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MATERNAL DEATH ANALYSIS AT A TERTIARY CARE CENTRE: A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: The quality of healthcare delivery system of a country is reflected by its Maternal mortality ratio(MMR). Maternal death is indeed a tragic event during or after a natural process and it is still the leading cause of death in women of reproductive age group. Method: retrospective study conducted on 134 cases of maternal death from May 2018 to April 2019 maternal deaths during pregnancy, delivery or puerperium upto 42 days were included in study and cause of death were analysed. Result: The MMR in our study is 1143 /1,00,000 live birth. Hypertensive disorders and eclampsia in our study accounted for 31%, hemorrhage 8.2%, Sepsis 6.7% of maternal mortality .

Conclusions: Hypertensive disorder of pregnancy was found to be the direct major causes of death. Prompt identification, early intervention and early referral can lead to massive decline in maternal mortality.

KEYWORDS : Maternal Mortality, Causes, Prevention

INTRODUCTION:

The quality of healthcare delivery system of a country is reflected by its maternal mortality ratio(MMR). Maternal death is indeed a tragic event during or after a natural process and it is still the leading cause of death in women of reproductive age group. According to the World Health Organization (WHO), A Maternal death is defined as death of any woman being pregnant or within forty-two completed days of termination of pregnancy irrespective of duration or site of pregnancy from any cause related to or aggravated by pregnancy but not from accidental or incidental causes [1]. According to the World Health Organization (WHO), Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. Out of these, 99% of deaths occur in developing countries. Maternal mortality is higher in women living in rural areas and among poorer communities. Between 1990 and 2015, maternal mortality worldwide dropped by about 44%. Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births. While Every minute a woman dies as a result of pregnancy and child birth somewhere in the world. In 1938, maternal mortality in India was 2000 which was declined to 1000 in 1959 and then it declined to 540 in 1999[2]. Current maternal mortality ratio is 167 per 1,00,000 live births which is far higher than millennium development goal 2020 i.e. 109 per 1,00,000 live births[3]. The tragedy is that these deaths are largely preventable. The progress in maternal health has been uneven, inequitable, and unsatisfactory. The risk of a woman dying as a result of a pregnancy and childbirth during her lifetime is about 1 in 6 in Afghanistan compared with 1 in 30,000 in Northern Europe[2]. United Nation (UN) report card on Millennium Development Goal-5 concluded that little progress had been made in sub-Saharan Africa where half of all maternal deaths take place. The progress shown by the South Asian countries including India which accounts for 25% of all maternal deaths is also not impressive[3]. Also maternal mortality is just a tip of iceberg, behind each mortality there are at least 20 mothers who experiences severe morbidity. Direct obstetric causes like haemorrhage, hypertensive disorders of pregnancy, septic abortion and medical cause like hepatitis, heart disease in pregnancy are common causes of maternal death. Anaemia is the most important indirect cause of maternal mortality. As these causes are preventable by early detection of high risk factors and early intervention during pregnancy, and can help to reduce the maternal mortality.

AIMS AND OBJECTIVE:

Aim of the study is to review the maternal deaths, its causes, to analyze the preventable factors and at what level of healthcare improvement is needed to avert the maternal deaths.

Objectives of present study are:

- To assess the epidemiological aspects of maternal mortality
- To assess the causes of maternal mortality
- To suggest the ways to reduce the MMR

METHODOLOGY:

It is a retrospective study conducted on sample of 134 cases of maternal death occurring over a period of 1 year from may 2018 to april 2019 that was carried out in Government medical college Nagpur, Maharashtra which is tertiary care centre India catering many districts, sub-districts and Primary health centre (phc) and adjoining states for health. As per definition of maternal death, death due to suicide and homicide were excluded from the study. Total 134 maternal deaths were carefully studied and analysed. Every maternal death was scrutinized from various aspects likely to be related to death such as age, locality of residence, parity, gestational age, literacy, Antenatal care, admission - death interval, condition of the women at admission, cause of death, whether preventable or not and if preventable the factor that needs to be improved and at which level of healthcare.

Observation

Table 1: Sociodemographic characterstics

Characteristic group	Groups	Number of maternal death	Percentage (%)
Age group(yrs)	<20	9	7.9
	21-25	59	51.8
	26-30	34	29.8
	>30	12	10.5
Gravida	1	45	33.6
	2	64	47.8
	3	17	12.7
	4	3	2.2
	5	5	3.7
Transport	Ambulance	78	59.1
	Private vehicle	54	40.9
Referral	Yes	110	82.1
	No	24	17.9
Referred from	Primary health care centre	12	9.8
	Secondary health care centre	52	42.6
	Tertiary health care centre	31	25.4
	Private hospital	27	22.1
Gestational age	First trimester	3	4.5
	Second trimester	15	22.4
	Third trimester	49	73.1
Literacy	Illiterate	4	3
	<8th standard	105	78.9
	>8th standard	24	18
Distance (Km) from referring centre	<50	48	36.6
	50-200	77	58.8
	>200	6	4.6

During the study period, there were 134 maternal deaths out of 11724 live births giving a maternal mortality ratio (MMR) of 1143 per 1,00,000 live births. The age group which had the maximum no. of deaths in this study was between 21-25 years (51.8%) (Table 1), 64 cases were gravida 2 (47.8%). A majority of deaths had occurred in third trimester (73.1%). Almost 110 cases (82%) were referral cases and 64% out of which were referred from far distance(>50km).42% of referral from secondary health care centre.82% of the population were had an education standard of less than eighth standard.

Table no.2: Maternal death and its characterstic

characteristic	Group	Cases	Percentage (%)
Antenatal care	Unbooked	25	15.7
	<4 visit	102	64.8
	>4 visit	31	19.5
status at death	Antenatal	25	19.4
	Postnatal	104	80.6
Place of delivery	Institutional delivery	104	95.4
	Home delivery	5	4.6
Route of delivery	Vaginal delivery	62	55.4
	Cesarean section	50	44.6
General condition at admission	Poor	94	70.1
	Fair	40	29.9
Admission to death interval	<12hr	29	22.5
	12-24hr	10	7.8
	24-48hr	11	8.5
	>48hr	79	61.29
Icu admission	Yes	110	89.48
	No	13	10.6

Table no. 2 shows us that about 81% of cases had visited health care centre for antenatal care <4 visit. The admission status was poor in 70% of cases out of which 90% required icu admission. 80.6% of these deaths were in the postnatal period out which 55.4% patient delivered vaginally. 4.6% of deaths were found to be home delivery.

Table no.3 : cause of maternal death and neonatal outcome

Maternal mortality	Causes	Cases	Percentage(%)
	Preeclampsia	42	31.3
	Post partum haemorrhage	11	82
	Sepsis	9	6.7
	Abortion	6	4.5
	Other direct	4	3
	Indirect	62	46.3
Neonatal outcome	Good	14	20
	Nicu admission	20	28.8
	Death	36	51.4

Amongst the causes of maternal mortality hypertensive disorder alone contribute to 31.1% of maternal mortality. Neonatal outcome is also poor amongst these case causing neonatal death in 51.4%.

Table no.4: Indirect causes of maternal mortality

Causes	Number	Percentage(%)
Hepatitis	16	26.2
Sickle cell disease	7	11.4
Meningitis	5	8
Cerebrovascular accident	4	6.5
Liver disorder	4	6.5
Chronic kidney disease	3	4.9
Acute febrile illness	4	6.5
Heart disease	3	4.9
Acute myeloid leukemia	3	4.9
Scrub typhus	3	4.9
Bronchopneumonia	2	3.2
others	7	11.4

Table no.4 shows indirect causes indirect causes of maternal mortality showing hepatitis in pregnancy having a high mortality 26.2%.as well as prevalence sickle cell disease and it complication causing mortality 11.2% cases.

DISCUSSION

The MMR in our study 1143 per 1,00,000 live birth in comparison to other studies from tertiary care institutions reported a maternal mortality rate of (371-4286/1,00,000) live births due to large referral cases[4]. 82.1% of women were referred out of which 64% from far off places resulting in delayed intervention and many {79%) were In poor general condition at the time of admission 90% requiring icu admission eventually. Late referral of cases from periphery and delayed interventions is one of leading modifiable factor causing maternal mortality. 30.3% of deaths occurred within the first 24 hours of admission whereas in other studies it was 60%. Most deaths occurred in the 21-25 years (51.5%) age group which other studies found to be 64.2%[5]. Post-partum deaths accounted for about 80.6% whereas in other studies it was only 70%[6]. The NRHM through JSY scheme

encourages rural women for institutional deliveries with incentives, still home delivery was reported in 4.6% of cases. Hypertensive disorders and eclampsia in our study accounted for 31.3% which is comparable with studies which as reported 29.54%[7]. Although the use of magnesium sulfate and early termination of pregnancy has let to improve the scenario of eclampsia still early diagnosis of preeclampsia needs to be emphasized to prevents deaths due to pre-eclampsia. In our study hemorrhage was a cause of death was 8.2% which comparable to other studies which reported 21.56%[8]. The decrease in haemorrhage is mainly attributed to the skilled birth attendant training to all staff nurses, village health nurses at the PHC and GH level. Active management of third stage of labour and avaiblity of prostaglandins at phc has lead to profound impact in decreasing postpartum haemorrhage(pph). Sepsis was reported in 6.7% of our cases which is comparable to other studies 13.75%[9]. The need for antibiotics and infection control practices are to be strictly followed to reduce deaths due to sepsis.

CONCLUSION:

The nation's goal for averting most deaths with correct intervention strategies must prioritize the important causes for appropriate resource allocation. Health education of masses along with good quality health care and transport facilities can prevent most of the deaths. In today's modern era of medicine most maternal deaths are seen in women from rural areas, less educated, unbooked and patients from low socioeconomic status, who had to travel a lot to reach a tertiary care centre. All in the medical fraternity should develop a "no blame" culture while doing confidential review of maternal deaths, exactly find the possible levels in prevention of that particular death and concentrate in strengthening that area. Maternal deaths are still high in comparison with developed countries. It is also high compared to our nearby state Kerala, India. Although we have empowered skilled birth attendant to give magnesium sulphate and excellent active management of the third stage of labor (AMSTL) training, still the detection of hypertension is delayed. So the visit in 3rd trimester has to be increased. It needs to be improved in terms of quality for early detection of PIH, early correction of anaemia and health education on importance of contraception, iron- folic acid supplement (IFA) tablets, the imminent symptoms of pre-eclampsia and providing ambulance to all healthcare facilities where delivery takes place in order to reduce the waiting time for the ambulance at the primary health centre (PHC) level. Proper history taking, judicious use of drugs, IV fluids and blood products should be done in managing cases and timely proper decision making at the tertiary care level would have prevented more than 90% of deaths. Also, there is no awareness of warning signs in pregnancy. High risk cases should be identified.

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