Review Article
Volume 11:10, 2022

Journal of Nursing & Care

ISSN: 2167-1168 Open Access

Knowledge, Attitude and Practices Regarding Neonatal Jaundice among Mothers

Amidu Alhassan*, Acquah Michaellina Brago, Kwateng Amissah Abena, Coffie Joanita Kekeli and Asiamah Judith Nuamah

Department of Nursing, University of Health and Allied Sciences, Ho, Ghana

Abstract

Background: Neonatal jaundice (NNJ) is a significant cause of neonatal morbidity worldwide and accounts for 75% of hospital readmissions in the first week of life. Severe neonatal jaundice can lead to irreversible brain damage or even death in otherwise healthy new-borns. One means of improving neonatal care and reducing potential mortality associated with neonatal jaundice in resource-limited settings is to create awareness among caregivers. Mothers therefore play a vital role in the early identification and prevention of complications.

Aim: To assess the knowledge, attitude and practices regarding neonatal jaundice among mothers per available empirical literatures.

Methodology: A critical review was done based on the objectives set for the study. The search for literature was conducted utilizing five (5) electronic databases including Google Scholar, PubMed, Research Gate, EMBASE and CINHAL for studies published in the English language from December, 2011 to 2021. Mendeley 7 software was used to manage retrieval of articles and screening for duplicates.

Findings: A total of twenty-five (25) studies were included in the review. The majority of the studies reviewed reported that mothers had poor knowledge of neonatal jaundice in terms of causes, signs and symptoms, management and prevention and that this was prevalent in most low-to-middle-income countries. Also, mothers had a negative attitude towards neonatal jaundice. Thus, most mothers affirmed that NNJ is not dangerous enough to be treated at the hospital and prefer to expose the baby to sunlight. Moreover, the majority of the studies reported poor practices of mothers towards the management of NNJ as most mothers exposed their new-borns to direct sunlight, herbal treatment and cutting the area between the baby's eyebrows with a blade.

Conclusion: The findings highlight the importance of stepping up efforts to improve mothers' knowledge, attitude and practices of NNJ. Also, health professionals should make use of the numerous media houses to dispel negative cultural beliefs attached to NNJ to aid in seeking early health care at health facilities.

Keywords: Knowledge • Attitude • Practices • Neonatal Jaundice • New-born • Mothers

Abbreviations: ANC: Antenatal care • G6PD: Glucouse-6-Phosphate Dehydronenase • GHS: Ghana Health Service • NNJ: Neonatal jaundice • WHO: World Health Organization

Introduction

This chapter entails background to the study, problem statement, justification of the study, the aim of the study, study objectives, research questions, significance of the study, operational definitions and organization of the study.

Background of the study

Neonatal jaundice (NNJ) is the yellowish discolouration of the sclera, conjunctiva and skin of the new-born as a result of the accumulation of unconjugated hyperbilirubinemia which usually occurs in the first one (1) week of life. Unconjugated hyperbilirubinemia usually reflects a normal transitional phenomenon in most infants. However, when serum bilirubin levels rise excessively, it is a cause for concern because unconjugated bilirubin is neurotoxic and can cause death in new-borns and lifelong neurologic sequelae. For these reasons, infants who develop jaundice need close monitoring and severe neonatal jaundice requires immediate medical attention. New-borns show clinical signs which tend to start on the head and face and then spread down the trunk and limbs as a result of high serum levels of bilirubin.

Globally, neonatal jaundice is a major public health problem and is present among 50-60% of full term and 80% of preterm new-borns (World Health Organization [WHO], 2016). According to the global burden of neonatal jaundice, the African Region has the highest incidence of severe neonatal jaundice per 1000 live births (667 per 1000 live births), followed by Southeast Asia (251 per 1000 live births). Neonatal jaundice also accounts for 75% of neonatal mortality in South Asia and sub-Saharan Africa. In sub-Saharan Africa, evidence from the Ghana Health Service (GHS) shows that the incidence of neonatal jaundice among new-borns has been on the rise in recent years. For instance, from 2015 to 2019, Ghana recorded 3,031, 4,251, 5,338, 7,175 and 9,273 cases of neonatal jaundice respectively.

According to the American Pediatric Society (APS), phototherapy is the most effective and most common modality for the treatment of neonatal jaundice. Thus, the absorption of light through the skin coverts bilirubin into bilirubin products that are excreted in the stool or urine (Al-Zamili & Saadoon, 2020). However, in treatment-resistant infants, cases with bilirubin levels exceeding the "high-risk" zone and those presenting with kernicterus, blood transfusion, combined with phototherapy, is regarded as the treatment of choice. Neonatal jaundice can be quite serious as it can lead to various complications such as kernicterus, seizures, high-frequency hearing loss, cerebral palsy and mental retardation evident at 3 years of age.

***Address for Correspondence:** Amidu Alhassan, Department of Nursing, University of Health and Allied Sciences, Ho, Ghana; E-mail: amidualhassan24@gmail.com*

Date of Submission: 03 October, 2022, Manuscript No. jnc-22-77173; **Editor Assigned:** 06 October, 2022, PreQC No. P-77173; **Reviewed:** 20 October, 2022, QC No. Q-77173; **Revised:** 22 October, 2022, Manuscript No. R-77173; **Published:** 29 October, 2022, DOI: 10.37421/2167-1168.2022.11.556

Neonatal jaundice prevention is important in the first week of life, especially in sub-Saharan Africa with the highest global burden of neonatal mortality. Early detection and treatment are the key strategies to prevent the complications of NNJ. Understanding mothers' knowledge of NNJs can help identify gaps and target areas for intervention, preventing chronic morbidity and neonatal mortality. Inadequate knowledge of neonatal jaundice is likely to result in risky delays, mismanagement and complications with adverse psychosocial consequences for the affected mothers. Nevertheless, several studies in low to middle income countries have reported inadequate knowledge about causes, complications, symptoms and prevention of NNJ. Also, Alfouwais, et al. (2018) stated that sometimes mothers do self-medication with herbal medicines and homemade remedies due to inadequate knowledge. With appropriate education, mothers can reliably recognize the familiar discolouration of the sclera and mucous membranes and seek timely treatment.

In low to middle-income countries, most mothers have misconceptions about the management of neonatal jaundice, which include the beneficial role of sunlight in reducing severe jaundice. To buttress this, Aladag, et al. stated that most mothers considered sunlight to be useful for neonates with jaundice as it melts the yellowish colour. To reduce morbidity and mortality due to NNJ, women of childbearing age (15 to 49 years) and pregnant women should be educated on early recognition of NNJ, prompt and appropriate intervention. Thus, improving the mothers' knowledge about the subject is therefore crucial. The aim of the study was to determine the knowledge, attitude and practice regarding neonatal jaundice among expectant mothers.

Problem statement

Infections, prematurity and birth asphyxia have attracted much attention as the predominant risk factors for neonatal mortality in both high to middle-income countries. However, neonatal jaundice, usually requiring phototherapy and exchange blood transfusions, is not only a leading cause of hospital admission or readmission in the first week of life but also constitutes an important cause of neonatal mortality. Survivors of severe neonatal jaundice are also at risk of various lifelong neuro-developmental impairments.

Neonatal jaundice is a very common problem in Ghana. However, the affected babies are brought late to the appropriate healthcare facilities, probably because most mothers have a poor understanding of the causes of NNJ, its detection and complications coupled with mismanagement. Hence, the role of mothers in early recognition of NNJ and seeking medical care at the right place is pivotal. Any action of mothers is influenced by their knowledge, attitude and their practices toward the condition. Unfortunately, according to various medical databases searched, there is a paucity of data that has been reported previously on how Ghanaian mothers are well informed about neonatal jaundice and their attitude and practices towards neonatal jaundice. Thus, there is the need to assess the level of knowledge, attitude and practices towards neonatal jaundice among mothers.

Justification

The high incidence of unwholesome practices like an absence of skilled birth attendants at delivery, delivery outside healthcare facilities, early hospital discharge post-delivery and poor post-delivery follow-up further emphasizes the need for mothers and other caregivers of new-born babies to possess basic knowledge about the causes, identification, treatment and complications attributable to neonatal jaundice. Often, the obstacle to change in practice may be a lack of knowledge of the benefits of more effective methods or a lack of knowledge of the problems and severity of associated effects the existing practice may be having. To address the United Nation's Sustainable Development Goals (3.2) on reducing childhood mortality, there is a need for a better understanding of the levels of knowledge, attitudes and practices among mothers towards neonatal jaundice.

Aim

To assess the knowledge, attitude and practices regarding neonatal jaundice among mothers per available empirical literature (Table 1).

Objectives

1. To assess the knowledge of mothers on neonatal jaundice.
2. To ascertain the attitude of mothers towards neonatal jaundice.
3. To determine the practices of mothers towards neonatal jaundice.

Research questions

1. What is the knowledge of mothers on neonatal jaundice?

Table 1. Characteristics of studies used in the empirical review.

Author	Year	Study Method	Study Location	Sample Size	Outcome Measures	Key Findings
Ng, et al. [1]	2014	Quantitative Cross-sectional study	Malaysia	198	Mothers' knowledge on neonatal jaundice	The majority of the respondents (78.0%) had low knowledge of NNJ even though most mothers (94.9%) had heard of neonatal jaundice.
Shrestha, et al.	2019	Descriptive Cross-sectional study	Nepal	177	Mothers' knowledge on neonatal jaundice	It was realized from the results that, the greater part of the mothers (59.9%) had low level of knowledge regarding neonatal jaundice. The findings of the study further indicated that a few of the respondents (25%) were aware of the causes of neonatal jaundice.
Amegan-Aho, et al. [2]	2019	Quantitative Cross-sectional study	Ghana	171	Mothers' knowledge on neonatal jaundice	The majority of the respondents (77.1%) were aware of NNJ but most mothers (88%) had poor knowledge of the causes of NNJ.
Onyearugha, et al. [3]	2016	Descriptive Cross-sectional study	Nigeria	300	Mothers' knowledge on neonatal jaundice	Despite the majority of the mothers (96%) being aware of the existence of the condition, most of the respondents (68.0%) had inadequate knowledge of neonatal jaundice
Aggarwal, et al. [4]	2017	Descriptive Cross-sectional study	India	350	Mothers' knowledge on neonatal jaundice	The majority of mothers (56%) had poor knowledge, (35%) of them had average knowledge whilst (8%) of the mothers with good knowledge were the ones whose previous baby suffered from NNJ and were treated medically.
Alfouwais, et al. [5]	2018	Quantitative cross-sectional study	Saudi Arabia	4413	Mothers' knowledge on neonatal jaundice	The majority of the parents' knowledge level about NNJ was poor (56.2%). The findings of the study further indicated that a few of the respondents (25%) were aware of the causes of neonatal jaundice.
Ogunfowora, et al. [6]	2018	Quantitative cross-sectional study	Nigeria	305	Mothers' knowledge on neonatal jaundice	knowledge on the clinical manifestation on NNJ was (47.1%). The study reported that the majority (74%) indicated frequent high fever and refusal to feed, (65%) indicated convulsion and (23%) indicated yellowing of the skin and sclera
Demis, et al. [7]	2021	Facility-based cross-sectional study	Ethiopia	380	Mothers' knowledge on neonatal jaundice	Mothers' knowledge of NNJ was poor (60.8%). Most of the mothers had their source of information from their peers and relatives.

Huq, et al. [8]	2017	Descriptive cross-sectional study	Bangladesh	150	Mothers' knowledge on neonatal jaundice	Among the respondents (40%) had satisfactory knowledge whilst (7.3%) had excellent knowledge regarding neonatal jaundice.
Olatunde, et al. [9]	2020	Descriptive cross-sectional study	Southwest Nigeria	518	Mothers' knowledge on neonatal jaundice	According to the results of the study, most respondents (69.5%) demonstrated poor knowledge of NNJ. Whereas the majority of them had their source of information from the hospital (52.1%).
Adoba, et al. [10]	2018	Case-control study	Ghana	150	Mothers' knowledge on neonatal jaundice	The majority of the respondents (92.7%) did not know that NNJ can be prevented or can be treated (85.3%).
Al-zamili and Saadoon	2020	Hospital-based study	Iraq	250	Mothers' attitude towards neonatal jaundice	The majority (64%) of the respondents has a positive attitude towards neonatal jaundice Relatives and friends were the main sources of knowledge for (52.6%) of the participants, followed by treating doctor in (29.8%). In (34%) of the participants' knowledge was gained after their child had NNJ, while in (42.1%) while their child was free of NNJ.
Egube, et al. [11]	2013	Descriptive cross-sectional study	Nigeria	389	Mothers' attitude towards neonatal jaundice	The majority of the mothers (91.3%) had a good attitude towards the management of the condition.Warning signs knowledge depended on the level of education and occupation where university graduates and health care workers were most knowledgeable and the difference was significant (p=<0.01).
Goodman, et al. [12]	2015	Descriptive cross-sectional study	Nigeria	358	Mothers' attitude towards neonatal jaundice	Respondents' attitudes towards NNJ in the study were generally good as the majority (90.4%) of respondents had a willingness to take the baby to the hospital if their babies developed NNJ.
Mohamed, et al. [13]	2016	Descriptive cross-sectional study	Egypt	400	Mothers' attitude towards neonatal jaundice	In terms of knowledge, 52.3% of participants had adequate knowledge about NNJ in the aspects of awareness, risk factors, management and complications. Almost all participants exhibited moderate (89.8%) and high levels (10%) of positive attitudes toward NNJMore than half of the mothers (62.3%) agreed that NNJ is a worrisome condition.
Alfouwais, et al.	2018	Quantitative cross-sectional study	Saudi Arabia	413	Mothers' attitude towards neonatal jaundice	Most (77%) of the respondents have heard about NNJ prior the survey. Most respondents (69.5%) demonstrated poor knowledge of the causes of NNJ. The majority, 98.4% had good attitude toward treatment of NNJ. Most respondents (72.1%) demonstrated poor knowledge of the correct treatment of NNJ.
Said	2018	Descriptive cross-sectional study	Malaysia	320	Mothers' attitude towards neonatal jaundice	A large proportion of the expectant mothers 261 (67%) knew some complications of NNJ. Two hundred and five (52.7%) did not know any danger sign of complications of NNJ. Three hundred and fifty five (91.3%) had good attitude towards its management. Majority of expectant mothers whose previous babies had NNJ took the babies to the hospital for treatment.
Oppong, et al. [14]	2019	Quantitative cross-sectional study	Ghana	200	Mothers' attitude towards neonatal jaundice	Two hundred and forty-seven (91.4%) mothers correctly identified the condition and infection was the only most common known cause (47%). Only 34% of the mothers knew that NNJ could cause brain damage and 40% identified refusal of feeds as a danger sign. Up to 64% of the mothers believed attending antenatal care could prevent the condition.
Le, et al. [15]	2014	Prospective study	Vietnam	175	Practices of mothers towards neonatal jaundice	Out of the 175 respondents, 135 (77.1%) had heard about NNJ but only 37 (27.4%) of them heard it from the hospital. Among those who had heard about NNJ, 98 (72.6%) knew at least one symptom of NNJ; 125 (92.6%) did not know the causes of jaundice or had the wrong information and there was no significant association with their level of education.
Huq, et al.	2017	Descriptive cross-sectional study	Bangladesh	150	Practices of mothers towards neonatal jaundice	The majority (90.6%) of the respondents indicated that they would put their babies diagnosed with jaundice under direct sunlight, (62.7%) indicated they will sort to herbal remedies whiles only a few (10.5%) indicated they would visit the hospital
Aggarwal, et al.	2017	Descriptive cross-sectional study	Turkey	229	Practices of mothers towards neonatal jaundice	Most of the respondents (79%) had poor practices towards NNJ. Rather than referring affected babies to hospitals for proper management, 13.4 %, 10.4 % and 3 % of the participants would treat with ineffective drugs, natural phototherapy and herbal remedies respectively. None of the participants knew any effective means of prevention. Conclusion:
Boskabadi, et al. [16]	2011	Descriptive cross-sectional study	Iran	127	Practices of mothers towards neonatal jaundice	The use of herbal or traditional remedies may lead to a delay in proper diagnosis and treatment. During the first week, 77% of newborns were kept in dark rooms. Only 2.5% had routine follow-up before 14 days. Among 118 mothers who were worried by their infant's jaundice but did not seek care, 40% held non-medical beliefs about its cause or used traditional therapies instead of seeking care..
Moawad, et al. [13]	2016	Descriptive cross-sectional study	Egypt	400	Practices of mothers towards neonatal jaundice	Despite the majority of the respondents being educated, most of them engaged in bad practices (60%) towards neonatal jaundice.

Shehu, et al. [17]	2020	Descriptive cross-sectional study	Nigeria	140	Practices of mothers towards neonatal jaundice	The practice of the mothers concerning NNJ was not good as only (25%) of the mothers took their neonates to the hospital after detecting signs and symptoms of NNJ
Ezeaka, et al. [18]	2014	Quantitative cross-sectional study	Nigeria	488	Practices of mothers towards neonatal jaundice	Findings from the study revealed that hospital admission was the most common intervention indicated by 70 (16.2%) of the respondents followed by exposure to sunlight by 38 (8.8%) mothers

2. What is the attitude of mothers towards neonatal jaundice?
3. What are the practices of mothers towards neonatal jaundice?

Significance of the study

The outcome of this long essay is expected to guide healthcare professionals and policymakers to decide on an appropriate method of information dissemination and the need for an increased awareness campaign about NNJ among expectant mothers and women in general. The study is also expected to identify knowledge gaps about NNJ among expectant mothers and how to address the identified gaps. Furthermore, findings from this study will also add to existing data and serve as a baseline for further studies.

Operational definition of terms

Neonatal jaundice: It refers to the yellowish discoloration of the sclera, conjunctiva and skin of the new-born

Knowledge: It refers to the quality of information expectant mothers acquire about neonatal jaundice.

Attitude: The way pregnant women respond, react and behave towards neonatal jaundice.

Practices: It refers to the activities undertaken by mothers to treat neonatal jaundice.

Neonate: A new-born baby, specifically a baby in the first 4 weeks after birth.

Organization of the work

This study is organized into four chapters. Chapter one contains the introduction to the study which covers the background to the study, problem statement, justification for conducting this study, the aim of the study, research questions, significance of the study, operational definitions and organization of the study. Chapter two of the study concentrates on the literature review, which looks at detailed research works which have been published on the subject area. This chapter details the literature search strategies used, a critical literature review on the topic, organized according to the specific objectives of the study and a summary of the literature reviewed was added. Chapter three of the study presents the findings and discussions of the literature review based on the objectives of the study. Chapter four summarizes the study and closes with conclusions drawn from the study, implications and recommendations made concerning the study.

Literature Review

This chapter represents a critical review of scholarly articles on the knowledge of mothers on neonatal jaundice, the attitude of mothers towards neonatal jaundice and the practices of mothers towards neonatal jaundice. Literature has been reviewed regarding the specific objectives of the study.

Literature search strategy

This section discussed the strategy employed during the literature search. It covers the search terms, databases searched, the number of results found and inclusion and exclusion criteria.

Keywords used/search items used

Search terms were developed from the topic and objectives of this present review. Using Boolean Operators like “AND”, “OR” and “NOT” some of the keywords used to form search terms were; knowledge, attitude, practices, neonatal jaundice, hyperbilirubinemia, ABO incompatibility, neonatal hemolysis, kernicterus, phototherapy, exchange transfusion, neonate, new-born and mothers. The search terms were used as single words and also as phrases to search for relevant articles for the study.

Databases searched

In finding relevant literature on the topic, a wide range of databases was used. This was to help gather available literature from journals that are relevant to the study. Articles were retrieved from Google Scholar, PubMed, Research Gate, EMBASE and CINHAL. Mendeley software was used to manage the retrieval of articles and screening for duplicates.

Number of literature results found

The electronic databases’ searches yielded 2,267 records. Google Scholar, PubMed, Research Gate, EMBASE and CINHAL recorded 956, 723, 198, 236 and 154 articles respectively. A total of 1,380 articles were removed after entry in Mendeley software as duplicates. The remaining 887 articles for studies were retrieved from abstracts, but 700 articles were excluded because their titles suggested they were irrelevant to the topic. A total of 187 articles were retrieved for full-text examination. However, 162 articles were excluded after the full-text examination because the article suggested studies did not meet the inclusion criteria. To conclude, a total of 25 articles were used for this literature review. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart was used to give a visual illustration of the selection process (Figure 1).

Inclusion and exclusion criteria

Inclusion criteria: Articles used in the study were selected for review by using predefined selection criteria:

1. Original qualitative, quantitative, or mixed-method studies
2. Studies were conducted from 2011 to 2021 concerning the study objectives
3. Articles published in the English language only
4. Peer-reviewed articles published in credible journals
5. Full-text articles
6. Exclusion criteria

The following categories of publications were excluded from the review:

1. Articles with no accessible content, either in print or electronic format.
2. All publications that are not peer-reviewed
3. Commentaries
4. Articles that are not written in English.
5. Grey literature

Critical literature review

Knowledge of mother’s neonatal jaundice: Adequate knowledge of mothers about neonatal jaundice is very essential as it can improve the health-seeking behavior of mothers with neonatal jaundice as well as reduce the complications associated with neonatal jaundice. This section reviews literature on the knowledge of mothers about NNJ and it is subdivided into causes, signs and symptoms, management and prevention available empirical literature across the globe.

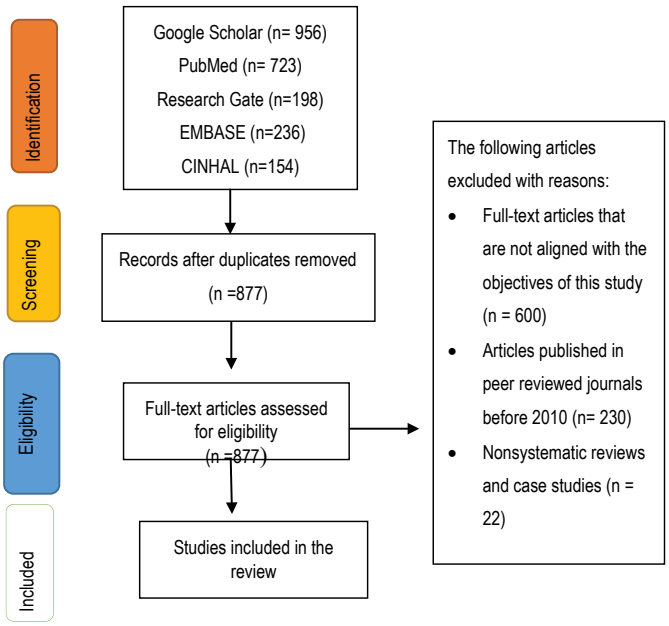

Figure 1. PRISMA flow chart for critical literature selection.

With regards to knowledge of the causes of neonatal jaundice among mothers, Nag, et al. [1] conducted a cross-sectional study among 198 mothers whose new-borns were admitted to Ward 3D of Hospital Teluk Intan, Malaysia. Findings from the study revealed that the majority of the respondents (78.0%) had low knowledge of neonatal jaundice, whereas more than half (57.6%) of the mothers had their source of information from health staff. The study further revealed that few of the mothers (8.1%) were able to identify prematurity, infection in the blood, herbal medicine and G6PD deficiency as possible causes of neonatal jaundice. On the other hand, (52.0%) indicated their food intake as a cause of neonatal jaundice and also (35.9%) indicated that neonatal jaundice was inherited from mothers. Similarly, Shrestha, et al. in a study among 177 mothers in selected villages in Nepal reported that a greater part of the mothers (59.9%) had a low level of knowledge regarding neonatal jaundice. It was also revealed that only (12%) of the respondents knew of infection, (10%) knew of blood incompatibility and (5%) of the mothers knew of prematurity as a cause of neonatal jaundice. Likewise, in Ghana, Amegan-Aho, et al. [2] in a cross-sectional study among 171 expectant mothers reported that the majority of the respondents (88%) had poor knowledge of the causes of neonatal jaundice. The study further reported that (58%) of the respondents did not know the cause of neonatal jaundice, (8%) of the respondents knew about blood incompatibility of the neonate whereas (14%) indicated it could be as a result of spiritual attack. Nevertheless, Onyearugha, et al. [3] in their study among 300 expectant mothers in Nigeria reported that most of the respondents (68.0%) had adequate knowledge of neonatal jaundice. The majority of respondents were knowledgeable about the causes of neonatal jaundice, with (77%) knowing that infection causes neonatal jaundice and (62%) indicating blood incompatibility as another cause. Their main source of information was from health workers.

In terms of the knowledge of mothers about the signs and symptoms of neonatal jaundice, Aggarwal, et al. [4] conducted a descriptive cross-sectional study among 350 mothers in Uttarakhand, India. Findings from the study revealed that the majority of mothers (56%) had poor knowledge of neonatal jaundice. The study further revealed that half of the respondents (50%) did not know whether the high body temperature of the baby and the yellow skin color are signs of neonatal jaundice. 34% and 13% of the respondents indicated a refusal to feed and high-pitched crying of babies, respectively, as danger signs of the severity of neonatal jaundice. Similarly, a cross-sectional study by Alfouwais, et al. [5] in Saudi Arabia among 413 expectant parents revealed that the majority of the parents (56.2%) had poor knowledge of neonatal jaundice. The study further reported that the most common warning signs for the necessity of treatment were high fever and refusal to feed as indicated by (31.3% and 26.6%) of the mothers respectively. While 44% of the respondents indicated they did not know any signs of neonatal jaundice, Also, Ogunfowora, et al. [6] reported in their study among 305 women in Nigeria that knowledge of the clinical manifestation of neonatal jaundice was (47.1%). It was further revealed that few of the respondents (14%) knew about frequent high fever and refusal to feed, (13%) knew about convulsion and (13%) knew about yellowing of the skin and sclera as clinical features of neonatal jaundice. However, a facility-based cross-sectional study by Demis, et al. [7] in northern Ethiopia among 380 mothers indicated that the mothers' knowledge of neonatal jaundice was good (60.8%). The study further reported that more than half (57%) of the respondents were aware of the yellowish coloration of the eye and skin, convulsion and fever as the clinical manifestation of neonatal jaundice.

Considering the knowledge of management and prevention of neonatal jaundice among mothers, Huq, et al. [8] in a descriptive cross-sectional study in Bangladesh showed that the majority of the respondents (73.3%) had inadequate knowledge regarding neonatal jaundice. Also, (90.6%) of the respondents knew of putting the jaundiced baby under direct sunlight, (62.7%) indicated herbal remedies, (25% indicated consulting with a doctor and (12%) had knowledge of phototherapy. A study by Olatunde, et al. [9] among 518 pregnant women in southwest Nigeria revealed that most respondents (69.5%) demonstrated poor knowledge of neonatal jaundice. However, the majority of the respondents (52.1%) had their source of information from the hospital. With regards to preventive measures towards neonatal jaundice, most of the respondents indicated checking for early signs such as yellowing of the sclera and skin of the neonate and referring the neonate to the hospital as soon as possible. In Ghana, Adoba, et al. [10] in a study among 150 mothers reported that the majority of the respondents (92.7%) did not know that neonatal jaundice can be prevented or can be treated. Nevertheless, a study by Zuraidah and Ramadan (2018) in Canada reported that more than half (62%) of the respondents knew of phototherapy as a means of treatment for affected babies in the hospital.

Attitudes of mothers towards neonatal jaundice: An attitude is an expression of a favorable or unfavorable evaluation of a person, place, thing, or event. Studies have proven that an improvement of expectant mothers' attitudes towards neonatal jaundice produce a favorable outcome for new-borns' health [11].

Al-zamili and Saadoon in a hospital-based study among 250 mothers in Iraq reported that the majority (64%) of the respondents had a positive attitude towards neonatal jaundice. Thus, 72.3 percent of the respondents were worried their child would be diagnosed with neonatal jaundice. However, 62.34% affirmed that several blood tests on an infant can cause anemia. In addition, 84.2 percent of respondents said they would consult a doctor if they noticed signs and symptoms of neonatal jaundice in their babies. Similarly, a descriptive cross-sectional study of Egube, et al. among 389 expectant mothers in Nigeria showed that a higher proportion of the mothers (91.3%) had a good attitude towards the management of the condition. This affirmed the fact that most of the expectant mothers whose previous babies had neonatal jaundice took the babies to the hospital for immediate treatment. Others also expressed their willingness to seek medical attention if their babies were to develop the condition. Furthermore, Goodman, et al. [12] revealed in their descriptive cross-sectional study among 358 mothers in Nigeria, respondents' attitudes towards neonatal jaundice were generally good as the majority (90.4%) of respondents were willing to take the baby to the hospital if their babies developed neonatal jaundice. Moreover, Mohamed, et al. [13] conducted a descriptive cross-sectional study among 400 Egyptian mothers. Findings from the study revealed that more than half of the mothers (62.3%) agreed that neonatal jaundice is a worrisome condition. Only 52 (13.1%) of the respondents affirmed that investigations of neonatal jaundice and frequent blood samples might result in anemia. Also, (25.5%) of the participants admitted that they would give herbal drinks as a possible treatment.

Nonetheless, Alfouwais, et al. in a cross-sectional study among 413 mothers in Saudi Arabia reported that more than half of the respondents (60%) of the respondents had negative attitudes toward neonatal jaundice. Also, about (58.1%) affirmed that neonatal jaundice is not dangerous enough to be treated at the hospital. Likewise, Said (2018) in a descriptive cross-sectional study among 131 mothers in Malaysia revealed that more than half of the respondents (55%) had a negative attitude. The majority of the mothers (65%) did not consider neonatal jaundice as a severe condition. Only (15.0%) were worried about anemia which might occur as a result of several blood-taking procedures. Some of the respondents (10.2%) agreed they would not consult a physician because of the fear of hospitalizing their babies. Moreover, in Ghana, Oppong, et al. [14] in a cross-sectional study among 200 women reported that only 13.2% of the respondents expressed their willingness to seek medical care. Also, (84.3%) affirmed they would expose the baby to sunlight or use glucose water.

Practices of mothers towards neonatal jaundice: Practices are the customary, habitual, or expected procedures or ways of doing something in a particular setting. Certain practices used by mothers to treat neonatal jaundice are harmful and as a result, parents must be included in the proper management.

Le, et al. [15] in a study among 979 mothers in Vietnam to determine their practices towards the management of neonatal jaundice reported that the majority (88%) of the respondents commonly avoided exposure of their new-borns to direct sunlight and kept their new-borns in dark rooms during the first 7 days. Also, (56%) of the mothers reported using traditional, herbal, or over-the-counter treatments for new-born problems during the first week. Similarly, Huq, et al. conducted a descriptive cross-sectional study among 150 mothers in Bangladesh to assess their practices towards neonatal jaundice. Findings from the study reported that the majority (90.6%) of the respondents indicated that they put their babies diagnosed with jaundice under direct sunlight, (62.7%) indicated they sorted through herbal remedies, while only a few (10.5%) indicated they would visit the hospital.

Furthermore, a cross-sectional study by Aggarwal, et al. among 138 mothers in Tanzania reported that most of the respondents (79%) had poor practices towards neonatal jaundice. The findings further showed that mothers indicated applying hazardous conventional methods in cases of neonatal jaundice, such as cutting the area between the baby's eyebrows with a blade, cutting the back of the ear and the body which is not applied in different cultures. Some of the respondents also engage in practices such as feeding off a baby with breastmilk (22.7%) whilst others do nothing at all (24%) to protect the baby from jaundice. In addition, a study conducted by Boskabadi, et al. [16] in Iran found that the use of herbal or traditional remedies may lead to a delay in proper diagnosis and treatment. They looked at three different herbs (Cichorium intybus, salix alba and malva sylvestris) which were found to be the most used herbal remedies by mothers and midwives for treatment. It was revealed that infants given these remedies had a higher incidence of complications due to hyperbilirubinemia. Complications are more serious due to a delay in taking the neonates to the hospital. Likewise, Moawad, et al. (2016) in a study among 400 Egyptian mothers revealed that most of the mothers engaged in bad practices (60%) towards neonatal jaundice. The majority (66.8%) of the respondents indicated that a neonate diagnosed with neonatal jaundice is given herbal drinks and glucose. Whereas a proportion of (54%) respondents was induced by cultural beliefs that new-borns should be kept in darkrooms and not exposed to sunlight as it might harm the babies. Moreover, Shehu, et al. [17] in Nigeria reported that the practice of the mothers concerning neonatal jaundice was not good as only (15%) of the mothers took their neonates to the hospital after detecting signs and symptoms of neonatal jaundice. About (48%) of the respondents exposed the babies to sunlight. The fact that most mothers believe that exposure to sunlight is a form of treatment explains why up to one-third of them will immediately expose their babies to sunlight when they develop jaundice.

However, Ezeaka, et al. [18] conducted a cross-sectional study among 488 mothers in Nigeria. Findings from the study revealed that hospital admission was the most common intervention indicated by 78.2% of the respondents, but only 8.8% of mothers exposed their affected children to sunlight. In Ghana, Amegan-Aho, et al. (2019) conducted a cross-sectional study among 175 expectant mothers and it was revealed that (84.3%) seek medical attention immediately after recognizing any sign of jaundice.

Gaps in the literature

Few studies have been conducted on the knowledge level, attitude and practices regarding neonatal jaundice among mothers in Ghana. Additionally, the scales used to determine the knowledge of NNJ were not clearly specified in the studies. Moreover, most articles that were reviewed used a cross-sectional design. This design depends on the ability of the participants to recall events in the past prior to the study, which is subject to recall bias.

Summary of reviewed literature

This comprehensive review of empirical literatures focused on mothers' knowledge, attitudes and practices regarding neonatal jaundice. The majority of the literature reviewed indicated that mothers had poor knowledge about NNJ, which was prevalent in most low-to-middle-income countries. Friends were their primary sources of information. Nevertheless, Onyearugha, et al. in Nigeria revealed that most of the mothers, 68%, had adequate knowledge of NNJ and indicated infection and blood incompatibility as possible causes of NNJ. In terms of mothers' attitudes toward neonatal jaundice, the majority of the literature reports a negative attitude of mothers toward neonatal jaundice. As a result, most mothers agreed that neonatal jaundice is not dangerous enough to warrant hospitalization and prefer to expose the baby to sunlight. Furthermore, the majority of studies reported poor maternal practices in the management of NNJ, with most mothers exposing their new-borns to direct sunlight, herbal treatment and cutting the area between the baby's eyebrows with a blade. However, some mothers also took their children to the hospital upon detection of NNJ and never exposed their babies to the sunlight or any medication nor herbal treatment.

Findings and Discussion

This chapter presents the findings and discussions of the literature review based on the knowledge, attitude and practices of mothers towards NNJ.

Discussion of findings based on objectives

Knowledge of mothers on neonatal jaundice: In assessing the knowledge of mothers on neonatal jaundice, fifteen (15) articles were critically analyzed across the globe. Most of the articles reviewed reported diversity in the knowledge level of mothers on NNJ. Nevertheless, the majority of the articles reported poor knowledge of mothers on NNJ. Findings from the review indicated that most mothers had poor knowledge of the causes of NNJ. Studies by Nag, et al. in Malaysia and Shrestha, et al. in Nepal reported that the majority of mothers, 78% and 59.9% respectively, had low levels of knowledge regarding NNJ. The studies further revealed that only a few of the mothers associated the cause of NNJ with prematurity. Likewise, Amegan-Aho, et al. (2019) in Ghana indicated that a section of mothers attributed the cause of NNJ to spiritual forces. The above findings can be attributed to the participants' source of information. According to Shrestha, et al. (2019), most of the mothers had their source of information from family and friends. The kind of information mothers receive from family and friends is very crucial in determining how mothers respond to the health problems of their new-borns. This buttresses the findings by Goodman, et al. (2015), which stated that information shared by family and friends is mostly self-centered and shrouded in misinformation. This implies that family relatives should be included in community-based-oriented health education on neonatal jaundice to dispel misconceptions about NNJ. Also, health professionals should provide intensive education on neonatal jaundice and must be disseminated through the media and at ANC using local dialects which can be understood by most indigenous women. Nevertheless, Onyearugha, et al. (2016) in Nigeria revealed that most of the mothers, 68%, had adequate knowledge of NNJ and indicated infection and blood incompatibility as possible causes of NNJ. This is not surprising as the researchers stated that the main source of information for the mothers was from health workers. The quality of information disseminated to mothers will eliminate mothers' misconceptions and enlighten them on NNJ.

Concerning mothers' knowledge of recognizing the signs and symptoms of NNJ, most studies reviewed found that the majority of mothers portrayed inadequate knowledge in identifying the exact clinical features of NNJ. Studies by Aggarwal, et al. (2017) in India and Alfouwais, et al. (2018) in Saudi Arabia revealed that 50% and 44% of mothers, respectively, did not know whether the high body temperature of the baby and the yellow skin color are the clinical features of NNJ. Likewise, Ogunfowora, et al. (2018) in Nigeria reported that only a few of the mothers, 13%, knew about convulsion and yellowing of the skin and sclera as clinical features of NNJ. Contrary to the above findings, Demis, et al. (2021) in Ethiopia reported that most of the mothers, 57%, indicated the yellowish color of the eye and skin, convulsion and fever as clinical signs of NNJ. The disparity in knowledge level among the studies reviewed is most likely to be due to the educational level of the study participants. Mothers in the studies reviewed are likely to have varying educational levels, which could imply that respondents with a higher educational level are more likely to have adequate knowledge of NNJ through their academic course or read about it themselves. This is consistent with the findings of Demis, et al. (2021), which found that educational level was statistically associated with the mother's knowledge of NNJ. Thus, mothers with higher educational levels are five (5) times more likely to have adequate knowledge of NNJ. However, the above findings are alarming because delaying in response to clinical features can result in complications of NNJ such as kernicterus, deafness and death. Hence, health professionals should partner with the mass media in the dissemination of health education, most importantly on the clinical signs and symptoms of NNJ, to prevent the complications of the disease.

Regarding the knowledge of the management and prevention of NNJ among mothers, most studies reported inadequate knowledge of how to manage or prevent NNJ. The study by Olatunde, et al. (2020) in Nigeria indicated that (90.6%) of mothers knew about putting jaundiced babies under direct sunlight and (62.7%) indicated herbal remedies. Also, Adoba, et al. (2018) in Ghana revealed that the majority of the mothers, 92.7%, did not know that NNJ could be prevented or treated. These findings are worrisome as the poor knowledge portrayed by mothers can expose babies to health hazards, especially prolonged sun exposure, which can cause sunburn, skin and eye conditions. Therefore, healthcare professionals, namely midwives and antenatal care clinics who are in touch with women with poor knowledge of NNJ, should spend more time and effort to explain to mothers how to avoid the problem of neonatal jaundice through the establishment of community programs to encourage mothers and also support breastfeeding. On the other hand, a study by Zuraidah and Ramadan (2018) in Canada reported that more than half (62%) of mothers knew of phototherapy as a means of treatment. This finding can be attributed to the participant's level of education, as most mothers had attained a high level of education and, as a result, were highly informed about NNJ.

Attitudes of mothers towards neonatal jaundice: In assessing the attitude of mothers towards neonatal jaundice, seven (7) articles were reviewed. Most studies reviewed reported negative attitudes among mothers towards NNJ. Studies by Alfouwais, et al. (2018) in Saudi Arabia and Oppong, et al. (2019) in Ghana, reported negative attitudes of mothers towards NNJ, as the majority of the mothers, 58.1% and 84.3%, respectively, affirmed that NNJ is not dangerous enough to be treated at the hospital and prefer to expose the baby to sunlight. Congruently, Said (2018) in Malaysia revealed that the majority of mothers (85%) agreed to treat their children in the house under sunlight and with local remedies. The above findings can be related to the participants' belief system as Oppong, et al. (2019) indicated in their study that mothers with strong cultural beliefs hold to the conception that babies with yellowish skin need to be exposed to sunlight for treatment. Moreover, the above findings can be attributed to the inadequate knowledge level of mothers about NNJ. This observation is an important reminder that health education on the subject must emphasize the need for mothers to take affected babies to hospitals for prompt management and also clear up misconceptions about the use of direct sunlight for the treatment of NNJ. In contrast to the above findings, Al-zamili and Saadoon (2020) in Iraq and Mohamed, et al. (2016) in Egypt found that the majority of mothers, 84.2% and 90.4%, respectively, said they would consult a doctor if their babies showed signs and symptoms of NNJ. This positive assertion can be linked to mothers' perception of healthcare. Thus, Mohamed, et al. (2016) in Egypt indicated in their study that most mothers perceived the hospital as the first place to access health treatment. Most hospitals have the needed resources for the treatment of neonatal jaundice. Therefore, immediate access to hospitals for NNJ management should be encouraged.

Practices of mothers towards neonatal jaundice: Concerning the practices of mothers towards neonatal jaundice, most studies reviewed postulated poor practices of mothers towards the management of NNJ. Studies by Le, et al. (2014) in Vietnam, Boskabadi, et al. (2011) in Iran and Huq, et al. (2017) in Bangladesh, reported that most mothers (56%), (58%) and (62.7%), respectively, resorted to herbal remedies. Similarly, Aggarwal, et al. (2017) in Tanzania reported that most mothers 79% applied hazardous methods such as cutting the baby's eyebrows, the back of the ear and other parts of the body with a blade as their culture demands in the management of NNJ. Nevertheless, Ezeaka, et al. (2014) in Nigeria and Amegan-Aho, et al. (2019) in Ghana revealed that 78.2% and 84.3% of mothers respectively sought medical attention immediately after recognizing any sign of jaundice. This finding is a good practice and needs to be encouraged by all mothers, while visiting traditional healers should be discouraged. However, the variation from the findings can be attributed to the study setting. According to Moawad, et al. (2016), women who resided in rural areas engaged in poor socio-cultural practices such as giving their infected babies herbal remedies. In view of the different education levels and cultural practices, these factors should be taken into consideration during the design of educational materials and their methods of delivery. Nevertheless, the above practices are alarming as the delay in seeking medical treatment for NNJ can lead to severe hyperbilirubinemia and this may contribute significantly to neonatal morbidity and mortality. Hence, in order to reduce such malpractices in the community, health educational talks and engagements should be designed to find out the various activities mothers engage in at home in the management of NNJ.

Limitations of the Literature Review

One major limitation of this review was the use of articles that predominantly used the cross-sectional design. This design depends on the ability of the participants to recall events in the past, prior to the study, which is subject to recall bias. Additionally, the results for this review were obtained from journals that were available in full text, therefore, limiting out studies that required payment before viewing which would have provided reliable information. Moreover, the majority of the studies included in this study had a small sample size; therefore these factors could generalize reports. The scales used to determine the knowledge of NNJ were not clearly specified in the studies.

This chapter focuses on the summary and conclusions based on the findings of the study. It further shed light on the implications and recommendations drawn from the study.

Summary

The general aim of the study was to determine the knowledge level, attitude and practices of mothers regarding neonatal jaundice. To achieve this aim, three objectives were formulated. These were to assess the knowledge of mothers about neonatal jaundice, ascertain the attitude of mothers towards neonatal jaundice and identify the practices of mothers towards neonatal jaundice.

A critical review was done based on the objectives set for the study. Search terms were developed from the topic and objectives of this present review. Using Boolean Operators like "AND", "OR" and "NOT", some of the keywords used to form search terms were; knowledge, attitude, practices, neonatal jaundice, hyperbilirubinemia, ABO incompatibility, neonatal hemolysis, kernicterus, phototherapy, exchange transfusion, neonate, new-born and mothers. Databases searched in conducting the literature review in this study include: Google Scholar (n=956), PubMed (n=723), Research Gate (n=198), EMBASE (n=236) and CINHAL (n=154). The electronic databases' searches yielded 2,267 records. However, after careful scrutiny for articles in line with

the inclusion criteria, twenty-five (25) articles were selected for review. Studies that were published between 2011 and 2021 were used for this study (Figure 1).

According to the review's findings, most mothers had poor knowledge of neonatal jaundice. Friends and health professionals were their primary sources of information. In addition, the review found that the majority of mothers had a negative attitude toward neonatal jaundice. Furthermore, most mothers had poor practices for managing neonatal jaundice.

Conclusion

In conclusion, the majority of studies reviewed reported that mothers had poor knowledge of neonatal jaundice in terms of causes, signs and symptoms, management and prevention and that this was prevalent in the majority of low-to-middle-income countries. Mothers also had an unfavourable attitude toward neonatal jaundice. As a result, most mothers agreed that NNJ is not dangerous enough to require hospital treatment and prefer to expose their babies to sunlight. Furthermore, the majority of studies reported poor maternal practices in the management of NNJ, with most mothers exposing their newborns to direct sunlight, herbal treatment and cutting the area between the baby's eyebrows with a blade. These practices are concerning because delaying medical treatment for NNJ can result in severe hyperbilirubinemia, which can significantly increase neonatal morbidity and mortality.

Implication

Based on the findings of the study, the following nursing implications can be outlined.

Nursing administration

In-service training and periodic workshops organized by nursing administrators should be geared towards nursing and midwives' understanding of NNJ.

Nursing education

Nursing educators need to be better equipped with knowledge about NNJ to be able to bridge the knowledge, attitude and practice gap among mothers about NNJ. Health education should be intensified at the antenatal clinics to create awareness before expectant mothers deliver their babies. Nursing educators need to be better equipped with knowledge about NNJ to be able to bridge the knowledge gap among mothers about NNJ. Health education should be intensified at the antenatal clinics to create awareness before expectant mothers deliver their babies.

Nursing research

Future research should focus on the implication of maternal practices on neonates towards the management of NNJ.

Nursing practice

The poor knowledge of mothers about NNJ could affect mothers' health-seeking behavior and the care they receive, which could lead to complications of NNJ such as kernicterus, seizures, high-frequency hearing loss, cerebral palsy and mental retardation evident at 3 years of age. Hence, health professionals should continue to create the awareness of early detection of NNJ and management through the mass media to prevent the occurrence of complications.

Recommendation

Based on the findings, the following are recommended to help enhance the knowledge, attitude and practices of mothers towards NNJ.

1. The Ministry of Health, through health professionals and the numerous media houses, should intensify health education on NNJ to dispel negative cultural beliefs attached to NNJ.
2. The Ghana Health Service should conduct periodic in-service training on proper counseling and management of NNJ among health professionals.
3. Health professionals should advocate for the adoption of good practices towards NNJ, such as early health seeking. This will aid in the complications of NNJ and reduce neonatal mortality and morbidity associated with NNJ.
4. The Ghana Education Service should include NNJ in the junior high school and senior high school syllabuses, which can aid children in educating mothers about NNJ and even help in the early detection of NNJ.
5. Family members should be involved in the health education of NNJ since there were the most cited sources of information by mothers.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

References

1. Ng, Su Yuen and Sze Yee Chong. "What do mothers know about neonatal jaundice? knowledge, attitude and practice of mothers in Malaysia." *Med J Malaysia* 69 (2014): 252-256.
2. Amegan-Aho, Kokou H., Catherine I. Segbefia, Naa Djama O. Glover and Gloria A. Ansa, et al. "Neonatal jaundice: Awareness, perception and preventive practices in expectant mothers." *Ghana Med J* 53 (2019): 267-272.
3. Onyearugha, C.N., A. Chapp-Jumbo and I.O. George, et al. "Neonatal jaundice: evaluating the knowledge and practice of expectant mothers in Aba, Nigeria." *J Health Sci Res* (2016): 42-47.
4. Aggarwal, Bindu, Archana Agrawal, Piyush Chaudhary and Girish Gupta, et al. "Neonatal Jaundice: Knowledge, attitude beliefs and practices of postnatal mothers in a tertiary care hospital in Uttarakhand, India." *Indian J Child Health* 4 (2017): 603-608.
5. Alfouwais, Norah M., Laila S. Seada, Rawan Y. Alahmadi and Ahmed A. Alassiri, et al. "Assessment of knowledge, attitude and practice of Saudi parents towards neonatal jaundice (NNJ): A cross-sectional study." *Egypt J Hosp Med* 70 (2018): 1686-1694.
6. Ogunfowora, Olusoga B and Olusoji J. Daniel. "Neonatal jaundice and its management: knowledge, attitude and practice of community health workers in Nigeria." *BMC Public Health* 6 (2006): 1-5.
7. Demis, Asmamaw, Addisu Getie, Adam Wondmieneh and Birhan Alemnew, et al. "Knowledge on neonatal jaundice and its associated factors among mothers in northern Ethiopia: a facility-based cross-sectional study." *BMJ Open* 11 (2021): e044390.
8. Huq, Sazia, Sarder Mahmud Hossain, Syed Mohammad Tanjilul Haque and Monowar Ahmed Tarafder, et al. "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* 8 (2017): 121-127.
9. Olatunde, Ogundare Ezra, Omoyajowo Adefunke Christianah, Babatola Adefunke Olarinre and Ajite Adebukola Bidemi, et al. "Neonatal jaundice: Perception of pregnant women attending antenatal clinic at a tertiary hospital in Southwest, Nigeria." *Glob Pediatr Health* 7 (2020): 2333794X20982434.
10. Adoba, Prince, Richard KD Ephraim, Kate Adomakowaah Kontor and Joseph-Josiah Bentsil, et al. "Knowledge level and determinants of neonatal jaundice: A cross-sectional study in the Effutu municipality of Ghana." *Int J Pediatr* 2018 (2018).
11. Egube, B.A., A.N. Ofili, A.R. Isara and J.U. Onakewhor, et al. "Neonatal jaundice and its management: knowledge, attitude and practice among expectant mothers attending antenatal clinic at University of Benin Teaching Hospital, Benin City, Nigeria." *Niger J Clin Pract* 16 (2013): 188-194.

12. Goodman, Olayinka O., Omolara A. Kehinde, Babatunde A. Odugbemi and Toriola T. Femi-Adebayo, et al. "Neonatal jaundice: knowledge, attitude and practices of mothers in Mosan-Okunola community, Lagos, Nigeria." *Niger Postgrad Med* J 22 (2015): 158.

13. Moawad, Eman Mohamed Ibraheim, Enas Abdallah Ali Abdallah and Yahia Zakaria Abdelalim Ali. "Perceptions, practices and traditional beliefs related to neonatal jaundice among Egyptian mothers: A cross-sectional descriptive study." *Medicine* 95 (2016).

14. Oppong, Joyce, Harriet Ampofo, Charlotte Boakye-Danquah and Ivy Nsiah, et al. "Prevalence and Risk Factors Associate with Neonatal Jaundice at Cape Coast Teaching Hospital (CCTH), Cape Coast." (2019).

15. Le, Loc T., John Colin Partridge, Bich H. Tran and Vui T. Le, et al. "Care practices and traditional beliefs related to neonatal jaundice in northern Vietnam: a population-based, cross-sectional descriptive study." *BMC Pediatrics* 14 (2014): 1-8.

16. Boskabadi, H., F. Ashrafzadeh, F. Azarkish and A. Khakshour, et al. "Complications of neonatal jaundice and the predisposing factors in newborns." *J Babol Univ Medical Sci* 17 (2015): 7-13.

17. Shehu, M., H. Shehu and T. O. Ubanyi. "Analysis of Mothers' knowledge, beliefs and practice towards neonatal jaundice in Bingham University Teaching Hospital Jos, Plateau State, Nigeria."

18. Ezeaka, Chinyere V., Rosemary O. Ugwu, Mariya Mukhtar-Yola and Ekanem N. Ekure, et al. "Pattern and predictors of maternal care-seeking practices for severe neonatal jaundice in Nigeria: a multi-centre survey." *BMC Health Serv Res* 14 (2014): 1-10.

How to cite this article: Amidu, Alhassan, Acquah Michaellina Brago, Kwateng Amissah Abena and Coffie Joanita Kekeli, et al. "Knowledge, Attitude and Practices Regarding Neonatal Jaundice among Mothers." *J Nurs Care* 11 (2022): 556.