbers of men and women participated in the study, with more than half of the nurses being female and over two-thirds more men.

The current study's findings regarding education levels showed that the majority of the nursing staff had a technical level and a very small percentage had a graduate degree. The new

findings are in line with study by Arba & Zana (2020), which discovered that more than two-thirds of participants have doctorate degrees in their educational backgrounds. On the other hand, the study by Ali, Obeisat, and Tarawneh (2019), which discovered that almost all of the nurses evaluated held a bachelor's degree in nursing, is at odds with our findings. A study by Shrestha, Petrini, and Turale (2013) that discovered that roughly one-third of nurses possess a bachelor's degree is likewise at odds with the results of the present research.

It was found that just under half of the trained nurses had less than one year of experience in the newborn critical care unit. 1 year, and more than a third of them have between 1 and 5 years. A small percentage of them have experience greater than 5 years. Decade. This might be because nurses with diplomas from nursing programmes and technical education are employed more quickly than those with college degrees. More over one-third of the nurses assessed in a related study by Shrestha, Petrini, and Turale (2013) had one to five years of professional experience. The study by Negussie, Hailu, and Megenta (2018), which discovered that two-thirds of her study participants had more than six years of experience, did not agree with this one. Additionally, a study by Ali, Obeisat, and Tarawneh (2019) revealed that more than half of the participants had worked in her NICU for more than six years. This study also contrasts with her Arba, Zana (2020) study, which indicated that individuals with more than six years of expertise were much more prevalent than those with less than five years of experience. About a quarter of an inch. The majority of graduate nurses have never attended a newborn care program, and just one-third have taken part in a neonatal care program, according to research on the participation of graduate nurses in neonatal care training programs. This outcome might be brought on by the nurse's heavy workload, the understaffing in her programme, the lack of training, and the absence of a professional nursing curriculum. The findings of the current study are in line with those of the study by Shrestha, Petrini, and Turale (2013), in which the majority of participants did not receive any training in newborn care.

On the one hand, this outcome conflicts with the research by Ali, Obeisat, and Tarawneh (2019), which discovered that roughly 75 percent of the participants finished the programme. Additionally, a study by someone who discovered that over a third of those asked had finished training in neonatal care More than one-third of the nurses assessed in a related study by Abdu, Gebrselassie, Abdu, Mare, Tadesse & Liben (2019) got rapid training in neonatal care. We discovered that, in contrast to the study of Arba and Zana (2020), the majority of participants had undergone her ENC training.

We lacked current expertise in terms of skilled nursing professionals who delivered babies in the mother's stomach. Additionally, nurses lacked understanding of newborns' dryness and irritability. The fact that the majority of nurses who attend professional institutions and nursing schools are graduates and that professional institutions' curricula do not cover as much material as nursing schools' may be factors in this outcome. In contrast to what was discovered for neonatal placement right after birth, a study by Negussie, Hailu, and Megenta (2018) indicated that about three-quarters or more of the majority of babies were placed in the mother's tummy right after birth. have enough information to determine whether or not However, fewer than 25% of them lacked sufficient expertise. Additionally, according to a study by Abdu, Gebrselassie, Abdu, Mare, Tadesse, and Liben (2019), almost two-thirds of study participants had sufficient knowledge of babies. The majority of participants, including Sharmin, Chowdhury, Khan & Hoque (2021) and Yosef, Getachew & Weldekidan (2021), had an excellent understanding of the location of the newborn care.

The current study's findings also point to a lack of caregiver awareness about newborn breathing and colour. Current findings do not agree with a study by Abdu, Gebrselassie, Abdu, Mare, Tadesse, and Liben (2019). According to the study, about half of the participants had the necessary information to evaluate neonatal breathing. In accordance with the findings of the current study, Yosef, Getachew, and Weldekidan (2021) discovered that more than half of the participants lacked sufficient knowledge regarding whether the baby required the first umbilical cord or resuscitation. I comprehend. It is immediately cuttable.

The findings of this study also showed that most nurses lack enough expertise of umbilical cord clamping. Although not in the same line, studies by Murphy, et al., 2019 and Berhe, Tinsae & Gebreegziabher (2017) indicated that the majority of caregivers had a solid understanding of delayed cord clamping. Negussie, Hailu, and Megenta (2018) discovered that only roughly one-third of participants had a solid understanding of line lock delays in the same line survey. More than half of the participants in a study by Yosef, Getachew, and Weldekidan (2021) had a solid understanding of cable clamp delay. A study by

Esan, Adedeji, Bello, and Omolafe (2020) also found that nearly two-thirds of respondents had sufficient knowledge of how to clamp and cut the umbilical cord immediately in a newborn..

Additionally, according to current findings, one-third of nurses are proficient in starting a breastfeeding attachment. according to a 2021 study by El-Sakka, Yacout, Abd, and Moustafa. Both studies (Shridhar, Pandey & Karmani, 2019 and Shahin, Metwally & Abd El Monem, 2021) and discovered highly statistically significant differences in the participants' breastfeeding knowledge. But it does not follow the same direction as the current study by Sharmin, Chowdhury, Khan, and Hoque (2021). The majority of participants in a study by Berhe, Tinsae, and Gebreegziabher (2017) believed that breastfeeding should begin within the first hour of a baby's life. The majority of participants in a study by Esan, Adedeji, Bello, and Omolafe (2020) had good knowledge of early breastfeeding initiation during her first hour.

Regarding eye care It was evident from the findings at this point that none of the nurses who took the training had any knowledge of ophthalmology. According to a study by Berhe, Tinsae, and Gebreegziabher (2017), only around one-third of participants who used eye drops (silver nitrate) after washing their eyes had enough knowledge of utilising. This finding is consistent with the findings of the current study. to prevent eye infections following delivery. According to a study by Murphy et al. (2019), the majority of nurses have a basic understanding of ophthalmology. A study by (Abdu, et al., 2019) that found that more than two-thirds of her participants had good knowledge of eye care also contrasts with this.

The majority of nurses were aware that tetracycline was the suggested eye ointment, according to Murphy et al. (2019). In a study by Berhe, Tinsae, and Gebreegziabher (2017), it was discovered that one-third of participants admitted to using eye drops (silver nitrate) after washing their eyes to prevent postnatal eye infections. I've also discovered that it demonstrates your application skills.

According to current findings, almost one-third of nurses lacked sufficient knowledge of vitamin K. A study by Abdu et al. (2019), which found that more than half of the participants had appropriate knowledge regarding vitamin K injections, is inconsistent with the current study. They discovered that fewer than half knew the appropriate dose of vitamin K for term babies, which is similar to the findings of a study by Murphy, et al., (2019) found that less than a quarter of nurses knew about vitamin K administration. Also, in a study conducted by Ayenew, Abebe, and Ewnetu (2020), less than half of the participants were given vitamin K intramuscularly in the anterolateral part of the thigh, and the appropriate dose of vitamin K was 1 in normal body weight. mg, found to be 0.5 mg. mg for babies whose weight he is less than 1500 grams.

The findings of this study also showed that most nurses lack enough knowledge on vaccinations. More than half of the participants in a study by Abdu et al. (2019) had solid knowledge of immunisation. Additionally, a study by Murphy, et al. (2019) discovered that the majority of nurses were aware of the newborn's oral polio vaccine and her BCG.

The most current findings reveal that not all nurses have enough expertise of neonatal evaluation. We conducted a pre- and post-intervention study," reported Lee et al. (2011) and Abed et al. (2021) systematic review investigating the quality of early essential neonatal care in hospitals in Gaza. They also noted the lack of knowledge about neonatal evaluation.

According to current findings, the majority of nurses do poorly when it comes to neonatal drying. Less than one-third of her nurses reported that their infant was wrapped in a fresh, warm cloth or towel, leaving the breast exposed, according to a research by Murphy et al. (2019). Contrary to the findings of the study by Yosef, Getachew, and Weldekidan (2021), nearly two-thirds of them dried their newborns right away.

More over half of participants in a dislike study by Esan, Adedeji, Bello, and Omolafe (2020) dried their newborn's body too rapidly. Nearly less than half of the participants in a study by Ayenew, Abebe, and Ewnetu (2020) brought the baby into skin-to-skin contact after removing the wet towel. More than three-fourths of the participants in a study by Tasew, Teshale, Bahrey, Mariye, and Teklay (2019) promptly cleaned their infants with a dry towel.

The majority of nurses do not provide proper neonatal cord care, according to current findings about neonatal umbilical cord care. In a related study, Murphy et al. (2019) discovered that less than a quarter of the nurses they surveyed actually used the suggested cord cleansing solution, chlorhexidine, to perform cord care. I comprehend. Contrary to the findings of the Yosef, Getachew, and Weldekidan (2021), the majority of them actually used cord clamping within the first two to three minutes of the baby's delivery. Less than half of research participants cut the umbilical chord of a

crying newborn 2-3 minutes after birth, or until the cord stopped pulsating, according to a study by Ayenew, Abebe, and Ewnetu (2020). Similar to a study by Esan, Adedeji, Bello & Omolafe (2020), we found that more than two-thirds of her respondents immediately clamped and cut the umbilical cord of their newborn.

According to current findings, just a small percentage of nurses performed adequately with breastfeeding. According to a related study (Sachan et al., 2021; Tran et al., 2018), compliance was improved and maintained when breastfeeding began within an hour. Every 36 months, 61%. According to a research by Yosef, Getachew, and Weldekidan (2021), more than two-thirds of new mothers consistently began nursing their babies within the first hour of delivery. More than three out of four participants in a study by Berhe, Tinsae, and Gebreegziabher (2017) practiced putting the infant on the mother's stomach right after birth. More than three-quarters of study participants started exclusive breastfeeding within an hour of giving birth, according to Ayenew, Abebe, and Ewnetu's (2020) research. In a study by Esan, Adedeji, Bello, and Omolafe (2020), more than three-quarters of respondents started breastfeeding within 30 minutes of giving birth.

6.Conclusion:

Based on the results of this study, she concluded that all nurses studied had insufficient knowledge and unsatisfactory performance. There was also a statistically significant correlation between knowledge and performance.

7.Recommendations:

Based on the finding of the study, the following recommendations are suggested:

- There is a need to establish in-service training programs associated with well-designed immediate care packages for pediatric nurses to develop nurse knowledge, attitudes and practices that are compatible with emerging concepts in nursing.
- Nursing curricula should incorporate current technology to update knowledge on the latest advances as an emergency care package for pediatric nurses.
- A simple pamphlet about the pediatric nurse's emergency care package should be available and easily accessible in neonatal wards and delivery rooms.
- Surveys can be repeated with larger samples in a multicenter setting to generalize results.
- Design training programs for emergency care packages to help nurses assess and prepare term infants, reduce NICU admissions and complications, and identify resources that can mitigate adverse outcomes.
- Provide pediatric nurses with clear training materials (including books, textbooks, brochures, posters, videos and websites) on primary, secondary and tertiary prevention.

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Table (1): Distribution of studied nurses concerning to their demographic characteristics and occupational data.

▪		
▪ **Characteristics of the nurses**	**No (50)**	**% 100**
▪ **Age**		
Less than 20 years	4	8.0
20 – less than 30 years	33	66.0
30 – less than 40 years	12	24.0
40 years and above	1	2.0
Mean ± SD	28.42±7.51	
Min-Max	19-50 year	
▪ **Sex**		
Female	50	100.0
▪ **Level of education**		
Secondary school diploma	11	22.0
Technical diploma	21	42.0
Bachelor's degree	14	28.0
Post graduate affiliation	4	8.0
▪ **Years of experience in NICU**		
< 1 year	22	44.0
1 year - < 5 years	18	36.0
5 years - < 10 years	4	8.0
10 years and more	6	12.0
Nurses' pervious attendance of programs about care of newborn		
Yes	16	32.0
No	34	68.0

Table (2): Characteristics of the studied newborns

Characteristics of the newborns	N (50)	% 100
Sex		
Male	31	62.0
Female	19	38.0
Gestational age		
Full term	50	100.0
Mean ± SD	37.50±0.71	
Apgar score at 1minute		
Normal	50	100.0
Mean ± SD	7.20±0.78	
Apgar score at 5minute		
Normal	50	100.0
Mean ± SD	7.16±0.73	
Weight		
Mean ± SD	2.88±0.25	
Height		
Mean ± SD	49.30±1.84	
Head circumference		
Mean ± SD	33.26±0.44	
Respiratory rate		
Normal	50	100.0
Mean ± SD	56.24±2.75	
Temperature		
Mean ± SD	36.60±0.20	
Heart rate		
Normal	50	100.0
Mean ± SD	144.42±6.35	
Color		
Normal	49	98.0
Abnormal	1	2.0
O2 saturation in room air		
Mean ± SD	95.64±1.72	
Blood glucose level		
Mean ± SD	80.54±7.10	

Table (3) Nurses' knowledge about Immediate Care Bundle Protocol

Item	Knowledge level	N	%	50	100
Nurses' knowledge about deliver the baby onto the mother's abdomen					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*0.40±0.98*			
Nurses' knowledge about dry and stimulate the baby					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*3.62±0.72*			
Nurses' knowledge about assess the baby's breathing and color					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*3.18±1.02*			
Nurses' knowledge about the cord clamping					
	Sufficient	6		12.0	
	Insufficient	44		88.0	
	Mean ± SD	*2.20±0.72*			
Nurses' knowledge about breastfeeding initiation					
	Sufficient	19		38.0	
	Insufficient	31		62.0	
	Mean ± SD	*5.52±2.27*			
Nurses' knowledge about eye care					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*0.62±0.49*			
Nurses' knowledge about vitamin K					
	Sufficient	19		38.0	
	Insufficient	31		62.0	
	Mean ± SD	*2.64±0.87*			
Nurses' knowledge about newborn immunization					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*1.94±0.73*			
Nurses' knowledge about the newborn assessment					
	Sufficient	0		0.00	
	Insufficient	50		100.0	
	Mean ± SD	*4.66±1.30*			
	Total mean score of Knowledge	**24.78±4.79**			

Table (4) Nurses' observational checklist of immediate care bundle protocol for nurses:

Item	Satisfactory, & Unsatisfactory performance	N%	
Part I:			
Total nurses observational checklist about immediate care bundle protocol	Satisfactory performance	0	0.00
	Unsatisfactory performance	50	100.0
	Mean ± SD	*18.04±5.95*	
Part II: Direct nurses observational checklist about immediate care bundle protocol			
A. Preparation of the delivery room:	Satisfactory	6	12.0
	Unsatisfactory	44	88.0
	Mean ± SD	*3.22±1.47*	
B. Applying infection control practices:	Satisfactory	0	0.00
	Unsatisfactory	50	100.0
	Mean ± SD	*2.12±0.32*	
C. The newborn dryness	Satisfactory	0	0.00
	Unsatisfactory	50	100.0
	Mean ± SD	*4.38±0.49*	
D. Breathing assessment of the newborn:	Satisfactory	0	0.00
	Unsatisfactory	50	100.0
	Mean ± SD	*3.24±0.98*	
E. Cord care of the newborn	Satisfactory	0	0.00
	Unsatisfactory	50	100.0
	Mean ± SD	*7.40±2.74*	
F. Breastfeeding	Satisfactory	5	10.0
	Unsatisfactory	45	90.0
	Mean ± SD	*9.08±4.36*	
	Total mean score of observational checklist	**47.48±10.83**	

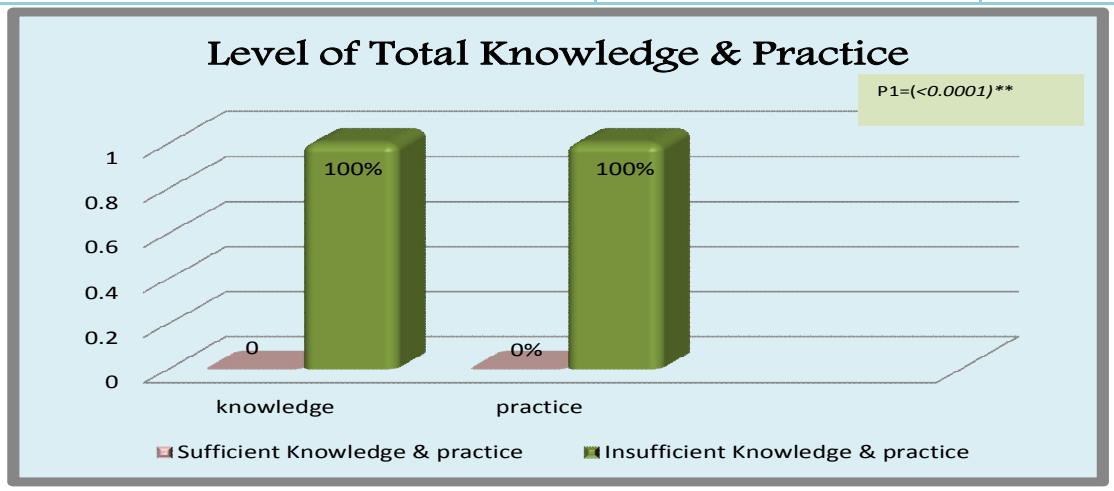

Figure (1): Distribution of the studied nurses according to their level of total Knowledge & practice about immediate care bundle

Table 5: correlation between total knowledge and performance about immediate care bundle

Items	Performance about immediate care bundle pre the protocol Correlation Coefficient (r)	P- value
Total knowledge score	0.366	0.009