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#### PERINATAL MORTALITY IN A RURAL COMMUNITY

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#### ABSTRACT

**Objective:** To determine the peri-natal mortality rate (PMR), still birth rate (SBR) and early neonatal death rate (ENDR) in Igueben Local Government Area (LGA) of Edo State.

**Design:** A descriptive cross-sectional study

**Setting:** Igueben LGA is a rural governmental unit in mid-western Nigeria.

**Subjects:** All women of child-bearing age, resident in three randomly selected political wards in Igueben LGA were identified.

**Results:** Of the 921 women of child-bearing age recruited, 258 deliveries with three perinatal deaths were recorded, giving a PMR, SBR and ENDR of 11.6/1000TB, 11.6/1000TB and 0/1000LB, respectively. Almost all the mothers studied (99.6%) received skilled obstetric care in delivery.

**Conclusion:** The actual PMR, SBR and ENDR were considerably lower than the National estimated averages of 76/1000TB, 43/1000TB and 35/1000LB, respectively. While this may perhaps be related to the quality of obstetric care, it underscores the importance of community-based studies in the determination of vital statistics which are important in health planning including resource allocation.

#### INTRODUCTION

Early neonatal deaths (END) still contribute as much as 28% of under-five deaths and about 50% of perinatal deaths annually worldwide (1,2). Since reducing under-five mortality is crucial to achieving Millennium Development Goal (MDG)-4, addressing the problem of under-five mortality must include efforts to reduce ENDS. For every stillbirth there is almost always an early neonatal death, because the causes are closely linked (1). Therefore, efforts directed at reducing still birth rate (SBR) could help to reduce early neonatal death rate (ENDR).

The estimated burden of perinatal mortality in Nigeria may not be accurate. This is because stillbirths are usually unaccounted for in the National statistics as they occur largely at home (3). Also, most of the studies on perinatal mortality have been hospital-based and conducted mainly in referral centres. Furthermore, the paucity of information on perinatal deaths is further worsened by the weak vital registration system in the country (3).

Since about 67% of the deliveries take place at home, the babies are more likely to die at home and would thus not be recorded or accounted for in the national statistics (3). Therefore, community-based studies are required to accurately evaluate the perinatal mortality burden. Since the achievement of MDG-4 is hinged on a significant reduction in the number of newborn deaths, especially ENDS, it is important to periodically evaluate perinatal mortality and thus proffer solutions for reducing the rate. The last review of perinatal mortality in Edo State was hospital-based, and carried out over 20 years ago in the state capital Benin City (4). This study was therefore done to bridge the gap in knowledge of perinatal mortality in Nigeria.

#### MATERIALS AND METHODS

The study was conducted in Igueben LGA of Edo State, Nigeria. The LGA has a population of 69,639 (35,141 males and 34,498 females) (5), with the population of women of child bearing age projected at 20,698

at 60% of the female population(6). The people are predominantly of the Ishan tribe and speak Esan language. Igueben LGA was considered the most suitable for this study amongst the five Esan speaking LGAs of Edo State because of its near homogeneity and relatively stable population dynamics. Furthermore, communication with the study subjects was easy as the researcher is fluent in Esan Language, the main language of communication in the LGA. Ethical approval was obtained from the ethics committee of the University of Benin Teaching Hospital, Benin City, Nigeria.

This descriptive and cross-sectional study was carried out between June and August, 2010. The period reviewed was limited to one year, June 2009 to May 2010, in order to allow for effective and adequate recall of information on the last pregnancy / delivery by the mothers. Three wards representing 30% of the ten geopolitical wards in the LGA were selected by simple random sampling. All mothers resident in the randomly selected wards who had live births and stillbirths during the period were recruited into the study. Mothers with foetal losses at gestational ages <28 weeks and mothers delivered in the same wards during the period but were not resident in the LGA or refused to be interviewed were excluded from the study.

Permission was obtained from the husband and/or head of each household. Verbal consent was also obtained from each respondent before the questionnaire was administered. Every house in the selected wards was visited and all the women of child-bearing age who met the inclusion criteria for the study and did not object to participation in the study were recruited. The pre-existing enumeration of houses in each ward (obtained from the office of the LGA) was used to ensure complete survey of all the houses in each selected ward.

Information on age, educational level, marital status, occupation, antenatal care, parity, place of delivery and outcome of last pregnancy were obtained using a questionnaire which was pre-tested in one of the wards not included in the study. Socioeconomic status was determined using the method described by Olusanya *et al.* (7). The questionnaire was

administered on each recruited subject in the language the mother was most comfortable with. Households occupied by civil servants were visited at the end of the day's work. A repeat visit was paid to the houses where either nobody was found or eligible persons were absent to ensure that no suitable study subject was excluded from the study.

Data were entered into SPSS 13.0 (Chicago IL). Analysis was done with the same tool. The perinatal mortality rates are presented as values / 1000.

## RESULTS

Two hundred and fifty-eight (28%) of the 921 women of child-bearing age interviewed had deliveries at  $\geq 28$  weeks gestational age during the period under review. All the deliveries resulted in 258 singleton babies. The data on age of the women were available for 245 (95.0%) of the mothers while 13 (5.0%) did not know their ages (Table I). The mothers were aged between 16 and 45 years with a mean age of  $28.1 \pm 6.4$  years. With age classified at five years intervals, the modal age group was 26-30 years accounting for 72 (27.9%).

In terms of parity, 87 (33.7%) were primiparous, 104 (40.3%) multiparous and 67 (26%) grand-multiparous mothers. Only one (0.45%) of the 258 mothers did not receive antenatal care. Over half 151 (58.5%) were cohabiting while 96 (37.2%) were married. The distribution of the other types of relationships is shown in Table 1. Majority of the study subjects had primary education (56.6%), 32.6% had secondary education and 5.0% of the subjects had tertiary education. Stratification of the subjects in accordance with the family's socio-economic status showed that the majority of subjects 211 (81.8%) were of the low socio-economic classes. The other characteristics of the study population are shown in Table 1. All but one mother had their delivery in orthodox health facilities.

There were 255 live births. All survived their first week of life, giving an ENDR of 0 / 255 or 0 per 1000 live births. There were three stillbirths, giving a SBR of 3 / 258 or 11.6 per 1000 total births. With a total of three perinatal deaths (3 stillbirths) and no END, the PMR was 3 / 258 or 11.6 per 1000 total births.

**Table 1**  
*Socio-demographic characteristics of the study population*

Socio-demographic features	Frequency (n=258)	Percentage
Maternal age (years)		
≤20	33	12.8
21-25	61	23.7
26-30	72	27.9
31-35	39	15.1
36-40	33	12.8
≥41	7	2.7
Not known	13	5.0
Maternal parity		
1	87	33.7
2-4	104	40.3
≥ 5	67	26.0
Maternal booking status		
Booked	257	99.6
Unbooked	1	0.4
Marital status		
Married	96	37.2
Cohabiting	151	58.5
Separated	3	1.2
Widow	1	0.4
Single	7	2.7
Educational status		
No formal education	15	5.8
Primary	146	56.6
Secondary	84	32.6
Tertiary	13	5.0
Socio-economic status		
High	2	0.8
Middle	45	17.4
Low	211	81.8

## DISCUSSION

The actual PMR, SBR and ENDR for Igueben LGA in Edo State as found in this study are low when compared to the estimated averages of 76/1000TB, 43/1000TB and 35/1000LB for PMR, SBR and ENDR, respectively, for Nigeria in 2004.<sup>8</sup> The actual rates are also lower than the range of values from other studies within Nigeria and other developing countries (PMR 43-134/1000TB, SBR 24-87/1000TB

and ENDR 17-65/1000TB)(9-18). The results from the current study are better and may be reflective of the true values in the LGA. The difference between the current study and earlier studies may be due to the improved utilisation of orthodox health care facilities as almost all the mothers in the study delivered in health facilities implying that they had access to skilled obstetric care at delivery. It may also be due to the fact that the rates for Nigeria were projected Figure 1. The low PMR may also be partly because a large

proportion of deliveries (94.6%) took place at term. Previous studies have demonstrated that the best perinatal outcome occurs amongst term babies (19,20).

There was no preterm or post-term perinatal death in this study. This may be due to the fact that almost all the deliveries were undertaken in health facilities where appropriate decisions and referral could be made. However, an earlier study in Benin also did not report any post-term perinatal death (21).

No early neonatal death was found in this study. It is possible that the practice of concealing newborn deaths in Africa may have contributed to this finding (2,22). It is also possible that the low figures may represent the gains of efforts to reduce PNMR.

The remarkably lower rates estimate for Edo State, which is in Southern Nigeria when compared to those of the Northern States such as Sokoto State, may be due to regional variations in mortality rates (14). Still, the present study highlights the importance of community-based studies in the determination of perinatal mortality rates. National estimates could be better computed from these rates rather than from hospital-based studies or country estimates.

The mortality rates in this study are low compared to the national average for Nigeria (1). This is because the national figures are projections from regression analysis (1). Such projections may not be representative of the true situation. This is exemplified by the rates computed in 1993 from a Northern Nigerian community-based study which were also lower than the 2004 Nigerian national perinatal, stillbirth and early neonatal death rates (1,14). Therefore, the results of this study further underscores the importance of community-based studies in the determination of true perinatal mortality rates and other vital statistics.

Also, the more favourable rates in this study may be due to the fact that most of the previous studies in Nigeria were hospital-based and conducted in tertiary health facilities (9-13,4,23-29). The patients in such referral tertiary centers represent disproportionately ill babies and are thus not representative of the general population of babies within the communities. Furthermore, a large proportion of the eligible babies in the community are excluded from such studies as about 67% of all deliveries in Nigeria are said to take place at home. Finally, most of those studies were conducted over ten years ago, since which time health services may have improved in Nigeria.

This study has shown that a high rate of ANC and delivery within health facilities is associated with low perinatal mortality rates. The health system in this LGA should be studied closely to enable its replication in other parts of Nigeria with mortality studies. More importantly this community based evaluation has shown that mortality statistics from low income countries may not be as poor as projected. It is recommended that more community based

studies be carried out to accurately describe the epidemiology of perinatal deaths. This will enable more evidence-based interventions to be instituted.

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