Rising Maternal Mortality in Mumbai Metropolitan Region: Need for Action

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ABSTRACT

Data from the past suggest that maternal deaths mostly occurred due to obstetric complications, like postpartum hemorrhage, sepsis or maternal morbidities, like eclampsia and cardiac diseases. This trend, however, has changed over a period of time in developing countries, like India where increasing number of maternal deaths have been attributed in recent years to preventable infectious causes, such as hepatitis, tuberculosis and malaria. Rising maternal mortality ratio (MMR) due to infections indicates there are several loop holes in the basic healthcare system at various levels in their prevention and control. Although maternal mortality worldwide is decreasing progressively, curbing maternal deaths in certain developing regions of the World including few parts of India and Mumbai Metropolitan Region at a faster rate is essential in order to achieve the United Nations Fifth Millennium Development Goal of 2015.

Keywords: India, Infections, Maternal mortality, Millennium development goal 2015, MMR, Mumbai metropolitan region, Preventable.

INTRODUCTION

Maternal mortality remains an issue of concern worldwide, even today. Measurement of maternal mortality in the form of maternal mortality ratio (MMR) is an important indicator for assessing the quality of health care system in any community. Maternal mortality ratio is calculated as the number of maternal deaths during a given time period per one lakh live births during the same period due to complications arising from pregnancy or childbirth.

Maternal mortality ratio is considered to be low if it is < 100, moderate if > 100 to 299, high if it is ≥ 300 to 499, very high if it is > 500 to 999 and extremely high if it is ≥ 1000. The Fifth Millennium Development Goal (MDG) put forth by the United Nations aims to improve maternal health with the target of reducing MMR by 75% between 1990 and 2015 and achieve universal access to reproductive health by 2015. While most countries aspire to achieve the target by 2015 and there has been a decreasing trend in maternal mortality across the World, some developing regions with very high or extremely high MMR continue to lag behind in this race and are unlikely to attain this goal.

Worldwide Trends in Maternal Mortality}

A country is considered to be ‘on track’ for achieving the Millennium Development Goal 2015 if MMR of 1990 was >100 and the average annual percentage decline between 1990 and 2013 is 5.5% or more. Only 11 countries are ‘on track’ according to the WHO 2013 data, which includes countries like Maldives, Nepal and Bhutan. If the average annual decline in MMR is between 2 and 5.5%, the country is considered to be ‘making progress’. Sixty-three countries including India and USA are in this category. Countries with an average annual decline of less than 2% are considered to have made ‘insufficient progress’ which includes 13 countries mostly in the Sub-Saharan African region.

Globally, there were an estimated 289000 maternal deaths in 2013, a 45% decline since 1990, which recorded 523000 maternal deaths. Similarly, the global MMR has reduced from 380 in 1990 to 210 in 2013 yielding an average annual decline of 2.6%. Developing countries accounted for 99% (286000) of the global maternal deaths in 2013. The Sub-Saharan Africa with 179000 maternal...
deaths contributed alone to 67% of all maternal deaths globally in 2013 and continues to be a high risk region for maternal mortality due to its very high MMR of 510.\textsuperscript{1} Out of the 40 countries with the highest MMR in 2013, Sierra Leone is the topper with an extremely high MMR of 1100, followed by Chad (980), Central African Republic (880) and Somalia (850).\textsuperscript{1} Other countries with high MMR are Afghanistan, Tanzania, Pakistan, Bangladesh, Iraq and Russia.\textsuperscript{1} India—50,000 and Nigeria—40,000 together accounted for one-third of all global maternal deaths in 2013.\textsuperscript{3} In contrast, China with the largest population in the world recorded only 5900 maternal deaths in 2013 due their ‘one child policy’.\textsuperscript{3}

United States of America (USA) estimated a total of 800 maternal deaths in 2013 (MMR increased from 7.2 in 1987—18.1 in 2013) most of which were due to hypertensive disorders of pregnancy, uncontrolled diabetes, heart diseases, postpartum hemorrhage or obstructed labor.\textsuperscript{1} The best performing countries with the lowest MMR in 2013 are—Estonia, with only two maternal deaths in 2013, Sweden, Norway (MMR-4), Denmark, Greece (MMR-5) Australia, Netherlands (MMR-6), France and United Kingdom (MMR-8).\textsuperscript{1}

The low MMR in these countries is attributed to efficient leadership, innovation, development of short and long-term strategies promoting safe motherhood and nutrition, adaptation to change for sustained progress and good quality healthcare.\textsuperscript{1}

**MATERNAL MORTALITY AND HIV-AIDS**

There is an aggravating effect of pregnancy on human immunodeficiency virus (HIV) and the interaction between pregnancy and HIV is the underlying cause of maternal death. These deaths are considered as acquired immune deficiency syndrome (AIDS)-related indirect maternal deaths.\textsuperscript{2} In 1990, there were nearly 1700 AIDS-related indirect maternal deaths. Following the HIV epidemic, maternal deaths increased, peaking in 2005 at 12000, but then declined in 2010 when an estimated 8500 AIDS-related maternal deaths occurred.\textsuperscript{2} In 2013, 7500 (2.6%) out of total 289000 maternal deaths were attributed to AIDS-related indirect maternal deaths. Out of these, Sub-Saharan Africa accounted for 6800 deaths (91%).\textsuperscript{2} The rapid roll out of antiretroviral therapy over recent years in regions with high HIV prevalence has reduced the number of maternal deaths and the number of people on antiretroviral therapy has increased.\textsuperscript{2}

**Maternal Mortality in India**

According to WHO data, MMR in India is 190 in 2013 in contrast to 590 in 1990. Despite its noticeable progress in decreasing MMR over recent years (65% drop in MMR since 1990) India is still lagging behind the MDG target of bringing a 75% decline in MMR till 2015.\textsuperscript{3} Maternal mortality ratio in India is decreasing at the rate of 4.5% annually. In order to meet the 2015 target, this reduction should be accelerated to 5.5% annually.\textsuperscript{3}

As shown in the Graph 1, the MMR in India has been declining steadily since 1990. According to the Sample Registration System report of 2013, only three states in India have achieved MMR reduction to double digit in 2013. Kerala has been a consistently best performing state with MMR of 66 in 2013 followed by Maharashtra (MMR-87) and Tamil Nadu (MMR-90).\textsuperscript{5} But there has been considerably high MMR in few states like—Assam which has recorded the highest MMR in 2013 (328) followed by Rajasthan (318), Uttar Pradesh (292), West Bengal (235), Madhya Pradesh (230) and Bihar (215) as shown in Graph 2.\textsuperscript{4}

These are low performing states mainly because of lesser proportion of institutional deliveries (less than 25%), illiteracy, lack of information regarding importance of antenatal care and complications of home deliveries,
social issues like young age at marriage or childbirth, poverty, and high prevalence of infections.³

Although India has been successful in curbing maternal deaths since 1990, the high MMR of the above mentioned states is a major reason why India still has a long way to go to achieve the 2015 target.⁴

**Maternal Mortality in Maharashtra**

Maharashtra has been among the only three states in India, to have achieved a double digit MMR of 87 in just 3 years, bringing it to second position after Kerala in 2013.⁷ There has been a progressive fall in maternal mortality in our state, more importantly due to the Janani Suraksha Yojana (JSY), a centrally sponsored scheme, which is a safe motherhood intervention under the National Rural Health Mission launched in 2005 in all states and union territories of India with an objective of reducing maternal deaths. It provides monetary benefit to those below poverty line in the first two deliveries to promote institutional deliveries in rural and urban areas of states with less than 25% institutional deliveries like UP, Uttarakhand, Bihar, Assam, Odisha, MP, Chhattisgarh, Jharkhand, Rajasthan and Jammu Kashmir and in rural areas of the remaining states. Beneficiaries are escorted by the Accredited Social Health Activists (ASHAs) for delivery at health center along with provision of cost reimbursement for transport and cash incentive to the ASHA for encouraging women for institutional deliveries. This cash incentive policy was perceived to attract, motivate and support the needy pregnant women with special focus on the low performing states mentioned above.¹¹

Currently, the MMR is below 80 (2014–2015) in Maharashtra as there have been 96% institutional deliveries throughout the state—in private or government hospitals under proper medical attention.¹⁰ For the low income group, there are Anganwadi centers throughout the state for free vaccinations, supplements and medicines during pregnancy, free checkup every 3 months and post pregnancy checkup. Maharashtra which currently fares second, aims to surpass Kerala in achieving the lowest MMR in India by next year.⁶

**Maternal Mortality in Mumbai Metropolitan Region**

While Maharashtra has achieved reduction in its MMR, Mumbai continues to have a rising incidence of maternal deaths (Table 1).⁷ An update from Hindustan Times in May 2015 stated that maternal deaths in Mumbai have increased 40% over the past 5 years.⁷ Maternal mortality ratio in Mumbai has reached an alarming 158 this year. This is almost two times the mortality ratio of Maharashtra.⁹ The exact total number of mortalities in the year 2015, however, is not yet known.

Data from the civic body which record these deaths every month revealed that the top cause of maternal deaths in Mumbai is tuberculosis, an infectious disease that is curable.⁷ The emergence of multi-drug resistant (MDR TB) and also extensively drug resistant cases (XDR TB) has proved significant.⁷ Early diagnosis and initiation of treatment can prevent maternal deaths due to untreated tuberculosis. After TB, hepatitis A and E which are foodborne infections have emerged as common causes of maternal mortality and are easily preventable by simple household methods like boiling water prior to drinking.⁷ Severe maternal anemia, again a preventable cause of mortality reflects poor antenatal care and follow up in the rural areas. This situation is in contrast to other parts of the country and world where maternal deaths are mostly due to postpartum hemorrhage, hypertensive disorders, cardiac diseases and septicemias.⁸

One of the major reasons for the rising maternal mortality is, untimely referral of severely morbid patients from neighboring districts of Thane, Kalyan, etc. to tertiary referral centers in Mumbai for critical management.⁸ The time lapse during referral results in deterioration in patients condition, further decreasing the chances of survival. The high numbers of referred patients brings out the inadequacy in antenatal, intrapartum and immediate postpartum care and health infrastructure at peripheral centers.

Weaknesses in the JSY scheme also contribute toward the rising MMR. According to an article in the Indian Express in 2014, there has been a decline of 82.6% in the number of women beneficiaries under JSY as most women find it difficult to access the cash incentive due to absence of bank accounts and Aadhaar cards.⁹ Some women receive the cash several days after delivery or often in instalments, and have to travel to the nearest institution for it which is in contravention of the JSY guidelines. It was also found that ASHAs have underperformed in encouraging more women from low socioeconomic classes for institutional deliveries.¹⁰ Moreover, the scheme is provides financial assistance only in rural areas of high performing states like Maharashtra. Hence, Mumbai with a majority of urban population is hardly supported by

### Table 1: The increasing maternal deaths in Mumbai since 2010 as per BMC data

<table>
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<tr>
<th>Years</th>
<th>BMC death review committee data—total maternal deaths in mumbai</th>
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<tbody>
<tr>
<td>2010–11</td>
<td>222</td>
</tr>
<tr>
<td>2011–12</td>
<td>259</td>
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<tr>
<td>2012–13</td>
<td>278</td>
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<td>2013–14</td>
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<td>2014–15</td>
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JSY. Also, the incentive amount of Rs. 700 provided to beneficiaries is not enough for delivery expenses at health centers in the metropolitan cities as a result of which, fewer women are attracted toward the cash benefit and do not avail the facility. Utilization rate of the JSY services has been found to be lower in metropolitan areas and there is scope for improvement.11

Lack of access to transportation, fewer antenatal visits of the urban-poor due to language barriers and overcrowded hospitals, increasing numbers of home deliveries, inability of traditional birth attendants (dais) to conduct safe deliveries and recognize complications leading to late referral are other challenges in peripheral parts of Mumbai.7

Maternal Mortality at our Set up

Recent trends in maternal mortality at MGM Hospital which is a tertiary referral center at Kalamboli, Navi Mumbai, have been similar to those observed all over Mumbai. There has been an increase in maternal deaths in recent years due to infections.

In 2014, a total of six maternal mortalities were recorded of which three (50%) were due to hepatitis E. 2015 has so far recorded five maternal deaths of which two were attributed to hepatitis E, one to H1N1 positive swine flu and one to severe anemia. Though majority of these patients were referred from Rural health centers, these mortalities could have been prevented by timely referral, and antenatal precautions like early diagnosis of anemia, iron supplements, boiling of drinking water, avoiding roadside food, improved sanitation and H1N1 vaccination in susceptible cases.

CONCLUSION

The earlier belief that most causes of maternal mortality are not much within our control is slowly fading away as a result of the shift of this spectrum in recent years from obstetric causes toward preventable and curable medical causes like tuberculosis and hepatitis, in most developing countries of the world including India. Putting an end to these preventable deaths is the need of the hour.12

The first step should be taken to correct fallacies of the healthcare system in early identification and reporting of infections leading to maternal mortality. Health services must be strengthened at the grass-root level in order to bridge the gap between healthcare professionals and below poverty line areas. This can be achieved through strategies, such as adoption of remote villages and improvement of their sanitation and health infrastructure. Better utilization of JSY should be stressed upon by creating more awareness regarding the scheme, increasing the incentive amount by a sufficient margin to meet requirements in urban-poor areas of metropolitan cities like Mumbai, ensuring that the entire amount reaches the beneficiaries without unnecessary delay, availability of free and accessible transportation, timely referral to higher centers and provision of all services free of cost at the health facilities.

While all Millennium Development Regions of the world are experiencing a decline in their MMR and although India and Maharashtra have done exceedingly well in decreasing maternal mortality, Mumbai continues to lag behind. It is indeed a paradox that the financial capital of our country having advanced tertiary healthcare still has a rising incidence of maternal deaths. There is certainly a need for action.

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