Original Article

Indian Journal of Obstetrics and Gynecology
Volume 5 Number 4, October - December 2017
DOI: http://dx.doi.org/10.21088/ijog.2321.1636.5417.2

Study of Maternal Mortality at a Rural Medical College: A Seven Year Study

Garima Arora*, Rohidas Chavan, Sabir Khan***, Gourav Bagga******

Abstract

Background: The current maternal mortality ratio in India is 212 100000 live births. India is behind the target of 103 deaths per live births to be achieved by 2015 under the united nations mandated millennium development goals. Maternal mortality is one of the area in Indian obstetrics where strong concern and consequences is seen. *Aims and Objectives:* To calculate the maternal mortality rate in our hospital, assess the demographic data, assess the causes of maternal mortality and suggest steps to reduce the MMR. *Materials and Methods:* A retrospective analysis of maternal deaths from hospital records and death summaries over a period of seven years from January 2009 to December 2015. Data will be collected and grouped. Standard statistical software will be used for analysis of data. Observation In our institute, MMR was 362 in 2009 which declined to 242 in 2015. (mean mortality rate of study was 309.28 year). Most of deaths occurred in women belonging to 3rd decade of their life (73.8%). Most belong to lower class families (62.09%), Majority of the females in our study had vaginal delivery (61.43%), most of deaths occurred within 24 hours of admission to hospital (48.36%), eclampsia was the most common direct cause of maternal mortality (24.1% of total maternal deaths), anemia was the most common indirect cause of maternal mortality (15.68% of total maternal deaths). *Conclusion:* Reviewing the maternal deaths that occurred in our hospital there is an urgent need of early intervention in PIH, sepsis and anaemia. Analysis of every maternal death through maternal death audit should be carried out to identify the actual cause of maternal deaths and deficiencies in health care delivery system that might help to formulate preventive measures to reduce pregnancy related deaths

Keywords: Maternal Mortality.

*Assistant Professor
**Associate Professor
***Junior Resident
****Senior Resident,
Department of Obstetrics & Gynaecology,
Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra 445001, India.

Corresponding Author:
Rohidas Chavan
Associate Professor,
Department of Obstetrics & Gynaecology,
Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra 445001, India.
E-mail: Chavanrp4404@gmail.com

Received on 04.08.2017,
Accepted on 16.08.2017

Introduction

In developing countries maternal mortality is unacceptably high. About 830 women die from pregnancy- or childbirth-related complications around the world every day. It was estimated that in 2015, roughly 303000 women died during and following pregnancy and childbirth. Most of the maternal deaths occurred in low-resource settings, and most of them could be prevented by taking appropriet steps . During 2015, in India 45000 maternal deaths occurred with maternal mortality ratio of 174 [1].

Direct maternal deaths are those resulting from complications of pregnancy, delivery or their management. Indirect maternal deaths includes conditions present before or develop during pregnancy but aggravated by the physiological effects of pregnancy and strain of labor.

Material and Methods

It was a retrospective study of maternal deaths from hospital case papers and death

summaries from Jan 2009 to Dec 2015 in the department of Obstetrics & Gynecology of Shri Vasantrao Naik Government Medical College, Yavatmal.

Inclusion Criteria of Cases

1. All deaths occurring during pregnancy and within 6 weeks of delivery.
2. Early pregnancy complications (Ectopic pregnancy, vesicular mole and abortions)

Exclusion Criteria

1. All deaths occurring 6 weeks after delivery.
2. Accidents

Details of the patients like name, age of patients, date of admission and death, booked or un-booked, presenting complaints and details of antenatal care was recorded. Obstetrics history including marital status, age of marriage, age of first pregnancy, primi or multi, history of previous pregnancy and labor, complication during present pregnancy, past and present medical problems. A thorough analysis of data collection was done. Information was obtained from case sheets including laboratory investigations and maternal mortality records register.

The available records were reviewed for the parameters like incidence of maternal mortality and factors influencing maternal mortality and causes of maternal mortality.

Results and Discussion

During the study period of 2009 -2015 there were 53104 deliveries done in the hospital, of which 52627 live births took place and there were 153 maternal deaths. The maternal mortality ratio was 296/100000 live births. A Large number of patients are admitted and referred from surrounding primary health centers to VNGMC for deliveries and the treatment of complication of pregnancy and post-partum phase.

Maternal mortality ratio in present study is 296/ 100000 live births. This may be due to the increased number of referrals, as our hospital is tertiary health centre and medical college.

Table 1: Year wise distribution of deliveries and maternal deaths and socioeconomic status

Socioeconomic status	No. of maternal deaths	Percentage (%)
Upper	00	00
Upper-middle	00	00
Lower-middle	28	16.3
Upper-lower	30	19.6
Lower	95	62.1

Year	Deliveries	Maternal deaths	Live births	MMR/10socioeconomic status0,000
2009	6685	24	6629	362
2010	6675	29	6639	437
2011	6356	17	6335	268
2012	7227	17	7440	228
2013	8415	29	8357	347
2014	8684	16	8534	187
2015	8882	21	8693	242

Table 2: Distribution as per education and area of residence

Education	No. of maternal deaths	Percentage (%)
Illiterate	75	49.0
Primary education	55	35.9
Secondary education	10	6.5
High secondary education	10	6.5
Graduate	3	1.9

Area of residence	No. of maternal deaths	Percentage (%)
Urban	143	93.46
Rural	10	6.50

Table 3: Distribution as per age and parity

Age	No. of maternal deaths	Percentage (%)
<20	33	21.56
21-30	113	73.80
>31	7	4.57

Parity	No of maternal deaths	Percentage(%)
Primigravida	82	53.5
Multigravida	69	45.0
Grand-multi	2	1.3

Table 4: Distribution as per admission death interval

Admission death interval	No. of maternal deaths	Percentage (%)
<24 hrs	74	48.36
24 hrs to 7 days	71	46.40
>7 days	8	5.22

Table 5: Delivery method and maternal deaths

Variable	No of maternal deaths	Percentage (%)
Antenatal	31	20.26
Postnatal vaginal	94	61.43
Postnatal LSCS	23	15.03
Early pregnancy death	5	3.26
Total deaths	153	100

Table 6: Causes of maternal death

Cause of death	No. of maternal deaths	Percentage (%)
Direct cause		
Eclampsia	37	24.1
Haemorrhage	27	17.6
Sepsis	33	21.5
Pulmonary embolism	9	5.88
Obstructed labour/ ruptured uterus	1	0.65
hyperemesis	1	0.65
Indirect causes		
Anaemia	24	15.7
Hepatitis	10	6.51
Heart disease	7	4.57
Others	4	2.61

More maternal deaths were reported in women from rural areas (93.4%), illiterate (49%), and belonging to low socioeconomic status (62.09%). This shows that poor nutritional status, anemia, malnourishment, lack of ante-natal check-ups due to illiteracy and unawareness were the underlying causes.

Our study showed that 73.8% of women die between the ages 21-30 years, as highest number of women belong to this age group. Nishupriya et al (2010) [2] reported 74.22%.

Out of 153 deaths, 82 were primigravida (53.59%), 69 (45%) were multigravida and 2 (1.3%) were grand multipara. Dogra [3] and Purandare [4] also published similar report in their studies.

Admission death analysis of our study revealed that 48.36% of women died within 24 hours of admission, possibly due to poor general condition of women on admission, late referrals, and at times due to long travel time from neighboring states and it correlates with the result obtained from Surendranath Panda et al (2000) [5].

In our study, majority of maternal deaths have occurred in women who had vaginal delivery. This is because many deliveries were occurred at home and peripheral centers and referred to hospital at later stages.

The analysis revealed that 70.58% of deaths are due to direct obstetric causes and 29.41% due to

indirect causes. Other studies have shown variation in direct obstetric causes from 60 to 80%. Our figure of 70.58% is closer with Nikhil Purandare et al (2000-2005)at 65% and Pal Amitava et al(2005) [6] at 78.7%. Nishupriya et al [2] (1999-2009)reported 74.3%.

Eclampsia (24.1%) is the leading cause of deaths in our institution by sepsis (21.5%), haemorrhage (17.6%) and pulmonary embolism (5.8%). Our findings were consistent with studies by Jain [7], Jadhav [8], Pal [9], Onakewhor [10] and Shah [11].

It is important to detect Pre-eclampsia and manage before the onset of convulsions (eclampsia) and other life-threatening complications. Administering drugs such as magnesium sulfate for pre-eclampsia can lower a woman's risk of developing eclampsia. In Indian scenario with little access to care and lower social status of women, traditional health practices are usually inadequate to detect preeclampsia early. Pregnancy induced hypertension commonly advance to more complicated stages of disease, and many births and deaths occur at home unreported.

Eclampsia, as seen in our study was found to be the leading cause of death in study done by Roy [12]. The high mortality reported from the developing countries was noted primarily among patients who had multiple seizures outside the hospital and those without prenatal care [13,14,15]. A recent systematic review of the causes of maternal mortality and its geographic distribution has shown that the Indian subcontinent has a significantly higher maternal mortality attributable to sepsis, infection and haemorrhage [16]. In our study, anemia (15.68%) is the leading indirect cause of maternal mortality followed by hepatitis (6.5%), heart disease (4.57%), malaria (1.96%), dengue (0.65%) which correlates with the results from Surendranath Panda et al (2000) [5] and Verma Ashok et al (2008) [17].

Preexisting anemia complicates pregnancy leading to congestive cardiac failure, post-partum hemorrhage, puerperal sepsis, puerperal venous thrombosis and pulmonary embolism and death. Blood iron levels of women of child bearing age should be regularly monitored and proper nutritional care should be taken to overcome this problem and to save life of thousands of women who die due to anemia during pregnancy in our country.

Conclusion

Reviewing the maternal deaths that occurred in our hospital there is an urgent need of early intervention in PIH and sepsis. Most deaths could have been avoided with the help of good antenatal, intra-natal and post-natal care, early referral, quick, efficient and well equipped transport facilities and availability of adequate blood and by promoting overall safe motherhood. Reduction in maternal mortality can only be achieved by persistant coordinated, long term efforts within the families, communities and the health system. Universal access to health system, institutional deliveries and strenghthening of referral units for obstetrics emergency will reduce maternal deaths significantly. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system. All couples should have access to effective, client-oriented and confidential family planning services to prevent unwanted pregnancy and unsafe abortion. Maternal mortality and morbidity can be reduced by implementing basic and comprehensive emergency obstetrics care. Analysis of every maternal deaths through maternal death audit should be carried out to identify the actual cause of maternal deaths and deficiencies in health care delivery system that might help to formulate preventive measures to reduce pregnancy related deaths.

References

1. WHO maternal mortality Fact sheet Updated November 2016 http://www.who.int/mediacentre/factsheets/fs348/en/.
2. Nishu Priya, Verma Ashok, Verma Suresh. Maternal Mortality: Ten years Retrospective Study. JK science. Journal of Medical education and Research 2010 Jul-Sep;12(3).
3. Dogra P, Gupta KB. A study of maternal mortality at a tertiary institute. Obs and gynae. Today.2009:115;58-60.
4. Purandare N, Singh A, Upadhyae S, Saraogi R M. Maternal mortality at a referral centre: a five yearstudy. J Obstet Gynaecol India 2007;57:248-250.
5. Panda S, Das BB, Patnaik A. An investigation into maternal mortality. Paper presented at the 44th All India congress of obstetricians and gynaecologists, Ahmedabad; 28-31 December 2000.
6. Pal Amitava. Review of changing trends in maternal mortality in a rural medical collegein west Bengal. Journal of obstetrics and gynecology India, 2005;55(6): 521-524.
7. Jain M, Maharahaje S. Maternal mortality: A retrospective analysis of ten years in a tertiary hospital. Indian J Prev Soc Med. 2003;34:103–11.
8. Jadhav AJ, Rote PG. Maternal mortality–changing trends. J Obstet Gynaecol India. 2007;57:398–400.
9. Pal A, Ray P, Hazra S, Mondal TK. Review of changing trends in maternal mortality in a rural medical

college in west Bengal. J Obstet Gynecol India. 2005;55:521–4.

10. Onakewhor JU, Gharoro EP. Changing trends in maternal mortality in a developing country. Niger J Clin Pract. 2008;11:111–20.
11. Shah RJ, Ali I, Banday A, Fazili A, Khan I. Analysis of maternal mortality in a small teaching hospital attached to tertiary care hospital. Indian J Community Med. 2008;33:260–2.
12. Roy S, Singh A, Pandey A, Roy H,Roy S.Maternal mortality in apex hospital Bihar. J Obstet gynaecol Ind.2002;52.100-104.
13. Goldenberg RL, Mcclure EM, MacGuire ER, et al. Lessons for low income regions following the reduction in hypertension related maternal mortality in high –income countries. Int JGynaecolObstet .2010: 110:271-273.
14. Danso KA, Opare-Addo HS. Challenges associated with hypertensive disease during pregnancy in low-income countries. Int J Gynaecol Obstet 2010:110: 78-81.
15. Dasari P, Habeebullah S. Maternal mortality due to hypertensive disorders of pregnancy in a tertiary care centre in Southern India. Int J Gynaecol Obstet 2010:110:271-273.
16. Khan KS, Wojdyla D, Gulmazoglu AM, Van Look PF. WHO analysis of causes of maternal death: A systematic review:Lancet 2006:367:1066-74.
17. Verma A, Minhas S, Sood A. A study on maternal mortality. J Obstet Gynaecol India 2008;58:226-9.