academicJournals

Vol. 8(5), pp. 87-90, May 2016
DOI: 10.5897/JPHE2015.0779
Article Number: 94BCA4D57964
ISSN 2141-2316

http://www.academicjournals.org/JPHE

Journal of Public Health and Epidemiology

*Full Length Research Paper*

# Prevalence of neonatal jaundice in Eku Baptist Community Hospital in Delta State Nigeria

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Received 26 September, 2015; Accepted 11 December, 2015

**The prevalence of neonatal jaundice among newborn babies in Eku Baptist Community Hospital in Delta State was studied between January 2007 and May 2013. A total of 2,509 neonatal case folders were reviewed to determine the prevalence, pattern of occurrence, and associated risk factors of neonatal jaundice among the newborn babies aged between 1 and 28 days. Neonatal jaundice accounted for a total prevalence of 52. 6 in 1000 of the total number of cases reviewed. There was significant prevalence (p≤0.05) of neonatal jaundice in males (67.4) than in females (43.6). The risk factors of neonatal jaundice identified were sepsis (66.7%), prematurity (15.2%), lack of breast feeding (9.0%), ABO incompatibility (5.2%), and anaemia (3.8%). Two deaths were recorded from neonatal jaundice due to sepsis. Although the prevalence of neonatal jaundice was low, there is need to educate women on regular antenatal checks and delivery in appropriate health care facility in order to curb the incidence of neonatal jaundice.**

**Key words:** Prevalence, neonatal jaundice, newborn babies, Eku Baptist Community Hospital.

## INTRODUCTION

Jaundice is the most common condition that requires medical attention in newborns. It appears as a result of the imbalance between bilirubin production and excretion (Dennery et al., 2001). During pregnancy, mother's body discards foetus's bilirubin through placenta. After birth, the newborn has to discard blood bilirubin by itself. The bilirubin may have elevated values in newborns up to concentrations causing the yellow colouration of skin and mucosae. This is due to organs immaturity and inability to cope with the rhythm needed for the bilirubin to be extracted from the organism (Iacob et al., 2011). Neonatal jaundice therefore is the yellow colouration of the skin and sclera of newborn babies that result from hyperbilirubinaemia. Neonatal jaundice occurs worldwide up to 60% of term and 80% of preterm newborns in the first week of life (Slusher et al., 2004). It is one of the important contributors to neonatal morbidity and mortality which has remained very high in sub Saharan African, Asia, and Latin America (Ezechukwu et al., 2004). Unconjugated hyperbilirubinaemia is the most common

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**Table 1.** Neonatal delivery from January 2007 to May 2013.

| Annual delivery of neonates | Frequency | % |
|---|---|---|
| 2007 | 161 | 6.4 |
| 2008 | 154 | 6.1 |
| 2009 | 173 | 6.9 |
| 2010 | 433 | 17.3 |
| 2011 | 470 | 18.7 |
| 2012 | 800 | 31.9 |
| 2013 | 318 | 12.7 |
| Total | 2,509 | 100 |
| | | |
| **Sex** | | |
| Male | 949 | 37.8 |
| Female | 1,560 | 62.2 |
| Total | 2,509 | 100 |

form of jaundice encountered by family physicians (Porter and Dennis, 2002). Even though extreme is rare in developed countries, it is still quite rife in developing countries often resulting in kernicterus with its attendant medical, economic and social burden on the patient family and society at large (Wang et al., 2005).

Institutional neonatal care started in Nigeria in the late 60s and use of incubators was introduced and special care baby units (SCBU) were set up. In the context of SCBU, there are still deficiencies as monitoring care is hampered by lack of equipment, such as infant monitors, pulse oximeters, arterial blood gas monitoring, epileptic power supply, and unstable supply of oxygen. Just as babies were dying so were their mothers (Lawn et al., 2005). All healthy newborns are at potential risk if their jaundice is unmonitored or managed inappropriately.

Risk of developing insignificant neonatal jaundice is higher in male infants (Hamid et al., 2003). Unlike the developed countries where feto-maternal blood group incompatibilities are the main causes of severe neonatal jaundice, it is mostly prematurity, glucose 6 phosphate dehydrogenase (G6PD) deficiency, infective causes as well as effects of negative traditional and social practices constitute the aetiology in developing countries (Oladokun et al., 2009; Onyearugha et al., 2011). This study was to determine the prevalence, pattern of occurrence, and associated risk factors of neonatal jaundice in Eku Baptist Community Hospital, Delta State, Nigeria.

## MATERIALS AND METHODS

The study was carried out in Eku Baptist Community Hospital in Ethiope West Local Government Area of Delta State, Nigeria. The study included cast note records of mothers and their neonates (male and female neonates) from January 2007 to May 2013. A total of 2,509 neonatal case records were retrieved. The newborn babies were between 1 and 28 days of age. History including onset time of hyperbilirubinaemia, onset of breast feeding and lab data of complete blood count, blood group and rhesus type of mother and neonate were taken. Data concerning age, sex, prevalence and risk factors were documented and analyzed using frequency tables, simple percentages, and chi-square. Prevalence of neonatal jaundice was calculated using number of cases divided by total cases multiplied by 1000.

## RESULTS

The total number of neonatal delivery from January 2007 to May 2013 was 2,509. Neonates born were 1,560 (62.2%) females and 949 (37.8) males (Table 1). There were more female neonates delivered than male neonates during this period.

Neonatal jaundice was present in only 132 of the 2,509 neonates delivered with prevalence of 52.6 (Table 2). Total prevalence of neonatal jaundice in females was 43.6 and total prevalence in males was 67.4.

Table 3 shows the age at which neonatal jaundice occurred in the neonates. As shown in this table, 93 (70.5%) of the neonates developed jaundice within the first week of life.

Table 4 shows the associated risk factors of neonatal jaundice, from the study. The associated factors included sepsis (66.7%), anaemia (3.8%), prematurity (15.2%), ABO incompatibility (5.3%), and lack of breast feeding (9.0%).

## DISCUSSION

The prevalence of neonatal jaundice in this study (52.6) was lower when compared with other studies with 126 (Kavehmanesh et al., 2008) and 149.9 (Najib et al., 2013)

**Table 2.** Prevalence of neonatal jaundice.

| Sex | Occurrence of neonatal jaundice in total population | | | |
|---|---|---|---|---|
| | Total population | Present | Prevalence | Prevalence in total population |
| Male | 949 | 64 | 25.5 | 67.4 |
| Female | 1560 | 68 | 27.1 | 43.6 |
| Total | 2309 | 132 | 52.6 | - |

**Table 3.** Age at which neonatal jaundice was presented

| Age (days) | Frequency | Percentage |
|---|---|---|
| 1 – 7 | 93 | 70.5 |
| 8 – 14 | 29 | 21.9 |
| > 14 | 10 | 7.6 |
| Total | 132 | 100 |

**Table 4.** Associated risk factors of neonatal jaundice

| Associated risk factors | Frequency | Percentage |
|---|---|---|
| Sepsis | 88 | 66.7 |
| Anaemia | 05 | 3.8 |
| Prematurity | 20 | 15.2 |
| ABO incompatibility | 07 | 5.3 |
| Lack of breast feeding | 12 | 9.0 |
| Total | 132 | 100 |

and higher than the result from the studies of Iacob et al. (2011) with 17.1, Maisels and Kring (1998) with 4.2, and Tikmani et al. (2010) with 16.5. This study showed a significantly higher prevalence of males with neonatal jaundice than females even with the higher female neonates delivered. The higher prevalence of males with neonatal jaundice than females corroborated with the study of Hamid et al. (2003) who had higher males with neonatal jaundice due to the fact that the enzyme level of the activity of G6PD was significantly lower in males than in females (George and Akani, 2011). But the result of the study disagreed with the studies of Sciuto et al. (2009) and Egesie et al. (2008) where they reported lower prevalence of neonatal jaundice in males. Males have lower levels of the enzymes activity of G6PD than the females in view of the fact that the defect is X-linked recessive resulting in the male's tendency to develop neonatal jaundice (George and Akani, 2011).

Majority of the neonates developed neonatal jaundice in their early life probably due to prematurity and septicaemia (Udo et al., 2008). Septicaemia was the leading cause of neonatal jaundice from this study. West and Tabansi (2014) attributed the high prevalence of sepsis documented in their study to the exclusion of all neonates who had prior antibiotic therapy or whose mother had antibiotics within a week of delivery. Low prevalence of sepsis in developed countries could be a reflection of a more hygienic environment, better obstetric and nursery care than in developing countries (Edwards, 2002). According to Egube et al. (2013), neonatal sepsis occurs from poor umbilical cord hygiene and haemolysis in G6PD deficient babies when menthol is applied to the umbilical cord. It could also be as a result of delay in seeking medical attention for neonatal jaundice; hence, contributing to development of kernicterus.

Studies from Owa and Ogunlesi (2009) reported that septicaemia and G6PD deficiency were the leading causes of neonatal jaundice. From this study, prematurity, lack of breastfeeding, ABO incompatibility, and anaemia were the other causes of neonatal jaundice at Eku Hospital, though there was significant difference ($P<0.05$) between the risk factors for neonatal jaundice to be prevalent. This report corroborated with the studies of Najib et al. (2013) who had other associated risk factors as ABO and Rh incompatibility and breast feeding. Exclusive breastfeeding without prolonged periods of fasting and avoidance of supplementation with dextrose or water is some documented measure associated with

lower serum bilirubin levels in newborns (Dennery et al., 2001).

Since all healthy newborns are at potential risk if their jaundice is unmonitored or managed inappropriately, there is need to address the social demand for patient safety and to respond to calls for a public health policy to better manage the disease. Documenting the prevalence, identifying risk factors for severe hyperbilirubinaemia prior to discharge, lactation support to ensure optimal feeding, and parents education for hyperbilirubinaemia and keeping follow-up are necessary (Newman et al., 2006). Follow-up of babies is required to monitor the possible changes in skin and behavior. Phototherapy and exchanged transfusion may be required (Iacob et al., 2011).

## Conclusion

The prevalence of neonatal jaundice at Eku Hospital was low, but the occurrence of neonatal jaundice and few deaths due to sepsis cannot be overlooked. Health care providers working with neonates should play a key role in identifying the associated risk factors and assessing neonates for pathological jaundice. Parental counseling, education for early detection, regular antenatal care, and longer hospital stay are required in order to prevent this condition.

## Conflict of interest

The authors have not declared any conflict of interest

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