Original Article

Knowledge regarding neonatal jaundice among students

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ABSTRACT

Objectives: The objectives of the study were to assess the knowledge regarding neonatal jaundice (NNJ) among students in school of Midwifery Lafia, North Central Nigeria and to find the statistical significance association between their level of knowledge score regarding NNJ with their selected sociodemographic variables.

Material and Methods: The research design used for the study was a descriptive survey design, and a purposive sampling technique was used to select 50 students in school of Midwifery Lafia, Nigeria. This prospective research was conducted within 11 months (from January to November 2022). Data were collected using a self-structured knowledge questionnaire. The data were analyzed using descriptive and inferential statistics with IBM Statistical Package for the Social Sciences Statistics version 26.0.

Results: The results showed that the sociodemographic variables and age range of the respondents are between 18–20 years, 21–23 years, and ≥24 years, which accounted for 11 (22%), 23 (46%), and 16 (32%), respectively. Out of 50 (100%) respondents, 0 (0.0%) have adequate knowledge, 21 (42.0%) had moderate knowledge, while the majority, 29 (58.0%) had inadequate knowledge of NNJ. Therefore, the $H_{0:1}$ Hypothesis was accepted, while $H_{1:1}$ Hypothesis was rejected. There was a statistically significant association between their level of knowledge score regarding NNJ with their selected sociodemographic variables such as age (21–23 years) $P = 0.017$, level of study (300) $P = 0.003$, and family history of NNJ (no) $P = 0.001$. Hence, the $H_{0:3}$ Hypothesis was rejected, while $H_{1:3}$ Hypothesis was accepted.

Conclusion: In conclusion, the recommendation was given to conduct a similar study in different settings using a large sample for generalization of the findings.

Keywords: Knowledge, Neonatal jaundice, Northcentral, School of midwifery, Students

INTRODUCTION

The word jaundice was derived from the French word "Juan" which means yellow.[1] Neonatal Jaundice (NNJ) can be described as yellowish discoloration of the skin, sclera, and mucosa caused by excess accumulation of bilirubin in the tissue and plasma, and serum bilirubin level should be in excess more than 17–18 mg/dL.[2] It is a common condition globally, occurring in up to 60% of term and 80% of pre-term new-borns in the 1st week of life, while in Nigeria is 35%.[3] The etiological factors include ABO and Rhesus (Rh) incompatibility, Glucos-6-phosphate dehydrogenase (G6PD) deficiency, infection (including sepsis and urinary tract), while known predisposing factors are infant of diabetic mother, prematurity, low birth weight, hyperbilirubinemia in siblings, and unknown cause.[4]

However, in normal physiology bilirubin comes from the breakdown in heme, which is produced from the breakdown of haemoglobin, heme is converted to biliverdin, iron, and carbon-monoxide by the enzyme heme oxygenase. Biliverdin is then converted to bilirubin by

reductase; then conversion of heme to bilirubin takes place in the reticuloendothelial system. The unconjugated bilirubin is hydrophobic and is transported to liver, the liver bound to albumin where it is conjugated by the enzyme uridine diphosphate-glucuronosyltransferase. Conjugated bilirubin, which is water soluble is excreted in the bile and into the gastrointestinal tract and mostly excreted in feces after being metabolized by bacterial flora, and some conjugated bilirubin is deconjugated to unconjugated bilirubin and reabsorbed through the enterohepatic circulation.[5]

Moreover, there are several types of NNJ reported in neonates, including pathological jaundice, physiological jaundice, jaundice due to breastfeeding or breast milk, and hemolytic jaundice, including three subtypes due to Rh factor incompatibility, ABO blood grouping incompatibility, and jaundice associated with G6PD deficiency.[6] Several studies showed that for more than five decades in Nigeria where, the burden of severe NNJ is unpinned by widespread G6PD deficiency, and nationwide survey of pediatricians in Nigeria, ranked NNJ as a priority neonatal morbidity for World health intervention.[7] The first symptom is a yellowish discoloration of the skin and the eyes. NNJ can be detected by examining the baby and testing bilirubin levels in the blood.[8]

In addition, the choice of management is made according to the severity of the jaundice, phototherapy, exchange transfusion, or fluid replacement may be required. The use of prebiotics to prevent jaundice can result in a change in consistency and frequency of defecation.[9] The complications can lead to serious lifelong neurological disabilities and complications such as delay speech, motor disorders, and kernicterus.[4] Therefore, according to the recent global survey, about 1.1 million new-borns develop severe jaundice annually and most of them reside in Sub-Saharan Africa and South Asia. NNJ is the leading cause of mortality and morbidity associated with newborns, especially in West Africa, and needs to be prioritized with global intervention.[10] Hence, the researcher felt the need and desire to conduct a study on knowledge regarding NNJ among Students in selected school of Midwifery in North Central Nigeria.

Aim

The aim of the study was to assess the knowledge regarding NNJ among students in school of Midwifery Lafia, North Central Nigeria and to find the statistically significance association between their level of knowledge score regarding NNJ and their selected sociodemographic variables.

Research hypotheses

- $H_{0:1}$ There was no statistically significant knowledge of NNJ.

- $H_{1:2}$ There was a statistically significant association between their level of knowledge regarding NNJ and their selected sociodemographic variables.

MATERIAL AND METHODS

Study design and population for the study

The research design used for the study was a descriptive design to assess the knowledge regarding NNJ among students in school of Midwifery Lafia, Nigeria.

Sample size and sampling technique

A purposive sampling technique was used to select 50 Students in school of Midwifery Lafia, Nigeria. The sample size of this study was 50 respondents who were selected from the target population, which are students in school of Midwifery Lafia, Nigeria.

Inclusion criteria

Only students in school of Midwifery Lafia, Nigeria, those that were willing to participate and were available during data collection were included in this study.

Exclusion criteria

Students that are not willing to participate in the study and those that were not available during data collection were excluded from the study.

Development and description of tool

A structured knowledge questionnaire was developed by the researcher to obtain answers from Midwifery Students. The tool used for the research study was a self-structured knowledge questionnaire which was prepared to assess the knowledge regarding NNJ. The tool was formulated on the basis of the clinical experience of the researcher, extensive library search, review of literature, and consultation of experts. The instrument for data collection was a self-structured, closed-ended questionnaire to suit the research objectives.

- Section A: It consisted of demographic variables of students and included six items such as age, marital status, religion, level of study, area of residence, and family history of NNJ.
- Section B: It consisted of a self-structured knowledge questionnaire on knowledge regarding NNJ. There were 12 knowledge questions, each question had multiple choice with four responses (a, b, c, and d). Each correct answer was given a score of one mark, while the wrong answer and unanswered score was zero. The maximum score was 12. The level of knowledge score was interpreted as adequate, moderate, and inadequate.

Ethical consideration

The study was conducted after the approval of the ethical committee of the Nasarawa State Ministry of Health Lafia, Nigeria. Consent was also obtained from the Principal School of Midwifery and study participants; the students were assured of confidentiality of their responses.

Method of data collection

The data were collected from the respondents and was analyzed using descriptive and inferential statistics with the aid of IBM Statistical Package for the Social Sciences version 20.0; simple criteria were analyzed by frequency and percentage distribution tables. The chi-square test was used to find the association between their level of knowledge regarding NNJ with their selected sociodemographic variable. [Table 1] shows the level of knowledge score, and the of knowledge score was graded as adequate, moderate and inadequate. 75 - 100% (9 - 12 score) was graded as adequate, 50 - 66.66% (6 - 8 score) was graded as moderate, and 0 - 41.66% (0 -5 score) were graded as inadequate level of knowledge.

RESULTS

The Table 2 shows that the age range of the respondents is between 18–20 years respondents socio-demographic variables, 21–23 years, and ≥24 years which accounted for 11 (22%), 23 (46%), and 16 (32%), respectively. In religion practice, 36 (72%) practice Christianity, 12 (24%) Islam, while 2 (4%) other regions. According to the level of study, 10 (20%) are in 100 level, 16 (32%) are in 200 level, and 24 (48%). Minority 18 (36%) of the respondent are residing in rural, while majority 32 (64%) are in urban area. Only 11 (22%) has family history of NNJ whereas 39 (78%) have no family history of NNJ. Table 3 the results showed that, out of 50 (100%) respondents, 0 (0.0%) had adequate knowledge, 21 (42.0%) had moderate knowledge, while the majority 29 (58.0%) had inadequate knowledge of NNJ.

The Table 4 shows the association between their level of knowledge regarding neonatal jaundice and their selected sociodemographic variables. And there was a statistically significant association between their level of knowledge score regarding NNJ with their selected sociodemographic variables such as age (21–23 years), $P = 0.017$, level of study (300) $P = 0.003$, and family history of NNJ (no) $P = 0.001$.

DISCUSSION

Salia *et al.* conducted a study on knowledge, attitudes, and practices regarding NNJ among caregivers in a tertiary health facility in Ghana. Systematic random sampling was used to select the sample; data were collected from caregivers using a questionnaire. The data were analyzed using STATA

Table 1: Level of knowledge score.

Level of knowledge	Score	Percentage
Adequate	9-12	75–100.00
Moderate	6-8	50–66.66
Inadequate	0-5	0–41.66

Table 2: Respondents socio-demographic variables *n*=50.

S/No	Variable	Frequency (F)	Percentage
1	Age		
	18–20 years	11	22.0
	21–23 years	23	46.0
	≥24	16	32.0
2	Marital status		
	Unmarried	36	72.0
	Married	14	28.0
3	Religion		
	Christianity	36	72.0
	Islam	12	24.0
	Others	2	4.0
4	Level of study		
	100 level	10	20.0
	200 level	16	32.0
	300 level	24	48.0
5	Area of resistance		
	Rural	18	36.0
	Urban	32	64.0
6	Family history of neonatal jaundice:		
	Yes	11	36.0
	No	39	64.0

Table 3: Respondents knowledge of neonatal jaundice (n=50)

Level of knowledge	Score Range	Frequency (F)	Percentage
Adequate	9–12	0	0.0
Moderate	6–8	21	42.0
Inadequate	0–5	29	58.0

version 14.0. The results showed that less than half of the caregivers had good knowledge (45.5%) and attitude (47.5%) but 58.9% had good practices regarding NNJ. Caregivers who had prior awareness and education on NNJ were three times more likely to have good knowledge about jaundice than those without previous education $P = 0.001$.[11]

In another study conducted by Huq *et al.* (2017) on knowledge regarding NNJ management among mothers, a descriptive survey study was done in a tertiary-level hospital of Dhaka City. A purposive sampling technique was used to

Table 4: Association between their level of knowledge regarding neonatal jaundice with their selected sociodemographic variables. $n=50$.

S/No	Variables	P-value
1	Age Years 21–23 years	0.017[s]
2	Level of study 300	0.003[s]
3	Family history of neonatal jaundice No	0.001[s]
s: Statistically significant association		

select the sample to administer the questionnaire. Data were collected from 150 respondents. The results showed that 7.3% of the respondents had an excellent level of knowledge regarding NNJ, 40.0%, 34.0%, 18.7% had satisfactory, good, and poor level of knowledge, respectively. There was a statistically significant association between the previous knowledge of the respondents on NNJ with the level of knowledge among the respondents ($P = 0.027$) and age of the respondents ($P = 0.012$).[12]

The key findings of this study showed that the sociodemographic variables showed that the age range of the respondents is between 18–20 years, 21–23 years, and ≥24 years, which accounted for 11 (22%), 23 (46%), and 16 (32%), respectively. In religion practice, 36 (72%) practice Christianity, 12 (24%) Islam, while 2 (4%) other regions. According to level of study, 10 (20%) are in 100 level, 16 (32%) are in 200 level and 24 (48%). Minority 18 (36%) of the respondents are residing in rural, while the majority 32 (64%) are in urban area. Only 11 (22%) has family history of NNJ, whereas 39 (78%) have no family history of NNJ.

The majority (58.0%) of the respondents had inadequate knowledge of neonatal jaundice. Therefore, the $H_{0:1}$ Hypothesis was accepted while $H_{1:1}$ Hypothesis was rejected. This is in conformity with a study conducted by Salia *et al.*; systematic random sampling was used to select the sample; data were collected from caregivers using questionnaire. The data were analyzed using STATA version 14.0. The results showed that less than the half of the caregivers had good knowledge (45.5%).[11]

The study results showed that there was a statistically significant association between their level of knowledge score regarding NNJ with their selected socio-demographic variables such as age (21–23 years) $P = 0.017$, level of study (300) $P = 0.003$, and family history of NNJ (no) $P = 0.001$. Hence, the $H_{0:3}$ Hypothesis was rejected while $H_{1:3}$ Hypothesis was accepted. This is in conformity with a descriptive cross-sectional study conducted by Huq *et al.* purposive sampling technique was used to select the sample to administer the questionnaire. Data were collected from 150 respondents.

The results showed that 7.3% of the respondents had excellent levels of knowledge regarding NNJ, 40.0%, 34.0%, and 18.7% had satisfactory, good, and poor levels of knowledge, respectively. There was a significant association between the previous knowledge of the respondents on NNJ with the level of knowledge among the respondents ($P = 0.027$) and age of the respondents ($P = 0.012$).[12]

Recommendations

Based on the study findings, the researcher recommends that a similar study can be conducted on knowledge regarding NNJ among students in selected school of Midwifery using different settings and large sample for generalization of the findings. Pre-experimental study can be conducted on knowledge regarding NNJ among students in selected school of Midwifery using different settings.

CONCLUSION

The results showed that the majority of the respondents had inadequate knowledge regarding NNJ; and there was a statistically significant association between their level of knowledge score regarding NNJ with their selected socio-demographic variables (age, level of study, and family history of NNJ).

Ethical approval

The research was approved by the institutional Ethical Committee at School of Midwifery Lafia, Nigeria, with Ref. number SOML/EA/012, dated 2nd April 2022.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate participants consent.

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There are no conflict of interest.

Use of artificial intelligence (AI)- assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)- assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Asefa GG, Gebrewahid TG, Nuguse H, Gebremichael MW, Birhane M, Zereabruk K, *et al.* Determinants of neonatal jaundice among neonates admitted to neonatal intensive

care unit in public general hospitals of central zone, Tigray, Northern Ethiopia, 2019: A case-control study. Biomed Res Int 2020;2020:4743974.

2. Brits H, Adendorff J, Huisaimen D, Beukes D, Botha K, Herbst H, *et al.* The prevalence of neonatal jaundice and risk factors in healthy term neonates at national district hospital in Bloemfontein. Afr J Pri Health Care Fam Med 2018;10:1582.

3. Adoba P, Ephraim RK, Kontor KA, Bentsil JJ, Adu P, Anderson M. Knowledge level and determinants of neonatal jaundice: A cross-sectional study in the Effutu municipality of Ghana. Int J Pediatr 2018;2018:3901505.

4. Boskabad H, Raskhshanizadeh F, Moradi A, Zakerihamidi M. Systemic review: Risk factors and cause of neonatal hyperbilirubinemia: A systemic review study. J Pediatr Rev 2020;8:211-22.

5. Ansong-Assoku B, Saheh SD, Ankola PA. Neonatal Jaundice. Treasure Island, FL: StatPearls Pub LLC; 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK532930/ [Last accessed on 2022 Feb 27].

6. Ullah S, Rahman K, Hedayati M. Hyperbilirubinemia in neonates: Types, causes, clinical examinations, preventive measures and treatments: A narrative review article. Ira J Public Health 2016;45:558-68.

7. Olusanya BO, Osibanjo FB, Mabogunje CA, Slusher TM, Oluwe SA. The burden and management of neonatal jaundice in Nigeria: A scoping review of the literature. Niger J Clin Pract 2016;19:1-17.

8. Wong JR, Bhutani KV. Patient education: Jaundice in newborn infants beyond the basics. Available from: https://www.uptodate.com/contents/jaundice-in-newborn-infants-beyond-the-basics [Last accessed on 2022 Feb 28].

9. Westwod K. Neonatal jaundice: Cochrane evidence on prevention and treatment. Evidence Cochrane; 2020. Available from: https://www.evidentlycochrane.net/neonatal-jaundice [Last accessed on 2022 Feb 28].

10. Awe OO, Olawade DB, Afolau TD, Wada OZ, Alabi DD. Prevalence of jaundice among neonates admitted in a tertiary hospital in Southwestern Nigeria. Adv Pediatr Neonatol Care APNC-121 2021;3:1-6.

11. Salia SM, Afaya A, Wuni A, Ayanore MA, Salia E, Kporvi DD, *et al.* Knowledge, attitudes and practices regarding neonatal jaundice among caregivers in a tertiary health facility in Ghana. PLoS One 2021;16:e0251846.

12. Huq S, Hossain SM, Haque SM, Trafder MA. Knowledge regarding neonatal jaundice management among mothers: A descriptive study done in a tertiary level Hospital of Dhaka city. Anwer Khan Mod Med Coll J 2017;8:121-27.