Nigerian Journal of Paediatrics 2004; **31**(1) 14-18

Perinatal Mortality at the Close of the 20th Century in Lagos University Teaching Hospital

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Summary

Ekure EN, Iroha EO, Egri-Okwaji MTC, Ogedengbe OK. Perinatal Mortality at the Close of the 20th Century in Lagos University Teaching Hospital. *Nigerian Journal of Paediatrics* **2004, 31:14.**

Objective: To determine the perinatal mortality rate in Lagos University Teaching Hospital at the close of the 20th century.

Materials and Methods: Routinely collected data from the Departments of Obstetrics & Gynaecology and Paediatrics from January 1996 to December 2000, were analysed. The data included total deliveries, stillbirths and early neonatal deaths.

Results: A total of 6,759 deliveries, including 163 multiple pregnancies, occurred during the period. There were 573 perinatal deaths comprising 471(69.7/1000) stillbirths and 102(16.2/1000) early neonatal deaths. Autopsy was performed on 115 of the 573 deaths resulting in a perinatal autopsy rate of 20.1 percent. The overall perinatal mortality rate was 84.8/1000 while the perinatal mortality rate for singletons was 83/1000. Analysis of the deaths by the Wigglesworth classification showed that 46.6 percent of the deaths were normally formed macerated stillbirths, 38.7 percent were due to asphyxial conditions and 8.9 percent were attributed to conditions associated with immaturity. Lethal congenital malformations accounted for 3.7 percent while other specific conditions were responsible for 2.1 percent of the deaths.

Conclusion: These rates are still very high and strategies to decrease perinatal mortality will need to focus on antenatal and intrapartum obstetric care. All those involved in obstetric and neonatal care require regular education on the need for prompt identification of problems, early referral and prompt intervention.

Key Words: Perinatal mortality, antenatal and intrapartum obstetric care.

Introduction

THE World Health Organization estimates that more than nine million infants die before birth or in the first few weeks of life each year, and that nearly all of these deaths occur in developing countries.[1] In recent times, improvement of child survival has been the focus of the international public health and development community and this has had great success. UNICEF's report on The State of the World's Children indicates that infant and under five mortality rates have declined by varying degrees in most countries in the past three decades.[2] Early neonatal death, a part of perinatal mortality, is a factor in infant mortality. Therefore, if there is no improvement in the perinatal mortality, there is a limit to the extent to which progress can be made in reducing infant mortality. In Lagos, Abudu and Akinkugbe[3] in 1982, reported a perinatal mortality rate of 42.5/1000 among singletons. Conversely, other hospital-based studies in Nigeria have reported rates ranging from 80.9/1000 to 119/1000 in the past three decades.[4-9] These are very high rates when compared with rates in the developed world that are often less than 10/1000.[10]

Perinatal deaths could be due to problems occurring in the antenatal, natal or postnatal period. Furthermore,

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because perinatal mortality is closely related to birth-weight, comparison of perinatal mortality rates between different populations is more meaningful when broken down by birth-weight groups or expressed as standardized perinatal ratios.[11] Classifying perinatal deaths helps to highlight areas that require development of preventive strategies. The present study was therefore conducted to evaluate and classify the perinatal mortality in a teaching hospital at the close of the 20th century with the aim of assessing progress and identifying areas that require priority intervention strategy towards improving child survival.

Materials and Methods

This retrospective study was conducted at the Lagos University Teaching Hospital (LUTH) – a tertiary health institution and referral centre for general hospitals, private hospitals and maternity homes in Lagos. It offers obstetric and neonatology services among other health services. Routinely collected perinatal data from the departments of Obstetrics and Paediatrics between January 1996 and December 2000 were retrospectively reviewed. Data recorded included total deliveries, stillbirths and early neonatal deaths. For each perinatal death, information on maternal age, booking status, parity, gestation, complications of pregnancy and labour was collected. Other data collected were presentation, mode of delivery, sex of baby, birth weight, Apgar scores, neonatal morbidity and age at death.

Stillbirth was defined as the complete expulsion from the mother of a foetus weighing 500grammes or more, which shows no sign of life at, or after birth; early neonatal death was death of a live born infant weighing 500grammes or more at birth who dies during the first week of life, and perinatal mortality rate as the number of stillbirths and early neonatal deaths per 1000 total deliveries.[12] The subjects were those who fulfilled any of the above definitions, while foetal deaths without expulsion in a dead mother were excluded. The perinatal deaths were classified into five groups using the Wigglesworth pathophysiological classification.[11] The groups were normally formed macerated stillbirths, those with lethal congenital malformations, those conditions associated with prematurity, asphyxial conditions and other specific conditions. The asphyxial conditions included all normally formed fresh stillbirths of any birth-weight and all early neonatal deaths in term infants, including birth trauma unless a specific condition was diagnosed during life or at necropsy. The data was analysed using the SPSS 10.0 for Windows statistical software (*SPSS Inc. Chicago, USA).*

Results

There were 6,759 deliveries including 163 multiple deliveries during the five-year period. The perinatal deaths numbered 573 and comprised 471 stillbirths and 102 early neonatal deaths. There was no record of any perinatal death among neonates born in the hospital and admitted into other departments apart from the

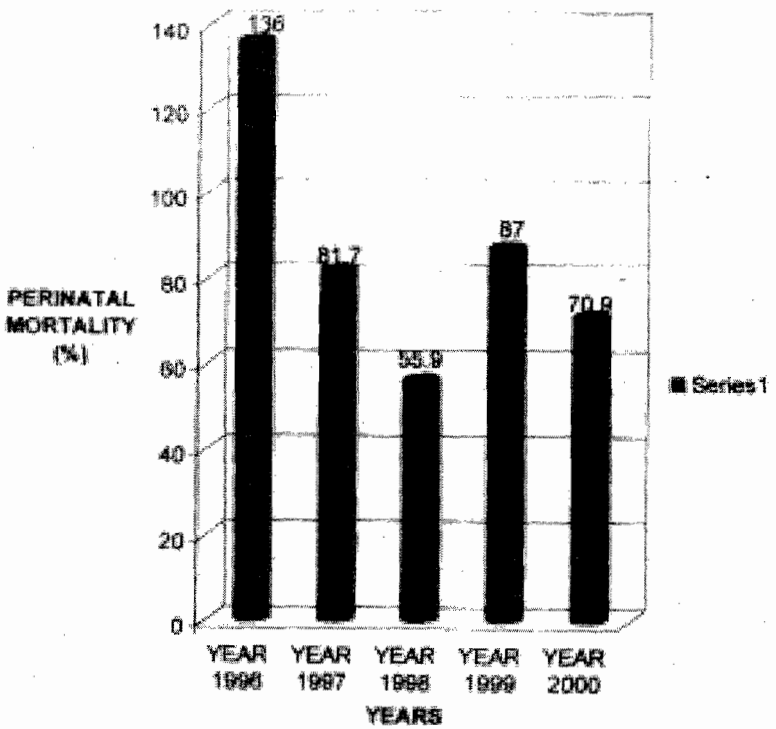

Fig 1: Perinatal Mortality by year

Paediatrics department or among discharged babies. Autopsy was performed on 115 of those that died, resulting in a perinatal autopsy rate of 20.1 percent. The stillbirths consisted of 271 macerated and 200 fresh stillbirths. Table I shows the perinatal mortality according to maternal age, parity, gestation and booking status.

The sex ratio of the perinatal deaths was 1:1, while the stillbirth and early neonatal death rates were 69.7/1000 and 16.2/1000, respectively. The overall perinatal mortality rate was 84.8/1000 (Table II). However, there were 532 perinatal deaths out of the 6430 single births,

Table I

Maternal Characteristics in Perinatal Deaths

Variables	*Frequency*	*Percentage*
Age (yrs)		
15-20	35	6.1
21-30	318	55.5
31-40	192	33.5
>40	5	0.9
Unknown	23	4
Parity		
0-5	534	93.2
6-10	12	2.1
Unknown	27	4.7
Gestation (weeks)		
<37	264	46.1
>37	273	47.6
Unknown	36	6.3
Booking Status		
Booked	205	35.8
Unbooked	349	60.9
Unknown	19	3.3

Table II

Perinatal Mortality Rates

Variables	*Frequency*	**Rates*
Total Deliveries	6,759	-
Stillbirths	471	69.7
Early neonatal deaths	102	15.1
Perinatal mortality	573	84.8

*Rates = number/1000.

resulting in a perinatal mortality rate of 82.7/1000 for singletons. The yearly perinatal mortalities from 1996 to 2000 were 136/1000, 81.7/1000, 55.9/1000, 87/1000 and 70.9/1000 respectively, showing a significant downward trend (P<0.001; Fig.1). Using inclusion criteria of 28 weeks gestation or 1000g in birth weight, there were 518 perinatal deaths, resulting in an overall perinatal mortality rate of 76.6/1000.

Table III shows a progressive decline in the perinatal mortality rate as the birth weight increased. Using the Wigglesworth classification of deaths, analysis showed that 46.6 percent of the deaths involved normally formed macerated stillbirths, 38.7 percent were due to asphyxial conditions and 8.9 percent were attributed to conditions associated with immaturity. All fresh stillbirths and full term babies with a diagnosis of birth asphyxia were classified under asphyxial conditions. Lethal congenital malformations accounted for 3.7 percent while other specific conditions were responsible for 2.1 percent of the deaths. (Table IV). The lethal congenital malformations occurred in four macerated stillbirths, six fresh stillbirths and eleven early neonatal deaths. The common lethal congenital malformations were anencephaly, hydrocephalus and complex congenital heart diseases. The 12 cases with

Table 111

Birth-weight Specific Perinatal Mortality Rates

Weights (grammes)	*No. of Births*	*Stillbirths*	*Early Neonatal Deaths*	**Perinatal Mortality Rate*
≤1000	102	48	18	647.1
1001-1500	161	45	22	416.1
1501-2000	241	46	19	269.7
2001-2500	466	80	4	180.3
>2500	5024	117	155	54.1
Unknown	36	15	4	52.8

*Rate= number/1000

Table IV

Classification of the Perinatal Deaths using Wigglesworth's Pathophysiological Classification

Birth weight (grammes)	*Normally formed Macerated Stillbirths*	*Lethal Congenital Malformations*	*Conditions associated with*	*Asphyxial Conditions Conditions Immaturity*	*Other Specific*	*Total*
d"1000	31	1	16	16	2	66
1001-1500	27	3	16	18	3	67
1501-2000	23	2	14	22	4	65
2001-2500	48	1	3	31	1	84
>2500	131	14	-	125	2	272
*Unknown	7	-	2	10	-	19
Total	267(46.6%)	21(3.7%)	51(8.9%)	222(38.7%)	12(2.1%)	573(100%)

*Modification to Wigglesworth table made to include cases whose birth-weights were not recorded.

other specific conditions as shown in Table IV, had septicaemia.

Discussion

This review reveals a high perinatal mortality at 84.8/1000 using the WHO recommended criteria.[13] However, using inclusion criteria of 28 weeks gestation or 1000g in birth weight, an overall perinatal mortality rate of 76.6/1000 was obtained. About two decades ago, Abudu and Akinkugbe[3] had reported a perinatal mortality rate of 42.5/1000 among singletons between 1973 and 1977 in this institution. In our study however, the perinatal mortality rate among singletons was 82.7/1000; a near 100 percent increase over the figures reported by Abudu and Akinkugbe. Despite the reduction in the number of deliveries over a similar time interval of five years, from 13,857 to 6,759, the perinatal mortality had increased. This increase in mortality could either be an indication of deteriorating perinatal services at LUTH or delayed presentation for such services by patients. Indeed, most reviews in Nigeria[5-9] during the past three decades have reported figures ranging from 80 to 119/1000. With such high figures at the close of the 20th century, it becomes obvious that there is a decline in perinatal health in Nigeria. The reasons for the decrease in the number of deliveries in this institution include increased cost of services, availability of other hospitals which offer maternity services, and incessant industrial action by different categories of hospital staff resulting in irregularity in services and waning public confidence. These reasons make referral to this hospital a last resort following failure of other intervention measures. This may account for the increased mortality rate despite the decline in the number of deliveries.

Low birth weight contributes significantly to perinatal mortality. The chance of survival for a baby increases as the birth weight increases; the lowest mortality in this series, occurred in the group with birthweights between 3500g and 4000g. Although the perinatal mortality rate in this study improved with increasing weight, the rate of 54.1/1000 for babies who weighed more than 2500g is still high and indicates that other factors are involved. Also, while 48.3 percent of the macerated stillbirths were babies less than 2500g, 49.1 percent of them weighed more than 2500g. Similarly, 56.3 percent of the babies with asphyxiated conditions weighed more than 2500g. Furthermore, included in the 39.1 percent that weighed 2500g or less were full term babies. This further indicates that other factors in perinatal mortality are equally important. A good proportion (46.6 percent) of the perinatal deaths involved normally formed macerated stillbirths. Macerated stillbirths are related to antenatal care and background maternal factors[11] as opposed to fresh stillbirths that suggest death close to the time of delivery and often due to asphyxia. In this study, asphyxial conditions, which included all fresh stillbirths, contributed 38.7 percent of the perinatal deaths.

Foetal deaths are said to marginally exceed neonatal deaths in their contribution to perinatal mortality leaving the obstetrician with the central role in reducing perinatal morbidity and mortality.[12] The neonatal deaths caused by immaturity, a reflection of paediatric care in

this study, was 8.9 percent. The stillbirth rate at 69.7/1000 in this study greatly exceeds the early neonatal death rate of 16.2/1000. This shows that strategies to decrease perinatal mortality need to focus on antenatal and intrapartum obstetric care. This is necessary if child survival in Nigeria must improve further. It is therefore recommended that there should be a regular education of traditional birth attendants and community health workers in the management of pregnancy and labour and more importantly, prompt referral of cases prior to the onset of labour. There should also be regular education of health workers in referral centres on antenatal and intrapartum evaluation for early identification of complications and prompt intervention. Obstetricians and paediatricians should work together to establish dialogue with the government on research findings and solutions to identified problems. Further controlled studies are needed to identify current factors that affect perinatal mortality in this institution.

Acknowledgements

We thank Dr FEA Lesi for his assistance in data analysis. We are also grateful to Dr Whyte, Dr David and the house officers in the neonatal unit for assistance in data collection.

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