Assessment of Nurses' Knowledge and Practice regarding Neonatal Jaundice in Neonatal Intensive Care Unit at Suez Canal University Hospitals

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Abstract

Background: Neonatal jaundice is still the leading cause of preventable brain damage, physical and mental handicap and early death among newborn infant in many communities. **Aim:** The present study aimed to assess nurses' knowledge and practices regarding neonatal jaundice in neonatal intensive care unit at Suez Canal University Hospitals. **Design**: A descriptive research design was utilized. **Setting:** the study was conducted at NICU at Suez Canal University Hospitals. **Sample**: included a convenient sample of all nurses (45) and 60 neonates diagnosed with jaundice in the previously mentioned setting.**Tools:**A structured interviewing questionnaire and observational checklists to assess nurses' knowledge and practices regarding neonatal jaundice. **Results:** Indicated that more than four fifths of the studied nurses had poor level of knowledge regarding neonataljaundice, andmore than four fifths of the studied nurses had unsatisfactory practice regarding nursing care given to neonates with jaundice. **Conclusion:** The study concluded that the studied nurses' knowledgeand their practice levels were poor regarding nursing care given to neonates with jaundice and there was nostatistical correlation betweenthe studied nurses' total knowledge and their total practice. **Recommendation:** The study recommended in-services educational program for updating nurses' knowledge and practice regarding neonatal jaundice.

Keywords: Neonates – Jaundice–Nurses– knowledge - Practice

1. Introduction

Jaundice is one of the most prevalent clinical conditions in neonates. Neonatal jaundice is a common clinical problem encountered during the neonatal period, especially in the first week of life. Nearly 8% to 11% of neonates develop jaundice, when the total serum bilirubin rises above the 95th percentile for age (high-risk zone) during the first week of life. Almost 60% of full-term and 80% of preterm neonates develop jaundice **(Ashor et al., 2016; Olusanya et al., 2015).**

Although neonatal jaundice is a benign self-limiting and fairly common condition, severe neonatal jaundice can lead to Kernicterus and irreversible brain damage. Excessive amounts of bilirubin build up in the bloodstream and cause brain damage and can result in problems with vision and hearing

difficulties, mental retardation, and lifelong illnesses which can lead to death **(Adebami, 2015).**

Jaundice is a potentially life threatening condition that continues to affect the newborns, accounting for continued hospital readmission. Health care providers worldwide recognize that severe jaundice is a silent cause of a significant neonatal morbidity and mortality. Untreated neonatal jaundice can lead to death in neonatal period and to kernicterus **(Mohamed et al., 2016).**

High bilirubin levels may be toxic to the developing central nervous system and may cause neurological impairment even in term newborns. In most cases, it is benign and no intervention is required. Approximately 5-10% of them have clinically significant jaundice requiring use of phototherapy or other therapeutic options **(Pattanshetti and Dash, 2018).**

Therapeutic methods of management of hyperbilirubinemia include phototherapy, exchange transfusion, infusion of albumin, and pharmacologic management **(Olusanya, et al., 2015).**

Nurses play an important role in the implementation of universal screening for increased bilirubin levels in the newborn **(Khudhair, 2016)**. Neonatal nurses' should acquire advanced up-to- date knowledge and practices as phototherapy and blood exchange to save neonates' life **(Ashor et al., 2016).**

Significance of the study

Neonatal Jaundice is the most common health hazard problem and the commonest cause of admission to NICU in the neonatal period that about 50%of birth in the world and 60% of birth in Egypt **(Ahmed and Hani, 2017).**

Nursesplay an important role to achieve optimal outcomes for neonates who are suffering from jaundice**(Ibrahim et al., 2019).** The current study was carried out to shed light on nurses**'** knowledge and practice regarding care of neonates suffering from jaundice.Therefore, this was important to assess pediatric nurses' knowledge and practices regarding neonatal jaundice.

The aim of the study was to:

Assess nurses' knowledge and practices regarding neonatal jaundice in neonatal intensive care unit at Suez Canal University Hospitals.

Research Question:

What are nurses' knowledge and their practices regarding neonatal jaundice at neonatal intensive care unit of Suez Canal University Hospitals?

Is there a relationship between nurses 'knowledge and their practices regarding neonatal jaundice in neonatal intensive care unit at Suez Canal University Hospitals?

Subjects and Methods

Study design: A descriptive design was used in this study.

The sample of the study: a convenient sample of 45 nurses and 60 neonates diagnosed with jaundice.

Study setting: The study was carried out Neonatal Intensive Care Unit in Suez Canal University Hospitals.

Tools of data collection:

Tool I: A structured interview questionnaire:

This tool was developed by the researcher based on related scientific literature review. It was composed of the following parts:

Part 1: Characteristics of the studied nurses (age, qualification, and years of experience).

Part 2: Characteristics of the studied neonates (gender, gestational age and birth weight).

Part 3: Assessment of nurses' knowledge regarding neonatal jaundice and its care. The total number of questions (58 questions) that assessed the studied nurses' knowledge was checked within model key answer.

Scoring System of nurses' knowledge:

Rregarding the knowledge scores, the correct answer was given two scores, the incomplete correct answer was given one score and don't know or incorrect answers were given zero. The total knowledge scores were 116 scores = 100%. The scores were summed up and converted into percent score. Knowledge was considered to be good (if the studied nurses' total score of knowledge percent was ≥ 75%), average (if the studied nurses' total score of knowledge percent was 60% < 75%) or poor (if the studied nurses' total score of knowledge percent was < 60%).

Tool II:Observational checklists

The observational checklists were adapted from **Lomax, (2015); Lynn, (2014); Bowden and Greenberg,(2012) and MacDonald et al. (2012**), to investigate the nurses' practices regarding care of neonates with jaundice. A certain modifications were done by the researcher in the adapted checklists to suit the nature of the study. It

was used to assess nurses' actual practices regarding care for neonatal jaundice. It included the following procedures: taking venous blood sample, eye care, umbilical cord care, bathing, diaper care and bottle feeding. Care of neonate under phototherapy, care for neonates during blood exchange transfusion.

Scoring System of nurses' Practices:

The total number of steps in all observational checklists was 144 steps. Actual nurses' practice was assessed by the observational checklists and accordingly their practice was classified either "done" or "not done". Regarding the practices scores, each correct step done by the nurse was given (1) score and not done was given (0) score. The total practice scores were 144 scores. The scores were summed up and converted into percent score. The total nurses' practices were considered to be either satisfactory (if the studied nurses' total score of practices was ≥ 75%) or unsatisfactory (if the studied nurses' total score of practices was < 75%).

Reliability of the Study Tools:

A structured interviewing questionnaire was tested by using a Cronbach's Alpha test that was 0.863 and 0.785 for the observational checklists.

Field work:

The purpose of the study was explained briefly to nurses who were willing to participate. The actual field work was carried out over a period of six months, starting from May 2019 to November 2019. Nurses were asked to fill the structured questionnaire in the presence of the researcher to provide any help if it is needed. The time consumed to answer questionnaire sheet ranged from 15-25 minutes. The observational checklists were filled by the researcher. The researcher directlyobserved each nurse for once during their actual practice. The time consumed to observe each nurse ranged from 10 to 30 minutes. The researcher was available 4 days weekly.

Administrative design:

An official letter was obtained from the Dean of the Faculty of Nursing, Suez Canal University, to the Director of Suez Canal University Hospitals, for permission and cooperation to conduct the study. The aim of the study & its expected outcomes were illustrated.

Ethical considerations:

The research approval was obtained from the Ethical Committee / Faculty of Nursing / Suez Canal University. Verbal

consent was also obtained from the studied nurses providing care to the neonate suffering from jaundice. Confidentiality was secured for each studied nurse. The studied nurses were informed that they have the right to withdraw from participation in the study at any time.

Statistical design:

Appropriate statistics including, frequency, distribution, means and standard deviations, Wilcoxon test and Pearson correlation. P-value < 0.05 was considered statistically significant (*), p-value < 0.001 was considered highly statistically significant (**), and p-value ≥ 0.05 was considered statistically insignificant (NS).

3. Results

Table (1): indicates that 64.4% of the studied nurses belonged to the age group from 20 <25 years old (**mean age**, 23.76±5.16 years).Also, 84.4% of them were females. Regarding nurses' qualification the majority of the studied nurses (93.3%) had technical nursing institute. Concerning years of experiences of the studied nurses, it was cleared that 66.7% of them had experience in the neonatal intensive care unit from 1 < 5 years.

Table (2) clarifies that, 65% of the studied neonates were males. Less than half (45.0%) of the studied neonates were fed by artificial feeding, more than half (51.7%) of them diagnosed with physiological jaundice. As regards phototherapy treatment, 45.0% of them were treated with double phototherapy.

Table (3) illustrates that the nurses'total knowledgelevel regarding neonatal jaundicewas poor (84.4%).

Table (4) shows that the total nurses' practiceslevel regarding care of neonatal jaundicewasunsatisfactory (84.4%).

Table (5) demonstrates that there was no statistical correlation between totalnurses' knowledge and practices score regarding neonatal jaundice.

4. Discussion

Regarding characteristics of the studied nurses, the present study illustrated that less than two thirds of the studied nurses their age was in age group of 20 < 25 years. This finding supported by **Tharwat et al. (2014)**, who conducted a research about "Assessment of nurses' knowledge and practice about care needed for newborn under phototherapy in neonatal intensive care unit (NICU) in Ismailia City", who found that 58% of them

were between the ages of 20 years to less than 25 years.

In contrast with **ElSalieh et al. (2020),** a study entitled "Assessment of Neonatal Nurses' Performance regarding Early Detection of Neurological Dysfunction among Neonates Having Hyperbilirubinemia", who reported that more than one third of the studied nurses were in age group 25-30 years.

Concerning qualifications of the studied nurses, the majority of them had diploma of technical institute of nursing; these findings were supported by **Tharwat et al. (2014),** who demonstrated that more than half of the studied nurses had nursing technician institute. From the researcher point of view this may be due to that nursing technical institutes provide the health care settings and community with larger number of graduates than the other nursingagenciessuch as Faculties of Nursing.

Concerning the years of experiences of the studied nurses, the findings of the current study showed that two thirds of the studied nurses had 1 < 5 years of experience in the Neonatal Intensive Care Units. This result is inan accordance with **El Salieh et al. (2020),** who found that approximately one third ofthe studied nurses had <5 years of experience in NICU. Also, **Mohamed et al. (2016),** who found that nearly two thirds of the studied nurses had 2 - 5 years of experience in NICU with **x̄± SD** 7.36± 6.22 years.

The present study showed that the majority of the studied nurses didn't attend any training programs regarding neonatal jaundice. The finding agreed with **Mirza and Atrushi, (2019),** in a study entitled "Knowledge and Attitude of Nurses about Neonatal Hyperbilirubinemia in DuhokGovernorate" who reported that the highest percentage of the studied sample did not have training courses regarding neonatal hyperbilirubinemia. Also,**Tharwat et al. (2014),** stated that the majority of the studied nurses didn't attend any training sessions regarding neonatal hyperbilirubinemia.Howeverthis finding disagreed with **Fayoumi, (2018),** in study entitled "Neonatal Jaundice Knowledge, Attitude and Practice among NursesWorking in Neonatal Intensive Care Units and Pediatric Wards, Deanship of Graduate Studies Al-Quds University" who observed that more than half of nurses had previous training course regarding neonatal hyperbilirubinemia.

Concerning the characteristics of the studied neonates, the present study reflected that, one third of the studied neonates were males. Moreover, these findings agreed with

Abd El Moktader et al. (2019), in a study entitled "Hyperbilirubinemia in Neonatal Intensive Care Unit: Incidence and Etiology at Fayoum University Hospital", who showed that the majority of neonates with jaundice were males.

Concerning feedingtype of neonates, the current study represented that more than two fifths of the studied neonates' had artificial feeding. This finding was consistent with **Ashor et al. (2016),** who conducted study about "Effect of a Designed Nursing Care Protocol on Clinical Outcomes of Neonates with Jaundice", who revealed that the majority of the studied neonates had artificial feeding. Also, these findings inconsistent with **El-Sayed et al. (2013),** in a study entitled "Effect of phototherapy on behavior of jaundiced neonates" who conducted a research about "Effect of phototherapy on behavior of jaundiced neonates" and revealed that most of the studied neonates (80%) were fed by bottle.

The present study revealed that more than half of the studied neonates had physiological jaundice. These finding goes on the same line with **Alkohotani et al. (2014),**who conducted a research about "The frequency of different types of neonatal jaundice in the Makah region" and revealed that the most common type of jaundice was physiological jaundice. These results disagreed with **Kalita et al. (2016),** about "Aetiological Profile of Neonatal Hyperbilirubinemia in Neonatal Intensive Care Unit of Gauhati Medical College and Hospital, Guwahati, Assam" who reported that the incidence of pathological jaundice (55.76%) was more than physiological jaundice.

In relation to treatment modalities, the current study reflected that more than two thirds of the studied neonates were under double phototherapy. This finding was agreed with **Asefa et al. (2020),** in study entitled "Determinants of Neonatal Jaundice among Neonates Admitted to Neonatal Intensive Care Unit in Public General Hospitals of Central Zone, Tigray, Northern Ethiopia" who reported that two thirds of the cases were treated with phototherapy.

Concerning gestational age of the studied neonates, the present study showed that the gestational age ranged from 36 to 39 weeks with($\bar{x}\pm$ SD 37.05 ± 0.89) weeks. This finding agreed with **Abdel Gafour et al. (2020),** in study entitled "Effect of Nursing Intervention on Care of Neonates Suffering from Hyperbilirubinemia" who demonstrated that the gestational age ranged from

34.24±2.24 and 34.14±1.86 weeks among the studied neonates.

Regarding the total knowledge of the studied nurses related to neonatal jaundice, the majority of the studied nurses had poor level of knowledge. These findingswere in the same line with **Abdel Gafour et al. (2020),** who revealed that, the majority of the studied nurses had inadequate knowledge.These results may be due to lack of training courses about neonatal jaundice.

Concerning the total practice of studied nurses' regarding neonatal jaundice, the majority of the studied nurses had unsatisfactory level of practice.These findings go in the same line with **Ibrahim et al. (2019),** in study entitled "Assessment of Nursing Care Provided to Neonates Undergoing Phototherapy" who revealed that, the majority of the studied nurses had unsatisfactory practice. These results may be due to nurses' work overload and large number of neonates needs care.

Concerning correlation betweentotal nurses' knowledge and their total practices, there was nostatistically correlation between total knowledge and their total practices. This finding was consistent with the study done by **Al Gameel et al. (2020),** who stated that, there was no statistically significant correlation between knowledge score and practice score among the studied nurses.

5. Conclusion

In the light of the current study, it can be concluded that, the majority of the studied nurses' had poor knowledge and unsatisfactorypractices regarding neonatal jaundice.

6. Recommendations

- Periodic assessment of nurses' knowledge and practices regarding neonates suffering from jaundice at NICU.
- Pre – service training program for all nurses specially newly recruited nurses working at NICU regarding neonatal jaundice.
- Periodically training programs directed to all aspects of care provided for neonates at NICU.

Table (1):Distribution of the studied nurses according to their characteristics (n = 45)

Nurses' Characteristics	No	%
Age in Years:		
20<25	29	**64.4**
25 < 30	8	17.8
30≤ 35	8	17.8
x̄± SD	**23.76±5.16**	
Qualification:		
Diploma of Nursing School	1	2.2
Diploma of Technical Institute of Nursing	42	**93.3**
Bachelor in Nursing Sciences	2	4.4
Years of Experiences:		
1< 5	30	**66.7**
5 < 10	13	28.9
10≤15	2	4.4
x̄± SD	**20±0.88**	
Having Training Course in Neonatal Jaundice:		
Yes	3	6.7
No	42	**93.3**

Table (2): Distribution of the studied neonates according to their characteristics **(n= 60)**

Neonates' Characteristics	No	%

Gender:		
Male	39	**65.0**
Female	21	35.0
Types of Feeding:		
Breast Feeding	18	30.0
Artificial Feeding	27	**45.0**
Both	15	25.0
Types of Jaundice:		
Physiological	31	**51.7**
Pathological	29	48.3
Phototherapy Treatment:		
Single	13	21.7
Double	27	**45.0**
Triple	20	33.3

Table (3): Distribution of the studied nurses' total knowledge regarding neonatal jaundice (n=45)

Items	No	%	*W*
Poor	38	**84.4**	**6.4**
Average	7	15.6	
x̄± SD	**47.98±2.83**		

Table (4): Distribution of the studied nurses' total practices regarding care provided to neonates with jaundice (n=45)

Items	No	%	*W*
Unsatisfactory	**38**	**84.4**	5.2
Satisfactory	7	15.6	
x̄± SD	**101.3±66.7**		

Table (5): Correlation between the studied nurses' total knowledge and their total practices regarding neonates with jaundice (n=45)

Items	Total nurses' knowledge	
	(r)	***P***
Total nurses' practices	0.020	0.899

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