Assessing the Awareness and Perception of Neonatal Jaundice among Expectant Mothers in Ghana

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ABSTRACT

Purpose: The study aimed to investigate the awareness and perception of expectant mothers on neonatal jaundice in Ghana.

Methods: A descriptive cross-sectional design, employing quantitative approach was used. Convenient and purposive sampling technique was employed in sampling 334 expectant mothers for the study. Data was collected using self-administered questionnaire and was analysed using IBM SPSS version 26.0 with descriptive and chi-square statistics.

Results: Majority of the responses were between the ages of 30 -34years (32.9%; n = 110), never married (57.8%; n = 193). Findings from the study concluded that a vast majority of the respondents knew about NNJ (87.1%; n = 291) and consider infections (57.2%; n= 191) as a possible cause of NNJ. 85% (n= 285) of the respondents agreed that the mode of delivery could have led to the neonatal jaundice. It emerged in the study that there is a significant relationship between the level of awareness and perception of neonatal jaundice among expectant mothers in GPHA Hospital (p<0.05), X^2 (24, N = 334) = 568.04, p = 0.000. About 52% (n = 182) of the mothers agreed that they engage in home treatment with local herb mediations in managing and treating children with NNJ. Per the results, 82.3% (n = 275) of the respondents agreed that the severity of the sickness (NNJ) affect their decision in management and treatment.

Conclusion: It was recommended that targeted public enlightenment program and education on identification of common newborn illness and safe initial home interventions during antenatal and postnatal sessions need to be intensified to help reduce morbidity and adverse events associate with Neonatal Jaundice.

Introduction

Neonatal jaundice (NNJ) often known as unconjugated hyperbilirubinemia is a condition characterized by yellow discoloration of the skin and sclera of new-born infants which can cause serious damage to the developing brain (bilirubin encephalopathy) of the new-born, which is irreversible [1]. The common causes of significant unconjugated hyperbilirubinemia in the first week of life include sepsis, glucose-6-phosphate dehydrogenase deficiency, blood group incompatibility and cephalhematoma [2]. The United States has seen a marked decrease in the incidence of kernicterus since the publication of the American Academy of Paediatrics guidelines on the detection and management of hyperbilirubinemia in 1994.

In developing countries, hyperbilirubinemia is still a public health concern. Belonwo, Gwarozo and Adeleke opined that in Sub-Saharan Africa, severe NNJ is associated with increased prevalence of neurological impairment and excess mortality. In Ghana, unpublished morbidity and mortality data from the Emergency Unit of the Department of Child Health of KBTH (excluding the Neonatal Intensive Care Unit) showed that in the year 2012, 348 (30.2%) out the 1154 neonatal admissions at the emergency room were due to NNJ. According to reports from the Ghana Demographic and Health Survey, during five years preceding the 2003 and 2008 GDHS the infant mortality rate went down from 64 per 1,000 to 41 per 1,000 respectively. Despite this progress, more than 50 percent of infant deaths occur within the neonatal period of life and there has not been any improvement in the rate of new-born deaths in Ghana. Over two-thirds of these deaths occur in the first year of life. The sluggish progress in late years in reducing under-five mortality rate is attributed to the ascension in the neonatal mortality rate, which has neonatal jaundice as one of its chief contributors [1]. The neonatal death rate over the past five years (2014-2018) has risen from 30 to 32 per 1000 live births according to UNICEF. According to a report by UNICEF, Ghana's neonatal mortality rate which stands at 32 per 1000 live births as compared to the worldwide level of 20 is thus high. This makes neonatal mortality an integral component of under-five deaths, accounting for 40% of under-five mortality in Ghana. The burden of neonatal jaundice is unacceptably high in middle-income and low-income countries and has motivated calls for intense examination and attention [3].

According to Sarici et al., severe hyperbilirubinemia often leads to kernicterus, which results in economic, social and medical challenges to parents, the family and the society. On a global scale neonatal jaundice occurs in about 60 percent of most new-born babies [1,3]. The paediatric outpatient unit of the Korle-Bu Teaching Hospital in Accra, Ghana, reports that not a single day passes without a case of neonatal jaundice being attended to [1,4]. Garfo [1] stated that in 2016, neonatal jaundice was the sixth leading cause of admissions at the Trauma and Specialist Hospital in Winneba with 118 cases (7.8 percent). However, little data exists on the awareness and perception of neonatal jaundice among expectant mothers in the Western region. It is against this frailty that this study sought to examine the level of awareness and perception of neonatal jaundice among expectant mothers in GPHA Hospital as no studies of such nature has been conducted in the institution.

Research Questions

1. What was the level of awareness of neonatal jaundice among expectant mothers in relation to the socio-demographic background in GPHA Hospital, such as age, educational level and occupation?
2. What was the perception of expectant mothers on neonatal jaundice in GPHA Hospital?
3. What was the relationship between the level of awareness and perception of neonatal jaundice among expectant mothers in GPHA Hospital?
4. What practices did mothers engage in managing and treating children with neonatal jaundice at GPHA Hospital?
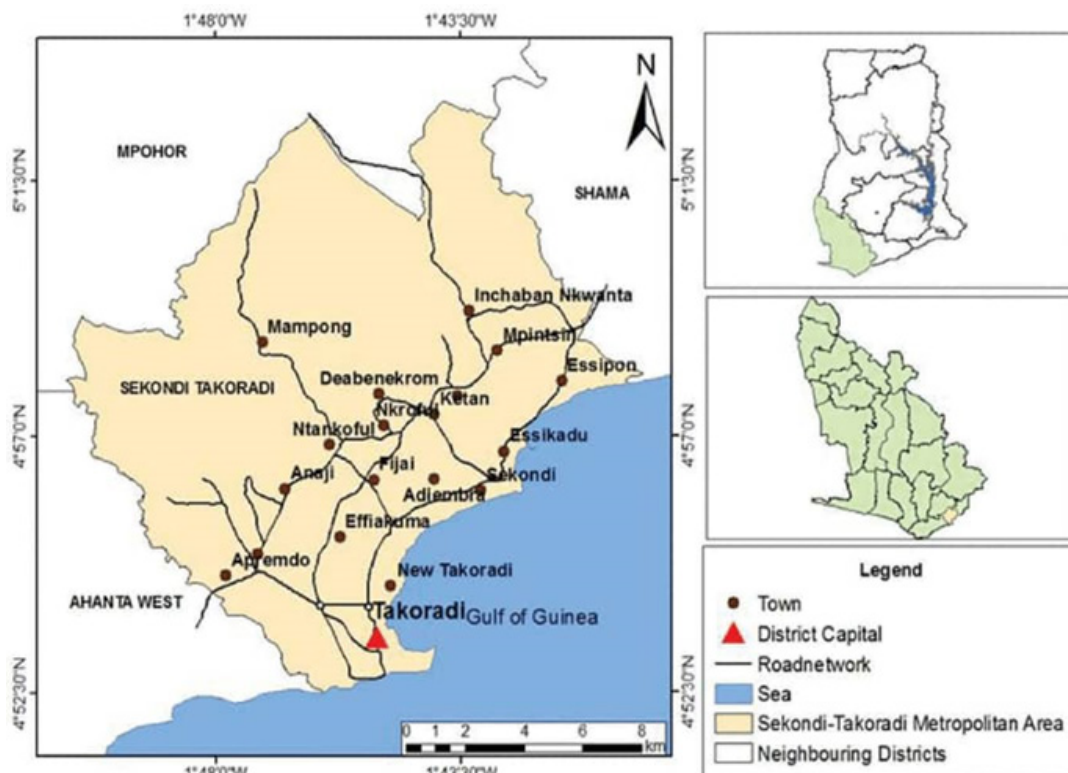

Figure 1: Map of Sekondi Takoradi. Source: Ghana Statistical Service, GSS.

Methods

Research Design

A cross-sectional survey design was used for the study. The descriptive survey is considered the most apt design for carrying out this research since it is the approach which deals with things as they currently. Information obtained from the descriptive survey research could be meaningful in analyzing a situation since it involves describing, recording, analyzing and interpreting conditions that exist. In this study, the quantitative method was used to investigate the level of awareness and perception of expectant mothers on neonatal jaundice in GPHA Hospital and establish the relationship between the awareness and of perception of neonatal jaundice among expectant mothers.

Study Area

The Ghana Ports and Harbour Authority Hospital was the study area. It is a hospital situated in Takoradi in the Western region of Ghana in West Africa. It is located near the Ghana Naval Base office of Takoradi overlooking the Gulf of Guinea. It was established to cater for its own workers but was opened to the public later on for them to also seek medical attention when the need arises. It is a hospital with a bed capacity of 52 and can be increased to 70 in the event of mass injuries or trauma.

Population

The population of the study comprised of all expectant mothers who visited GPHA Hospital for antenatal care. The 2019/2020 Out Patient Department statistics data from January to September of expectant mothers in GPHA Hospital was 2027.

Sampling Procedure

Sample Size Determination

Yamane formular was used to determine the sample size for the study was. According to him, the sample size for any study can be determined using the relation;

$$n = \frac{N}{1 + Ne^2}$$

Where the parameters;
n represents the sample size
N represents the total population = 2027
e is the margin of error (usually 0.05)
Substituting these values into the formula yields a sample size of;

$$n = \frac{2027}{1 + 2027(0.05)^2} \quad n = 334$$

Convenient & purposive sampling technique was used to select the participants for the study. The systematic random sampling technique is operationalized by selecting an element from the list at random and then every k^{th} element in the frame is selected, where the k is the sampling interval. Those who were included as participants for the study were mothers who fell within sampling interval.

Data Collection Instruments

Questionnaire was used in obtaining the data. The use of questionnaire enabled the researcher to obtain more information with respect to answering research questions one, two and four which is in line with the claim that "questionnaires permit wider coverage for a minimum expense both in money and effort". The questionnaire was designed based on review from literature that was largely presented to categorize and determine concept which were being used from the past research works which are similar to address the research questions. Prior to collecting the actual data, pretesting was done using 50 respondents from Takoradi Government Hospital. This helped to assess the validity of the research instrument and respondents' general reaction. These individuals that were used for the pre-testing were not involved in the actual study. This exercise helped to correct errors with the questionnaires. Instrument Reliability is defined as the extent to which an instrument consistently measures what it is supposed to pretesting was conducted using 50 expectant mothers from the Takoradi Government Hospital, and the Cronbach's Reliability Alpha Coefficient was 0.701. Validity is the extent to which the scores from a measure represent the variable they are intended to measure. It is also explained as a measure of the accuracy of the findings obtained from a study. To ensure the validity of the questionnaire, items on the questionnaire matched the objectives of the study.

Data Collection Procedures

Prior to the collection of data, permission was sought from the hospital administration and the expectant mothers who attend antenatal care at GPHA Hospital. Questionnaires were administered during their visit to the hospital and were collected right after they finish filling to avoid incidence of being misplaced. A period of 4 weeks was used for the data collection. Before the data was collected, the participants were duly informed of the purpose of the research and how the questionnaire should be filled. This enable them to provide the right information required to achieve the objectives of this study. Respondents were given 10-15 minutes to complete the questionnaire.

Data Processing and Analysis

After receiving the research questionnaire, they were rigorously checked to find out if they were answered well and were qualified to be included in the sample. The questionnaires were coded and keyed into Software Package for Social Sciences (SPSS V. 21). The data were then assessed for its accuracy. After accurate data have been acquired, descriptive analysis was employed to make necessary comparison for all of the item in the research questionnaire. Descriptive and chi-square statistics was done to analyze the data.

Ethical Considerations

For the purposes of ethics, an introductory letter was taken from the School of Nursing and Midwifery, University of Cape Coast. The letter of introduction was presented to the institutional review board of the GPHA Hospital. For the purposes of confidentiality,

names of participants were not included in the socio-demographic data that were taken. Prior to the distribution of the questionnaires, informed verbal consent was sought from the study participants. Also, all the study participants were given the opportunity to decide whether or not to participate as well as the chance to back out from the study at any point in time in the course of the study.

Results
Socio-Demographic Characteristics
A total of 334 expectant mothers were recruited in this study. The response rate obtained was 100%. In table 1, the responses indicated that respondents between the ages of 30-34years recorded the highest number of 110, representing 32.9%. Moreover, respondents who were never married recorded the highest frequency of 193 representing 57.8%. The study revealed that 65.3% (n = 218) of the respondents had children. Greater proportion of the respondents had basic education (28.7%; n = 96). About 24% (n = 81) had one Antenatal visit during current pregnancy and exactly half (50.0%; n = 167) were in their third trimester.

Table 1: Demographic Characteristics of Respondents (n=334).

Variable	Frequency	Percentage (%)
Age of Respondent (years)		
< 20	0	0.0
20-24	58	17.4
25-29	100	29.9
30-34	110	32.9
35-39	41	12.3
40 and above	25	7.5
Marital status		
Never married	193	57.8
Cohabitation	50	15.0
Married	83	24.9
Separated	2	0.9
Widowed	5	1.5
Do you have children?		
Yes	218	65.3
No	116	34.7
Level of Education		
Informal	46	13.7
Basic	96	28.7
JHS/Middle	83	24.8
Secondary/Technical	66	19.8
Tertiary	43	13.0
Number of Antenatal visits attended during current pregnancy		
1	81	24.2
2	78	23.3
3	80	23.9
4	46	14.9
5 or more	38	13.7
Age of Pregnancy		
1st trimester	108	32.3
2nd Trimester	59	17.7
3rd trimester	167	50.0

Level of Awareness of Neonatal Jaundice among Expectant Mothers
Out of the 334 respondents, 291 (87.1%) reported that they know Neonatal Jaundice. Out of the respondents who knew of Neonatal Jaundice, 126 (37.7%) got to know of it from the hospital. It was found that 157 (47.0%) of the respondents detect Jaundice in babies by yellow skin and the major cause of Neonatal Jaundice was infections (191, 57.2%). Findings from the study revealed that the most danger sign of Neonatal Jaundice was fever (137, 41.0%), Table 2.

Table 2: Level of Awareness of Neonatal Jaundice among Expectant Mothers (n=334).

Variable	Frequency	Percentage (%)
Do you know neonatal jaundice?		
Yes	291	87.1
No	43	12.9
How did you get to know of it?		
Mass Media	25	7.5
Friend	50	15.0
Hospital	126	37.7
Witnessed	42	12.6
Other	48	14.8
How do you detect jaundice in babies?		
Yellow eyes	134	40.1
Yellow Skin	157	47.0
Other	43	12.9
What are the causes of Neonatal Jaundice?		
Infections	191	57.2
Disparity between blood of mother and baby	84	25.1
Too much oil consumption by mother	34	10.2
Mosquito bite	15	4.6
Other	10	2.9
What are the danger signs of Neonatal Jaundice?		
Fever	137	41.0
Refusal to feed	99	29.6
Hypotonia	33	9.9
Down turning of the eye	51	15.3
Convulsion	14	4.2

Perception of Expectant Mothers on Neonatal Jaundice
Findings from the study revealed that 284 (85.0%) agreed that the mode of delivery could have led to the neonatal jaundice. It was found that 184 (55.1%) of the respondents agreed that similar ethnic background could contribute to a baby developing jaundice. It emerged in the study that 191 (57.2%) consider blood group incompatibility as a possible cause of Neonatal Jaundice. It was revealed that 177 (53.0%) of the respondents affirmed infections can lead to the development of neonatal jaundice (Table 3).

It emerged in the study that there is a significant relationship between the level of awareness and perception of neonatal jaundice among expectant mothers in GPHA Hospital (p<0.05), X^2 (24, N = 334) = 568.04, p = 0.000 as shown in table 4.

Table 3: Perception of Expectant Mothers on Neonatal Jaundice (n=334).

Variable	Frequency	Percentage (%)
Do you think the mode of delivery could have led to the neonatal jaundice?		
Yes	284	85.0
No	50	15.0
Do you think similar ethnic background could contribute to a baby developing jaundice?		
Yes	184	55.1
No	150	44.9
Do you consider blood group incompatibility as a possible cause?		
Yes	191	57.2
No	143	42.8
Do you think infections can lead to the development of neonatal jaundice?		
Yes	177	53.0
No	157	47.0

Table 4: Chi-Square Tests.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	568.035ᵃ	24	.000
Likelihood Ratio	482.964	24	.000
Linear-by-Linear Association	143.820	1	.000
N of Valid Cases	334		

a. 15 cells (41.7%) have expected count less than 5. The minimum expected count is .60.

Practices Mothers Engage in Managing and Treating Children with Neonatal Jaundice

Table 5.0 presents practices mothers engage in managing and treating children with Neonatal Jaundice. Findings from the study revealed that 182 (56.2%) of the respondents agreed that they engage in home treatment with local herb mediations in managing and treating children with Neonatal Jaundice. Per the results, 275 (82.3%) of the respondents agreed that the severity of the sickness (Neonatal Jaundice) affect their decision in management and treatment. The study findings show that 197 (58.9%) of the respondents agreed that they implement certain cultural practices as a treatment method of Neonatal Jaundice. It emerged in the study that 159 (47.6%) of the respondents agreed that they apply their knowledge in Neonatal Jaundice in treatment (Table 5).

Table 5: Practices Mothers Engage in Managing and Treating Children with Neonatal Jaundice (n=334).

Variable	Frequency	Percentage (%)
Did you engage in home treatment with local herb mediations?		
Yes	188	56.2
No	146	43.8
Does the severity of the sickness affect your decision?		
Yes	275	82.3
No	59	17.7
Do you implement certain cultural practices you observe as a treatment method and how do you go about it?		
Yes	197	58.9
No	137	41.1
With your knowledge in neonatal jaundice, do you apply that in your treatment?		
Yes	159	47.6
No	175	52.4

Discussion

Findings from the study revealed that, a vast majority of the respondents reported that they know Neonatal Jaundice. Evidence from studies conducted by Amegan-Aho et al. [5] and Egube et al. [6] supports the study finding where they indicated that majority (77.1%) of the respondents had heard about Neonatal Jaundice and a vast majority (85.9%) of the respondents were aware of the condition respectively. Out of the respondents who knew of Neonatal Jaundice, majority had the information from the hospital. This contradicts with a study carried out by Amegan-Aho et. al. [7] which revealed that 27.4% of the respondents of their study heard about NJ from the hospital. Similarly, Adoba et al. [8] also found that school was the major source of information on neonatal jaundice (34.6%).

It was evident in the study that nearly half (47.0%) of the respondents detect Jaundice in babies by yellow skin. Likewise, Olusanya, Slusher, Imosemi and Emokpae [3] found that few (13.9%) mother-infants chose Dark Yellow. It was revealed that the causes of Neonatal Jaundice are infections (57.2%), disparity between blood of mother and baby (25.1%), too much oil consumption by mother (10.2%), Mosquito bite (4.6%) and others (2.9%). A study conducted by Ho [9] supports the study finding which indicated that G6PD deficiency, ABO incompatibility, low birth weight and sepsis are the common causes of neonatal jaundice. Findings from the study revealed that the danger signs of Neonatal Jaundice include fever (41.0%), refusal to feed (29.6%), hypotonia (9.9%), down turning of the eye (15.3%) and convulsion (4.2%). Likewise, as cited by Awasthi, Verma and Agarwal [10], more than half of the caregivers recognized fever, irritability, weakness, abdominal distension/vomiting, slow breathing and diarrhoea as danger signs in neonates. The study finding is inconsistent with a study carried out by Ogunfowora, Adefuye and Fetuga [11] where they indicated that considerably half (49.7%) did not know any danger sign of Neonatal Jaundice

Findings from the study revealed that significant majority (85.0%) agreed that the mode of delivery could have led to the neonatal jaundice. This is reflected by a study conducted by Adoba, et al. [8] which revealed that more than half (54%) of neonates developed Jaundice within 1–3 days after birth with 10% having it at birth. It was found that more than half (55.1%) of the respondents agreed that similar ethnic background could contribute to a baby developing jaundice. Similarly, a prospective, cross-sectional, population-based, descriptive study found that early discharge without follow-up, low maternal knowledge, cultural practices, and use of traditional treatments may limit or delay detection or care-seeking for jaundice.

The results of the study showed that more than half (57.2%) consider blood group incompatibility as a possible cause of Neonatal

Jaundice and more than half (53.0%) of the respondents affirmed infections can lead to the development of neonatal jaundice. Simlarly, Owa and Ogunlesi [2] indicated that the common causes of significant unconjugated hyperbilirubinemia in the first week of life include sepsis, glucose-6-phosphate dehydrogenase deficiency, blood group incompatibility and cephalhematoma. It emerged in the study that there is a significant relationship between the level of awareness and perception of neonatal jaundice among expectant mothers in GPHA Hospital (p<0.05). This is inconsistent with a study carried out by Amegan-Aho et al. [7] which revealed that, among those who had heard about Neonatal Jaundice majority (72.6%) knew at least one symptom of Neonatal Jaundice; a vast majority (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 (p=0.15).

Findings from the study revealed that more than half (56.2%) of the respondents agreed that they engage in home treatment with local herb mediations in managing and treating children with Neonatal Jaundice. Likewise, in the south-western part of Nigeria as cited by Ogunfowora and Daniel [12], 3% of the participants would treat Jaundice with herbal remedies. The results of the study showed that majority (82.3%) of the respondents agreed that the severity of the sickness (Neonatal Jaundice) affect their decision in management and treatment. Similarly, Olusanya, Akande, Emokpae and Olowe [13] found that factors independently associated with severe neonatal jaundice were maternal religion, occupation, use of herbal preparations during pregnancy, infant's gender, weight at screening, multiple gestation and place of birth.

The study findings show that more than half (58.9%) of the respondents agreed that they implement certain cultural practices as a treatment method of Neonatal Jaundice. A study conducted by Le et al. suports the study finding which revealed that early discharge without follow-up, low maternal knowledge, cultural practices, and use of traditional treatments may limit or delay detection or care-seeking for jaundice. It emerged in the study that considerably half (47.6%) of the respondents agreed that they apply their knowledge in Neonatal Jaundice in treatment. Likewise, Ogunfowora and Daniel [12], found that only (54.5%) had adequate knowledge of effective treatment namely, phototherapy and exchange blood transfusion.

Conclusion

Findings from the study revealed that a vast majority of the respondents indicated that they know Neonatal Jaundice. Moreover, the results of the study showed that greater proportion of the respondents consider blood group incompatibility and infections as a possible cause of Neonatal Jaundice. Targeted public enlightenment program and education on identification of common newborn illness and safe initial home interventions during antenatal and postnatal sessions need to be intensified to help reduce morbidity and adverse events associate with Neonatal Jaundice. Another notable issue is the public acceptance of utilizing traditional therapies for Jaundice. Therefore, raising public awareness of how to use traditional remedies along with the conventional treatments of Jaundice is of great importance.

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