

ORIGINAL ARTICLE

Audit of Perinatal Mortality at Jinnah Postgraduate Medical Centre Karachi

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ABSTRACT:

Objective: To determine the perinatal mortality rate (PNMR) and its causes.

Materials and Methods: An audit of all births was conducted from January 2010 - December 2010 in the department of Obstetrics and Gynecology Unit 1 of JPMC, Karachi. All still births from 28 weeks of pregnancy and neonatal deaths within first seven days of life in the hospital either in the obstetric ward or in the neonatal nursery were recorded. Aberdeen (Obstetric) classification of perinatal deaths was applied in the audit for classification of perinatal causes.

Results: From 1st January to 31st December 2010, there were 7537 deliveries and 453 perinatal deaths. Four hundred and seven babies were still born while 46 died within 7 days of birth. The perinatal mortality rate was 60.1/1000 total births and still birth rate was 54.0/1000 total births. The leading cause of perinatal deaths was antepartum hemorrhage 140(30.9%). This included abruption of placenta 97 (21.4%) and placenta previa 43 (9.4%). The next common cause was mechanical accounted for 95 (21.0%). Hypertensive disorder of mother was responsible for 94 (20.8%) of perinatal deaths. Congenital malformation caused deaths in 39 (8.6%) cases. Low birth weight was identified in 37(8.1%) maternal medical disorder as jaundice, anaemia and diabetes were responsible for 17 (3.7%) and neonatal infection such as respiratory disorders and septicemia caused deaths in 3 (0.6%) of cases.

Conclusion: Perinatal Mortality Rate in 2010 at JPMC was 60.1/1000 total births with leading cause of antepartum hemorrhage.

Keywords: Perinatal mortality, Stillbirth, Neonatal death, Audit, Tertiary care hospital

INTRODUCTION:

Perinatal mortality is a sensitive indicator of the quality of service provided to pregnant woman and their newborn. Perinatal mortality audit is an institutional help to find out the status of quality of services and to determine the important causes of perinatal deaths. It also enables to take measures for reducing and combating it. World Health Organization's (WHO) I.C.D-10 criteria for perinatal mortality include all still births from 22 weeks of gestation (or birth weight of >500gms) to neonatal deaths within seven days after birth.¹ Before October, 1992, all fetal deaths were registered as still births if they were delivered after 28 weeks of gestation; afterwards, gestational age for still births in United Kingdom was lowered to 24 gestational weeks as a result of change in legislation.² For the rural population of developing countries like Pakistan, perinatal deaths are defined as fetal deaths after 28 weeks gestation or more than 1000gms and early neonatal deaths with in the first week of life.

According to WHO, the number of perinatal deaths worldwide is greater than 7.6 million, with 98% of these

deaths occurring in developing countries³. While developed countries have seen dramatic decline in perinatal mortality because of investments in reproductive health and socio-economic conditions, corresponding progress in under-resourced countries has been slow. Because many births take place in domiciliary settings and are poorly reported, especially stillbirths,⁴ reliable reports on perinatal mortality are lacking. In many parts of Africa and Asia PNMR is as high as 75/1000 and 36-74/1000 total births respectively.⁵ While some estimates of perinatal mortality from community settings are available⁶, there are no country-specific estimates of perinatal mortality for Pakistan. A demographic survey of eight Squatters settlements in Karachi indicated a perinatal mortality rate of 54/1000 births.⁷ Similarly a large prospective study of village and peri-urban slum based population around Lahore revealed a perinatal mortality rate of 67/1000 total birth with still birth rate of 44%⁸.

Most of the methodologically sound available information on perinatal mortality in Pakistan is generated from hospital based studies⁹⁻¹⁰. A multicentre survey of hospital based studies by the Society of Obstetrician and Gynaecologist of Pakistan (SOGP) showed that overall PNMR in 1993 was 92/1000 total births with the majority of deaths (72%) were stillbirths¹¹.

Three previous studies of perinatal mortality rate at JPMC from 1965-67¹² 1989¹⁰ and 2000-2001¹³ have showed a perinatal mortality rate of 92, 101.8 and 60.1/1000 total births, respectively. Jinnah Postgraduate Medical Centre being the most busy and the premier referral hospital of the city, has 135 beds in the Obstetrics and Gynaecology Department with the annual admissions exceeding 12000 and approximately 7500 to 8000 deliveries taking place every year. Booked cases are only 30% and majority are referred cases, with some patients traveling over distances of 100 to 500km from province of Baluchistan and

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periphery of Sindh.

This retrospective study was undertaken to determine the perinatal mortality rate (PNMR) and its causes in the year 2010 at JPMC Karachi.

SUBJECTS AND METHODS:

This audit was conducted at JPMC from 1st January to 31st December, 2010. A standardized proforma and case definitions for data collection was developed. The criteria for booked status were a minimum of three antenatal visits in index pregnancy. The maternal data included age, parity, period of gestation, complications in pregnancy and mode of delivery. Infant data collected included weight, reported gestation age, sex, Apgar score at birth, age and the cause of death. Aberdeen (Obstetric) classification of perinatal deaths was applied in the survey for classification of perinatal causes, as it is more pertinent in the cause categorization, which is clinical and based on obstetrics risk factors. The causal explanation for three large groups of Wiggles worth and NICE classification namely intrauterine death, asphyxia and immaturity are difficult to be ascertained due to limitation in the diagnostic facilities of stillbirths and postmortem being declined in all cases due to religious and ethical reasons. Thus making Aberdeen classification, which is conceptually similarly to NICE classification, 14 as the most appropriate for resource-poor countries in perinatal studies.

RESULTS:

During one year period 1st January to 31st December 2010, there were 7537 deliveries and 453 perinatal deaths. Four hundred and Seven (407) were still born and 46 died within 7 days of birth. (Table1) summaries the pertinent information pertaining to these births. 118 (26.0%) deaths occurred in booked patients and 335 (74.0%) in non booked patients. The mean maternal age was 31.4 years. 111 (24.5%) perinatal deaths occurred in primigravidae and 186 (41.5%) in grand multipara. The majority of perinatal deaths were in preterm infants 338 (74.6%), and 115 (25.4%) were of 37 weeks gestation or more. The frequency of abnormal delivery was caesarean sections had to be performed on foetuses already dead, because of obstructed and prolong labour, placenta previa, and ruptured uterus. The overall perinatal mortality rate was 60.1/1000 total births and still birth rate was 54.0/1000 total birth. Causes of perinatal deaths according to Aberdeen classification are shown in (Table 2).

The leading cause of perinatal death was antepartum hemorrhage 140(30.9%). This included abruption placentae 97 (21.4%) and placenta previa 43 (9.4%). The next common cause was mechanical accounted for 95 (21.0%). Hypertensive disorder of mother was responsible for 94 (20.81%) of perinatal deaths. Congenital malformation caused deaths in 39 (8.6%). Low birth weight was identified in 37(8.1%) maternal medical disorder as jaundice, anaemia and diabetes were responsible for 17 (3.7%) and neonatal infection, respiratory disorders and septicemia caused deaths in 3 (0.6%) cases.

Table 1
N=7537

Booking Status	SB	NNDs	Total	%
Booked	109	9	118	26.0
Nonbooked	298	37	335	74.0
Maternal age				
15 – 20 years	38	8	46	10.25
21 – 30 years	185	18	203	44.81
31 – 40 years	153	12	165	36.42
> 40 years	31	8	39	8.6
Parity				
0 + 0	98	13	111	24.5
1 – 4	144	12	156	34.4
5 & above	165	21	186	41.1
Gestational Age				
28 – 32 weeks	206	8	214	47.21
33 – 36 weeks	103	21	124	27.47
> 37 weeks	98	17	115	25.48
Total	407	46	453	100.00

Table: 2
The Aberdeen Classification of Perinatal Deaths

Causes of death	SB 407	NNDs 46	Total 453	%
Congenital anomalies	38	1	39	8.6
Hydrocephalus	13		13	2.86
Anencephaly	15	-	15	3.31
Meningomyelocele with Spina bifida	3	1	4	0.88
Spina bifida with cleft palate	3	-	3	0.66
Omphalocele	2	-	2	0.44
Multiple (Talipes, Cleft palate etc.)	2	-	2	0.44
Hypertensive diseases	87	7	94	20.8
PIH	41	4	45	9.93
Eclampsia	46	3	49	10.8
APH	132	8	140	30.9
Abruptio placentae	94	3	97	21.4
Placenta previa	38	5	43	9.49
Mechanical	85	10	95	21.0
Obstructed and prolonged labour	28	5	33	7.28
Cord prolapsed	5	-	5	1.10
Ruptured uterus	20	-	20	4.41
Transverse lie	15	-	15	3.31
Breech	10	3	13	2.86
Brow Presentation	5	-	5	1.10
Forceps	2	2	4	0.88
Maternal infections and diseases	12	5	17	3.75
Heart disease	-	-	-	-
Jaundice	4	1	5	1.10
Anaemia	1	-	1	0.22
Diabetes	7	4	11	2.42
Isoimmunization	-	-	-	-
Neonatal infections	-	3	3	0.66
RDS	-	2	2	0.44
Septicemia	-	1	1	0.22
Unexplained	53	12	65	14.4
Birth weight <2.5kg	30	7	37	8.16
Birth weight >2.5kg	23	5	28	6.18
Total	407	46	453	100.00

DISCUSSION:

In this audit diversity in population as ethnicity, socio-economic status and education level of mothers were the confounding variables. Because of limited access and affordability to Neonatal Intensive Care Unit (N.I.C.U), the viability limit for perinatal period is still considered as 28 weeks of gestation, in Pakistan. Loss of follow-up due to early discharge of apparently healthy neonate prior to completion of first postnatal week was also a rate-limiting factor, as these neonates could have died at home and not reported to us.

In our audit, perinatal mortality rate is similar to that of other under developed countries¹⁵. These figures are not strictly comparable with population-based data from England and Wales or Denmark and Sweden¹⁶ but are

indicative of large public sector hospitals in developing countries.

Low socio-economic status, poverty, malnutrition and lack of antenatal care and a large burden of referred cases accounts for increased perinatal mortality rate.¹⁴ The high perinatal mortality rate shown in our set up is a reflection of inadequacy and inaccessibility of maternity services of our country and the poor socio-economic status and cultural pattern of the population.

With regard to parity of the mothers it has been observed that perinatal mortality has been higher among the first born and after the 5th child, as grandmultiparity is an established obstetrical and medical risk factor for both mother and foetus.¹⁷ This was also noted in a previous study.¹⁴ Period of gestation is an important factor for

survival of infants as figured out in a study. where largest number of deaths were noted in infants born before 37 weeks of gestation¹⁸ similar to another study.¹⁵ In our study abruption placentae was the commonest cause of still births and more than 50% of these babies weighed 2.5Kg and above. It is an important cause of perinatal mortality and morbidity in the developing countries and even in USA where 15% of deaths occurred due to abruption placentae^{19,20,21}. In the low socio-economic group of patients maternal malnutrition resulting under perfusion of the placental site is said to increase the risk of abruption.^{22,23}

In the present study mechanical causes like difficult labour, obstructed labour, ruptured uterus and cord accidents were identified. These deaths are indicative of the lack or in adequacy of antenatal and intra-natal care. In this study congenital malformation were seen in 39 (8.6%) of deaths. Though all congenital malformations were obviously not incompatible with life but these malformations were not diagnosed as no autopsy was allowed and carried out. Congenital malformation has become important cause of death in the developed world as other causes are eliminated and it is now responsible for more than 20% of deaths in contrast to our study^{24,25} What can and should be done? Improving primary and secondary health care facilities, availability of trained birth attendants and or lady health visitors to conduct safe deliveries at home can surely be helpful in changing the present day scenario. The problem of emergencies can also be reduced if the private maternity homes have had adequate arrangements for emergency resuscitative measures, such as I/V infusion, blood transfusion and skilled obstetrician. This would lower the frequent necessity of rushing the patient to the hospital at the last minutes which further tends to increase the perinatal mortality. In order to reduce perinatal mortality what requires an overall improvement in the socio-economic status of our population with better nourishment, education change in cultural pattern, health awareness and availability of good maternal and neonatal services.

CONCLUSION:

Perinatal Mortality Rate in 2010 at JPMC was 60.1/1000 total births. The leading cause was antepartum hemorrhage with abruption of placenta being first followed by placenta previa.

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