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Neonatal Jaundice Awareness, Perception and Knowledge Among Pregnant Women Attending Antenatal Clinic in Selected Private Hospitals in Port Harcourt, Nigeria

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Abstract

Background: Neonatal jaundice remains one of the most common neonatal conditions contributing to neonatal morbidity, mortality and preventable neurological complications. Maternal awareness, knowledge and perception play critical roles in early recognition and presentation to the hospital, enabling prompt management.
Aim: This study assessed the awareness and perception of neonatal jaundice among pregnant women attending antenatal clinics in three private hospitals in Port Harcourt, Nigeria.
Methods: A descriptive cross-sectional multi-hospital-based study was conducted among 350 pregnant women attending antenatal clinics. Data were collected using a structured questionnaire assessing socio-demographic characteristics, awareness, knowledge, and perception of neonatal jaundice. Data was analysed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics, chi-square test, and binary logistic regression analysis were employed, with statistical significance set at $p < 0.05$.
Results: The findings revealed that 85.1% of respondents had heard about neonatal jaundice, with health workers identified as the major source of information (61.7%). Most respondents correctly identified yellow discoloration of the eyes and skin as a sign of neonatal jaundice (69.4%). Overall, 43.7% of respondents demonstrated good knowledge of neonatal jaundice, while 22.3% had poor knowledge. Tertiary education ($p <0.001$), multiparity ($p = 0.046$), and information obtained from health workers ($p = 0.009$) were found to be significant predictors of good knowledge.
Conclusion: Although awareness of neonatal jaundice was high among the pregnant women, important knowledge gaps and misconceptions still exist. Strengthening antenatal health education on neonatal jaundice is recommended to improve early recognition and appropriate healthcare-seeking behaviour.

Keywords: *Neonatal jaundice, awareness, perception, knowledge, pregnant women.*

1. Introduction

Neonatal jaundice is one of the most common clinical conditions affecting newborns worldwide and remains an important contributor to neonatal morbidity, hospital admissions, and preventable neurological complications [1]. Neonatal jaundice is characterized by yellow discolouration of the skin, sclera, and mucous membranes resulting from elevated serum bilirubin levels in the newborn Physiological jaundice, a mild, self-limiting condition that occurs in healthy children, must be distinguished from pathological jaundice which is usually caused by an underlying medical condition or risk and can lead to severe hyperbilirubinemia, acute bilirubin encephalopathy and kernicterus, resulting in irreversible neurological damage such as hearing impairment, cerebral palsy, or death if not promptly recognized and managed [2,3]. Globally, neonatal jaundice contributes significantly to neonatal morbidity, particularly in low- and middle-income countries where access to early diagnosis and appropriate treatment remains limited [1,4,5]. Among WHO regions, the prevalence of severe neonatal jaundice among admitted neonates varies and ranges from 0.73 to 3.34% with the highest percentages in the African and South Eastern Asia and 0.16 to 2.75% for acute bilirubin encephalopathy. [6]. In Nigeria, the burden of neonatal jaundice (NNJ) and its management is also high, it remains a common cause of admission and readmission into special care baby unit in the 1st week of life [7] with a facility-based prevalence rate of 8.9 to 60% (8). It is also a major cause of developmental disability and neonatal mortality and delayed presentation has been blamed as a major factor contributing to poor outcome.[9, 10] Maternal knowledge, awareness, and perception are critical factors influencing early detection and healthcare-seeking behaviour. Varying levels of awareness and perception of neonatal jaundice among mothers and pregnant women have been reported [11, 12, 13], In Port Harcourt, Rivers state, few related studies were found on the knowledge and perception of NNJ by mothers [14,15]; both were carried out in government healthcare facilities with none in the private facilities. This study thus assessed the awareness and perception of neonatal jaundice among pregnant women attending antenatal clinics in three private hospitals in Port Harcourt, Nigeria.

2. Methodology

2.1 Study Design

This was a descriptive cross-sectional hospital-based study that assessed the awareness, knowledge and perception of neonatal jaundice among pregnant women attending antenatal clinics in selected private hospitals in Port Harcourt, Rivers State, Nigeria. The study was conducted over a period of four months, from November 2025 to February 2026.

2.2 Study Area

The study was conducted in 3 private hospitals in Port Harcourt Metropolis, Rivers State, Nigeria. Port Harcourt is a major urban city in the Niger Delta region with a rapidly growing population and diverse socioeconomic characteristics. The city has several public and private healthcare facilities providing antenatal, obstetric, and neonatal healthcare services. The three healthcare facilities offer antenatal care services to pregnant women and are well patronized within the metropolis.

2.3 Study Population

The study population comprised pregnant women attending antenatal clinics in the 3 private hospitals in Port Harcourt who gave informed consent for the study.

2.4 Inclusion Criteria

The following participants were included in the study:

1. Pregnant women attending antenatal clinics in the three healthcare facilities.
2. Pregnant women who gave informed written consent to participate in the study.
3. Pregnant women who were mentally and physically stable during data collection.

2.5 Exclusion Criteria

1. Pregnant women who declined consent.
2. Pregnant women who were severely ill during the period of data collection.

2.6 Sample Size Determination

The sample size for the study was determined using Cochran's formula for single population proportion:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

- n = minimum sample size
- Z = standard normal deviate at 95% confidence interval (1.96)
- p = estimated proportion of awareness of neonatal jaundice among pregnant women from a previous study which was 0.70 [14]
- $q = 1 - p = 0.30$
- d = margin of error (0.05)

Substituting the values into the formula:

$$n = \frac{(1.96)^2 \times 0.70 \times 0.30}{(0.05)^2}$$
$$n = \frac{3.8416 \times 0.21}{0.0025}$$
$$n = \frac{0.8067}{0.0025}$$
$$n = 322.68$$
$$n \approx 323$$

To account for non-response and incomplete questionnaires, 10% was added:

10% of 323 = 32

323 + 32 = 355

2.7 Sampling Technique

A multistage sampling technique was used. In the first stage, some private hospitals and healthcare centers providing antenatal care services were purposively selected based on patient attendance and accessibility. The calculated sample size was distributed to the three study sites using proportionate sampling. In the second stage, pregnant women attending antenatal clinics who met the inclusion criteria were recruited using convenience sampling during clinic days until the required sample size was achieved.

2.8 Data Collection Instrument

Data was collected using a structured self-administered questionnaire developed after reviewing relevant literature on neonatal jaundice awareness and perception. The questionnaire consisted of four sections: socio-demographic characteristics, awareness of neonatal jaundice, knowledge of causes and risk factors, and perception towards neonatal jaundice. The questionnaire contained both closed-ended and multiple-choice questions.

2.9 Validity and Reliability of Instrument

The questionnaire was reviewed by experts in Paediatrics, public health, and maternal health research to ensure face and content validity. Necessary corrections and modifications were made based on expert recommendations.

A pilot study was conducted among 30 pregnant women attending antenatal clinics in a healthcare facility outside the study area. The reliability of the instrument was assessed using Cronbach's alpha, and a reliability coefficient of 0.84 was obtained, indicating good internal consistency.

2.10 Data Collection Procedure

Approval was obtained from the management of the three healthcare facilities before commencement of the study. Eligible pregnant women attending antenatal clinics were informed about the objectives of the study, and written informed consent was obtained before questionnaire administration. The questionnaires were administered by trained research assistants and retrieved immediately after completion to minimize non-response and incomplete data.

2.11 Variables of the Study

Dependent Variable: Awareness, Knowledge and perception of neonatal jaundice.

Independent Variables: Age, marital status, educational level, occupation, parity, and source of information on neonatal jaundice.

2.12 Data Analysis

Data obtained from the study were coded and entered into the Statistical Package for Social Sciences (SPSS) version 25.0 for analysis. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarise the data.

Knowledge of neonatal jaundice was assessed using six knowledge variables, including knowledge of causes, risk factors, complications, and treatment of neonatal jaundice.

Each correct response was assigned one (1) mark, while incorrect responses or "Do not know" responses were assigned zero (0) mark. The maximum obtainable score was six (6), while the minimum obtainable score was zero (0).

The respondents' total knowledge scores were summed and converted into percentage scores. Based on the percentage scores obtained, respondents were categorised into three knowledge levels as follows:

- Poor knowledge = 0–2 correct responses ($< 50\%$)
- Fair knowledge = 3–4 correct responses (50–69%)
- Good knowledge = 5–6 correct responses ($\geq 70\%$)

The frequencies of respondents within each category were computed to generate the overall knowledge level of neonatal jaundice presented in Table 4.

Chi-square test was used to determine associations between socio-demographic variables and knowledge level of neonatal jaundice. Binary logistic regression analysis was further performed to identify predictors of good knowledge of neonatal jaundice among respondents. Statistical significance was set at $p < 0.05$.

3. Results

Out of the 355 participants recruited, 5 questionnaires were dropped because of incomplete data and 350

were analyzed. Table 1 shows the socio-demographic characteristics of the 350 pregnant women attending antenatal clinics included in the study. Most respondents were between the ages of 30 and 39 years (44.6%), followed by those aged 20–29 years (40.6%). The majority of the respondents were married (88.9%). More than half of the participants had a tertiary education (56.6%), while only a small proportion had primary education (6.3%). Civil servants constituted the highest occupational group (32.0%), and most respondents were multiparity (64.9%).

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<20	18	5.1
	20–29	142	40.6
	30–39	156	44.6
	≥40	34	9.7
Marital Status	Married	311	88.9
	Single	29	8.3
	Divorced/Widowed	10	2.8
Educational Level	Primary	22	6.3
	Secondary	104	29.7
	Tertiary	198	56.6
	Postgraduate	26	7.4
Occupation	Civil Servant	112	32.0
	Trader	94	26.9
	Self-employed	78	22.3
	Unemployed	41	11.7
	Others	25	7.1
Parity	Nulliparous/primiparity	123	35.1
	Multiparity	227	64.9

Table 1. Socio-Demographic Characteristics of Pregnant Women Attending ANC (N = 350)

Table 2 shows the level of awareness of neonatal jaundice among pregnant women attending antenatal clinics. The majority of respondents (85.1%) had heard about neonatal jaundice, while 14.9% had no prior awareness of the condition. Health workers were identified as the major source of information (61.7%), followed by social media (24.2%) and family or friends (18.8%). Most respondents correctly identified neonatal jaundice as yellow discolouration of the eyes and skin (69.4%), although some respondents had misconceptions regarding its symptoms.

Table 2: Awareness of Neonatal Jaundice Among Pregnant Women

Variable	Category	Frequency (n)	Percentage (%)
Ever Heard of Neonatal Jaundice	Yes	298	85.1
	No	52	14.9
Source of Information*	Health Workers	184	61.7
	Social Media	72	24.2
	Family/Friends	56	18.8
	Television/Radio	41	13.8
Correct Identification of Jaundice	Yellow Eyes/Skin	243	69.4
	Fever	39	11.1
	Poor Feeding	28	8.0
	Do not know	40	11.5

Table 2. Awareness of Neonatal Jaundice Among Pregnant Women

Table 3 presents respondents' knowledge regarding the causes and risk factors of neonatal jaundice. More than half of the respondents correctly identified infection as a possible cause of neonatal jaundice (60.3%), while 49.4% recognised prematurity as a risk factor. Only 35.4% were aware that blood group incompatibility could cause neonatal jaundice. Furthermore, 53.7% correctly acknowledged that delayed treatment could lead to brain damage. However, a notable proportion of respondents (34.0%) believed that exposure to sunlight alone could cure neonatal jaundice.

Variable	Correct Response	Frequency (n)	Percentage (%)
Infection can cause neonatal jaundice	Yes	211	60.3
Prematurity is a risk factor	Yes	173	49.4
Blood group incompatibility can cause jaundice	Yes	124	35.4
Herbal medication use may contribute	Yes	142	40.6
Delayed treatment may cause brain damage	Yes	188	53.7
Exposure to sunlight alone can cure jaundice	Yes	119	34.0

Table 3. Knowledge of Causes and Risk Factors of Neonatal Jaundice

Table 4 presents the overall knowledge level of neonatal jaundice among pregnant women attending antenatal clinics. The findings revealed that 43.7% of respondents demonstrated good knowledge of neonatal jaundice, while 34.0% had fair knowledge and 22.3% had poor knowledge. This suggests that although awareness of neonatal jaundice was high, substantial knowledge gaps still exist among a considerable proportion of pregnant women.

Knowledge Level	Frequency (n)	Percentage (%)
Poor Knowledge	78	22.3
Fair Knowledge	119	34.0
Good Knowledge	153	43.7
Total	350	100.0

Table 4. Knowledge Level of Neonatal Jaundice

Variable	Category	Frequency (n)	Percentage (%)
Neonatal jaundice is a serious condition	Agree	276	78.9
	Disagree	29	8.3
	Undecided	45	12.8
Hospital treatment is necessary	Agree	301	86.0
	Disagree	21	6.0
	Undecided	28	8.0
Traditional remedies are effective	Agree	84	24.0
	Disagree	206	58.9
	Undecided	60	17.1
Early detection improves outcome	Agree	317	90.6
	Disagree	11	3.1
	Undecided	22	6.3

Table 5. Perception of Neonatal Jaundice Among Respondents

Table 5 shows respondents' perceptions towards neonatal jaundice. The majority of respondents agreed that neonatal jaundice is a serious health condition (78.9%) and that hospital treatment is necessary for affected newborns (86.0%). Most respondents also believed that early detection improves neonatal outcomes (90.6%). However, 24.0% of respondents believed that traditional remedies are effective in the treatment of neonatal jaundice, indicating the persistence of some cultural misconceptions.

Table 6 presents the association between educational level and knowledge of neonatal jaundice. There was a statistically significant association between educational level and respondents' knowledge of neonatal jaundice (^{2} = 32.481, p < 0.001). Respondents with tertiary and postgraduate education demonstrated significantly higher levels of good knowledge compared to those with primary and secondary education. Poor knowledge was predominantly observed among respondents with lower educational attainment.

Educational Level	Poor n (%)	Fair n (%)	Good n (%)	χ^2	p-value
Primary	13 (59.1)	7 (31.8)	2 (9.1)	32.481	<0.001
Secondary	39 (37.5)	41 (39.4)	24 (23.1)		
Tertiary	23 (11.6)	62 (31.3)	113 (57.1)		
Postgraduate	3 (11.5)	9 (34.6)	14 (53.9)		

Table 6. Association Between Educational Level and Knowledge of Neonatal Jaundice

Table 7 presents the results of a binary logistic regression analysis of factors associated with good knowledge of neonatal jaundice among pregnant women. Tertiary education significantly increased the likelihood of having good knowledge of neonatal jaundice (aOR = 2.91, p < 0.001). Multiparity was also independently associated with good knowledge (aOR = 1.67, p = 0.046). Respondents who obtained information from health workers were more likely to demonstrate good knowledge compared to others (aOR = 2.12, p = 0.009). However, maternal age was not significantly associated with good knowledge of neonatal jaundice after adjustment for confounding variables.

Variable	cOR (95% CI)	p-value	aOR (95% CI)	p-value
Tertiary Education	3.42 (2.01–5.83)	<0.001	2.91 (1.63–5.20)	<0.001
Multiparity	1.88 (1.16–3.05)	0.011	1.67 (1.01–2.78)	0.046
Information from Health Workers	2.54 (1.49–4.33)	0.001	2.12 (1.20–3.74)	0.009
Age ≥30 years	1.39 (0.84–2.31)	0.194	1.18 (0.68–2.04)	0.552

Table 7. Binary Logistic Regression Analysis of Factors Associated with Good Knowledge of Neonatal Jaundice

4. Discussion

This study assessed the awareness and perception of neonatal jaundice among pregnant women attending antenatal clinics in three private hospitals and healthcare centers in Port Harcourt, Nigeria. The findings revealed a high level of awareness of neonatal jaundice among respondents, although important gaps in knowledge and misconceptions regarding its causes, complications, and treatment still existed. The high level of awareness observed in this study is comparable with findings from previous Nigerian studies that reported that many pregnant women and mothers had heard about neonatal jaundice [11, 12]. Health workers were identified as the major source of information among respondents, highlighting the important role of antenatal clinics and healthcare professionals in disseminating maternal and newborn health information. This finding is consistent with previous reports by

Ogunlesi and Abdul [16], who observed that healthcare workers significantly influence maternal awareness and healthcare-seeking behaviour regarding neonatal jaundice. Despite the high level of awareness observed, only a moderate proportion of respondents demonstrated good knowledge of neonatal jaundice. This finding agrees with studies conducted in Lagos and other parts of Nigeria, where awareness of NNJ did not necessarily translate into adequate knowledge [12,13]. Some respondents in the present study still believed that exposure to sunlight alone could cure neonatal jaundice, reflecting persistent misconceptions and inappropriate treatment practices. Misconceptions with regards to the causes, treatment, dangers signs and complications of NNJ were also reported by Olatunde et al. [17] with majority relating its aetiology to yellow fever and malaria in pregnancy, and some still resorting to the use of glucose water and early morning sunlight for its treatment. Several such misconceptions have also been reported from outside Nigeria (18, 19) The finding that most respondents correctly identified yellow discolouration of the eyes and skin as a sign of neonatal jaundice is encouraging and suggests some level of understanding of the condition. Similar finding has been reported by some authors [13, 20] Early recognition of jaundice is essential for timely presentation to the hospital healthcare facilities for early intervention and prevention of severe complications such as Acute bilirubin encephalopathy and kernicterus. However, inadequate knowledge regarding risk factors such as blood group incompatibility and prematurity indicates persisting knowledge deficits among the pregnant women. Previous studies have similarly reported poor maternal understanding of the aetiology and risk factors of neonatal jaundice [1,14]. Educational level was significantly associated with knowledge of neonatal jaundice in this study. Respondents with tertiary education demonstrated better knowledge compared to those with lower educational attainment. This finding is consistent with previous studies that reported higher educational status as an important predictor of good maternal knowledge regarding neonatal jaundice [15, 21, 22]. Educated mothers are more likely to access health information, understand antenatal counselling, and seek appropriate medical care promptly. Multiparity was also identified as a significant predictor of good knowledge of neonatal jaundice. This may be due to previous maternal experiences with neonatal care and repeated exposure to antenatal health education during previous pregnancies. Multiparity was associated with increased knowledge of NNJ in the study by Ezeaka et al. [23]. Having a previous child with NNJ has also been associated with increased knowledge of NNJ [16, 24, 25]. The study further revealed that most respondents perceived neonatal jaundice as a serious medical condition requiring hospital treatment, which is important because poor recognition of disease severity is associated with delayed healthcare-seeking behaviour and increased complications [9, 16]. However, the persistence of traditional beliefs, use of home remedies and engagement in other inappropriate practices by some mothers remain major public health concerns because cause delayed presentation to hospital and increase risks for severe hyperbilirubinemia, acute bilirubin encephalopathy, kernicterus and other complications [7, 16, 23].

Conclusion

This study assessed the awareness and perception of neonatal jaundice among pregnant women attending antenatal clinics in three private hospitals in Port Harcourt, Nigeria. The findings revealed that although awareness of neonatal jaundice among respondents was relatively high, important gaps in knowledge and misconceptions regarding its causes, complications, and treatment still existed. Health workers were identified as the major source of information on neonatal jaundice, highlighting the importance of antenatal education and each contact with a healthcare provider in improving maternal awareness. The study further demonstrated that educational level, multiparity, and information obtained from healthcare workers were significant predictors of good knowledge of NNJ. While most respondents perceived NNJ as a serious condition requiring hospital treatment, a considerable proportion still hold unto traditional remedies and other misconceptions and this could contribute to delayed presentation with increased risk of kernicterus and other neurological impairment thus should be continuously addressed through targeted individual, group and community health education.

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