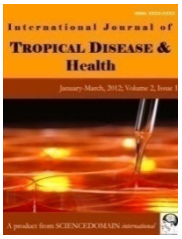

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Knowledge, Attitude and Practice towards Neonatal Jaundice among Community Health Workers in Southern Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author PIO designed the study, performed the statistical analysis and wrote the first draft of the manuscript. Authors BAAH and DAD managed the analysis and literature search and all authors read and approved the final draft of the manuscript for submission. All authors read and approved the final manuscript.

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ABSTRACT

Aim: The study aimed to assess the knowledge of community Health Workers (CHWs) on neonatal jaundice (NNJ), exploring their perceptions, knowledge and practices.
Study Design: It was a cross sectional study of randomly selected CHWs who were

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attending a child health workshop in Southern Nigeria.
Place and Duration of Study: The study was carried out during a workshop in Yenegoa Local Government Area, Bayelsa State, Nigeria.
Methods: Simple structured questionnaires were distributed to all health workers who gave consent to participate in the study. These were retrieved by the authors as soon as they were filled. Information obtained included biodata, length of practice, knowledge of causes, complications and management of NNJ.
Results: There were 200 participants, 91 males and 109 females giving a male to female ratio of 1: 1.2. The mean duration of service was 6.01±4.97 years. 191 (95%) had fair to adequate knowledge of description of NNJ. However only about 25% of respondents had good knowledge of its causes. Antibiotics and glucose water were perceived by 60.4% and 37.5% of CHWs as useful drugs in the management of NNJ, while 82% would recommend sunlight as effective treatment. Work experience was significantly associated with knowledge of the use of EBT and phototherapy in the treatment of NNJ with those less than 5 years having better knowledge than the older ones.
Conclusion: CHWs may recognize NNJ but knowledge on causes and treatment is inadequate and may cause potential delays in referral for effective treatment. There is need for regular training and re-training of health workers to ensure effective management and reduce the complications of NNJ.

Keywords: Neonatal jaundice; knowledge; community health workers.

1. INTRODUCTION

Neonatal Jaundice refers to the yellowish discoloration of the skin and mucous membranes of the newborn caused by increased bilirubin levels in blood [1,2,3]. It is one of the most common conditions requiring medical attention in newborns and occurs in up to 60% of term and 80% of preterm newborn infants [1,2,3]. It is not a disease in itself but a manifestation of physiologic and pathologic conditions occurring in the newborn [2]. Neonatal hyperbilirubinemia may be conjugated or unconjugated. In most newborns, unconjugated hyperbilirubinemia reflects a normal transitional phenomenon and results from several physiologic processes [2]. In some infants, serum bilirubin levels may increase excessively (Pathologic jaundice) and can lead to Kenicterus and irreversible brain damage [1,4]. These adverse effects of severe hyperbilirubinaemia are preventable if jaundice is recognized and treated early [4,5]. While the incidence of severe hyperbilirubinemia has decreased in developed countries, this is not reflected in resource limited countries [5,6]. Acute bilirubin encephalopathy is still a common finding in Nigeria and other African countries [5,6]. Some of the factors that contribute to this problem include limited parental knowledge regarding hyperbilirubinemia and unavailability of appropriately trained health care workers and screening tools [6,7].

Furthermore, increasing numbers of newborns are being discharged early from hospital and with short post-natal hospital stay, jaundice may not be apparent at the time of hospital discharge, limiting the ability of the physician to detect jaundice during the period when bilirubin levels are likely to rise [4,8-9]. Some of these babies even in developed countries are brought back to hospital with severe neonatal jaundice.

In many communities in Southern Nigeria, and other parts of the country [1] community health workers (CHWs) are the first port of call for newborns both for services like immunization and for various ailments including NNJ. This affords them the opportunity to

recognize and appropriately refer newborns with significant NNJ. With proper training and supervision, assessment by CHWs could improve referral and thus outcomes of hyperbilirubinemic babies. The aim of this paper was to assess knowledge, perceptions and practices of CHWs on NNJ.

2. MATERIALS AND METHODS

The study was carried out amongst a convenient sample of community health workers attending a child health workshop at Yenegoa the capital city of Bayelsa state, Southern Nigeria. Participants were community health workers of various cadres drawn from all the twenty eight Local Government Areas of the state.

A simple structured questionnaire adopted from a similar study carried out in the western part of Nigeria [1] was used for data collection. Questionnaires were distributed randomly just before the commencement of one of the sessions of the workshop. The aim of the study was explained to participants and only those who gave consent were given the questionnaires to fill. Questionnaires were retrieved by investigators as soon as they were filled. Information obtained included biodata, length of practice, knowledge of neonatal jaundice, its complications and management. Glucose-6-phoshate dehydrogenase deficiency, a common cause of NNJ in our environment was left out of the questionnaire because of the technicality of the term considering the category of health workers being assessed. For the purpose of this study, knowledge of the description of NNJ was considered adequate if respondents were able to identify yellowish /greenish discoloration of the eyes, skin and mucous membranes, fair if they could recognize this discoloration involving some part of the body e.g. eyes or skin and poor if they had no idea at all.

Data collected were entered into a Microsoft excel spread sheet and analyzed using SPSS version 16.0. Results were expressed as rates and proportions. Chi-square statistics were used to test for significance. Level of significance was put at a p value of less than or equal to 0.05.

Approval for the study was obtained from the Institutional Review Board of Bayelsa State College of Health Technology.

3. RESULTS

There were 200 respondents, 91 males and 109 females giving a male to female ratio of 1: 1.2. The mean duration of service was 6.01±4.97 years (mean ± SD). 191 (95%) had fair to adequate knowledge of description of NNJ with (94%) and (77%) recognizing the eyes and skin respectively as sites for examination for jaundice in the newborn. Table 1 shows health workers recognized sites for recognition of NNJ.

Reported causes of NNJ included germs in breast milk 96 (48%), bad breast milk 90 (45%), infections in the baby 68 (34%), blood group incompatibilities 56 (28%). Other causes mentioned included prematurity and malaria Table 2.

Danger signs associated with neonatal jaundice as recognized by health workers were down turning eyes 143 (71.5%), high pitched cry 132 (66%) and fever 126(63%), among others. Danger signs as reported by CHWs are shown in Table 3.

Table 1. Sites for assessment of neonatal jaundice by CHWs

Site	Number	Percent
Eyes	188	94
Skin	153	77
Palms or soles of feet	62	31
Urine (colour)	124	62
Stool (colour)	7	3.5
Don't know	8	4.0
Only in the lab	1	0.5

Table 2. Causes of NNJ as reported by CHWs

Causes	Number	Percent (%)
Blood group incompatibilities	56	28
Infections in the baby	68	34
Malaria	38	19
Mosquito bites	10	5
Germs in breast milk	96	48
Bad breast milk	90	45
Prematurity	51	25.5
Don't know	4	2.0

Table 3. Danger signs associated with neonatal jaundice

Sign	Number	Percent
Refusal to suck/poor suck	69	34.5
High pitched cry	132	66
Down turning eyes	143	71.5
Arching back	3	1.5
Convulsions	34	17
Fever	126	63
Don't know	11	5.5

Ninety six (48%) believed that there were effective drugs for the treatment of neonatal jaundice. Of these, 58 (60.4%) and 36 (37.5%) mentioned glucose water and ampiclox syrup/drops respectively. For local treatment of NNJ, sunlight was reported by 163 (81.5%) and herbs by 4 (2%) as effective treatment.

Phototherapy and exchange blood transfusion were reported by 158 (79%) and 83 (41.5%) respectively as effective treatment for NNJ Table 4. Work experience was significantly associated with knowledge of the use of EBT (p=0.000) and phototherapy (p=0.000) in the treatment of NNJ with those less than 5 years having better knowledge than the older ones.

One hundred and seventy seven (88.5%) knew that babies could die from neonatal jaundice. Knowledge of other complications was lower Table 5.

Table 4. Perceived usefulness of phototherapy and EBT in treatment of NNJ

Years of service	Usefulness of phototherapy in treatment of NNJ				χ^2	p value
	Yes (%)	No (%)	Don't know (%)	Total (%)		
0 – 5	120 (94.5)	7 (5.5)	0 (0)	127 (63.5)		
6 – 10	24 (49.0)	25 (51.0)	0 (0)	49 (24.5)	63.79	0.000
> 10	14 (58.4)	8 (33.3)	2 (8.3)	24 (12.0)		
Total	158 (79.0)	40 (20.0)	2 (1.0)	200 (100)		
	Usefulness of EBT in the treatment of NNJ					
0 - 5	68 (53.5)	58 (45.7)	1 (0.8)	127 (63.5)		
6 - 10	12 (24.5)	37 (75.5)	0 (0)	49 (24.5)		
> 10	3 (12.5)	19 (79.2)	2 (8.3)	24 (12.0)	96.67	0.000
Total	83 (41.5)	114(47.0)	3 (1.5)	200 (100)		

Table 5. Complications of NNJ as reported/identified by CHWs

Response	Complications no (%)						
	Convulsions	Brain damage	Abnormal behavior	Mental retardation	Physical handicap	Others-blindness, deafness, etc	Death
Yes	62 (31)	120 (60)	7 (3.5)	91 (45.5)	25 (12.5)	1(0.5)	177(88.5)
No	138 (69)	80 (40)	193 (96.5)	109 (54.5)	175(87.5)	199 (99.5)	23(11.5)
Total	200 (100)	200(100)	200 (100)	200 (100)	200 (100)	200(100)	200(100)

4. DISCUSSION

The study shows that health workers could recognize NNJ fairly adequately. This is similar to findings by other authors [1,10]. This would mean that jaundice as a symptom is easy to recognize as authors have shown that even mothers recognize jaundice fairly well [11]. Although recognition of jaundice was not a problem, knowledge of the causes was poor. Listed among the causes of jaundice in the newborn were bad breast milk and germs in breast milk. The implication of this is the probability that women who have babies with NNJ may be asked by health workers to stop breast feeding. This is worrying as breast milk is not only the best feed for babies but also the best home therapy for jaundice as adequate amounts of breast milk increase a baby's bowel movements, which help secrete the buildup of bilirubin [12]. Avoidance of breast feeding on the assumption that breast milk is bad may therefore worsen the outcome of the baby. Similar to a previous Nigerian study, [1] knowledge of the common causes of NNJ in Nigeria like prematurity, infections and blood group incompatibilities was poor. This highlights a serious need for education of health workers who remain one of the first points of contact for sick newborns.

Glucose water and ampiclox (ampicillin/cloxacillin antibiotic combination) were favoured as effective drugs for treatment of NNJ. This practice again has been mentioned by other authors both among health workers and among mothers [1,11]. In newborns, frequent bowel motions diminish enterohepatic circulation thereby increasing bilirubin excretion. Supplementation of breast milk with glucose water in newborns with jaundice is not recommended as it may reduce milk production and intake and consequently increase enterohepatic circulation of bilirubin and consequently delay reduction in serum bilirubin levels [12,13,14]. Antibiotics are also not indicated in the primary management of NNJ except where septicaemia is confirmed as the aetiology of NNJ [15]. They do not reduce serum bilirubin levels and some like co-trimoxaxole which was also mentioned in this study may increase serum bilirubin levels [15,16]. These practices therefore only cause a

distraction and delay in seeking or referring for appropriate treatment with grave consequences and should be strongly discouraged among health workers.

A large percent of CHWs would recommend sunlight for the treatment of jaundice. This perception was also reported among health workers in the Nigerian study earlier mentioned [1]. This misconception is also common amongst mothers in different parts of the country and beyond [3,11,17,18]. Whether this misconception originates from health workers and spreads to the community or vice versa needs to be investigated. However, authors have also shown that mothers who derived their knowledge of NNJ from health workers were significantly less inclined to self-treatment and more likely to seek hospital treatment for their jaundiced infants [18]. Although sunlight is known to provide sufficient irradiation in the 425 - 475nm band to provide phototherapy, this practice is unsuitable due to several safety concerns [14]. For instance, exposure to ultraviolet light may cause sunburn, while infrared light may cause the body to overheat. The infant may also lose body heat from the uncovered skin during treatment, with potential for dehydration. A recent study done in western Nigeria has shown filtered sunlight to be a cheap, safe and efficacious alternative to conventional phototherapy in the treatment of NNJ in African newborns [19]. Until this method becomes fully established, since facilities for investigation may not be available at the primary care level, the false sense of security which may come from exposing a neonate to sunlight may be detrimental to the infant [15].

Over half of respondents knew phototherapy to be an effective therapy for NNJ while less than half knew about exchange blood transfusion. This is poor as both procedures are widely carried out in various centers in Nigeria and this also means that chances for effective referral for appropriate care of newborns with NNJ would be limited. Interestingly there was a significant relationship between length of practice and knowledge of the usefulness of both procedures in the management of NNJ. This could possibly be related to length of time spent out of school or changes in content of school curricula over time. Other authors postulating a reason for better health knowledge among health workers with less work experience adduced that new recruits are still learning and undergoing practical tutelage while the older ones do less of routine clinical work and more of administrative work [20]. Whatever the reasons may be, this finding highlights the need for training and re-training at regular intervals so that knowledge is updated and sustained.

Knowledge of the complications of NNJ was very poor among respondents. This finding contrasts with findings in a similar study in western Nigeria among health workers [1]. The reason for this is not apparent. The finding in this study may mean that there is poor perception of the dangers associated with the condition among health workers and this may affect management in terms of recognition, appropriate referral and effective treatment. It is well documented that NNJ has the potential to cause significant brain damage and severe neurological impairment [2,4,5,21]. Inadequate knowledge about the causes, treatment and complications of NNJ may adversely affect the actions of health workers and thus increase associated morbidity and mortality.

5. CONCLUSION

Community health workers recognize NNJ easily but lack adequate knowledge on its causes, complications and treatment. Knowledge of the usefulness of phototherapy and EBT in the treatment of NNJ was better among those with shorter work experience ($p<0.001$). There is an urgent need for regular in-service training among health workers for newborn conditions like neonatal jaundice.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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