

Maternal Mortality in a Tertiary Care Centre in Nepal

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Abstract

Introduction: Nepal has one of the highest maternal mortality rates.

Aims and objective: To identify the maternal deaths and identify the causes and key risk factors.

Method: A retrospective (descriptive) study was carried out at BPKIHS by analyzing the case sheets of all maternal deaths of four years (April 1998- March 2002). The cause of death and the factors that may have indirectly contributed to death were noted.

Results: The total number of deaths during these four years was forty-four, with 61.4% of patients being multigravid and 96.5% unbooked. More than 85% of patients reported from periphery. The majority (93.18%) of deaths were due to direct causes. The most common cause of maternal death was sepsis (43.18%) of which septic abortion was the leading cause (27.27%). Hypertensive disorders accounted for 29.54% of deaths and out of these, eclampsia was the leading disorder. Haemorrhage accounted for 13.66% of deaths. There were two cases of rupture uterus (4.5%) Anaemia was found in 29.54% of cases and it may have contributed indirectly to maternal mortality. Three deaths (6.8%) were due to medical causes.

Conclusion: Preventable causes accounted for majority of deaths. Septic induced abortion and eclampsia together accounted for more than 50 % of deaths. The non-availability of safe abortion services, the mountainous terrain, lack of good primary /district level hospitals and poor transport facility seem to be the most important reasons for most maternal deaths in our study.

Key words: Maternal Mortality, Nepal. [Trop J Obstet Gynaecol, 2004; 21:168-171]

Introduction

Maternal mortality is the leading cause of death among women of reproductive age between 15-49 years in most developing countries. According to a joint statement, issued by WHO, UNICEF & UNFPA and World Bank, nearly 600,000 women die every year globally as a result of the complications of pregnancy and childbirth. The magnitude of the problem being that every minute, a woman dies. 99% of these deaths occur in developing countries.

Besides Africa, South Asia has the highest maternal mortality rate (MMR) in the world. Developed countries, in contrast account for only 1% total maternal deaths. The risk of dying from pregnancy or pregnancy related causes may be up to 200 times higher in developing countries as compared to developed countries. Maternal mortality in Nepal is one of the highest. Family health survey in 1996, estimated MMR to be 539 per 100,000 live births. The level of maternal mortality is an indicator of the general socioeconomic development of a community and the prevailing health services. The present study was undertaken with a view to identify the causes of maternal mortality in BPKIHS and analyze the factors responsible for them.

Aims And Objectives

To identify the causes and key risk factors currently responsible for maternal mortality in BPKIHS.

Materials And Method

A retrospective (descriptive) study with a study population of all maternal deaths that occurred due to

pregnancy or pregnancy related causes in BPKIHS, during the four years from April 1998 March 2002 was carried out. The case sheets of all maternal deaths were analysed. The cause of death was noted & the factors which may have indirectly contributed to death were also looked into and the information was entered into data entry form.

Results

During the study period there were 44 maternal deaths. Majority (93.18%) of deaths were due to direct causes. Most of the maternal deaths were in the age group of 15-25 years (61%). Most patients were multigravidas (61.36%). 96.45% of the patients who died were unbooked and unsupervised. Most of the cases (72%) were referred from outside Sunsari district (district in which the hospital is situated). The short duration of hospital stay before death (Table 1) illustrates the delay in referral of these patients.

Table 1: shows the duration of hospital stay

Duration of stay	No of Patients	%
< 24 HRS	23	52.27
25-48 HRS	10	22.77
2-5 DAYS	07	15.90
>5 DAYS	4	9.09

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Table 2 shows deaths caused by specific causes related to childbirth & pregnancy.

Table 2: Causes of Maternal Mortality.

<i>Causes</i>	<i>No. of Cases</i>	<i>%</i>
Sepsis	19	43.18
Hypertensive Disorder	13	29.54
Hemorrhage	06	13.66
Rupture Uterus	02	4.5
Medical Causes	03	6.8

Sepsis was the leading cause of death contributing to 43% of deaths. Septic abortion was the most common cause of sepsis (63%). Chorioamnionitis and puerperal sepsis accounted for 15 % each of sepsis. One death of sepsis was due to retained placenta. Hypertensive disorders were responsible for 30 % of maternal deaths. Eclampsia was the most common hypertensive disorder leading to death of a mother (92 % of hypertensive disorders). One patient had hypertension with hepatic failure. The third leading cause of death was hemorrhage which accounted for 14% of total deaths. Postpartum hemorrhage caused three out of six (50%) of hemorrhage deaths. Two out of six (33%) of deaths due to hemorrhage were due to combined antepartum and postpartum hemorrhage. There was one death due to abortion related hemorrhage. Ruptured uterus caused two maternal deaths. Medical causes were responsible for three deaths. Hepatitis, rheumatic heart disease and acute gastroenteritis accounted for one death each. Anaemia was found in 29.54% of cases, which could have contributed indirectly to maternal mortality. A total of 29 patients delivered. Table 3 shows the mode of delivery and fetal outcome, which was poor in 58.63% of these 29 patients.

Table 3: Nature of Delivery and Fetal Outcome

<i>Type Of Delivery</i>	<i>No of Patients</i>	<i>%</i>
Lscs	14	48.27
Vaginal	11	37.93
Forceps	02	6.89
Laparotomy	02	6.89
Fetal Outcome in Twenty Nine Deliveries		
Alive	12	41.37
Stillbirth/ Nnd	17	58.63

Discussion

The MMR is the number of maternal deaths per 100,000 women of reproductive age, but this denominator is difficult to determine precisely. The national center of health statistics, the WHO and others define the MMR

as the number of maternal deaths per 100,000 live births. Epidemiologists recognize this as the maternal mortality ratio. Maternal mortality has been an under-recognized issue world wide, despite an estimated 600,000 maternal deaths per year from pregnancy related causes. There is also a marked inequity in geographic distribution, since 95% of these deaths occur in developing countries, followed by South Asian countries.¹ Maternal mortality in the SAARC region is one of the highest in the world. The rate is above 500 per 100,000 live births in almost all countries of the region, except Srilanka. In a study conducted in Srilanka, the MMR was found to be 98.5 per 100,000.² India showed a declining rate from 684 to 394 over a decade.³

Our study was a retrospective analysis of maternal deaths in a teaching institute in Nepal over a period of four years. Maternal mortality ratio in our study was found to be 564 per 100,000 live births. In a data collected by the family health survey in 1996, the maternal mortality ratio was found to be 539 per 100,000 live births. A study conducted in the Eastern Himalayan Region (EHR) showed a MMR of 550.⁴

Ours is a tertiary care center situated in an area, where primary health services are inadequate. Besides other factors, delayed referrals and delay in transport contribute to the increased mortality. In our study, majority of the patients belonged to the age group of 15-25 yrs. This is comparable to a study conducted in EHR, Darjeeling, which reported most of their patients (62.07%) to be between the age group of 20-30 yr.⁴ In another study conducted in Libya, the mean age of maternal deaths was 31.56 yr.⁵ As these deaths were in a young age group it emphasizes the need for measures required for lowering mortality.

Majority of our patients (61.36%) were multigravidas. In the Eastern Himalayan Region study multigravidas accounted for 58.62% of cases.⁴ In Libya, the mean parity was 4.5.⁵ In our study 96.35% of cases were unbooked or unsupervised i.e. they did not receive any antenatal care during pregnancy. This is comparable with the study conducted in the EHR, which showed 83% of their patients to be unbooked.⁴ In Libya, all of their patients were unbooked.⁵

In our study, out of the total number of patients that reported, 72.72% hailed from outside Sunsari district. Problems in transport and resulting delay in instituting proper medical care may have contributed to the mortality.

Direct causes contributed to 93.18% of maternal deaths in our study. In the EHR study direct causes accounted for 72.41% of deaths.⁴ In Czech Republic, direct maternal mortality was 6.7 per 100,000 live births.⁶ In developed nations, direct maternal mortality has reduced dramatically due to improved general status, health care services during pregnancy and child birth.

Infections during pregnancy, labour and puerperium or septic procedures result in a lot of suffering to the mother and this accounts for a lot of maternal mortality and morbidity. In our study, sepsis was found to be the leading cause of death among the maternal causes.

Sepsis as a whole, accounted for 43.18% of the mortality. In the HER, it accounted for 24.14% of deaths.⁴ In Ireland it accounted for 20% of maternal mortality.⁷ In other studies sepsis was not the leading cause of maternal mortality but still it was among the top three causes. In Srilanka, genital tract sepsis accounted for 26% of direct mortality.² In South Africa, West Africa and Nigeria, it accounted for 13%, 15% and 17.3% respectively.^{8,9,10}

A recent WHO report estimated that about 50% of all pregnancies are unplanned and about 25% unwanted. Some 150,000 unwanted pregnancies are terminated by induced abortion everyday (up to 53 million each year). Of these about a third are performed under unsafe conditions and in an adverse social and legal climate, resulting in some 135-275 deaths everyday (approximately 50,000 - 100,000 deaths each year). In our study, septic abortion accounted for 27.27% of deaths. In Kazakhstan, illegal abortion was the leading cause of death in pregnant women.¹¹ In Nigeria and France, illegally induced abortion accounted for 32.7% and 30% of deaths.^{12, 13} As abortion was not legalized in Nepal during the study period, all induced abortions are unsafe abortions in this country. This might have contributed to the high maternal mortality.

Hypertensive disorders are the most common medical complication of pregnancy. These disorders are a major cause of maternal mortality world wide. Pregnancy induced hypertension accounted for 29.14% of maternal deaths in our study. In the EHR it accounted for 10.34% of maternal deaths.⁴ In Libya and West Africa it accounted for 28.6% and 21% respectively of total maternal deaths.^{5,14} In our study, eclampsia accounted for 27.27% of total maternal mortality. This is more than in a study done in West Africa, in which it accounted for 11% of deaths.¹⁴ In Ireland and in Ghana it constituted 20% and 6.8% of maternal mortality respectively.^{7,15} In Brazil, it accounted for 60% of maternal mortality due to direct causes.⁴ In Texas, it was found to be leading cause of death.¹⁶ In China, hypertension was found to be the second leading cause of maternal mortality.¹⁷ In a study conducted in Pondicherry, in maternal deaths due to eclampsia, 43% had operative delivery and remaining delivered vaginally.¹⁸ In our study, out of thirteen cases with hypertension 33% delivered vaginally while 53.88% had operative delivery.

Hemorrhage during pregnancy should be regarded as a serious complication. Obstetrical hemorrhage is most likely to be fatal to the mother in circumstances in which blood or blood components are not available immediately. The centre of disease control analyzed 1453 non-abortion related maternal deaths in the United States and reported that hemorrhage was a direct cause in at least 29% of these.¹⁹ In our study, hemorrhage accounted for 13.66% of maternal deaths and was found to be the third leading cause of maternal mortality. In the HER, it accounted for 20.69% of deaths.⁴ In Brazil, Japan, Srilanka and Egypt it accounted for 40%, 39%, 20% and 31%

respectively.^{20,21,22} In China, hemorrhage was the major cause of direct maternal mortality.²³ In Thailand and Malaysia, hemorrhage was one of the top three causes of maternal mortality.^{17,24,25} In Nigeria, postpartum hemorrhage accounted for 1620 deaths/100,000 livebirths.²⁶

Indirect causes contributed to 6.88% of maternal deaths in our study. In the EHR, indirect causes accounted for 27.59% of maternal deaths.⁴ In the Czech Republic, indirect causes were found to be responsible for 3.3 deaths per 100,000 live births.⁶ In developing nations, direct and preventable causes contribute most to maternal deaths. In our study, only three cases died due to an indirect cause and they were one case each of infective hepatitis, rheumatic heart disease and acute gastroenteritis. In a study conducted in the HER, infective hepatitis contributed to 6.9% of maternal deaths.⁴ In Srilanka and Brazil indirect causes accounted for 29% and 16.7% of maternal mortality respectively.^{2,20}

Anaemia in pregnancy is a major health problem in the developing world. It is one of the common causes of maternal mortality. Anaemia may act as an underlying factor which places women at a higher risk of dying from one of the 5 major causes of maternal mortality (Sepsis, eclampsia, hemorrhage, abortion and obstructed labour). In our study 29.54% of the patients who died were found to be anaemic. This is less than that reported by a study conducted in Libya, in which 70% of the women who died were anaemic.⁵ In the EHR severe Anaemia accounted for 10.34% of the maternal deaths.⁴ The proportion of maternal deaths due to Anaemia has been estimated for countries with reliable data- India (16%), Kenya (11%), Nigeria (9%) and Malawi (8%). It may be directly responsible as an independent factor.²⁷ In a study conducted in Thailand, anaemia accounted for 39% of maternal deaths.²⁴ In another study conducted in West Africa, anaemia accounted to be the major cause of death in 8% and a cofactor in 41% of maternal deaths.¹⁴

Conclusion

The tragedy with maternal deaths is that most are preventable with proper care. Better health care is the key to it which requires neither high technology nor expensive drugs. Good antenatal care and safe abortion services could have prevented most deaths. The mountainous terrain, the political turmoil and lack of resources preclude the availability of healthcare to a large segment of the local population. The second important reason is the cost of health care and the prevailing poverty. Septic abortion is almost entirely preventable by legalizing abortion and by providing safe abortion services.

Despite best antenatal care, some women may develop complications without warning signs and may require emergency care. The establishment of first referral units for emergency obstetric cases, access to transportation and promotion of family planning and spacing of births

will help in reducing the maternal mortality and will result in an overall improvement in the national economy which is the ultimate goal of any country.

Acknowledgement

We thank our Institute for giving us an opportunity to undertake a research project. No financial assistance was granted for the study.

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