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RESEARCH ARTICLE

AN EVALUATION OF PRETERM DELIVERIES IN A DEVELOPING COUNTRY

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ABSTRACT

Preterm delivery is the leading cause of perinatal mortality accounting for up to 40-60% of perinatal deaths. These have been attributed to a variety of factors, though in some cases the direct cause is not readily apparent.
Materials: Information required was obtained from folders of preterm babies admitted into special care baby unit in the study center for a period of five years (2005-2010). Results: In this study, there was a significant association between birth weight, uptake of antenatal care and marital status, (likelihood ratio; 0.03, 0.000 and 0.001) respectively. The poor outcomes (Left against Medical Advice and death) were higher among babies of single mothers. Eight out of 12 lama and 16 out of 25 deaths met with statistical significance, p = 0.001. Conclusion: Compulsory female education and early identification of women at risk of preterm delivery will reduce perinatal deaths. Referral to appropriate health centers as well as the use of cheap and cost-effective care would go a long way to reduce these deaths.

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INTRODUCTION

Preterm birth is defined as birth of a live baby between 28 and 36 completed weeks in developing countries and 20 to 36 completed weeks in developed countries because of sophisticated neonatal support. (Waldermar, 2011) Preterm delivery is the leading cause of perinatal mortality and long-term neurological sequelae. (Slattery and Morrison, 2002; Gyetvai *et al*., 1999; Kilpatrick, 2012; ACOG technical bulletin. Preterm labor, 1995) Of the 15million children delivered annually worldwide, about one million deaths occur due to preterm births and its complications. (Blencowe *et al*., 2012) Nigeria ranks third amongst the top ten countries with highest preterm delivery after India and China. (Preterm births, 2013) Some studies have reported that preterm deaths account for 40-60% of perinatal deaths, (Skeman and Rajab, 2003; Njokanma and Olanrewaju, 1995; Etuk *et al*., 2005) though in most the direct cause of these deaths were not always apparent. Some risk factors have been attributed amongst which are pregnancy induced hypertension, antepartum hemorrhage, premature rupture of membranes, low socioeconomic class, maternal febrile illnesses like urinary tract infection and malaria, prim gravid, multiple pregnancy, unmarried women and strenuous jobs. (Ezechi *et al*., 2003; Omole-Ohonsi *et al*., 2012; Oyo-Ita *et al*., 2001; Beborowicz, 2001) Attempts to reduce risk factors to preterm delivery by use of drugs are limited due to poor efficacy and side effects. (Waldermar, 2011; Slattery and Morrison, 2002; Kilpatrick SJ. Management of preterm labor, 2012) These perinatal deaths can therefore be reduced through feasible and cost-effective care such as early identification of women at risk of preterm delivery and administration of steroids, availability of warmth via the use of incubators or kangaroo mother care, frequent breastfeeding, administration of antibiotics for infection and care of the cord with antiseptics. This study therefore intends to identify risk factors associated with preterm delivery in this setting. It is hoped this would assist in the early identification of women at risk of preterm delivery to enable prompt intervention. This is also to provide relevant information to the Government, donor agencies and NGOs to provide the necessary equipment, and human resources to assist in the reduction of perinatal mortality.

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MATERIALS AND METHODS

This is a retrospective study that reviewed the data from 1st Jan 2005 to Dec 31st 2010 in the neonatal intensive care unit of the University of Calabar Teaching Hospital. Hospital Ethical Committee was received after due process. Information sort

from these folders included age on admission, birth weight of the preterm babies, sex, marital status, educational and occupational status of parents, form of antenatal care, parity, and outcome. The SPSS version 18 was used to analyze the data. Results were presented using frequency tables and Chi square. A P-value of less than 0.05 was taken as significant.

RESULTS

Eighty-eight preterm babies were studied. The mean weight and age of the preterm subjects were 1.74kg (SD 0.413). The birth weight, uptake of antenatal care and outcome were significantly associated with marital status, (likelihood ratio; 0.03, 0.000 and 0.001) respectively. Multiple pregnancy was the commonest predisposing factor (57.6%) to preterm delivery though this is not statistically significant.

Table 1. Marital status and factors that influence the outcome of Perinatal deliveries

Characteristics	Marital status		Total (%)	P-value
	Married	single		
Weight category(kg)				
<1.0	0	4	4 (4.5)	likelihood ratio=0.037
1.1-1.5	14	13	27 (30.7)	
1.51-2.0	22	12	34 (38.6)	
2.1-2.49	15	8	23 (26.1)	
Total	51	37	88 (100.0)	
ANC				
Yes	39	13	52 (59.1)	X^2=0.000
No	12	24	36 (40.9)	
Total	51	37	88 (100.0)	
Place of delivery				
Hospital	45	24	69 (78.4)	
TBA	6	12	18 (20.5)	
Church	0	1	1 (0.01)	likelihood ratio=0.025
Outcome				
Discharge	38	13	51 (58.0)	likelihood ratio=0.001
Lama	4	8	12 (13.6)	
Died	9	16	25 (28.4)	
Total	51	37	88 (100.0)	

ANC= antenatal care, TBA=traditional birth attendant

Table 2. Determinants of weight of the babies

Characteristics	Marital status		Total (%)	P-value
	Married	single		
Weight category(kg)				
<1.0	0	4	4 (4.5)	likelihood ratio=0.037
1.1-1.5	14	13	27 (30.7)	
1.51-2.0	22	12	34 (38.6)	
2.1-2.49	15	8	23 (26.1)	
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Total	51	37	88 (100.0)	

ANC= antenatal care, TBA=traditional birth attendant

Table 3. Socio-economic status and mode of health care

Social parameters	Socio-Economic Status		Total		P-value
	Low	Middle	High		
Mode of delivery					
SVD	31	21	6	58	
CS	13	13	4	30	0.663
Place of delivery					
Hospital	30	30	9	69	
TBA	13	4	1	18	0.180
Church	1	0	0	1	
ANC					
Yes	21	24	7	52	
No	23	10	3	36	0.093
Maternal parity					
Para-1	25	15	5	45	
Para-2	7	8	2	17	
Para-3	9	6	3	18	
Para-4	2	2	0	4	0.719
Para-5	1	1	0	2	
Para-6	0	2	0	2	

The poor outcome, LAMA and death were higher among babies of single mothers; 8 out of 12 LAMA and 16 out of 25 deaths. These were statistically significant, p = 0.001.

DISCUSSION

The study showed equal proportion of both sex, male to female ratio of 1:1. This is at par with studies reported among the white population. (Harlow *et al*., 1996; Maconochie and Roman, 1997; Cooperstock and Campbell, 1996) The belief that male fetuses promote onset of preterm delivery may not be tenable in this study. This may be due to the interplay between independent mechanisms that are involved for onset of preterm labor in black male fetuses. Moreover, gender determination is a chance process. More males were delivered via caesarian section though this did not meet statistical significance (p <0.368). Lieberman *et al*. reported similar finding. (Lieberman *et al*., 1997) The reasons for this difference is not clear. However, female fetuses have been known to have higher levels of catecholamine than the male fetuses and therefore better equipped to withstand hypoxic stress with better outcome. (Maconochie and Roman, 1997) Place of delivery and low socioeconomic class did not seem to affect preterm deliveries, p=0.771. This same trend was observed in a similar study conducted in the same center earlier by Etuk *et al*. (2005) The probable explanation for this may have to do with complex mechanisms that predispose to preterm delivery that may not have been sort for in this study. Maternal parity did not significantly influence preterm delivery though over 50% of these deliveries were among the primpara women, p=0.719. (Etuk *et al*., 2005; Lopez and Breart, 2013) This may be because of the belief among multipara women that they already have experience and therefore tend to ignore attending antenatal care. This similar trend has been observed among women attending antenatal care in Benin. (Gharoro and Igbafe, 2000)

The uptake of antenatal care in this study was high 52 (59%) though no valuable association was found. Most of the mothers were of the middle and high social class. However, there was a strong association between marital status and antenatal care attendance, p=0.000. Gharoro *et al*. (2000) in their study to sort for characteristics that influence antenatal care in Benin reported 52.1% were of the middle class and a decreasing attendance for antenatal care with increasing parity. The probable explanation may be because married women are better placed financially with the support from their spouses and therefore can cope with health care demands. More so, women of the high and middle class are more likely to be educated and therefore seek medical care than those of the low social class. Marital status and place of delivery were strongly associated, p=0.025. This maybe so because it was a hospital based study and most probably those who accessed health services were mostly married 78.4%. Furthermore, the literacy level of the unmarried mothers is more likely to be low with a tendency to patronize unorthodox care. Although multiple pregnancy on its own predisposes to preterm delivery, it also contributes significantly to the development of eclampsia. (Onyiriuka and Okolo, 2004; Aferdita *et al*., 2011; Kurdi *et al*., 2004; Pingili *et al*., 2007; Wood *et al*., 2000) The critical management of these two clinical conditions is invariably associated with preterm delivery. This survey found multiple pregnancy and eclampsia as the common predisposing factors to preterm deliveries, 57.6% and 33.3% respectively, p=0.208. There was a favorable association between birth weight and outcome with marital status, p=0.03 and 0.001 respectively. The belief that well-nourished women are at a better chance to have adequate for gestational age babies may be tenable as well as being able to provide for the financial demand needed for neonatal intensive care management. Also, neonatal complications like infections contribute significantly to poor outcome in these babies. (Njokanma and Olanrewaju, 1995; Ezechi *et al*., 2003)

Conclusion

Preterm delivery has remained and continues to be one of the most serious challenges in the care of pregnant women most especially in the developing countries. Compulsory female education, female empowerment and abolition of child marriage could go a long way to reduce preterm deliveries. Early identification of women at risk of preterm delivery and referral to appropriate centers as well as the use of cheap and cost-effective care would go a long way to reduce these deaths.

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