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Research Article

A five year study of maternal mortality in Mandya district, Karnataka, India

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ABSTRACT

Background: Maternal mortality is a quality health care of that area. We planned a study on maternal mortality ratio (MMR) to understand the causes leading to maternal mortality in Mandya district, Karnataka, India after the introduction of national rural health scheme in past five years.
Methods: It is a retrospective analysis of case records. We collected records of MMR occurred from Jan 2011 to Dec 2015 over a period of five years from district health office.
Results: MMR from Jan 2011 to Dec 2015 is 38.25/lakh live births the same was 106.9 (in 2001-05) and 95.89 (2006-10). MMR commonly seen between 20-29years and most of them died within 24 hours of admission. Post-partum haemorrage (PPH), eclampsia and amniotic embolism are still the leading causes, anaemia plays a major role (10% direct and 37.5% indirect cause) of maternal mortality.
Conclusions: Introduction of NRHM certainly helped to reduce MMR in our district. MMR by Anaemia, PPH and eclampsia are largely preventable on early recognition and aggressive treatment by skilled birth attendants.

Keywords: Maternal mortality, Skilled birth attendents, Anaemia

INTRODUCTION

Maternal mortality is an index of quality of health care of that area. It is defined as "death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the duration or site of pregnancy from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes". Improving maternal health and reducing maternal mortality have been key concern all over globe particularly in India since 1980 to till date. At the country level, the two countries that accounted for one third of all global maternal deaths are India at 17% and Nigeria at 14%. The maternal mortality ratio (MMR) in developing regions (230) was 14 times higher than in developed regions (16).WHO concluded improving maternal death reviews, evidence and innovation, development and implementation of dual short-term and long term strategies will help in decreasing MMR.[1]

The Office of the Registrar General, India under the Ministry of Home Affairs in Dec 2013 declared maternal mortality in India as 178 in 2010-12.[2] Maternal mortality study in Madhya Pradesh, India showed 81% of all maternal deaths can be prevented through proper understanding diagnosis and management of labor complications.[3]

The reasons that women die in pregnancy and childbirth are many layered. Behind the medical causes are logistic causes, failure in healthcare system, lack of transport etc. and behind these are social, cultural and political factors which together determine the status of women, their health, fertility and health seeking behavior.[4]

Keeping this in mind this study is planned to understand the causes leading to maternal mortality in Mandya district,India.

METHODS

This is a retrospective study, done by studying maternal mortality case records in Mandya district health office from Jan 2011 to Dec 2015.

Case records will be analyzed year wise in relation to distribution of deliveries and maternal deaths, age and parity, when death occurred-antenatal, intra, postnatal period, place of delivery, place of death, delivery conducted by whom, and cause of death for the period of five years.

Inclusion criteria

- Death of a pregnant lady
- Death of lady within 42 days of termination of pregnancy

Exclusion criteria

Death of pregnant lady due to accidental/incidental causes.

RESULT

In the study, there were total of 40 maternal deaths in a span of five years for 104569 deliveries in Mandya district with MMR of 38.25/lakh live births (Table 1).

25-29yrs is the most common age group with 42.5% followed by 20-24 years (35%) had maternal mortality in the study (Table 2).

Table 1: Maternal mortality and live births with MMR year wise.

Year	No. of maternal deaths	No. of live births	MMR/lakh live births
2011	10	21899	45.66
2012	9	21399	42.05
2013	7	21075	33.21
2014	6	20274	29.59
2015	8	19922	40.15
Total	40	104569	38.25

Table 2: Maternal mortality with age wise distribution and its percentage.

Age wise distribution	No. of maternal deaths	Percentage
< 20 years	1	2.5
20- 24 years	14	35.0
25-29 years	17	42.5
30- 34 years	4	10.0
35- 39 years	4	10.0

Most of the maternal mortality 27/40 occurred within 24hr. 16 out of 27 deaths occurred in 4-24 hours of admission. A case of eclampsia, one with haemorrhagic shock, a case of puerperal sepsis (discharged against advice) and a case of preeclampsia with pulmonary edema died at home/on the way to the hospital (Table 3).

All had ANC registration at subcentre, PHC, CHC or in private hospital. 35% had irregular ANC (Table 4).

Table 3: Distribution of maternal mortality in relation to admission to the hospital and time of death year wise.

Admission to death interval	2011	2012	2013	2014	2015	Total
On the way to hospital/home		1	1		02	04
Less than 4 hrs	05	2				07
4- 24 hrs	04	3	02	04	03	16
24- 48 hrs					2	02
48- 72 hrs		1	01		01	01
3- 7 days		1	02	01		04
7- 10 days	01	1	01	01		04

Table 4: Showing regular/irregular ANC with percentage.

ANC registration	No. of maternal death	Percentage
Regular ANC	26	65.00
irregular ANC/unboked cases	14	35.00

Most of pregnant women died in intranatal period. Most common cause of death during antenatal period was eclampsia (Table 5).

Table 5: Death of pregnant ladies in relation to antenatal, intra-natal and post-natal period.

Died during	No. of maternal death	Percentage
Antenatal period	7	17.5
Intranatal period	23	57.5
Early puerperium	10	25.0

Maternal motality is almost same in primi and multigravida (Table 6).

Table 6: Distribution of maternal deaths and gravidity.

	No. of maternal deaths	Percentage
Primi gravida	18	45.00
Multigavida	20	50.00
Grand multi	2	05.00

Maternal mortality is little higher in caesarean delivery than vaginal group (Table 7).

Table 7: Maternal deaths in relation to timing and route of delivery.

	No. of maternal deaths	Percentage
Before delivery	07	17.5
vaginal delivery	16	40
LSCS delivery	17	42.5

Post partum hemorrhage is the most common cause of maternal mortality of 32.5% followed by eclampsia (15%) and amniotic fluid embolism (12.5%) most of them not accepted for postmortem.

Anaemia is present in majority of the cases i.e., in post partum hemorrhage, sepsis, and also involved in heart failure (Table 8).

Table 8: Different causes of maternal mortality and its percentage.

Causes of maternal mortality	No.	Percentage
Post partum hemorrhage	13	32.5
Eclampsia and its complications	6	15
Amniotic fluid embolism	5	12.5
Severe anaemia in failure	4	10
Puerperal Sepsis	2	5
post abortion with DIC	1	2.5
Complication of anaesthesia (spinal shock)	1	2.5
Dilated cardiomyopathy	1	2.5
Obstructed labour	1	2.5
Hollow viscus perforation with peritonitis(after LSCS)	1	2.5
Transfusion related acute lung injury	1	2.5
Medical disorders Status epilpeticus-1 Acute fulminant hepatitis-1 Pulmonary kochs with abdominal preg (optd) MODS-1 Pneumonia with cardio respiratory failure -1	4	10

70% of MMR is directly related to pregnancy complications (Table 9).

Table 9: Direct and indirect causes of MMR and its percentage.

Direct causes of MMR	28	70%
Indirect causes of MMR	12	30%

DISCUSSION

MMR in Mandya district was 106.9/lakh live births in 2001-2005 and it was 95.89/lakh live births between 2006-10. With effective implementation of NRHM programme, training skilled birth attendents and awareness in people has reduced MMR to 38.25/lakh live births in 2011-2015.

In these five years in our district, post-partum hemorrhage is the leading cause of MMR of 30%. This is associated with co-morbidities like anaemia (8 cases) Placenta previa (2 cases), previous two caesarean (3 cases) both atonic and traumatic PPH (2 cases)

In majority of cases there was a delay in recognition of PPH and treatment/referral.

Pre-eclampsia and its complications is the second leading cause of maternal mortality in our study. Most of the cases were not recognized in antenatal checkups (irregular ANC). Four died in antenatal period majority had aspiration during convulsions.

Anaemia is present in almost all the cases of maternal mortality. Four cases had Severe/very severe anemia lead to death because of heart failure in IVth stage two of them migrated from other district during pregnancy for occupation and had no ANC, other two were unbooked cases.

Case records showed five cases of sudden deaths attributed to amniotic embolism, none of them had post mortem report.

Common conditions like anaemia, eclampsia and post-partum hemorrhage are the leading causes of maternal mortality reflecting lack of antenatal care and timely referral as observed in Naik S et al and Jadhav et al.[5,6]

CONCLUSIONS

With effective implementation of NRHM (National rural health mission) in our district maternal mortality is decreased from 95.89 to 38.25/lakh live births in these five years.

Post-partum hemorrhage, eclampsia and anaemia are still the leading causes of maternal mortality. Anaemia is the direct cause in 10% and as indirect causes in PPH, and sepsis, (37.5%)

All leading causes like PPH, eclampsia and anaemia are largely preventable. Training SBA (skilled birth attendants) for early recognition/referral and aggressive treatment on these co-morbidities may help in further reduction of MMR.

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