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AWARENESS AND UNDERSTANDING OF NEONATAL JAUNDICE AMONG CAREGIVERS OF ADMITTED NEONATES IN A TERTIARY CARE HOSPITAL

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Abstract

Background:
Neonatal jaundice (NNJ) remains one of the most frequent causes of neonatal morbidity and readmission worldwide. Poor caregiver awareness and misconceptions often delay recognition and treatment, predisposing infants to preventable bilirubin neurotoxicity.

Objectives:
To assess caregivers' awareness, understanding, and practices regarding NNJ among admitted neonates in a tertiary care hospital and to identify factors influencing knowledge levels.

Methods:
This descriptive cross-sectional study included 200 caregivers of admitted neonates. A pre-validated questionnaire assessed knowledge, attitudes, and practices related to NNJ. Data were analyzed using SPSS v26. Chi-square and logistic regression identified predictors of adequate knowledge. Sample size was estimated using Yamane's formula at a 95% confidence level.

Results: Among 200 participants (68% mothers, 32% fathers; mean age 29.8 ± 5.7 years), 86% recognized yellow discoloration as a sign of NNJ, yet only 42% identified prematurity and 38% infection as causes. Although 48% correctly cited phototherapy as the mainstay treatment, 27% still believed sunlight exposure could cure jaundice. Overall, 46.5% had good knowledge, and prior health education strongly predicted adequate awareness (AOR = 3.02; p = 0.001).

Conclusions: Moderate awareness was observed, but misconceptions persist regarding causes and management. Structured antenatal and postnatal counseling is essential to improve caregiver understanding, promote early detection, and prevent severe hyperbilirubinemia and kernicterus.

Keywords: Neonatal jaundice, caregiver knowledge, awareness, phototherapy, hyperbilirubinemia, neonatal care

Main Manuscript

Introduction

Neonatal jaundice (NNJ) is one of the most prevalent neonatal conditions, affecting approximately 60% of term and 80% of preterm infants within the first week of life [1,2]. It arises due to elevated serum bilirubin resulting in yellow discoloration of the skin and sclera [3]. While physiologic

jaundice is usually benign and self-limiting, pathological jaundice—manifesting within the first 24 hours or with a rapid bilirubin rise exceeding 5 mg/dL per day—requires prompt evaluation [4,5].
In low- and middle-income countries (LMICs), NNJ remains a significant cause of preventable neonatal morbidity and mortality [6]. Delay in recognizing danger signs, poor caregiver understanding, and reliance on traditional remedies contribute to complications such as acute bilirubin encephalopathy and kernicterus [7,8]. Despite global public health campaigns, awareness among caregivers remains suboptimal, especially where literacy levels are low [9–11].
Caregivers play a crucial role in early recognition and timely medical consultation. Previous studies from Ghana [12], China [13], and Nigeria [14] have demonstrated varying awareness levels influenced by maternal education, residence, and prior counseling. However, there is limited data from Indian tertiary settings evaluating caregiver understanding of NNJ.
This study aimed to assess the awareness, understanding, and practices regarding NNJ among caregivers of hospitalized neonates and identify factors associated with adequate knowledge. The findings aim to guide targeted educational interventions to improve neonatal outcomes.

Materials and Methods

Study Design and Setting

A descriptive cross-sectional study was conducted from June to 15th October 2025 in the neonatal unit of a tertiary care teaching hospital.

Study Population

The study included caregivers (parents or primary guardians) of neonates admitted with any diagnosis.
Inclusion criteria: caregivers aged ≥18 years who could comprehend the questionnaire and provided written informed consent.
Exclusion criteria: caregivers of critically ill neonates unable to participate or those who refused consent.

Sample Size and Sampling Technique

Sample size (n = 200) was determined using **Yamane's formula**:
$n=N/\ 1+N(e)^2$
Assuming a caregiver population (N) = 420 over 3 months and margin of error (e) = 0.05, the calculated sample was 200. Systematic random sampling (k = 2) selected every second eligible caregiver daily.

Data Collection Tool

A structured, pretested questionnaire—adapted from validated tools by Salia et al. [12] and Huang et al. [13]—included:
1. **Socio-demographic details**
2. **Knowledge** (definition, causes, recognition, complications, prevention)
3. **Attitudes** (perceived importance, cultural beliefs)
4. **Practices** (care-seeking behavior and management preferences).

Correct responses scored = 1, incorrect = 0. Total knowledge was categorized as:
- **Good:** > 80%
- **Moderate:** 60–80%
- **Poor:** < 60%.
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Validity and Reliability

The instrument underwent expert validation by neonatologists and nursing educators. A pilot study (n = 20) yielded Cronbach's alpha = 0.82, confirming internal consistency.

Ethical Approval

Institutional Ethics Committee approval (IEC/NEO/25/2025) was obtained. Participation was voluntary with written informed consent, ensuring confidentiality.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed with **SPSS v26**. Descriptive statistics (frequencies, percentages, means ± SD) summarized results. Chi-square and logistic regression determined associations between knowledge level and socio-demographic variables. $p < 0.05$ was considered statistically significant.

Results

Socio-demographic Characteristics

Of the 200 caregivers, 144 (72%) were mothers, 40 (20%) fathers, and 16 (8%) grandparents. The mean age was 29.8 ± 5.7 years. Most had secondary (38%) or tertiary (35%) education; 68% resided in urban areas, and 62% reported previous antenatal counseling on NNJ.

Knowledge of Neonatal Jaundice

Most caregivers (86%) correctly identified yellow skin/eye discoloration as a sign of jaundice. Only 42% recognized prematurity and 38% infection as causes, while 31% mentioned kernicterus as a potential complication. Nearly half (48%) knew phototherapy as standard treatment; however, 27% believed sunlight exposure could cure jaundice.

Parameter	Correct responses (%)
Definition (yellowing of skin/eyes)	86
Recognize danger signs (poor feeding, lethargy)	49
Identify prematurity/infection as causes	42
Knowledge of phototherapy treatment	48
Misbelief in sunlight/herbal cure	27

Overall knowledge scores revealed 46.5% had **good**, 33% **moderate**, and 20.5% **poor** knowledge (Table 1).

Attitudes and Practices

Eighty-one percent of caregivers agreed that regular ANC visits help in jaundice prevention. However, 23% reported they would attempt herbal remedies before seeking medical help. Seventy-seven percent stated they would immediately consult a healthcare provider if jaundice developed.

Table 1. Knowledge, Attitudes, and Practices among Caregivers (n = 200)

Category	Good n (%)	Moderate n (%)	Poor n (%)
Knowledge	93 (46.5)	66 (33.0)	41 (20.5)
Attitude	88 (44.0)	72 (36.0)	40 (20.0)
Practices	115 (57.5)	61 (30.5)	24 (12.0)

Factors Associated with Better Knowledge

Multivariate logistic regression identified three independent predictors:

- **Prior education on NNJ:** AOR = 3.02 (95% CI 1.59–5.74, p = 0.001)
- **Urban residence:** AOR = 2.10 (p = 0.03)
- **Maternal tertiary education:** AOR = 1.9 (p = 0.04)Sex, parity, and income were not significant.

Discussion

This study highlights that although most caregivers recognize the visible signs of NNJ, significant misconceptions persist regarding causes and treatment. Similar findings were reported by Salia et al. in Ghana, where only 45.5% demonstrated good knowledge [12]. Huang et al. in China observed 51% adequate awareness and emphasized the role of maternal education [13].

In contrast, Donkor et al. in Nigeria reported higher awareness (69.3%) among healthcare workers [14], likely reflecting professional exposure. Our results show persistent cultural practices such as exposing babies to sunlight or using herbal mixtures—also noted in studies from Lomé [15] and Ethiopia [16].

Caregivers' misconceptions may delay medical care, increasing risk for bilirubin encephalopathy [17,18]. Despite 57% reporting correct practices, unsafe beliefs remain a concern. Previous interventional studies confirm that structured education during antenatal visits significantly improves knowledge [19,20].

The association between higher education and better knowledge parallels results from Malaysian [21] and Ethiopian [22] studies, emphasizing the importance of literacy in health behavior. Consistent with our findings, Brobby et al. (2025) [10] and Huq et al. (2021) [19] found that previous exposure to health education is the strongest determinant of good awareness.

Recommendations

1. **Integrate NNJ education into antenatal and postnatal counseling** for all mothers.
2. **Develop visual aids** illustrating jaundice recognition, danger signs, and management.
3. **Conduct community outreach** in rural areas to dispel myths about sunlight and herbal treatments.
4. **Train primary healthcare workers** to standardize neonatal health education messages.
5. **Provide discharge leaflets** summarizing NNJ prevention and early recognition cues.

Conclusion

The study demonstrates moderate caregiver awareness of NNJ with persistent misconceptions. Prior exposure to education remains the most powerful predictor of good knowledge. Structured, repeated counseling during antenatal and postnatal periods and culturally sensitive community programs can improve early detection and timely treatment—preventing bilirubin-induced neurologic damage and reducing neonatal morbidity and mortality.

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Conflict of Interest
The authors declare that there are no conflicts of interest related to this study. All authors have read and approved the final manuscript and are solely responsible for its content.