A Study on Maternal Mortality in Baba Raghav Das Medical College, Gorakhpur

Reena Shrivastava, Harish C Tiwari, Renu Sangal

ABSTRACT

Introduction: Prevention of maternal deaths is one of our foremost goals to provide safety to motherhood and to avoid loss to the family, society, and the nation. Maternal mortality ratio (MMR) of Uttar Pradesh is very high as compared to national average. Within the state, there is wide variation in MMR. The explanations and answers to these regional variations are complex. This study was planned with the objectives to explore each and every maternal death that had occurred in Baba Raghav Das Medical College in the last 4 years (2011–2014).

Materials and methods: In this study, data were collected from records of all maternal deaths that had occurred in the Department of Obstetrics and Gynecology, Baba Raghav Das Medical College, Gorakhpur from March 2011 to December 2014. Records of all maternal deaths during this period were scrutinized for socio-demographic profile, obstetric history, antenatal care history, causes of maternal mortality, time trend, geographical or regional distribution, admission and death interval, condition of patients on admission, outcome of pregnancy, and reasons for delay. Records of number of maternal deaths and live births were also collected for previous 11 years (2004–2014).

Results: Maternal mortality ratio has dropped almost six times in the last 11 years. Early age at marriage, illiteracy, poor socioeconomic status, and multiparity were found to be important determinants of maternal mortality and can act as risk factors. The pattern of causes of maternal deaths in this institute (preeclampsia) is different from that found in the community (postpartum hemorrhage). Delay in seeking care because of unawareness and illiteracy and ignorance was found to be the major contributing factor for most of the maternal deaths.

Keywords: Maternal mortality ratio, Postpartum hemorrhage, Preeclampsia.

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assessing the probability of maternal death in each case and interventions accordingly.

MATERIALS AND METHODS

In this study, data were collected from records of all maternal deaths that had occurred in the Department of Obstetrics and Gynecology, Baba Raghav Das Medical College, Gorakhpur from March 2011 to December 2014. Records of all maternal deaths during this period were scrutinized for socio-demographic profile, obstetric history, antenatal care history, causes of maternal mortality, time trend, geographical or regional distribution, admission and death interval, condition of patients on admission, outcome of pregnancy, and reasons for delay. Records of number of maternal deaths and live births were also collected for previous 11 years (2004–2014).

Maternal death was defined and classified according to the World Health Organization’s International Classification of Diseases (ICD), 10th revision (ICD-10).4 Direct deaths result from obstetric complications of pregnant state (pregnancy, labor, and puerperium).

Indirect deaths are those resulting from previously existing disease or disease that developed during pregnancy and aggravated by pregnancy. Deaths were classified as direct and indirect. Maternal mortality ratio is defined as the number of direct and indirect maternal deaths per 100,000 live births up to 42 days after the termination of pregnancy. Data were analyzed using Microsoft Office Excel 2007.

RESULTS

Maternal mortality ratio was 11,574 (a total of 114 maternal deaths out of 985 live births) during the year 2004 and showed a continuous declining trend during the successive years. Maternal mortality ratio has dropped almost six times during the last 11 years. During the year 2014 it was 2,847 (67 maternal deaths out of 3,420 live births) (Graph 1). Number of deliveries at this institute increased almost three times during the same period.

Trend line of maternal mortality revealed a higher proportion of maternal deaths in the second half of every year and particularly during the months of July, August, September, and October (Graph 2).

PROFILE OF MATERNAL DEATHS

Out of the total maternal deaths, 61% majority belonged to 20 to 30 years age group, 18% belonged to < 20 years age group, and 21% belonged to > 30 years age group. Among the total maternal deaths, majority were Hindus (86.7%) and the rest were Muslims (13.3%).

Out of the total maternal deaths, 38% belonged to other backward class (OBC) category, 37.8% belonged to scheduled caste (SC) category, and only 24.2% belonged to general category. Among the total maternal deaths, majority (92.1%) were housewives and illiterates (61.8%).

Among total maternal deaths, 72.6% majority were multigravidas and 27.4% were primigravidas.
Only 27.34% of women who died here had received antenatal care, while 72.66% of women did not receive any kind of antenatal care. Lack of awareness (82.1%) was the most common reason behind it, while lack of accessibility (6.4%) and lack of funds (8.87%) were other reasons.

Eclampsia (24.88%) was found to be the most common cause of maternal mortality. Postpartum hemorrhage was the next important cause of maternal deaths. Declining trend was observed in proportion of maternal deaths due to postpartum hemorrhage. Proportion of maternal deaths due to preeclampsia showed a continuous rise in the last 4 years. Anemia was responsible for 13.3% of the deaths. Ectopic pregnancy and abortions accounted to 3.8% of maternal deaths. Obstructed labor and sepsis accounted to 2.46 and 6.9% maternal deaths respectively. Associated medical conditions with pregnancy (14.29%) were important indirect causes of maternal deaths (Table 1).

**Admission to Death Interval**

Admission to death interval analysis of the present study revealed that 30.2% of women died within 6 hours of admission, 16.7% within 6 to 12 hours of admission, 18.2% within 18 to 24 hours of admission, 13.6% within 24 to 48 hours, 9.8% within 48 to 72 hours, and 11.4% of women died after 72 hours of admission.

Majority (73.4%) of maternal deaths had occurred during postpartum period, 14.3% during antenatal period, and 2.3% during intranatal period.

Delay in seeking care was the most common delay that was observed in the present study. Most important reason stated for this delay was unawareness of danger signs. During the year 2011, unawareness of danger signs was one of the causes of delay among 73% of maternal deaths and it declined to 52% in year 2014. Illiteracy and ignorance was observed as the second most important reason (31–36%) for delay. Delay in getting transport and not reaching appropriate facility in time was found to be another important reason for delay during years 2011–2013 (40%), but a sharp decline was observed during year 2014 (20%) (Graph 3).

**DISCUSSION**

Although MMR had dropped six times in the last 11 years, still MMR at this institute was very high. Other Indian studies done in previous years have shown wide variation in MMR ranging from 3,344 per 100,000 live births to 1,650 per 100,000 live births. High MMR might be due to being a tertiary referral center which deals with exclusively high-risk patients.

Almost three-quarters (74.88%) of pregnant ladies who died here were referred from some other centers and belonged to neighboring district of Gorakhpur [Deoria (14.78%), Kushinagar (14.78%), and Maharajganj (10.84%)].

The age distribution pattern of deceased mothers was similar to the pattern of maternal deaths in India, as most (61%) of the deceased mothers were in 20–30 years age group. In a study by Sarin et al, 57.8% of maternal deaths were in the 21 to 30 years age group. However, proportional number of deliveries and near miss in age-specific groups has not been computed for this study.

Three-quarters of pregnant ladies who died here belonged to OBC and SC categories, while representation of these categories among general population is <50% as per census 2011. Similar to present study, an Indian Council and Medical Research study reported that 62.7% of maternal deaths were of uneducated women. A study by Sarin et al reported that a majority of the maternal deaths were among women belonging to poor class (76.4%). Oladapo et al reported that about one-third of

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<th>Table 1: Causes of maternal mortality</th>
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<td>Cause of death</td>
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<tr>
<td>Obstructed labor (%)</td>
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<td>Postpartum hemorrhage (%)</td>
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<td>Abortion (%)</td>
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<tr>
<td>Ectopic pregnancy (%)</td>
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<td>Vesicular mole (%)</td>
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<td>Anemia (failure) (%)</td>
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<td>Sepsis (%)</td>
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<td>Inversion of uterus (%)</td>
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<td>Postoperative complications (%)</td>
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<td>Indirect causes</td>
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<td>Pulmonary embolism (%)</td>
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<td>Diabetes (%)</td>
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the women who died were experiencing their first childbirth (similar to our present study). Early age at marriage, illiteracy, poor socioeconomic status, and multiparity are some of the determinants of maternal mortality and can act as risk factors.11

Proper antenatal care checkup, tetanus toxoid immunization, and iron-folic acid tablet consumption are essential obstetric care to make better outcome of childbirth. A majority of the mothers who died had not received any kind of antenatal care. Lack of awareness was found to be the most common reason for it. Promotion for antenatal care and institutional delivery are the prime responsibilities of ASHA.

Admission to death interval analysis of present study revealed that 30.22% of women died within 6 hours of admission, as most of the patients were in moribund and comatose conditions. These patients were brought late to this institute and irreversible damage had already occurred.

In the present study, eclampsia was found to be the most common cause of maternal mortality followed by postpartum hemorrhage, which can be compared with the study by Paul et al12 who reported hypertensive disorders of pregnancy (30%) as the most common cause of maternal deaths and Oladapo et al10 who reported hypertensive disorders of pregnancy (28%) to be the most common cause of maternal deaths followed by hemorrhage (21.3%), whereas Government of India and WHO13 reported hemorrhage as the most common cause. This clearly shows that the pattern of causes in medical institutes is quite different from that seen in community.

Direct causes contributed to 78.32% of all deaths in the present study. In most of the hospital-based studies in India,12,14-16 the direct causes were responsible for 51 to 82% of maternal mortalities.

Delay in seeking care was found to be a major contributing factor for most of maternal deaths. Most important reason stated for this delay was unawareness of danger signs. During the year 2011, unawareness about danger signs as a reason for delay was reported in 73% of maternal deaths and it reduced to 52% in the year 2014. Illiteracy and ignorance was observed as the second most important reason (31–36%) for delay. Delay in getting transport and not reaching to an appropriate health facility showed a sharp decline in the year 2014 (20%) as compared to years 2011–2013 (40%). In a study by Cham et al,17 7 of the 32 cases studied were delayed in the process of seeking medical attention and 27 of the 32 women were delayed in the process of reaching an appropriate medical facility. Few of the women experienced delay in receiving prompt and adequate obstetric care at the hospital level.

Graph 3: Type of delays contributing to maternal deaths (multiple delays were present simultaneously)
CONCLUSION

Maternal mortality ratio dropped almost six times in the last 11 years. Early age at marriage, illiteracy, poor socioeconomic status, and multiparity were found to be important determinants of maternal mortality and can act as risk factors. The pattern of causes of maternal deaths in this institute (preeclampsia) is different from that found in the community (postpartum hemorrhage). Delay in seeking care because of unawareness and illiteracy and ignorance was found to be the major contributing factor for most of maternal deaths.

REFERENCES