

Trends in Perinatal Mortality in Tribhuvan University Teaching Hospital: 13 Years Review

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Abstract

Introduction: The perinatal mortality rate (PMR) in Nepal is still very high. In major hospitals of Nepal, it is still ranging from 20-30 per thousand births. This study was carried out with the objective to review PMR and classifying it according to Wigglesworth classification to identify the causes of perinatal deaths at Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal over the past 13 years and assess need for improvement in care. **Material and Methods:** It was a retrospective study carried out in TUTH. Data of all stillbirths from 28 weeks of pregnancy and neonatal deaths within first seven days of life in the hospital was taken from monthly perinatal audit and annual mortality review. All the perinatal deaths were then classified according to Wigglesworth classification. **Results:** Over a 13 year period, there were total 42,746 births and 921 perinatal deaths giving a perinatal mortality of 21.5 per thousand births. Over this period PMR has decreased from 31 to 18 per thousand births. Still births contributed almost 50% of the perinatal deaths; deaths related to prematurity show an increasing trend and have increased by almost 70% in past 5 years. Deaths due to perinatal asphyxia were static. **Conclusion:** PMR over the years has shown declining trend at TUTH. There is need to improve antenatal, obstetric as well as intrapartum services to further reduce the still birth as well as deaths due to prematurity and perinatal asphyxia.

Key words: Perinatal mortality, Wigglesworth

Introduction

Worldwide, there are over 6.3 million perinatal deaths a year, almost all of which occur in developing countries, and 27% of them in the least developed countries alone¹. The perinatal death indicates the status of maternal and child health, the conditions of obstetric care and the level of economic development of a community². It also reflects both the characteristics of reproductive health and the quality of antenatal care, delivery, and newborn care³. The cause and determinants of perinatal death vary in different regions of world. Perinatal deaths due to obstructed labor and malpresentation are common where obstetric care is lacking⁴. In developing countries, it is estimated that asphyxia during labor and delivery leads to approximately seven deaths per thousand births,

whereas in developed countries it is less than one per 1,000 births¹ and the main causes of death in developed countries are extreme preterm births and congenital malformations^{5,6}.

As for stillbirth, it accounts for over half of all perinatal deaths. One third of stillbirths takes place during delivery, and is largely avoidable. Intrapartum deaths (i.e. those occurring during delivery) are closely linked to place of, and care at, delivery¹. In Nepal, four out of five births (81 percent) take place at home and less than one-fifth (19 percent) of births take place with the assistance of skilled birth attendant (doctor, nurse, or midwife). The demographic survey has shown that there is slight decline in perinatal mortality from 47 to 45 per 1000 birth over a period of 5 years⁷ and during that period, in major hospitals in Nepal, PMR ranged from 20–30 per thousand births^{8,9,10}.

Thus, this study was carried out in TUTH to see the trend of perinatal mortality including its causes.

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Material and Methods

It was a retrospective study. Analysis of the perinatal deaths in last 13 years was reviewed. Data was collected from monthly perinatal audit and annual mortality reviews from the year 2053 BS till 2067 BS. Data for two years (2058 and 2062) could not be retrieved. The PMR was calculated as the total number of stillbirths plus early neonatal deaths (within 7 days of birth) per thousand births. Similarly, Early Neonatal Mortality Rate (ENMR) was calculated as the deaths of neonates within 7 days of life per thousand live births and Still Birth Rate (SBR) was calculated as total number of fetal deaths per thousand births.

All the perinatal deaths were then classified according to Wigglesworth Classification¹¹. (*Class I*: normally formed macerated stillbirths; *Class II*: deaths due to congenital anomalies; *Class III*: conditions associated with immaturity; *Class IV*: asphyxial conditions developing in labor and *Class V*: specific conditions like sepsis.) Babies born before 28 weeks of gestation or below 1000grams at birth were excluded from the study. Trends in PMR, SBR and ENMR were then evaluated.

Results

There were 42,746 births in 13 years and over the years, it has increased by almost 49 %. (Figure 1). There were total of 921 perinatal deaths during that period giving a gross perinatal mortality of 21.5 /1000 births. Over a decade, PMR has declined by one third from 30 to 18 per 1000 births (Figure 2). The number of still births outnumbered significantly in the initial years but has declined and equaled to early neonatal deaths in recent years. All these years, though still birth (Class I) has decreased only by 33 %, it continues to contribute significantly to the perinatal deaths. Deaths due to congenital malformations (Class II) have remained static. There has been increase in the deaths due to prematurity (Class III) and has increased by almost 70% in last 5 years. Birth asphyxia (Class IV) related deaths have remained static and there is a decreasing trend in deaths due to sepsis (Class V) (Figure 3). Of total perinatal deaths, almost 50% is contributed by stillbirth followed by asphyxia related deaths that in 17% (Figure 4).

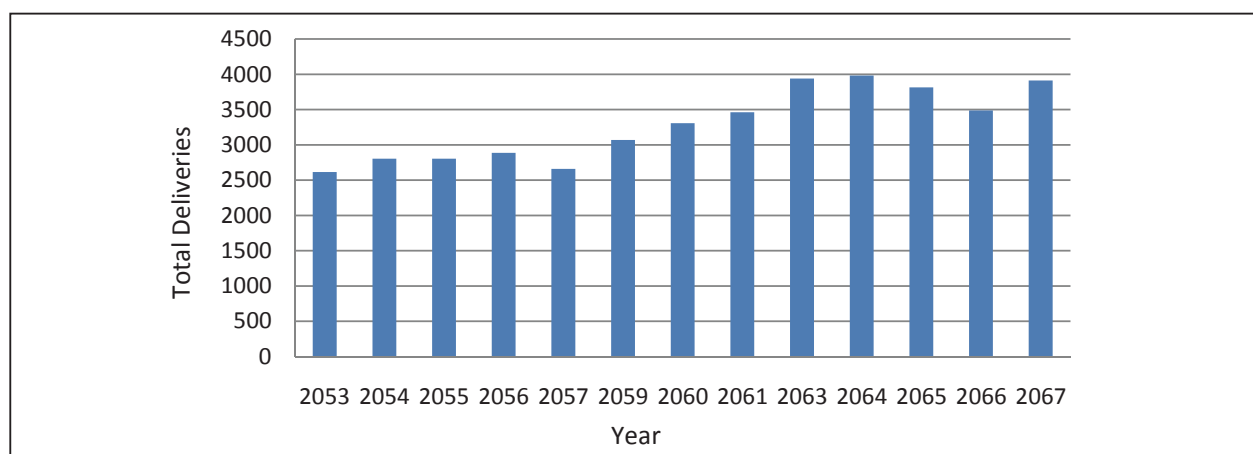


Fig 1: Distribution of Total Deliveries

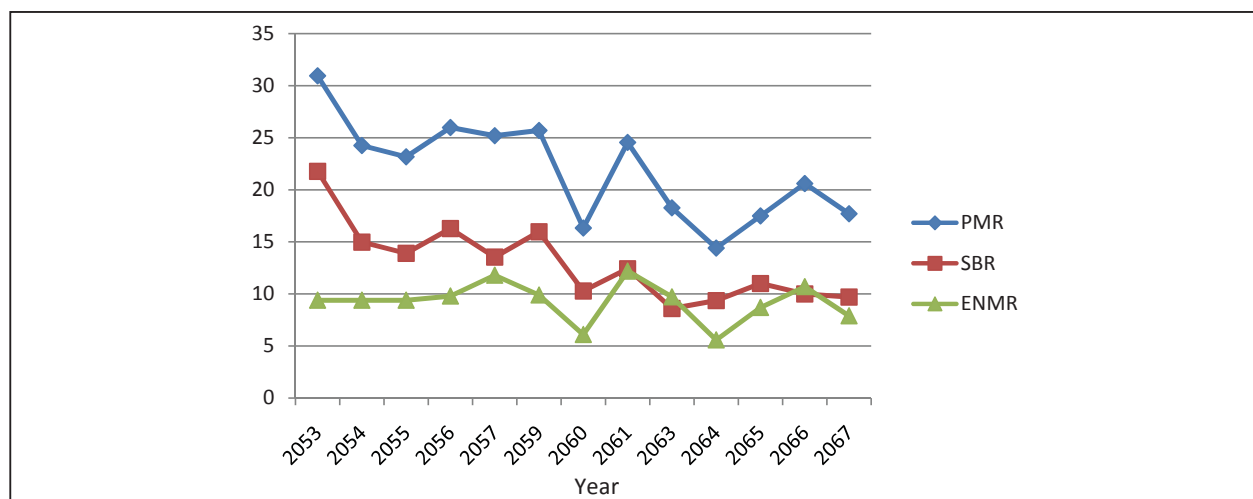


Fig 2: Trends in PMR, SBR and ENMR

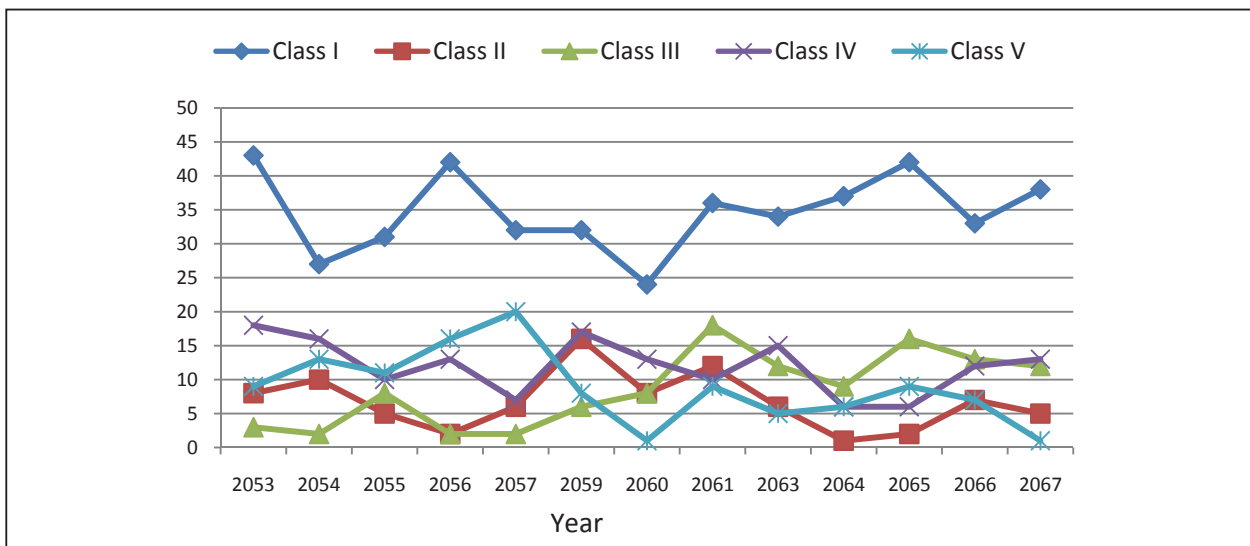


Fig 3: Trend in Perinatal Deaths according to Wigglesworth Classification

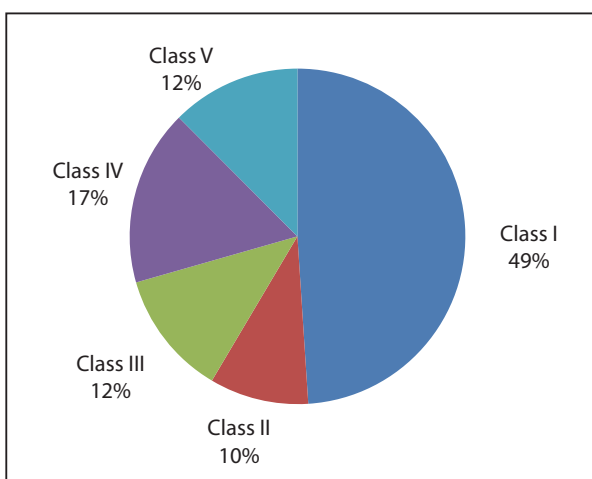


Fig 4: Distribution of Total Perinatal death in 13 years

Discussion

Over the period of 13 years, there were 42,746 deliveries in TUTH and it has increased by almost 50 % over these years but for the past few years, it has slightly decreased, the reason being that government hospitals are now providing monetary incentives to the families if they deliver in the government hospital and this facility is not available in our hospital. Though PMR has decreased by 41%, it is not satisfactory as compared to the study done by Das et al. In their study conducted in hospital in Orissa, India, they have achieved reduction on PMR by almost 50% over 10 year period and 60% of the perinatal death was contributed by still birth with decline in SBR by 43% in that period¹². A two year perinatal audit done by Shrestha et al at Kathmandu Medical College Teaching Hospital, Nepal, has also shown that almost 44% of PMR was contributed by still birth¹³. These studies are comparable to our study as in our study also still birth contributed to almost 50% of all the perinatal deaths and over these years it has decreased

by 55%. Global scenario also shows that in most of the developing countries, stillbirths represent more than half of perinatal deaths, while in developed countries, where interventions have largely eliminated excess early neonatal mortality, over 6 out of 10 perinatal deaths are stillbirths. But while comparing with South East Asian Region (SEAR), our data it is quite encouraging. Our PMR, SBR and ENMR are 21.5, 12.9 and 9 respectively (SEAR: PMR-33, SBR-19, ENMR-15)¹.

In the current study, though the ENMR is almost static during this period, deaths due to prematurity are quite alarming. It has increased by almost 70 %. This is due to the fact that many complicated cases are being referred here in our hospital as it is providing tertiary care for obstetric problems and moreover, we have started continuous positive airway pressure (CPAP) for the past 4 years and mechanical ventilation for past two years and the inborn neonates are now rarely referred to other hospitals, thereby increasing the number of total deaths in the hospital itself. As most of the preterm deliveries are unpreventable, prevention of these death mainly depend on neonatal care with aggressive respiratory and cardiovascular treatments including surfactant therapy, mechanical ventilation and pressor supports^{14,15}. Thus well trained staffs, residents and faculties with periodic refresher course in neonatal care and upgrading the facilities would definitely help to decrease these deaths. Regarding deaths due to asphyxia and sepsis, they are almost static. So there is dire need to focus more on obstetric care and management and infection control in our unit. Simple hand washing might help to reduce sepsis and thereby perinatal mortality.

Conclusion

Since many of the maternal and fetal cause for perinatal deaths could be prevented, to decrease the

perinatal mortality rate in our institute we need to focus on proper antenatal checkups and provide adequate health education with registration of all pregnant women with early detection of high-risk pregnancy and their timely management as the studies have shown that there is high perinatal mortality amongst the mothers who did not attend the antenatal check ups¹⁶.

Limitations

Since it is a retrospective study and data is collected from monthly and yearly perinatal audit, it could not identify the important factors contributing to still birth as well as asphyxia. The maternal factors contributing to perinatal death also could not be identified.

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Permission from IRB: Yes

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