

## ***Knowledge of the Causes and Management of Neonatal Jaundice by Primary Health Care Staff***

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### **Summary**

**Ekanem EE and Young MU.** Knowledge of the Causes and Management of Neonatal Jaundice by Primary Health Care Staff. *Nigerian Journal of Paediatrics* 1994; 21 : 37. Knowledge of the causes and management of neonatal jaundice (NNJ) by 205 Primary Health Care (PHC) workers in Calabar were assessed, using questionnaires with open-ended responses. The newborn period was correctly defined by 54.6 percent of the respondents. Important causes of jaundice that were given included blood group incompatibility by 73.2 percent, infection by 40.0 percent, drugs by 21.0 percent and malaria by 18.5 percent of the respondents. Brain damage, as a serious complication of jaundice, was recognized by 49.3 percent of the respondents. Management measures mentioned by a majority of the respondents included glucose water drinks by 48.8 percent, exposure to sunlight by 43.4 percent, referral to secondary or tertiary centre by 37.1 percent and administration of phenobarbitone by 25.4 percent. The study further revealed that the knowledge and attitude of most of these categories of PHC staff was generally inadequate and in some cases, risky to the patient. On the basis of the present findings, it is recommended that paediatricians should be involved in the training of PHC staff; that refresher courses should be organized from time to time for the staff to update their knowledge, and that "sunshine phototherapy cots" be introduced at the PHC level for management of mild cases of NNJ.

### **Introduction**

NEONATAL jaundice (NNJ) is a major paediatric problem in the country and it has been reported to be the commonest neonatal emergency in Lagos.<sup>1 2</sup> Its main aetiological factors include

G-6-PD deficiency, ABO blood group incompatibility, infection, prematurity and exposure of G-6-PD-deficient babies to naphthelene (camphor).<sup>3 4</sup> The condition is an important cause of cerebral palsy, mental handicap<sup>2 5</sup> and neonatal mortality.<sup>6 7</sup> Delay in the treatment of the disease is often associated with high morbidity and mortality.<sup>3 4 8</sup> Our personal observation in the University of Calabar Teaching Hospital (UCTH), where NNJ is the commonest cause of

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cerebral palsy,<sup>5</sup> suggests that this delay in the treatment is often caused at the Primary Health Care (PHC) level, where various ineffective remedies are usually offered before the referral of the patients. Health education on early recognition of NNJ is an important factor in reducing morbidity and mortality from this condition.<sup>5,8</sup> The present study was therefore, undertaken in the Calabar municipality and its environs, in order to assess the knowledge of the causes, complications and management of infants with NNJ by Primary Health Care (PHC) staff, who are the front liners in our health-care system to have the first contact with most newborn infants in the community.

#### Subjects and Methods

The subjects comprised different categories of PHC staff in the Calabar municipality and its environs. The study was undertaken, using questionnaires with open-ended responses. The questions sought information from the respondents on their knowledge about the definition of neonatal period, the signs, causes, complications and management of neonatal jaundice. Prior to the day that the investigators went to the respective centres, informed consent was obtained from the administrative heads at the centres and the dates agreed upon when the test would take place. On the day that the test actually started, adequate guidance on how to answer the questions, was given to the subjects, with care being taken so as not to influence the responses. The subjects were then requested to answer the questions and return the answer forms at the end of the allotted time. All 'don't know' responses were regarded as evidence of ignorance.

#### Results

There were 205 staff members in 38 PHCs who participated in the test. The categories of these respondents (Table 1) revealed that a majority of the staff included 68 (33.2 percent) nursing officers and 52 (25.3 percent) senior community health assistants. Four respondents (2.0 percent) did not state their rank. There were 112 (54.6 percent) of the respondents who correctly defined the neonatal period as the first 28 days of life; 33 (16.1 percent) answered that neonatal period was the first 24 hours of life; 30 (14.6 percent) replied that the period was the first seven days, while the response of 15 (7.3 percent) was that the period was from two months upwards. The response 'don't know' was given by 27 (13.2 percent) of the 205 respondents.

TABLE 1

*Categories of 205 Respondents to Questionnaires on Neonatal Jaundice*

<i>Category</i>	<i>No of Respondents</i>	<i>Percent of Total</i>
Community health officers	25	12.2
Rural health superintendents	5	2.4
Public health nursing officers and health sisters	16	7.8
Nursing officers	68	33.2
Community health supervisors	9	4.4
Senior community health assistants	52	25.3
Junior community health aides	25	12.2
Family health worker	1	0.5
Unspecified	4	2.0
<b>Total</b>	<b>205</b>	<b>100.0</b>

Table II lists the causes of NNJ as given by respondents. There were 150 (73.2 percent) respondents who said that blood group incompatibility was a major cause of NNJ; 102 (49.8 percent) gave physiological factor as the next cause, while infection was given next by 82 (40.0 percent) of the respondents. Drugs and malaria were given as causes of NNJ by 43 (21.0 percent) and 38 (18.5 percent) respondents, respectively. The 'don't know' responses numbered 14 (6.8 percent). On the question of where to look for the sign of jaundice in the newborn, 56 (26.8 percent) would look for it in the eyes alone, while 48 (23.4 percent) and four (2.0 percent) would look for it in the skin alone and in the urine, respectively. There were 13 (6.3 percent) respondents with 'don't know' answers.

TABLE II

Knowledge by 205 Staff at the Primary Health Clinics about the Causes+ of Neonatal Jaundice

Cause	No of Respondents	Percent of Total
Blood group incompatibility	150	73.2
Physiological	102	49.8
Infection	82	40.0
Drugs	43	21.0
Malaria (maternal or neonatal)	38	18.5
Neonatal hepatitis	26	12.7
Sickle-cell disease	17	8.3
Biliary obstruction	11	5.4
Prematurity	10	4.9
Vitamin-D deficiency	8	4.0
G-6-PD deficiency	7	3.4
Underfeeding	7	3.4
Maternal malnutrition	6	3.0
Birth asphyxia	5	2.4
Hereditary	4	2.0
Don't know	14	6.8

+More than one cause was given by some respondents.

On the question about complications (Table III), 101 (49.3 percent) respondents recognized brain damage as a possible danger, while liver damage was given by 28 (13.7 percent) of the respondents. Those who responded 'don't know' numbered 28 (13.7 percent). On the management of NNJ at the PHC, the responses (Table IV) included giving of glucose water by 100 (48.8 percent), exposure to sunlight by 89 (43.3 percent), while a referral to a higher institution and administration of phenobarbitone were given by 76 (37.1 percent) and 52 (25.4 percent) respondents, respectively. Knowledge about exchange blood transfusion (EBT) for severe NNJ was shown by 81 (39.5 percent) respondents, while 124 (60.5 percent) did not know about the procedure; of these 124 respondents, 36 (29.0 percent) would refer severe cases to a higher institution, while 88 (71.0 percent) would not refer, but will persist on giving glucose water, sunlight or phenobarbitone treatment.

TABLE III

Knowledge by 205 Staff at the Primary Health Clinics about Complications+ of Neonatal Jaundice

Complication	No of Respondents	Percent of Total
Brain damage	101	49.3
Liver damage	28	13.7
Anaemia	26	12.7
Death	20	9.8
Asphyxia	6	3.0
Dehydration	2	1.0
Skin damage	2	1.0
Eye damage	1	0.5
Harmless	1	0.5
Don't know	28	13.7

+ More than one complication was given by some of the respondents.

TABLE IV  
*Management of Neonatal Jaundice by 205  
 Staff at Primary Health Clinics*

<i>Management</i>	<i>No of Respondents</i>	<i>Percent of Total</i>
Glucose water	100	48.8
Exposure to sunlight	89	43.4
Referral to a secondary and tertiary institution	76	37.1
Phenobarbiton	52	25.4
Reassure mother and send home	12	5.9
Vitamin	2	1.0
Anti-malaria drug	1	0.5
Bed rest	1	0.5
Don't know	1	0.5

### Discussion

Neonatal jaundice is a worldwide and potentially lethal condition; therefore, health workers involved in the care of the newborn must possess adequate knowledge and skills to handle it. Since a majority of our children are delivered at the primary health level of the system, it is of the utmost importance that PHC workers should be well knowledgeable about the disease. In the present study, 54.6 percent of the respondents correctly defined the newborn period. A clear understanding of the newborn period would certainly engender a high index of suspicion on the peculiar problems associated with this period of life. This is most relevant in our environment where a majority of paediatric deaths occur during the neonatal period.<sup>7-9</sup> Though malaria, sickle-cell disease, vitamin deficiency and malnutrition were ignorantly given as causes of NNJ by an appreciable proportion of the respondents,

a wide range of the important causes of NNJ were identified. However, only 40 percent and 3.4 percent recognized infection and G-6-PD deficiency respectively, whereas these conditions have been widely reported as the most important causes of NNJ in Nigeria.<sup>3-4,8</sup> The causative role of camphor which is also well known in the country,<sup>3,8,10</sup> was not well appreciated by most of the respondents. Adequate knowledge of these causative factors would help the staff in taking preventive measures. About 70 percent of the respondents would include examination of the skin in their search for NNJ. Although mild jaundice is usually best detected on the sclera,<sup>11</sup> the difficulty in making the newborn open its eyes adequately for examination limits its usefulness. The skin must therefore, be examined by applying pressure to blanch it. This method of examination is not totally reliable in assessing the severity of hyperbilirubinaemia,<sup>12,13</sup> hence referral of cases for more competent care should be mandatory.

There were 49.3 percent of the respondents who knew about the dangers of jaundice on the brain of the newborn. This inadequacy of the knowledge of these dangers was reflected by the trivialization in the management of the condition, as 48.8 percent of the respondents would persist in treating NNJ with glucose water drinks, exposure to sunlight, phenobarbitone and some would even reassure the mother and send the infant home. Glucose water drink as a treatment for NNJ has no physiological basis; such a therapy not only diverts attention from breast milk, but creates a false confidence in the health personnel and mother, thus delaying referral to appropriate higher institution. Exposure to sunlight has been said to be effective if it is intense and prolonged,<sup>14</sup> but such "intense and prolonged" exposure in our environment may cause

hyperpyrexia with its attendant dangers in the newborn as well as predispose to infection. The use of phenobarbitone is controversial; it does not act rapidly to reduce bilirubin levels and may worsen the lethargy and anorexia associated with NNJ.<sup>12,13</sup> Thus, the high rating given to glucose water, sunlight and phenobarbitone therapy, is unfounded and tantamount to dangerous delays, or mis-management.

Lack of knowledge by 60.5 percent of the respondents on the existence of exchange blood transfusion service for severe NNJ is rather disturbing; it has revealed gross knowledge gap, or defective training of this cadre of health staff in Calabar. Perhaps, this situation may prevail in other parts of the country. As a great deal of information has been obtained on NNJ in Nigeria, it is important that relevant aspects of the condition are made available to PHC students and workers. Unfortunately, the available Primary Health Care manual on management of NNJ merely recommends referral of jaundiced low birthweight infants and is silent on other neonates.<sup>14</sup> However, since serum bilirubin level estimation, phototherapy and EBT cannot be carried out at the PHC centres in this country, referral of all cases of NNJ, except perhaps, the mildest cases should be considered.

The effectiveness of "sunshine phototherapy cot" in the treatment of neonatal jaundice has been reported by Olowe.<sup>15</sup> The construction of this cot is simple and does not require electric power. We would strongly recommend further development of this device and making it widely available in the country. This device, in addition to the provision of icterometers in our PHC centres, would go a long way to improve the care of the jaundiced newborn at PHC level. The cephalo-pedal progression of the skin discoloration in NNJ has been used successfully as a rough index in determining the degree of jaundice.<sup>16</sup> This method of assessment should be

taught to PHC workers so as to supplement their use of icterometers. Until these steps are effectively taken, the need to refer all cases of NNJ to secondary or tertiary centres remains inevitable. Finally, it is recommended that the training of the PHC staff should involve active participation of paediatricians.

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