Enliven Archive
Intensifying Thoughts

Original Research www.enlivenarchive.org *Enliven: Pediatrics and Neonatal Biology*

ISSN: 2379-5824

Neonatal Jaundice: Perception and Care Seeking Behaviours among Mothers/ Caregivers in a Developing Setting

Ekwochi Uchenna[1ϕ], Osuorah DI Chidiebere[2ϕ*], Ndu K Ikenna[1ϕ], Amadi F Ogechukwu[1], Okeke B Ifeyinwa[1], Obuoha Ejike[1], Shatima Dennis[3] and Eneh Chizoba[1]

[1]*Department of Paediatrics, Enugu State University of Science and Technology, Enugu State*

[2]*Child Survival Unit, Medical Research Council UK, The Gambia Unit*

[3]*Department of Paediatrics, National Hospital Abuja, Federal Capital Territory*

[ϕ]*Equal Contributors*

[*]Corresponding author: Osuorah DI Chidiebere, MSc, MPH, FRSPH, FMC Paed, Child Survival Unit, Medical Research Council UK, The Gambia Unit, Gambia, Tel: +2207905501; E-mail: chidi.osuorah@yahoo.com

Received Date: 15th July 2015

Accepted Date: 20th August 2015

Published Date: 26th August 2015

Citation: Ekwochi U, Osuorah DI, Ndu IK, Amadi OF, Okeke IB, et al. (2015) Neonatal Jaundice: Perception and Care Seeking Behaviors among Mothers/Caregivers in a Developing Setting. Enliven: Pediatr Neonatal Biol 2(6): 011.

Abstract

Objectives

Neonatal jaundice (NNJ) is a common newborn disorder globally which is preventable and easily treatable. However, when detected late and/or poorly managed, it is a leading cause of hospitalization, neurological complications and death in newborns. Since mother's knowledge of newborn jaundice is crucial to prompt recognition, intervention and prevention of morbidity and mortality associated with this condition, we sought to determine the knowledge, perception and care seeking behaviours of NNJ among mothers/caregivers.

Methods

This mixed method study enrolled four hundred and twenty one respondents attending infant welfare clinic in a community health centre in Nenwe town in Enugu state using pretested semi-structured questionnaire. Determinants of knowledge and health seeking behaviour of respondents for newborn jaundice were determined using chi-square and fisher's exact test where appropriate.

Results

Majority of the respondents had poor knowledge and incorrect perception of the causes and management of NNJ. Use of glucose water and instillation of breast milk into the eye of the newborn were some of the harmful home practices used by respondents in management of newborn jaundice. Educational attainment, experience in newborn care and type of occupation significantly determined knowledge, correct description of NNJ and seeking for care in a hospital among respondents.

Conclusion

There is poor knowledge and perception of NNJ among respondents. Targeted education during antenatal and infant welfare clinics by health professionals is needed to help mothers and care giver recognise NNJ, refrain from potentially harmful home interventions and promptly seek healthcare.

Introduction

Globally jaundice is a common condition in the newborn period, occurring in the first week of life in about 60% of term and 80% of preterm babies [1]. It is a leading cause of hospital admissions in the first week of life in many low income countries [2,3]. Jaundice in the newborn is critical as it is only in this period that serum bilirubin can result in death or various lifelong neurological squeal such as intellectual deficit, epilepsy, cerebral palsy, sensorineural hearing loss and behavioural problems in survivors [4,5]. These conditions undoubtedly pose stringent handicap in the affected individuals and causes severe psychosocial stress in their families and caregivers. A major cause of jaundice in the newborn in developed country is feto-maternal blood group incompatibilities unlike in developing countries where in addition to this, infection, prematurity, G6PD deficiency, use of herbal concoction in pregnancy, application of dusting powder in babies and storage of baby's clothes with camphor have been associated with NNJ [6-8]. Some of these factors especially in Sub-Saharan Africa, borders on socio-cultural practices of mothers who have limited knowledge of jaundice, its causes and health implications. Such knowledge gaps will likely result in unhealthy infant practices, risky delays, mismanagement, complications and adverse psychosocial consequences for the affected child and his or her family [9]. There is therefore need for regular survey to ascertain the knowledge level of the mothers in developing countries about NNJ and the care they offer to affected newborns in these settings especially prior to presentation to a formal health facility. The findings will provide a platform for continuous evidence based education of these mothers on the appropriate knowledge and care practices for NNJ.

Methodology

Study Area

This study was conducted in Community Health Center at Nenwe, Aninri Local Government Area of Enugu state, South-east Nigeria. Enugu state is located on latitude 6° 27′N and longitude 7° 30′E. Enugu state is made up of 17 Local Government Areas (LGA) with its capital carved from Enugu North, Enugu South and Enugu East LGAs [10]. The majority of the inhabitants are Igbo by tribe, and Christianity is the dominant religion. The minimum monthly income, similar to the national average was ₦18,000 (110 US$). Literacy rate is 66%, fertility rate 4.5 births per woman and there are 955 males per 1000 females [11].

Enrolment of Study Subjects

This is a hospital based convergent mixed method study conducted over a 6 months period between December 2014 and May 2015 in the Community Health Centre, Nenwe in Enugu state. Mothers and caregivers who attended the infant welfare clinics of the health centre and have nursed a baby in the past two years were consecutively enrolled and interviewed on their knowledge, perception and care of jaundice in the newborn period. Respondents were interviewed using structured pre-tested questionnaires. Individual interviews was conducted on some randomly selected respondents to get an in depth perspective on their perception of NNJ and its management. All interviews were conducted by trained research assistants after informed consent was obtained from each participant.

Measures

Socio-Demographic Characteristics

i. *Age of respondent*: in years was assessed and grouped as less than 25, 26-30, 31-35 and ≥36.

ii. *Completed education*: assessed using the following variables: completed tertiary, completed secondary, completed primary or less.

iii. *Occupation*: was categorized into unemployed, unskilled and skilled employments.

iv. *Number of newborn nursed*: was obtained and grouped as none, 1, 2-4 and >4.

Knowledge and Care for NNJ among Respondents

Respondents were interviewed to ascertain their knowledge and care rendered to their babies who developed jaundice. Their personal experience and perceived causes of jaundice were ascertained. Respondents were also interviewed on the immediate action taken and further care rendered to their newborns with jaundice. Those who took their newborns to the hospital were further interviewed to ascertain the day they presented after onset of jaundice and treatment given. The overall outcome of jaundice in their newborn was ascertained and grouped into full recovery, impairment and death. Where impairment occurred, the respondent was asked to describe the observed impairment.

Data Cleaning and Analysis

Quality control check was done by researchers on daily basis after enrolment. Microsoft excel 2007 was used to input the raw data. Data cleaning was done by researcher assistants and the study researchers. SPSS version 20 was used for data analysis. Chi-square and Fischer's exact test where appropriate was used to establish the relationship between the socio-demographic variable of respondents and their knowledge and care for NNJ. Results were presented in percentages and ratios, where appropriate. Statistical significance was set at p-value < 0.05.

Ethical Consideration

Ethical clearance was obtained from the Community Health Center Ethics Committee. Informed consent was obtained from every mother in her own right and on behalf of her child before recruitment. Participation in the study was entirely voluntary and no financial inducement whatsoever was involved. All information was handled with strict confidentiality.

Results

Characteristics of Respondents

Four hundred and twenty one (421) respondents consented and were enrolled for this study. Table 1 shows the characteristic of study respondents. Majority (42.3%) of them were between the 26-30 years age bracket and 280 (66.5) had completed a post-secondary education. One hundred and eighty two (43.2%) were unemployed while the remaining (56.8%) are employed. The employed respondents were engaged in skilled and unskilled work type in approximately 50% of the respective occupation categories. Slightly

over one-third (36.6%) of the respondents had nursed only one newborn and approximately half of the respondents (49.6%) have nursed two to four newborns. About one in 10 respondents (9.5%) had nursed more than four newborns while eighteen (4.3%) had no experience in nursing a newborn.

Table 1: Summary Description of Respondents

Variables	N= 421 n (%)
Age (years)	
Less than 25	99 (23.5)
26-30	178 (42.3)
31-35	92 (21.9)
36+	52 (12.4)
Completed education	
Primary or less	32 (7.6)
Completed secondary	109 (25.9)
Completed tertiary	280 (66.5)
Occupation	
Unemployed	182 (43.2)
Unskilled	121 (28.7)
Skilled	118 (28.1)
No. of newborns nursed	
None	18 (4.3)
1	154 (36.6)
2-4	209 (49.6)
>4	40 (9.5)

Table 1

Knowledge and Perception of Jaundice among Respondents:

Two hundred and sixty one (51.6%) of respondents claimed they have good knowledge of jaundice and it's causes. However only 160 (38.0%) of the 421 respondents gave a correct description of jaundice as yellow discolouration of the skin and/or the eye of a newborn. The other respondents 205 (48.7%) did not have any knowledge or incorrectly 56 (13.3%) described jaundice as blueness, paleness or redness of a newborn eye and/or skin. One respondent described it as follows:-

[AB, 27 years] "*Jaundice is paleness of the eye and skin due to excessive breakdown of blood which results in low blood levels in the baby's body"*

When the cause(s) of jaundice was inquired from respondents, 13 (3.1%) mentioned infection as the main cause, 6 (1.4%) believed it was caused by mother-newborn blood mixing, 1 (0.2%) and 2 (0.5%) respectively believed that jaundice is caused primarily by prematurity and drugs ingested by mothers during pregnancy. Others causes mentioned by 156 (37.1%) respondents included excessive blood in newborn body, reaction to camphor, spiritual causes, excessive use of herbal drugs in pregnancy, low blood levels, severe malaria in pregnancy, eating of certain food during pregnancy and albinism in child's gene. One interesting response from a 32 years old Banker regarding the cause of jaundice was that:-

[TC, 32 years] *"Jaundice results in a newborn when the blood group of the mother is different from that of the father"*

Of all the respondents 121 (28.7%) had witnessed yellow discolouration of the eye and/or body in their newborns. Twenty (16.8%) and 12 (10.1%) of these respondents noticed the discolouration in the first day of life and after the 7th day of life respectively while the vast majority (73.1%) noticed the yellow discolouration between the second and the 7th day of life. Immediate action taken by respondents after noticing the yellowish discolouration included giving glucose water 28 (34.1%), exposure to early morning sunlight 30 (36.6%), watchful inactivity 23 (29.2%) and instilling of breast milk into the baby conjunctiva to clear the yellow discolouration in 4(0.1%) respondents. Some respondent did a combination of these interventions. One 21 years old petty trader advised by her mother-in-law justified the use of breast milk as therapy for yellow discolouration of the eye by stating that:-

[JD, 21 years] *"Breast milk is highly medicinal and cures most newborns illnesses"*

A 33 years respondent with post-primary education who has nursed 2-4 newborns believes glucose water with or without exposure to early morning sunlight is second to none in household management of jaundice in newborn. She noted that:-

[UE, 33 years] *"Glucose is the best remedy for jaundice in newborns. I have always used it with good results in 2 of my children that had jaundice when they were babies. It (glucose water) energizes the cells of the newborn baby so they can absorb the substances in the blood causing the yellow discolouration (jaundice)"*

Sixty six (78.6%) of the 84 respondents whose jaundice persisted sought further care for the newborn in private hospitals, 36 (54.6%), public hospital in 22 (33.3%) cases and the remaining 8 (12.1%) consulted either a traditionalist and/or a spiritualist. Of the 58 respondents that sought further care in a hospital, 24 (41.3%) presented within 24 hours, 12 (20.7%) within 48 hours and 6 (10.4%) after 48 hours of noticing the yellow discolouration in their newborns. Twelve (20.7%) of the respondent could not remember how long it took them to present to the hospital. For the 18 (21.4%) respondents that did not seek further care for their newborns, 9 (50.0%) believed from experience the jaundice will resolve without any treatment, 6 (33.3%) was advised by friends and/or relatives it will resolve naturally with continued early morning sunlight exposure and/or glucose water, 2 (11.1%) could not afford the cost of hospital care and 1 (5.6%) did not believe it is a medical problem that needed a medical intervention.

Table 2

Table 2: Knowledge, perception and actions of respondents for new-born jaundice

Variables	N n (%)
Knowledge of jaundice	**N= 421**
No	205 (48.7)
Yes	216 (51.6)
Description of jaundice	**N= 216**
Correct	160 (74.1)
Incorrect	56 (25.9)
Any child ever had jaundice	**N= 421**
No	291 (69.1)
Yes	121 (28.7)
Don't know	9 (2.1)
Day jaundice was noticed	**N= 119**
First day of life	20 (16.8)
Second to seventh day of life	87 (73.1)
After seventh day of life	12 (10.1)
Immediate action†	**N= 84**
Gave glucose water	28 (34.1)
Exposed to sunlight	30 (36.6)
Did nothing	23 (29.2)
Dropped breast milk into the eye	4 (0.1)
Sought healthcare when jaundice persisted	**N= 84**
No	18 (21.4)
Yes	66 (78.6)
Type of healthcare	**N= 66**
Private hospital	36 (54.6)
Public hospital	22 (33.3)
Traditional and/or spiritual	8 (12.1)
Day presented to hospital	**N= 58**
Within 24 hours	24 (41.3)
Within 48 hours	12 (20.7)
After 48 hours	6 (10.4)
Cannot Remember	12 (20.7)
Treatment given	**N= 57**
Advised on early morning sunlight exposure	32 (56.2)
Advised to give glucose water	5 (8.8)
Drugs only given	10 (17.5)
Drugs + phototherapy given	10 (17.5)
Outcome	**N= 79**
Death	1 (0.01)
Impairment	8 (10.1)
Full recovery	70 (88.6)
Type of impairment†	**N=8**
Delayed head control	1 (12.5)
Inability to walk	3 (37.5)
Impaired intelligence	2 (25.0)
Convulsions	1 (12.5)
Hearing loss	1 (12.5)

† Some mothers reported a combination of listed variables

Management and Outcome of Newborn with Jaundice

Respondents that took their newborn for further evaluation were asked to recall how their newborns were managed in the facilities they sought care. Forty four (78.6%) of the 56 respondents held that their newborns were managed on outpatient basis while 12 (21.4%) said their newborn was admitted and managed as inpatients. More newborns 8 (66.7%) were admitted in private hospitals compared to 4 (33.3%) admitted in public hospitals (X^2=0.111, df=1, P=0.739). Treatment given included counselling on early morning sunlight exposure 32 (56.2%) and use of glucose water 5 (8.8%) with or without oral medications, use of drugs in 10 (17.5%) of cases and use of drugs and photo-therapy in 10 (17.5%) cases. A 47 years old civil servant with 5 children said:-

[BK, 47 years] *"When my daughter was admitted in 2003 for jaundice, the doctor said they may remove her blood and dilute it with another blood if the level of jaundice continues to rise. I was so scared and rejected it (refusing the doctor's statement in the spirit realm). I couldn't imagine my new born child carrying another person's blood. With prayers and divine intervention, the level came down with treatment on injection through the veins and fluorescent light alone"*

Majority (88.6%) of the respondent's newborns recovered without complications after management of their jaundice. Eight (10.1%) of the respondent's newborn developed short or long term impairment while 1 (0.01%) resulted in fatality. Impairment listed included delayed neck control in 1 (12.5%) case, inability to walk in 3 (37.5%) cases, suboptimal intelligence in 2 (25.0%) cases, convulsion 1 (12.5%) and hearing loss in one case (12.5%) each. Five (62.5%) of the newborns that developed impairment occurred among respondent who did not seek further care (3/18) or those who sought care outside the hospital (2/8) for their newborn with jaundice (X^2=3.532, df=2, P=0.171). The only fatality that occurred was in one of the newborns managed in a private hospital.

Socio-Demographic Factors and Perception of Jaundice among Respondents

Of the socio-demographic factors considered in this study, education of respondents and number of newborns they had nursed has an association with respondents perceptions of jaundice in newborns (Table 3). Significantly more respondents with higher educational attainment had knowledge (P=0.000) and gave correct description (P=0.000) of newborn jaundice compared to those with lower educational attainment. Similarly respondents

that have nursed more newborns had better knowledge (*P*=0.010) and gave more correct description of newborn jaundice compared to respondents that had nursed fewer newborn (*P*=0.010). Furthermore, it was noted that more respondents with higher educational attainment (*P*=0.044) and more unemployed respondents (*P*=0.032) eventually took their newborn to hospital after initial home interventions compared to other respondents (Table 3).

Table 3: Socio-demographic factors and perception of jaundice among respondents

Variables	Knowledge of Jaundice			Description of Jaundice				Immediate action taken				Eventually presented to the hospital			Time from symptom to hospital presentation			
	Yes	No	*P*	Correct	Incorrect	Nil	*P*	Glucose water	Sun light	Nil	*P*	Yes	No	*P*	<24 hours	<48 hours	≥48 hours	*P*
	n (%)	n (%)		n (%)	n (%)			n (%)	n (%)			n (%)	n (%)		n (%)	n (%)	n (%)	
Age (years)																		
Less than 25	46 (46)	53 (54)	.61	35 (35)	10 (10)	54 (55)	.73	6 (32)	5 (26)	8 (42)	.76	13 (62)	8 (38)	.57	5 (42)	6 (50)	1 (8)	.32
26-30	92 (52)	86 (48)		65 (37)	28 (16)	85 (47)		11 (32)	14 (41)	9 (27)		19 (54)	16 (46)		11 (69)	3 (19)	2 (12)	
31-35	48 (52)	44 (48)		37 (40)	12 (13)	43 (47)		6 (43)	4 (29)	4 (28)		9 (60)	6 (40)		6 (76)	1 (12)	1 (12)	
36+	30 (58)	22 (42)		23 (44)	6 (12)	23 (44)		5 (33)	7 (47)	3 (20)		5 (39)	8 (61)		2 (33)	2 (33)	2 (33)	
Education																		
Primary	9 (28)	23 (72)	**.00**	6 (19)	3 (9)	23 (72)	**.00**	2 (20)	7 (70)	1 (10)	**.01**	6 (60)	4 (40)	**.04**	3 (50)	2 (33)	1 (17)	.31
Secondary	44 (40)	65 (60)		33 (30)	12 (11)	64 (59)		13 (50)	10 (39)	3 (11)		10 (36)	18 (64)		3 (33)	3 (33)	3 (33)	
Tertiary	163 (58)	117(42)		121(43)	41 (15)	118(42)		13 (28)	13 (28)	20(44)		30 (65)	16 (35)		62(68)	28(30)	2(2)	
Occupation																		
Unemployed	87 (48)	95 (52)	.05	63 (35)	24 (13)	95 (52)	.09	11 (31)	13 (38)	11(31)	.70	25 (71)	10 (29)	**.03**	11 (50)	7 (32)	4 (18)	.86
Unskilled	57 (47)	64 (53)		44 (36)	12 (10)	65 (54)		9 (36)	11 (44)	5 (20)		10 (40)	15 (60)		6 (60)	3 (30)	1 (10)	
Skilled	72 (61)	46 (39)		53 (45)	20 (17)	45 (38)		8 (36)	6 (28)	8 (36)		11 (46)	13 (54)		7 (70)	2 (20)	1 (10)	
Nos. of newborn nursed																		
1	66 (43)	88 (57)	**.01**	48 (31)	18 (12)	88 (57)	**.01**	5 (33)	2 (13)	8 (54)	.15	10 (67)	5 (33)	.56	5 (57)	4 (43)	0 (0)	.62
2-4	123 (59)	86 (41)		90 (43)	34 (16)	85 (41)		16 (33)	21 (43)	12(24)		29 (57)	22 (43)		15 (56)	7 (26)	5 (18)	
> 4	17 (43)	23 (57)		14 (35)	2 (5)	24 (60)		4 (36)	5 (46)	2 (18)		5 (46)	6 (53)		2 (50)	1 (25)	1 (25)	

Bold figures of *P* are statistically significant

Discussion

About half of the respondents claimed they had good knowledge of jaundice and its causes. However two thirds of the respondents did not have any knowledge or incorrectly described jaundice as blueness, paleness or redness of a newborn eye and/or skin. Similar misconceptions and partial knowledge were noted in studies done in other parts of the country [12,13].

Some of the respondents felt that giving glucose water and exposure to early morning sunlight constituted adequate treatment for NNJ which prevented them from seeking further care. A similar observation was made in a study about the perception of NNJ among mothers in Port-Harcourt, Nigeria [12]. Supplementing with glucose water is not a recommended practice because it can worsen NNJ by interfering with breast milk intake, breast milk production thus delaying the reduction of bilirubin levels [14].

The practice of instilling of breast milk into the conjunctiva of the newborn to clear the yellow discolouration was reported in the present study. This was also reported in another study in Sagamu South-west Nigeria [15]. Although colostrum instillation into the eyes is suggested as an alternative prophylactic option for antibiotics against neonatal conjunctivitis because of its immunologic content [16], it has not been documented to have a role in treatment of NNJ.

Treatment given by health care workers included counselling on early morning sunlight exposure, phototherapy and other drugs. It is a cause for concern that the use of glucose water was part of treatment offered to mothers by some health care workers. This finding is similar to the poor knowledge of management of NNJ found among some cadres of health workers in a study conducted in Rivers state, South-south Nigeria [17]. Surprisingly there was no mention of exchange blood transfusion (EBT) among respondents as treatment given in hospitals where they sought further care contrary to high rate of EBT use in other hospital based studies in Nigeria [18,19]. With majority of respondents reporting that jaundice in their newborn was noticed between the second and seventh day of life, it is possible that physiologic jaundice which usually resolves even without treatment may have accounted for the low EBT usage. Also, the superstitious aversion to blood transfusions in newborns classically described by one of the respondents, may also explain the low use of EBT in the study setting. In addition, lack facilities and expertise for EBT in the study setting which is predominantly rural may also explain low usage in the hospital facility.

With early identification, prognosis for NNJ is good if the patient receives appropriate treatment [20] and majority of the newborns in the current study recovered without complications after receiving treatment for jaundice. Amongst the few who had complications, it was noted that most of them either did not seek further care or sought care outside the hospital. Early and appropriate referral at the primary health care level could therefore contribute to the reduction of the burden of NNJ [21].

Maternal education and parity had significant associations with the knowledge of NNJ in the present study. This is consistent with the results of other studies that surveyed socio-demographic factors and NNJ in developing countries [15,22-23]. Maternal education has been identified as the most significant social determinant of child mortality [24, 25]. Education

enhances mothers' utilization of health services for children and increases their likelihood of receiving prenatal care [26,27]. This is reflected by the finding in the present study that more mothers with higher educational attainment took their newborns to hospital after initial home interventions and also presented within less than 24 hours of noticing jaundice in their newborns. Finally, it was also noted that a significant number of unemployed respondents eventually took their newborns to the hospital after initial home interventions. This is probably as a result of these mothers having more time to care for their newborns.

Limitations of the Study

The main limitation of this study is that data collected from participants were self reported data which is subject to recall bias. This may have led to inaccuracies in information given by the respondents resulting in measurement and errors in analysis results.

Conclusion

There is poor knowledge and perception of NNJ among respondents. Targeted public enlightenment program and education on identification of common newborn illness and safe initial home interventions during antenatal and postnatal sessions needs to be intensified to help reduce morbidity and adverse events associated with NNJ.

Study Site

Community Health Center, Nenwe and study was approved by the ethical committee of the health center.

Acknowledgement

The authors wish to express our gratitude to all medical students who worked as research assistants during the field work. Also wish to thank the management and staff of the Community Health Centre Nenwe for their support during the study. We also thank all the respondents that gave consent and participated in this study.

Reference

1 Slusher TM, Angyo IA, Bode-Thomas F, Akor F, Pam SD, et al. (2004) Transcutenous bilirubin measurement and serum total bilirubin levels in indigenous African Infants. Pediatrics. 113: 1636-1641.

2 Ogunlesi TA, Ogunfowora OB, Adekanmbi AF, Fetuga MB, Runsewe-Abiodun TI, et al. (2006) Neonatal mortality at olabinsi onabanjo university teaching hospital, sagamu. Niger J Peadiatr 33: 40-46.

3 Young Infants Clinical Signs Study Group (2008) clinical signs that predict severe illness in children under age 2 months: a multicenter study. Lancet 371: 135-142.

4 Ibe BC (2008) In KEO Nkangineme, Azubuike JC. Eds Neonatal Jaundice. 12: 204.

5 Slusher TM, Olusanya BO (2012) Neonatal jaundice in low and middle income countries. In care of the jaundiced neonate. Edited by Stevenson DK, Maisels J, Watchko J. New York, NY: McGraw-Hill. 263-273. Chapter 13.

6 Olusanya BO, Akande AA, Emokpae A, Olowe SA (2009) Infants with severe neonatal jaundice in lagos, Nigeria: incidence, correlates and hearing screening outcomes. Trop Med Int Health 14: 301-310.

7 Eneh AU, Ugwu RO (2009) Perception of neonatal jaundice among women attending children outpatient and immunization clinics of the UPTH port Harcourt. Niger J Clin Pract 12: 187-191.

8 Oladokun A, Otegbayo JA, Adeniyi AA (2009) Maternal and fetal outcomes of jaundice in pregnancy at the University College Hospital, Ibadan. Niger J Clin Pract 12: 277-280.

9 Brethauer M, Carey L (2010) Maternal experience with neonatal jaundice. MCN Am J Matern Child Nurs 35: 8-14.

10 Enugu State Government Official Website. About Enugu: Retrieved and accessed on 12/08/2015 from www.enugustate.gov.ng/aboutenugu.php.

11 Nigerian Population Commission. State and local government demographic profile: 1991-2010, Abuja.

12 Eneh AU, Ugwu RO (2009) Perception of neonatal jaundice among women attending children out-patient and immunization clinics of UPTH Port Harcourt. Niger J Clin Pract 12: 187-191.

13 Ogunfowora OB, Daniel OJ (2006) Neonatal jaundice and its management: knowledge, attitude and practice of community health workers in Nigeria. BMC Public Health 6: 19.

14 http://americanpregnancy.org/first-year-of-life/breastfeeding-and-jaundice/

15 Ogunlesi TA, Ogunlesi FB (2012) Family socio-demographic factors and maternal obstetric factors influencing appropriate health-care seeking behaviours for newborn jaundice in Sagamu, Nigeria. Matern Child Health J 16: 677-684.

16 Ghaemi S, Navaei P, Rahimirad S, Behjati M, Kelishadi R (2014) Evaluation of preventive effects of colostrum against neonatal conjunctivitis: A randomized clinical trial. J Educ Health Promot 3: 63.

17 Opara PI, Alex-Hart BA, Dotimi DA (2014) Knowledge, Attitude and Practice towards Neonatal Jaundice among Community Health Workers in Southern Nigeria. International Journal of Tropical disease & Health 4: 1171-1178.

18 Owa JA, Ogunlesi TA (2009) Why we are still doing so many exchange blood transfusion for neonatal jaundice in Nigeria. World J Pediatr 5: 51-55.

19 CN Onyearugba, OI George (2014) Exchange blood transfusion in a Nigerian Teaching Hospital. International Journal of Tropical Medicine 9: 21-26.

20 Mung'ala-Odera V, Newton CR (2001) Recall of perinatal events by mothers living in rural Kenya. Epidemiology 12: 366.

21 (1994) Practice parameter: management of hyperbilirubinemia in the healthy term newborn. American Academy of Pediatrics. Provisional Committee for Quality Improvement and Subcommittee on Hyperbilirubinemia. Pediatrics 94: 558-565.

22 Egube BA, Ofili AN, Isara AR, Onakewhor JU (2013) Neonatal jaundice and its management: Knowledge, attitude, and practice among expectant mothers attending antenatal clinic at University of Benin Teaching Hospital, Benin City, Nigeria. Niger J Clin Pract 16:188-194.

23 Ezeaka CV, Ugwu RO, Mukhtar-Yola M, Ekure EN, Olusanya BO (2014) Pattern and predictors of maternal care-seeking practices for severe neonatal jaundice in Nigeria: a multi-centre survey. BMC Health Serv Res 14:192.

24 Rodrigo BKNR, Cooray G (2011) The knowledge, attitude & behaviour on neonatal jaundice of postnatal mothers in Provincial General Hospital, Badulla. Sri Lanka Journal of Child Health 40: 164-168.

25 Caldwell JC (1979) Education as a Factor in Mortality Decline: An Examination of Nigerian Data. Population Studies 33: 395-413.

26 Ogunlesi TA, Abdul AR (2015) Maternal knowledge and care-seeking behaviors for newborn jaundice in Sagamu, Southwest Nigeria. Niger J Clin Pract 18: 33-40.

27 Cleland J (1990) Maternal education and child survival: Further evidence and explanations. Canberra: Australian National University Health Transition Centre.