Original Article
Audit of Neonatal Outcome in Tertiary Care Hospital.

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Abstract

Background: Every year, 2.7 million stillbirths occur worldwide, mostly in developing countries. The United Nations Sustainable Development Goals (SDGs) include reducing childhood mortality under five years of age. Perinatal death audit is an intervention to reduce preventable neonatal mortality. The aim of this study was to determine the Perinatal Mortality Rate (PMR) and the factors responsible for perinatal deaths at a Tertiary Care Hospital in Karachi-Pakistan.

Methodology: This was a prospective study of all the stillbirths and early neonatal deaths in Abbasi Shaheed Hospital Karachi, Gynecology Unit I. Details of each perinatal death were filled in the standard form. We used Aberdeen Obstetric classification to classify causes of perinatal deaths.

Results: There were 1627 deliveries and 43 perinatal deaths during the study period. Our study's perinatal mortality rate was 27.14/1000 births, and the stillbirth rate was 13.25/1000 births. Antepartum hemorrhage (APH), pregnancy-induced hypertension (PIH) and anemia were the common causes of perinatal deaths.

Conclusion: Antepartum hemorrhage, pregnancy-induced hypertension and anemia are the leading causes of perinatal deaths. Most of these complications can be reduced by educating women and providing effective antenatal care.

Keywords

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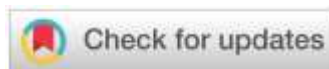
Introduction

Perinatal mortality is the death of a fetus between 28 weeks of gestation and the first week of life after birth. About 2.7 million stillbirths were estimated globally, and more than 98% of these occur in low and middle socioeconomic income groups[1]. Perinatal mortality is an essential indicator for evaluating the standard of health care provided to pregnant women and their newborns. Depending on access to and quality of obstetric care, the prevalence of antenatal risk factors, the proportion of stillbirth may vary from country to country.

Pakistan accounts for 7% of global neonatal mortality, and the reported perinatal mortality rate is 57-81/ 1000 birth[2-5]. Perinatal mortality declined from 31/1000 live births to 18/1000 in developed countries due to advanced health care facilities[6]. The majority of studies conducted in Pakistan providing information regarding perinatal mortality are hospital-based studies[7,8]. Few studies are available from public sector institutions regarding trends and risk factors for perinatal mortality[9]. The major contributor to neonatal death included lack of adequate obstetric care, maternal complications including antepartum and intrapartum period, prematurity, low birth weight, birth asphyxia, and infections throughout the world[10].

Neonatal mortality and neonatal morbidity are still high in developing countries due to neglected maternal health, illiteracy, poor socioeconomic status, lack of access to obstetric care and inadequate care facilities, lack of family planning[11,12]. Data regarding perinatal deaths in our country is very scarce. The aim of our study is to determine the perinatal mortality rate and factors responsible for perinatal deaths.

Methodology

This prospective cross-sectional study was conducted at Abbasi Shaheed hospital, having a capacity of 44 beds in each gynae unit and conducts around 4500-5000 deliveries per year. Written informed consent was obtained from all women coming for delivery with perinatal death between January to December 2018. The study was carried out following the declaration of Helsinki.

A total of 1627 booked and non-booked cases were included in the study having perinatal deaths after 28 weeks of gestational age weighing 1000 mg or more and the first week after birth. Twelve all birth before 28 weeks were excluded. A standardized performa for data collection was developed. Data including maternal age, parity gestational age, complications in present pregnancy, labour, mode of delivery, fetal Apgar score, weight, sex of baby and causes of fetal death were recorded. We used Aberdeen (Obstetric) classification to classify causes of perinatal death, which is based on obstetrics risk factors. Thus Aberdeen classification, like NICE classification, is more relevant for a third world country, like Pakistan[3].

Statistical analysis was done on SPSS version 20.0. Frequencies and proportions were calculated with 95% CI for descriptive analysis, including demographic data and cause of neonatal death. A Chi-square test was used to determine the association of baseline demographic characteristics with neonatal variables, and a p-value <0.05 was considered statistically significant.

Results

Total deliveries conducted during the study period from 1st Jan to 31st Dec 2018 were 1627 deliveries. Total live births were 1584, 48.8% were stillborn, and 51.2% died within seven days of birth (Table 1).

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Table 1: Distribution of deliveries in perinatal mortality in one year period

	Total no. of Neonatal birth	Percentage	95% CI
Total birth	1627		
Total Live birth	1584		
Stillbirths	21	48.84%	34.62-63.25
Early neonatal death	22	51.16%	36.75-65.38
Stillbirth rate	13.25/1000 Live Births	01.33%	0.78-02.24
Early neonatal death rates	13.25/1000 Live Births	01.39%	0.83-02.32
Perinatal mortality rates	27.14/1000 Live Births	02.71%	01.87-03.92

Out of these, seven stillbirths and 14 neonatal deaths occurred in booked cases. A total of 14 stillbirths and eight neonatal deaths occurred in the non-booked cases. Mean maternal age was 31±5.57 years, 16(37.2%) deaths occurred in primigravida and 12(27.9%) in grand multipara. Around 11.6% of cesarean sections had to be performed for obstructed labour, placenta previa, ruptured uterus.

Table 2: Demographic characteristics

Characteristics	Stillbirths	Neonatal death	Total Neonatal death	95% CI	p-value
Booked	07(16.27)	14(32.55)	21(48.84)	34.62-63.25	0.047
Non booked	14(32.55)	08(18.60)	22(51.16)	36.75-65.38	
Parity					
Primigravida	6(13.95)	10(23.26)	16(37.21)	24.38-52.14	0.113
G1-G4	7(16.27)	8(18.60)	15(34.88)	22.42-49.83	
More than G4	8(18.60)	4(09.30)	12(27.91)	16.75-42.69	
Age years					
20-25	0511.62)	08(18.60)	13(30.23)	18.60-45.11	0.549
25-30	06(13.95)	09(20.93)	15(34.88)	22.42-49.83	
More than 30	10(23.26)	05(11.62)	15(34.88)	22.4-49.83	
Gestational age					
28-32	08(18.60)	09(20.93)	17(39.53)	26.37-54.42	0.413
33-36	07(16.27)	03(06.97)	10(23.26)	13.15-37.74	
>36	06(13.95)	10(23.26)	16(37.21)	24.38-52.14	
Birth Weight (gm)					
1000-1500	05(11.62)	04(09.30)	09(20.93)	11.42-35.21	0.001
1500-2000	03(6.97)	05(11.62)	08(18.60)	09.74-32.62	
2000-2500	04(09.30)	05(11.62)	09(20.93)	11.42-35.21	
2500-3000	08(18.60)	05(11.62)	13(30.23)	18.60-45.11	
>3000	00(00)	03(06.97)	04(09.30)	03.68-21.60	
Gender					
Male	11(25.58)	13(30.23)	24(55.81)	41.11-69.57	0.381
Female	10(23.26)	09(20.93)	19(44.19)	30.43-58.89	

The total perinatal mortality rate was 27.14/1000, and the stillbirth rate 13.25/1000 births. The causes of perinatal deaths are shown (Table 3). The common causes were Antepartum hemorrhage, Pregnancy Induced hypertension, and anemia.

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Table 3: Causes of Death according to Aberdeen classification

Causes of Death		n(%)	95% CI
Pregnancy Induced Hypertension		07(16.28)	08.12-29.97
Preeclampsia & Eclampsia		-	
Antepartum Hemorrhage	Placental Abruption	16(37.21)	24.38-52.14
	Placenta Previa	02(4.65)	01.28-15.46
Mechanical	Obstructed Labor	01(2.33)	0.41-12.06
	Prolapse of Cord	-	
	Ruptured Uterus	02(4.65)	01.28-15.46
	Breech	-	
	Forceps	-	
Maternal Medical Disorder	Heart Diseases	-	
	Jaundice	-	
	Anemia	04(9.30)	03.68-21.60
	Diabetes	02(4.65)	01.28-15.46
Neonatal Infections	Respiratory Distress Syndrome	04(9.30)	03.68-21.60
	Congenital Pneumonia	-	
	Septicemia	04(9.30)	03.68-21.60
Congenital Anomalies		01(2.33)	0.41-12.06

Discussion

The neonatal period carries the highest risk of death in human life; in the association, the number of deaths has increased. In our study, PMR was 27.14/1000 births, which might seem less because our study was confined to a single unit of Abbasi Shaheed Hospital. If statistics from the other two units were also included, PMR would be almost comparable to other studies conducted at a national institution like Jinnah Post Graduate Medical Centre Karachi 97.2/1000, Bolan Medical College Complex Quetta 113/1000, Sheikh Zayed women Hospital Lahore 299/1000 births, LUMHS-100.7/1000 births[3,13]. This was the first study conducted in Abbasi Shaheed Hospital. Hence, we were unable to evaulate that whether there was improvement or deterioration in the perinatal mortality rate. The perinatal mortality rate has been rising in our country, which is due to low socioeconomic condition, deficiency of adequate nutrition and care, which is actually reflecting the inadequacy and in the accessibility of maternity services, including family planning.

It was observed that perinatal mortality was high among primigravida and grand multiparous women, which is an important obstetrical feto-maternal risk factor similar to other[3,13]. The mortality found higher among the male gender, similar to other studies[14]. The most frequent cause of perinatal deaths occurs in preterm babies 27(62.8%), while 16(37.2%) at 37 weeks gestation or more similar to others. Birth weight below 2.5 kg was found in 26(60.5%) babies in our study. Low birth weight is an important cause of death, as observed in other studies[3,15]. The factors responsible for these can be identified during the antenatal period; most of these can present with conditions that may be associated with low birth weight. The frequency of delivery by cesarean sections was 53.3%, and a high rate of early neonatal mortality was observed in our study, i.e. 34.88%; as UN recommends cesarean section rate of 5-15% to optimally minimize maternal and neonatal mortality[16,17]. So regular audit of the rate of the cesarean section will help improve the rate of neonatal mortality. Placental Abruption is a major cause of stillbirth in our study. Abruption is a leading cause of prenatal mortality in developed as well as developing countries. Maternal Malnutrition leads to the underpopulation of the placental site increasing the risk in poor socioeconomic women.

Antenatal care during pregnancy by a skilled medical provider is recommended by WHO and is shown to be associated with improved neonatal mortality and morbidity. One of the United National Millennium Development Goal aspires to reduce the under 5 childhood mortality to 30 per 1000 live births. In order to achieve this, maternal education, improvement in socioeconomic status, accessible health care facilities must be considered keenly[18]. APH is a major cause of perinatal morbidity and mortality (37.12%) in our study; similar findings were noted in other studies[3,10,17]. Though there are no strategies at present to prevent these conditions, the severity of its effect and mortality can be reduced by effective antenatal care, intrapartum, and good neonatal care.

The second most frequent cause of high perinatal mortality in our study was pregnancy-induced hypertension (16.28%), similar to other study[5]. Pregnancy-induced hypertension causing perinatal deaths is preventable if detected earlier and treated properly. Simple measures like high doses of calcium supplement during pregnancy can reduce the risk for preeclampsia, early recognition of raised blood pressure and its treatment to reduce the worsening situations like intrauterine growth restriction and intrauterine fetal death and preterm delivery. Effective antenatal care with early booking helps in the early recognition of women at risk, and management at the proper time can reduce perinatal mortality. The perinatal mortality rate in the present study was 2.71% because the delivery rate was less as we had taken the data from a single unit of the gynae department, which is our major limitation.

Conclusion

APH, PIH and anemia were the leading causes of perinatal mortality. Most of these complications can be reduced by educating pregnant women and providing effective antenatal care. Strengthening the health system, including a proper referral system and ongoing clinical audits, could reduce the rate of perinatal mortality in tertiary care hospitals.

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