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Archives of Applied Science Research, 2012, 4 (3):1511-1516
(http://scholarsresearchlibrary.com/archive.html)

ISSN 0975-508X
CODEN (USA) AASRC9

Predictors of Neonatal Morbidity and Mortality in Tertiary Hospital in Ogun State, Nigeria

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ABSTRACT

Reducing neonatal mortality is a crucial step for the Millennium Development Goal (MDG-4) to be achieved with neonatal mortality represents over 40% of infant mortality and one quarter of under-five mortality. This study was designed retrospectively to determine the predictors of neonatal morbidity and mortality in tertiary hospital in Ogun State, Nigeria. Purposive sampling technique was used to select all neonates who were admitted at neonatal unit of the hospital. A checklist was used to collect data for period of 6weeks and descriptive and inferential statistics were used to analyze the data generated. Findings of the study revealed that out of the 775 cases analyzed, morbidity and mortality were higher in out-born than inborn and in males than females. Most death occurred in the early neonatal period. There was significant association between place of delivery and management outcome of the neonates as well as significant association between place of delivery and Level of education of mothers of neonates under study with $p<0.05$. It was recommended that pregnant women should be educated and encouraged to make use of antenatal clinic throughout period of pregnancy and to deliver their babies in the hospital with adequate resuscitation facilities

Keywords: Management outcomes, Morbidity, Mortality, Neonate, Predictors Word Count: 213

INTRODUCTION

The extraordinary improvements in child survival over the past 25 years, both in developed and developing countries, has little or no impact on effective health care for the new born in many developing countries(Daly, Taylor, and Tinker, 2003). It has been reported that over 130 million babies are born every year, and more than 10 million infants die before their fifth birthday and almost 8 million before their first (Ahmad, Lopez, and Inoue, 2000; World Health Report. 2005). Neonatal mortality rates vary from five in developed countries to 34 per 1,000 live births in the less-developed regions of the world. Although there has been a remarkable worldwide decline in child mortality in the last quarter of the 20th century, this reduction in death rate has occurred mainly among older children, mostly due to the effects of immunization and infectious disease-control programmes (World Health Report. 2005).

Worldwide neonatal mortality represents more than half of the overall infant mortality and over one third of under-

five deaths. It is worthy to note that the overall under-five mortality is still very high in Africa; and neonatal deaths represent over 40% of infant mortality and one quarter of under-five mortality, unlike other regions of the world (World Health Report, 2005). A study conducted in Aminu Kano Teaching Hospital (AKTH) in Nigeria revealed that the risk of dying was significantly higher among out-born babies compared with delivered in AKTH (Mukhtar-Yola and Iliyasu, 2007). Also, a retrospective analysis of neonatal morbidity and mortality that was conducted at a tertiary hospital in Ilesa, Nigeria in relation to places of delivery, revealed that it was higher in outborn than inborn (Owa &Osinaike, 1996).

Dawodu and Effiong cited in Olowu, et al. (2005) demonstrated an increased neonatal survival on the neonatal unit of UCH and attributed this to improved equipment, more support staff and management of neonatal septicaemia. However another study few years after, reported high morbidity and mortality contrary to Olowus conclusion. This observation presents a decling state of maintanance which may be as a result of the National declining economy among others Olowu, et al. (2005).

According to Knippenberg et.al (2005), skilled attendance and institutional delivery rates are lowest in countries with the highest neonatal morbidity and mortality rate. In fact, Demographic and Health Survey (DHS) for data between1995 and 2003, across 40 countries revealed that more than 50% of neonatal deaths occurred following a home birth with no skilled care. In Nigeria today, a fair proportion of women do not attend antenatal care regularly, hence they did not benefit from education provided during pregnancy and perinatal period which is known to play a significant role in neonatal survival (Aluko and Oluwatosin 2008, Adeoye Rabiu and Tayo 2009)

Bhutta and Morris (2003) stated that that many newborn deaths could be averted if more women were in good health, well nourished, and received quality care during pregnancy, labour and delivery, and if both mother and newborn received appropriate care in the post-partum period. Hence this study determines the predictors of neonatal morbidity and mortality as well as the timing of neonatal mortality in a tertiary hospital in Ogun State Nigeria.

MATERIALS AND METHODS

This study was conducted in Olabisi Onabanjo University Teaching Hospital Sagamu. The hospital is made up of 20 departments of which the pediatric department is one of them. The pediatric department is made up of three wards namely: the neonatal, children emergency and children ward. The hospital has high patronage of clients because the state government subsidizes the cost of care received in the hospital. The study utilized checklist to collect data from the Medical Records of the hospital. The checklist used for data collection, consist of 26 items which assessed the demographic characteristics of the neonates, the clinical profile of the neonate, clinical management instituted and the outcome of management. A purposive sampling technique was adopted in which records of all neonates who were admitted at neonatal unit of hospital and who satisfy the inclusion criteria were used. Only neonates admitted whose records had more than six items from the demographic and clinical profile were included in the study. Ethical approval was obtained from the Ethical Review Committee of the hospital confidentially and anonymity was maintained. The services of the personnel in-charge of the record section was utilized in sorting out the necessary information based on the checklist. Data collection was done over 6weeks periods and was analyzed using descriptive statistcs in the form of frequencies, percentages and bar charts for demographic data and clinical issues. While inferential statistics, Pearson's Chi square (X^2) was used to establish associations between the place of delivery, mother's education and management outcome. Level of significance was set at 5%

RESULTS

Table 1 show that out of the 775 cases that met the criteria for inclusion in the study. Three hundred and sixtysix were inborn while 409 were outborn. Out of the 366 inborn, majority of the neonates 354(45.7%) were admitted in their early neonatal period (1-7days), while the other 12(1.6%) in their late neonatal period. One hundred and eighty nine 189(24.6%) were males while 177(23.0%) were females. Majority of the neonates, 285(36.8%) were delivered at term, followed by 44(5.7%) post term and 37(4.8%) preterm respectively. Two hundred and forty eight (33.5%) of the neonates have normal weight at birth, while 81(10.95%) have low birth weight and 37(5%) were overweight. Majority of the inborn 181(23.4%) were delivered per vaginal, 145(18.7%) through caesarean section and 40(5.2%) through instrumental delivery. Majority were 271 (34.9%) were discharged, 7(0.9%) referred, 72(9.3%) died and 16(2.1%) discharged against medical advice (DAMA).

Furthermore, out of the 409 outborn, majority of the neonates 395(50.9%) were admitted in their early neonatal period (1-7days), while the other 14(1.8%) in their late neonatal period. 248(32.3%) were males while 155(20.2%) were females. Majority of the out born, 312(40.3%) were delivered at term, followed by 64(8.3%) preterm and 33 (4.3%) post term respectively. 249 (33.7%).of the neonates that had normal weight at birth were 249 (33.7%), while 107(14.5%) have low birth weight and 18(2.4%) were overweight. Majority of the outborn 282(36.4%) were delivered per vaginal, 105(13.6%) through caesarean section and 22(2.8%) through instrumental delivery. Majority were 252 (32.5%) were discharged home 18(2.3%) referred, 127(16.4%) died and 12(1.6%) discharged against medical advice (DAMA).

Table 1 Demographic characteristics of the neonates according to place of delivery (n=775)

Characteristic		Inborn	Outborn
Neonatal age	1-7days	354 (45.67%)	395(50.97%)
	8– 28days	12 (1.55%)	14 (1.81%)
Sex	Male	189(24.58%)	248(32.25%)
	Female	177(23.02%)	155(20.15%)
Gestational Age at Delivery	Preterm	37(4.77%)	64(8.26%)
	Term	285(36.77%)	312(40.26%)
	Post term	44(5.68%)	33(4.26%)
Birth weight	Low birth	81(10.95%)	107(14.46%)
	Normal	248(33.51%)	249(33.65%)
	Macrosomia	37(5.00%)	18(2.43%)
Mode of delivery	Vaginal delivery	181(23.35%)	282(36.39%)
	Caesarean section	145(18.71%)	105(13.55%)
	Instrumental delivery	40(5.16%)	22(2.84%)
Outcome of Management	Discharged	271(34.97%)	252(32.52%)
	Referred	7 (0.90%)	18(2.32%)
	Died	72(9.29%)	127(16.39%)
	*DAMA	16(2.06%)	12(1.55%)

**DAMA-Discharged against medical advice*

Figure 1: Showing place of delivery among out born

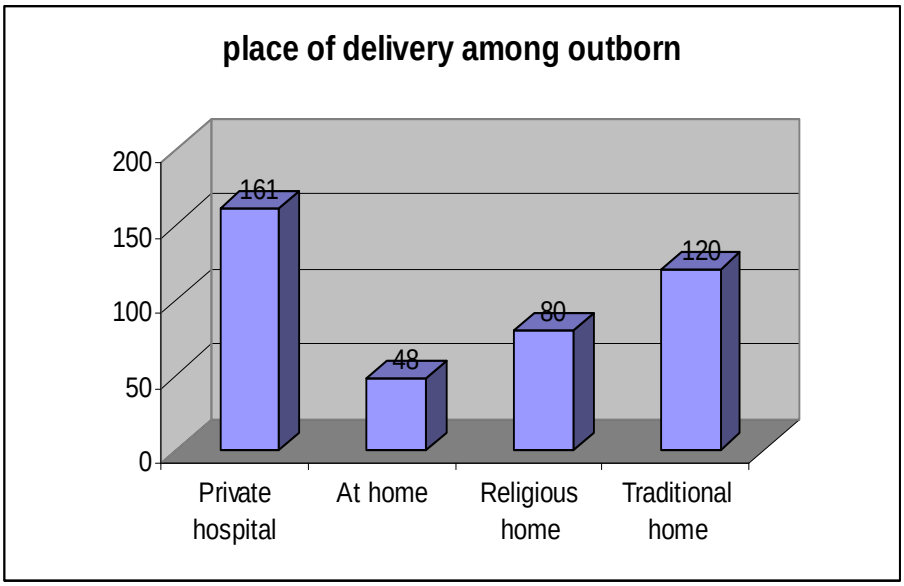

Figure 1 shows frequency of use of different places utilized for delivery by outborn neonates. The most frequently used is private clinics, followed by traditional homes, then

Table 2 shows associations between Place of delivery and neonatal outcomes

Outcome of Management	Place of delivery		Total	Pearson's Chisquare, X^2, and p values	Df	Remark
	Outborn	Inborn				
Discharged Referred	271(34.97%)	252(32.52%)	523			
Died	7 (0.90%)	18(2.32%)	25	X^2 =31.32,	3	Significant
DAMA	72(9.29%	127(16.39%)	199	P – value = 0.001		association
	16(2.06%)	12(1.55%)	28			
Total	366	409	775			

Table 2 revealed that there was significant association between place of delivery and management outcome of neonates under study with p<0.05

Table 3: shows associations between Place of delivery and education of mother

Level of education of mother	Place of delivery		Total	Pearson's Chi square, X^2 and p values	Df	Remark
	Outborn	Inborn				
None	15	5	20			
Primary	83	64	147	X^2 =35.82		
Secondary	212	160	372			Significant Association
Tertiary	56	180	236	P – value = 0.000	3	
Total	366	409	775			

Table 3 revealed that there was significant association between place of delivery and Level of education of mothers of neonates under study with p<0.05

DISCUSSION

It was also observed that neonatal morbidity and mortality rates were higher among out born than inborn. This is not surprising because deliveries from such places are usually carried out either by traditional birth attendance (TBA) or by unskilled persons under unhygienic conditions. Facilities and skilled hands for resuscitation are in most cases not available. This explanation is in line with previous reports by Knippenberg et.al (2005), that skilled attendance and institutional delivery rates are lowest in countries with the highest neonatal mortality rate. Bhutta et.al,(2003) also reported that, more than 50% of neonatal deaths arose following a home birth with no skilled care. Neonatal resuscitation actually forms a cornerstone in immediate newborn care and prompt resuscitation after delivery can prevent many of the neonatal deaths and disabilities (World Health Organization. 2006) but it is often not initiated or the procedures used are inadequate or wrong in such places (private clinics, TBA, at homes, religious home), hence it seems reasonable to say that pregnant women should be educated and encouraged to make use of antenatal clinic throughout period of pregnancy and to deliver their babies in the hospital with adequate resuscitation facilities and skilled health care professional.

Majority of the neonates died in their early neonatal period. This period is a highly vulnerable time for the neonate who is completing many of the physiological adjustments required for extra uterine existence. Almost two- third of infant deaths occur in the first month of life, among these, more than two- thirds die in their first week and among those also, two- thirds die in their first 24 hours. (Lawn, Cousens, & Zupan, 2005) The World Health Organization reported (2006) that most deaths in the neonatal period occur in the first few days after birth and this constitutes approximately 75% of neonatal mortality in all regions of the world. Furthermore W.H.O. stated that early neonatal deaths are mostly due to complications during pregnancy or childbirth, preterm birth and malformations; late neonatal deaths are due to neonatal tetanus and infections acquired either at home or in hospital and can only be reduced through effective pregnancy, childbirth and postnatal care reaching all mothers and their babies (World Health Organization Report. 2006). Hence, prompt management of women with complication during pregnancy or

labor is very essential in reducing neonatal mortality

The study revealed significant association between place of delivery and management outcome of neonates under study. Since the association is positive, it shows that they are moving in the same direction and there is significant association between the two variables. This is in conformity with Owa and Osinaike report that morbidity and mortality were higher in outborns than inborn.

The finding also revealed that there was significant association between place of delivery and Level of education of mothers of neonates under study with $p<0.05$.

This finding corroborates the statement of Caldwell's as cited by Bajracharya (2003) that the educated women are more likely to be proactive mothers, taking initiatives in providing the best care for their children and willing to go against traditional norms to access modern health care facilities for their children, thus increasing their rate of survival. According to Bhutta et.al (2005) the reasons for improved survival of neonates born to more highly educated mothers is not clear, but the association is only partly explained by the economic advantages and access to health care afforded by education.

CONCLUSION

This study was designed retrospectively to determine the predictors of neonatal morbidity and mortality in Olabisi Onabanjo University Teaching Hospital, Ogun State, Nigeria. The study has revealed that majority of the neonates were out born and were admitted in their early neonatal period in which mortality was also higher. The finding also revealed that there was significant association between place of delivery and management outcome of neonates under study as well as significant association between place of delivery and Level of education of mothers of neonates under study with $p<0.05$

Implication of the study for nursing practice

Identifying the predictors of neonatal morbidity and mortality will give direction regarding areas in midwifery practice that need intensified strategies for promoting neonatal health and survival. The result of this study shows that death occurred most among outborn and during early neonatal period, hence the knowledge from this study will help nurses and midwives to provide adequate health education and quality nursing care to pregnant women especially during labour and post natal period, since several proximal determinants of neonatal morbidity and mortality could be averted with health education and quality nursing care.

Recommendations

Based on the findings of this study, it was recommended that pregnant women should be educated and encouraged to make use of antenatal clinic throughout period of pregnancy and to deliver their babies in the hospital with adequate resuscitation facilities and skilled midwives.

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