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Neonatal Jaundice: Evaluating the Knowledge and Practice of Expectant Mothers in Aba, Nigeria

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Abstract

Background: Neonatal jaundice is a foremost cause of hospitalization in the first week of life worldwide. If not properly managed, it may result in significant bilirubin-induced morbidity and mortality. **Aim:** To evaluate the knowledge and practice of expectant mothers towards neonatal jaundice (NNJ) in Aba, Nigeria. **Materials and Methods:** This was a questionnaire based study involving 300 expectant mothers during antenatal visit. Data was entered into a computer and descriptive analysis done using SPSS software version 17. **Results:** The respondents were aged 19 – 44 years, mean age, 29.2 ± 4.6 years. Two hundred and eighty eight (96%) were aware of NNJ, and 150 (50%) had health workers as their source of information. Most, 249 (83%) knew one site of recognition of NNJ. Only 24 (8%) knew one danger sign while 264 (88%) did not know any at all. Majority, 244 (81.3%) did not know any cause of NNJ. Only 30 (10%) knew appropriate treatment modality while only 42 (14%) would appropriately take a baby with NNJ immediately to hospital. **Conclusion:** There is paucity of knowledge on causes and danger signs of NNJ amongst expectant mothers in Aba. Health care providers should be encouraged to disseminate information on NNJ to the general population in places of worship, communal and social gatherings.

Keywords: Aba, Expectant Mothers, Knowledge, Neonatal Jaundice

1. Introduction

Neonatal jaundice (NNJ) is the yellowish colouration of the skin and sclera of newborns due to increased level of bilirubin in the body.[1] It is the most common neonatal disorder requiring clinical evaluation and management all over the world.[2] It occurs in upto 60% of term newborns and 80% of preterms in the first week of life.[3] NNJ contributes significantly to neonatal morbidity and mortality in developing countries including Nigeria.[4]

In a study conducted in a tertiary health care institution in Abakaliki, south east Nigeria, NNJ constituted 36% of all neonatal intensive care unit (NICU) admissions in 2009.[5] Of the 1784 newborns admitted in special care baby unit (SCBU) of the University of Benin Teaching Hospital, Benin-city, south-south Nigeria from 2006 to 2008, 26.5% had NNJ with mortality of 12.7% occurring among the jaundiced neonates.[6] NNJ accounted for 25% of the 279 neonates admitted via emergency paediatric unit of Ahmadu Bello University Teaching Hospital Zaria, north east geopolitical zone of Nigeria in a study conducted by Ahmed et al. The incidence of kernicterus in that study was 20.3% and 2.6% in the outborn and inborn patients respectively. [7]Gamaleldin et al reported that forty eight percent (48%) of the 1008 neonates admitted in the outborn unit of NICU of Cairo University Children's hospital, Egypt from 2006 to 2008 had NNJ.[8]

Possible complications arising from unconjugated hyperbilirubinaemia include acute bilirubin encephalopathy, kernicterus, seizures, cerebral palsy, mental retardation, deafness, amongst others. [9]Re-emergence of kernicterus has been reported in many developed countries. A subcommittee review of American Academy of Pediatrics in 2004 reported upto 123 cases of kernicterus in 2004. In that work, kernicterus was reported as having 10% mortality and 70% long term morbidity. [10]Complications resulting from untreated or improperly managed unconjugated hyperbilirubinaemia are mostly incurable but could be prevented by early detection and effective management of NNJ.

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The short post delivery hospital stay, delays in obtaining post discharge appointment, lack of post discharge appointment for mothers delivering in unorthodox settings, lack of knowledge of risk factors for development of significant hyperbilirubinaemia in mothers, increased frequency of breast feeding, lack of concern about high bilirubin levels in newborns among paediatric care providers and late recognition and/or commencement of effective therapy for NNJ are documented factors associated with occurrence of kernicterus.[11-13]

Fortunately, early detection of NNJ by care givers, most often mothers and prompt application of appropriate therapy are paramount to curbing the occurrence of the disabling complications of NNJ and death.[14] Early postnatal discharge often within 48 hours is the norm in many parts of the world including Nigeria.[12,14-16.] It therefore becomes necessary that the preparedness of expectant and actual mothers and their ability to detect NNJ early and present the affected babies promptly to appropriate health facility be evaluated by assessing their knowledge, attitude and practice with regard to NNJ.

Previous studies have revealed worrisome varying degrees of ignorance and deficiency in the knowledge of risk factors, presentation, complications, treatment and attitude of family care givers regarding neonatal jaundice in different areas of the world.[17-20]For instance, in a prospective study to evaluate perception of neonatal jaundice among 225 women who have heard of NNJ attending children's outpatient and immunization clinic of a tertiary health institution in Port Harcourt, south-south Nigeria, 75 (33%) and 50 (22%) erroneously stated that eating too much groundnut in pregnancy and mosquito bite respectively were main causes of NNJ while 114 (50.7%) and 60 (26.7%) wrongly believed that exposure to sunlight and use of glucose drinks respectively were main forms of treatment.[17] In a cross sectional survey carried out on 100 mother-infant pairs admitted to SCBU of the Ogun State University Teaching Hospital south west Nigeria for NNJ between 2012 and 2013 even though 83.0% of the mothers enlisted had secondary and tertiary education, only 32% of the newborns had their initial care in the hospital. Thirty percent (30%) had their initial management at home; 20 were given antibiotics, 18, herbs; 2, breast milk instillation into the eyes, and 14 received no initial care at all.[18]

In a cross sectional observational study conducted amongst mothers whose babies were admitted for NNJ in a government hospital in Malaysia in 2008, 52% of the 198 mothers interviewed erroneously expressed that their food intake was a cause of NNJ while 35.9% believed that NNJ was inherited from mothers. [19]In another prospective study conducted on Iranian mothers whose babies were admitted in the University Children's Hospital from 2004 to 2007, 33% of the respondents attributed NNJ in their babies to feeding them with colostrum while 40% of the mothers postponed medical consultation and employed traditional approach in the management of their babies.[20]

Studies to evaluate the knowledge of expectant mothers regarding NNJ have not been conducted in Abia State, south east Nigeria to the best of our knowledge. This study was therefore designed to assess the knowledge and practice of expectant mothers on NNJ with respect to their awareness, recognition, knowledge of risk factors/causes, complications, treatment modalities, and initial step to take when it is noticed. The information obtained could help in appropriate direction of health education aimed at curbing the prevalence, severity and sequelae of NNJ in the community.

2. Materials and Methods

2.1 Study Design

This was an analytical cross-sectional study carried out in a maternity clinic in a suburb area of Aba the commercial nerve centre of Abia State, southeast Nigeria.

2.2 Study Population

This comprised expectant mothers on antenatal care visit to the maternity Clinic. The antenatal care held on Mondays and Thursdays and an average of 35 expectant mothers were seen on each occasion by 4 registered midwives, 8 auxiliary nurses in two consulting units. Health education were administered by available healthcare staff prior to formal consultation. Consultation was done by the registered midwives and 'experienced' auxiliary nurses.

2.3 Data Collection

The survey was conducted using an interviewer administered structured questionnaire generated by the authors. Expectant mothers who gave consent were given the questionnaire. The questions were asked in such a way as not to influence the response from the respondent. Answers from the respondents to the questions were documented. A pilot testing of the tool was conducted on 10 pregnant women and it was revised to ensure

clarity and ready comprehension of the questions by the respondents. The questionnaire was designed to obtain from the respondents information on age, marital status, parity, occupation, educational level, awareness of and ability to recognize jaundice, knowledge of causes/risk factors, danger signs, complications, treatment, and initial step to take by respondents onnoticing NNJ. The study was conducted by three trained house officers under the supervision of two authors. Participants were prevented from interpersonal communication on the study during the interview period. Participants interviewed previously were identified by direct questioning prior to administration of the questionnaire and prevented from second participation.

2.3.1 Recognition of Jaundice

Sites of recognition of jaundice in a baby assessed were (a) the eyes (b) skin (c) soles of the feet/palms of the hands.

2.3.2 Causes of Jaundice

2.3.3.1 Common Causes of NNJ Tested were

Incompatibility of mother/baby blood groups; infection in the newborn; delivery before 9 months; exposure of certain babies directly or indirectly to naphthalene balls; swelling on the head of baby following prolonged delivery.

2.3.2.2 Complications of Jaundice Assessed were

lowered intelligence; convulsion; stiffness of the body; deafness; abnormal body posture; delayed milestones .

2.3.3 Danger signs Elicited

High pitched cry, refusal of feeds, fever, arching of the body and convulsion were the danger signs evaluated.

2.3.4 Inclusion Criteria

Expectant mothers who gave consent were enrolled in the study.

2.3.5 Exclusion Criteria

Expectant mothers who were paramedical staff and those objecting to enlistment were excluded from the study.

2.3.6 Ethical Clearance

This was obtained from the Ethical Committee of the Abia State University Teaching Hospital, Nigeria .

2.3.7 Statistical Analysis

The data obtained was entered into a computer and descriptive analysis was done using statistical analysis software SPSS version 17.

3. Results

A total of 300 eligible and consenting expectant mothers attending the maternity clinic were interviewed. Table 1 demonstrates the socio-demographic characteristics of the respondents. The mean age of the respondents was 29.2 ± 4.6 years, range 19 to 44 years. Overwhelming majority of the respondents were married 292 (97.2%). Another vast majority were traders 230(76.6%) while most of them had secondary education 222 (74.0%). One hundred and two (34%) of the expectant mothers were primiparous. Other details are shown in table 1.

Table 1. Demographic Characteristics of the Respondents

Age	Frequency	Percentage
<20	5	1.77
20-24	61	20.3
25-29	14	38.0
30-34	90	30.0
35-39	24	8.0
40-44	6	2.0
Marital Status		
Single	2	0.7
Married	292	97.2
Divorced	2	0.7
Widowed	4	1.4
Occupation		
Trading	230	76.6
Teaching	4	1.4
Seamstress	12	4.0
Students	15	5.0
House wife	24	8.0
Others	15	5.0
Educational Status		
Primary	10	3.3
Secondary	222	74.0
Tertiary	68	22.7
Parity		
0	102	34.0
1-4	168	56.0
>4	30	10.0

Overwhelming majority of the respondents 288 (96%) were aware of NNJ while 12 (4.0%) were not. Most of those who had knowledge of the condition got their information from health workers, 150 (50%) and friends 78 (26%) [Table2].

Table 2. Awareness of Jaundice and Source of Information on NNJ among Respondents

Awareness	Frequency	Percentage
Yes	288	96
No	12	4
Source of information		
Health care workers	150	50.0
Friends	18	26.0
Neighbours	14	4.7
Relations	40	13.3
Electronic media	18	6.0

Overwhelming majority of the expectant mothers, 249 (83%) knew one site; 15 (5%) knew 2 sites, while 36 (12%) knew no area of the body where jaundice could be recognized. Of the 36 that were ignorant of the site of recognition, 6 and 3 stated jaundice could he noted in urine and stool respectively whereas 27outrightly had no idea.

Twenty four (8%) knew one danger sign while 12 (4%) knew two danger signs, but a whopping 264 (88%) did not know any danger sign.

Most 192 (64%) of the respondents believe that treatment is mainly by exposure to sunlight (Table 3).

Table 3. Assessment of Knowledge of Causes, Complications and Treatment of NNJ

Causes of NNJ	Frequency	Percentage
Know one	42	14.0
Know two	14	4.7
Know more than two	0	0.0
Know none	244	81.3
Complications of NNJ		
Know one	82	27.3
Know two	54	18.0
Know more than two	0	0
Know none	164	54.7
Treatment of NNJ		
Exchange of baby's blood in hospital	12	4.0
Phototherapy	18	6.0
Exposure to sunlight	192	64.0
Use of orthodox medications.	60	20.0
Herbal medications	6	2.0
No idea	12	4.0

NNJ=Neonatal Jaundice

4. Discussion

Overwhelming majority of the expectant mothers (96%) in this study were aware of occurrence of NNJ with 50% having health workers as their source of information; 26% and 13.3% obtaining their information from friends and relations respectively and only 6% from electronic media.

The high level of awareness of NNJ exhibited by respondents in this survey was similar to reports documented in Nigeria.[16, 20] Also in Malaysia high level of awareness (ranging from 75.4% to 93.8%) of NNJ had been reported among mothers interviewed.[21] The high level of awareness in this study might be explained by a large percentage of the respondents (96.7%) having secondary education and above.

Though Aba is the commercial nerve centre of Abia State, it boasts of numerous government and private secondary and tertiary educational institutions stimulating the citizenry generally to enhance their education.

Majority of the respondents in this study (50%) and a small proportion, 6% had their source of awareness of NNJ from health workers and mass media respectively. This was similar to reports from Benin City, south-south; Ogun State, south-west and Port Harcourt, south-south, Nigeria.[6,1,16] Health workers in healthcare setting being a major source of information on health matters to the populace has its inadequacies in effective dissemination of information to the citizenry. Firstly, it has been reported that up to 42% of deliveries are either outrightly without antenatal care or prenatal attention was given in inappropriate setting, hence the reach of necessary information from health workers to the women of child bearing age is limited.[22]Secondly, it has been documented that significant proportion of healthcare workers on occasions display inadequate knowledge of certain aspects of health issues and are therefore predisposed to giving inadequate information to antenatal attendees[1].

It therefore becomes necessary that health care workers must be exposed to regular seminars and workshops to refresh and update their knowledge. The low rate of information of the populace via electronic media could be explained by the often prolonged power outage in most areas of this country making widespread effective dissemination of information and education of the citizenry via electronic media difficult.

Increased effort should be made by knowledgeable medical personnel to make frequent appearances in

electronic media for the purpose of health education of the citizenry especially in areas where power supply is relatively stable.

The knowledge of danger signs, causes and complications of NNJ among the respondents was very deficient (Tables III, IV and V).

Table 4. What the Respondents will do if they have Baby with NNJ

Action	Number	Percentage
Take baby to hospital immediately.	42	14.0
Put under sunlight	168	56.0
Give orthodox medication	80	26.7
Consult another person	8	2.7
Give herbal medication	2	0.6

NNJ=Neonatal Jaundice

This was in keeping with observations in surveys conducted in Benin City Nigeria, where majority of the expectant mothers (52.4%) did not know any danger sign and Iran where 33% of the mothers believed NNJ was caused by colostrum and 40% opted for traditional medication in treatment for NNJ.[6,19]

Inadequate knowledge of causes and danger signs of NNJ among expectant mothers places them at a very grave risk of ignoring possibly avoidable predisposing factors and even signs that demand immediate management of jaundice in newborns making them develop jaundice and often being presented to healthcare facilities when irreversible neurotoxicity and brain damage might have occurred. Awareness of the deplorable handicapping and disabling complications of NNJ by the expectant mothers which fortunately are preventable arouses the mothers' desire to comply with prevention and appropriate treatment measures, to avert the health menace of the condition in the society.

In this study, 64% of the expectant mothers wrongly believed exposure of the newborn to bare sunlight was a treatment modality while only 4% and 6% knew phototherapy and exchange blood transfusion respectively as appropriate treatment measure. This was in contrast to results obtained from Benin City, Nigeria where majority of the respondents agreed to phototherapy and exchange blood transfusion as proper treatment modality. The better knowledge of proper treatment modality exhibited by respondents in Benin city could be explained by the fact that they were catered for and given health education in tertiary healthcare setting with more and better qualified healthcare staff in contrast to the maternity in a suburb setting with fewer and less qualified staff rendering antenatal care and giving health education to antenatal attendees as in the present study.

Majority of expectant mothers (56%) in this study would expose their newborns to ordinary sunlight as a management measure for NNJ while only 14% will take a newborn with NNJ to the hospital immediately. Exposure of newborn with jaundice to sunlight as a management measure is a common practice in sub-Sahara Africa[6,16,17,20] Such a practice is very inappropriate and conveys the danger of exposure of the newborn to infrared and ultra violet rays and sunburn. Such an exposure is roundly condemned and discouraged globally.[23]

However fortunately, specially filtered sunlight phototherapy using available window tinting which sieves out the undesired and dangerous infrared and ultraviolet rays in sunlight has been developed and tested in south west Nigeria proving its comparable efficacy and safety to conventional phototherapy[24]. This is recommended in low resource setting where availability of effective phototherapy is hampered by outright lack of electricity or frequent power outage.

Conclusion: The study revealed that the expectant mothers attending the maternity were overwhelmingly traders most of whom had secondary and tertiary education and high level of awareness of NNJ. However, the respondents' knowledge of causes, danger signs, complications, treatment of NNJ was quite poor. A small percentage of the expectant mothers also were aware of the immediate step to take when jaundice is noticed in a newborn. Regular education of the populace on the identification, causes, danger signs, complications, appropriate treatment modalities and the prompt step to take when NNJ is noticed becomes mandatory. Health education should be by certified knowledgeable health care providers via electronic media, and where large populations can be reached such as in markets, places of worship, communal and social gatherings.

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