

Maternal Mortality – A Three Year Retrospective Study at Government General Hospital, Guntur

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Abstract: As we all know that the Maternal Mortality Ratio/Rate is a Global Health Indicator which reflects the overall improvement of a community in terms of literacy, occupation, healthcare facilities, women empowerment and level of standard of living could also speaks the developmental status of a country. So it is very much important to study the factors associated either directly (or) indirectly with the high mortality to control the situation at large. The present study was undertaken to study the 151 maternal deaths happened over a period of three years from January 2012 to December 2014 in Government General Hospital (Teaching Hospital), Guntur with a view to analyse the situation related to age, period of delivery, outcome of fetus, Type of hospital/area from which the referral was happened, time interval between maternal admission & death and cause of maternal death etc. Results: About 89% of maternal deaths were happened among 20-29 years of age group with the mean age of 23.5 years and 70% occurred during postpartum period. Maximum cases were referred directly from PHCs and more than 40% deaths occurred during first 24 hrs after reaching the hospital. In this study 36% were primiparous, 60.26% delivered normally and live births were accounted for 45%. Toxemias of pregnancy was the commonest cause of maternal death(31.12%), followed by haemorrhage(14.5%), and Embolism(11.25%) was observed.

Key words: Maternal Mortality Ratio, Toxemias, Haemorrhage, Guntur

I. Introduction:

The health of the mother is the corner stone for the health of the entire family and the mother and child must be considered as one unit because the healthy mother always brings forth a healthy baby. In any community mothers and children constitute a priority group reason behind is they not only account for large sector of population they also a “Vulnerable” (or) a special risk group. The risk is connected with child bearing & delivery in case of women and growth, development and survival in case of Infants and children.

According to WHO a maternal death is defined as “the death of a women while pregnant (or) within 42 days of termination of pregnancy, irrespective of the duration & site of pregnancy, from any cause related to (or) aggravated by the pregnancy or its management but not from accidental (or) incidental causes.”¹ Global observations show that in developed regions maternal mortality ratio averages at 16 per 100000 live births but in developing regions the figure is 230 for the same number of live births². Further the problem is largely preventable.

Worldwide about 800 women die every day from pregnancy-child birth related causes². In 2013, 289000 maternal deaths were happened in the world and 99% of these deaths occurred in developing countries. Since 1990, maternal deaths worldwide have dropped by 45% related to Millennium development Goal (MDG) 5 adopted by international community in 2000². In sub-Sahara Africa, a number of countries have halved their maternal mortality since 1990. In Asia & North Africa, even a greater headway has been made.

In India 190/1 Lakh MMR was present in 2013³. And India contributes 17 % (50000) of the world’s maternal deaths⁴. MMR with reference to states in India, the southern states Kerala and Tamilnadu have less than 100 per thousand live births among all the states⁵. And the lifetime risk of maternal death in India as on 2013 is 1 in 190 whereas the same in USA is 1 in 1800⁶.

A woman is most vulnerable at the post partum period. About 50-70 percent maternal deaths occur in postpartum period of which 45 percent of deaths occur in the first 24 hours after delivery and more than two-thirds during the first week. Between 11-17 percent of maternal deaths occur during child birth itself⁷.

Maternal deaths mostly occur from the third trimester to the first week after birth. Studies show that mortality risks for mothers are particularly elevated within the first two days after birth. Most maternal deaths are related to Obstetric complications including post partum haemorrhage (most common cause), infections, eclampsia, prolonged (or) obstructed labour and complications of abortion¹.

II. Material & Methods:

Information pertaining to all the Maternal deaths (about 151) happened due to pregnancy and related causes in the department of Obstetrics and Gynecology, Government General Hospital (Teaching hospital),

Guntur, Andhra Pradesh during the period January 2012 to December 2014 was collected from Maternal death register for this retrospective study.

The available data about these 151 maternal death cases was analysed with a view to study the different factors associated with the mortality of these cases. Profiles like Age, Gravidity and the Socio-economic status, Mode of delivery, period of pregnancy, time interval between maternal admission and death, outcome of the fetus, Type of hospital/area from which referral was made and cause of death etc were selected as study variables as per the availability of the recorded information.

Appropriate statistical techniques were applied while analyzing the data and the observed results were discussed in the light of published material of various authors and conclusion & recommendations were made after detailed study of observations.

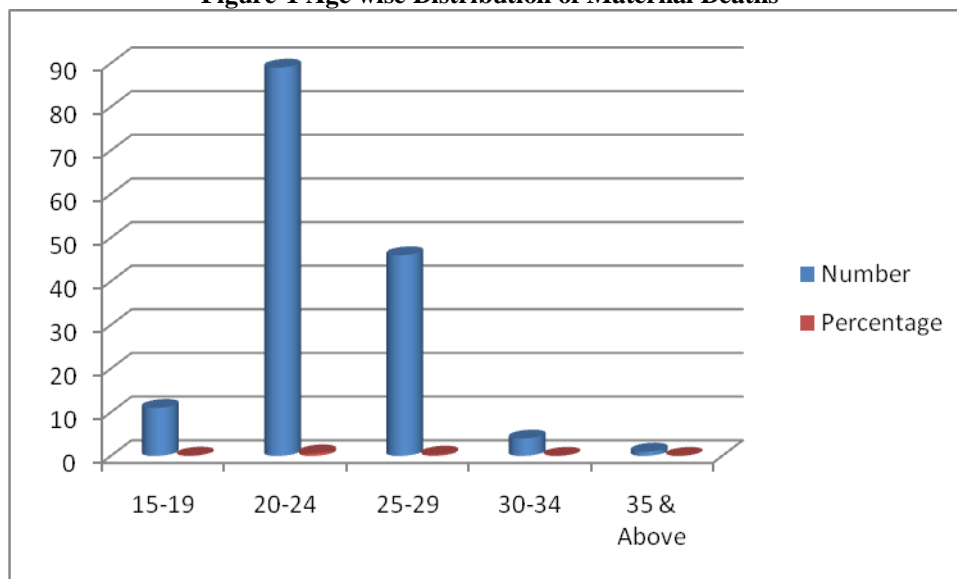
III. Results:

Table-1 Age Wise Distribution Of Maternal Deaths

S.No.	Age	Number	Percentage
1	15-19	11	7.2 %
2	20-24	89	58.9 %
3	25-29	46	30.4 %
4	30-34	4	2.6 %
5	35 & Above	1	0.6 %
	Total	151	100 %

$M \pm 2SE = 17.5 - 29.5$

Figure-1 Age wise Distribution of Maternal Deaths

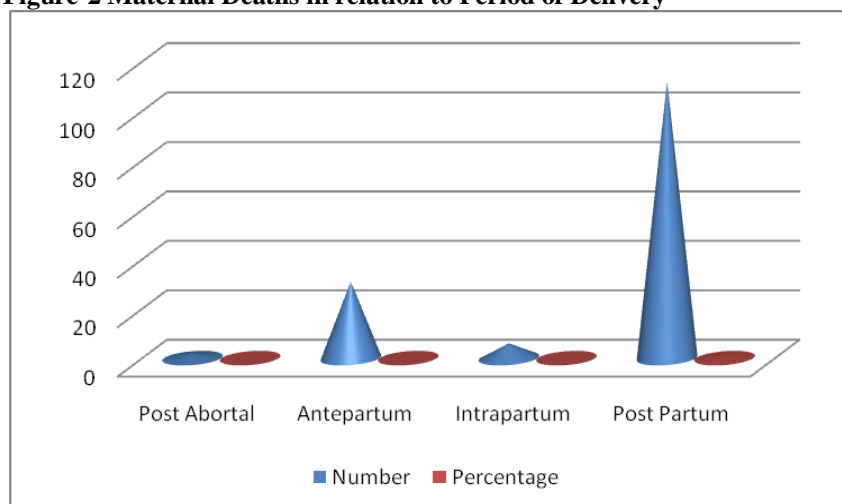


- Mean age of study cases was 23.5 years
- Age range of maternal deaths 16-39 years
- Related to Age wise distribution of Maternal deaths maximum about 58.9 % of deaths were observed among 20-24 years of age group followed by 30.4 % among 25-29 years, 7.2 % between 15-19 years, 2.6 % between 30-34 years and 0.6 % among 35 & above years was observed.

Tabel-2 Maternal Deaths In Relation To Period Of Delivery

S.No.	Period of Delivery	Number	Percentage
1	Post Abortal	2	1.3 %
2	Ante partum	31	20 %
3	Intra partum	6	3.9 %
4	Post Partum	112	74.1 %
	Total	151	100 %

Figure-2 Maternal Deaths in relation to Period of Delivery



- Maternal deaths in relation to period of delivery maximum 74.1 % were happened during Post Partum period followed by 20 % during Ante Partum period, 3.9 % during Intra-Partum period and 2 % happened during post abortal period.

Table-3 Outcome Of Fetus Of Maternal Deaths

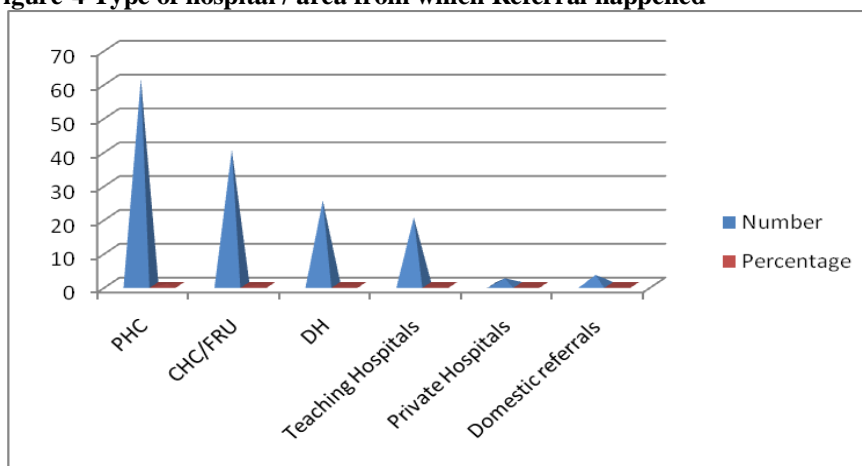
S.No.	Outcome of Fetus	Number	Percentage
1	Live Births	68	45 %
2	Still Births	47	31.1 %
3	Not Delivered	34	22.5 %
4	Aborted	2	1.3 %
	Total	151	100 %

- Regarding the status of outcome of fetus of maternal deaths, about 45 % were live births, 31.1 % still births, 22.5 % not delivered and 1.3 % were aborted.

Table-4 Type Of Hospital / Area From Which Referral Happened

S.No.	Type	Number	Percentage
1	PHCs	61	40.39 %
2	CHCs/FRUs	40	26.49 %
3	DHs	25	16.55 %
4	Teaching Hospitals	20	13.24 %
5	Private Hospitals	2	1.32 %
6	Domestic referrals	3	1.98 %
	Total	151	100 %

Figure-4 Type of hospital / area from which Referral happened



- Regarding type of area from which referral happened, most of the cases about 40.39 % referred from primary health centers (PHCs) followed by 26.49 % from CHCs (Community Health Centers), 16.35 % from DHs (District Hospitals), 13.24 % from Teaching hospitals, 1.98 % coming directly from homes and 1.32 % from private hospitals.

Table-5 Time Interval Between Maternal Admission & Death

S.No.	Time Interval	Deaths	
		Number	Percentage
1	With in first 24 hours	62	41 %
2	2 nd & 3 rd day	40	26 %
3	4 th to 7 th day	29	19 %
4	8 th to 14 th day	16	10.5 %
5	15 th to 30 th day	4	2.6 %
6	>30 days	0	0 %
	Total	151	100 %

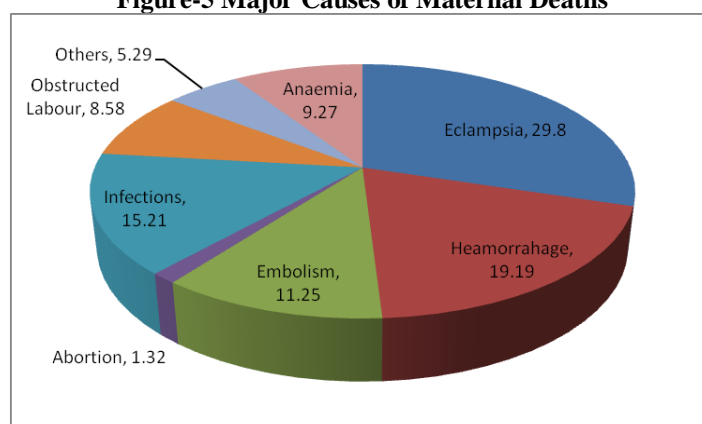
- With reference to time interval between Maternal admission & deaths about 41 % of deaths happened within first 24 hours after admission into hospital followed by 26 % were on 2nd & 3rd day, 19 % during 4th to end of first week, 10.5 % during 2nd week and 2.6 % 3 to 4 weeks was observed.

Table-6 Causes Of Maternal Deaths

S.No.	Cause of Death	Number	Percentage
	Direct Causes:		
1	Toxemias of pregnancy	45	29.80 %
2	Embolism	17	11.25%
3	Post partum haemorrhage	12	7.94 %
4	Ante partum haemorrhage	10	6.62 %
5	Puerperal Sepsis	5	3.31 %
6	DIC	4	2.64 %
7	Rupture Uterus	4	2.64 %
8	Rupture ectopic	1	0.66 %
9	Peripartum cardiomyopathy	5	3.31 %
10	Surgical Complications	4	2.64 %
11	Abortions	2	1.32
	Indirect Causes:		
12	Anemia	14	9.27 %
13	Heart Disease	3	1.98 %
14	Jaundice with Hepatic encephalopathy	8	5.29 %
15	Infections	8	5.29 %
16	ARF	7	4.63 %
17	HIV with TB	2	1.32 %

- Regarding causes of deaths maximum 29.80 % were due to Toxemias of pregnancy followed by 19.19 % Haemorrhage, 11.25 % Embolism, 9.27 % Anemia, 5.29 % Jaundice, 5.29 % Infections, 4.63 % ARF (Acute Renal Failure), 3.3 % puerperal sepsis, 3.31 % Ruptured uterus 2.64 % DIC, another 2.64 % post-section complications, 1.98 % Heart disease, 1.32 % due to HIV/TB and 0.66 % were due to Rupture ectopic respectively.

Figure-5 Major Causes of Maternal Deaths



IV. Discussion:

It is a tragic situation as the maternal deaths are not caused by disease but occurred during (or) after a natural process. It is one of the leading causes of death for women of reproductive age in many parts of the world. As the maternal mortality ratio (MMR) is one of the global health indicators and also the mother & child health is major concern of the Government, every possible attempt has to be made to reduce the MMR because most maternal deaths & Pregnancy complications could be prevented if pregnant women have access to good quality antenatal, intra natal & post natal care.

In this study the age wise distribution of maternal deaths shows that maximum about 58.9 % deaths were observed among 20-24 years of age group, followed by 30.4% among 25-29 yrs age group with the Mean age of 23.5 years and together among 20-29 years, it was 89% but in India as per Sample registration system, Office of the Registrar General the figure among the age group 20-29 years was 61 percent⁸. In the other studies of Puri A et al⁹ – 71.53%, Verma Ashok et al¹⁰-78.5%, Vidhyadhar B et al¹¹ 68% were in the age group of 20-29 yrs was observed. Our study figure (58.9%) between 20-24 years shows that more number of deaths occurred in this early age may be due to the effect of early marriages.

It was observed that In relation to period of delivery, maximum maternal deaths about 74.1% were happened during postpartum period followed by 20% during ante partum period, which is similar to the statement given by the WHO in relation to maternal deaths¹², that means the period from 3rd trimester to 1st week of postpartum period shows this is the crucial period to concentrate to decrease the incidence of maternal mortality.

According to the available data in our study with reference to outcome of fetus of maternal deaths, about 45% were live births followed by 31.1% still births, 22.5% not delivered and 1.3% were aborted. This shows that nearly 50 % of babies of maternal deaths were survived because of efforts of obstetric department of the hospital.

It was observed that with reference to time interval between admission into hospital & death, maximum 41 % of deaths were happened within first 24 hours of reaching the hospital, followed by 26 % on 2nd & 3rd day, 19% during 4th day to end of 1st week. Like this way highest percentage of maternal deaths were happened within first 24 hours after reaching the hospital as revealed by the study of Arpita et al¹³ (80 %) Vidyadhar B et al¹¹ (40%), Purandare et al¹⁴ (80 %) why the more number of maternal deaths happened within 1st 24 hours after admission into hospital is that more number of these cases came to hospital as late referrals the condition which would not allow us to take proper intervention to save the mother as well as the baby.

What we observed in this study regarding type of hospital / area from which referral happened, most of the cases (40.39 %) were referred from PHCs followed by 26.49 % from CHCs / FRUs, 16.35 % from teaching hospitals, 1.98 % came directly from home and 1.32% were referred from Private hospitals. After observing the above findings we understood that maximum number of referrals are coming from PHCs to tertiary care hospitals like our teaching hospital directly instead of referring to CHCs / Area hospitals / DHs which are being called as first referral units and 13.24 % of referrals also came from teaching hospitals like both private and other Government Medical College hospitals located within the radius of 100 kms apart.

Even though haemorrhage is the commonest cause of maternal deaths in the world and in our country, in this study toxemia of pregnancy was occupied the place of the commonest cause of maternal deaths which was accounted for 29.80 %, because a good number of haemorrhagic cases were better managed due to good maintenance of blood bank in the hospital. In another study conducted in West Bengal by Paul A et al¹⁵, toxemia of pregnancy was 50.56 % which is very high. With reference to haemorrhage, Paul A et al 9.2 %, Puri et al⁹ 21 % respectively as compared to the world figure 21%². In this study haemorrhage occupied the 2nd most common cause (14.56 %) followed by Embolism 11.25 %, Anemia 9.27 %, Jaundice (5.29 %), Infections (5.29 %), 4.63% acute renal failure, 3.31% Puerperal Sepsis and Peripartum Cardiomyopathy each. And DIC, Ruptured Uterus & Post Cesarean complications 2.64 % each. 1.98 % Heart disease, 1.32% Abortions, another 1.32% HIV and TB and 0.66 % with Ruptured Ectopic were observed as other causes of maternal mortality in comparison with Arpita et al¹³ study embolism (7.7 %) and Sepsis (9.27 %).

In our study anemia stands with 9.27% in comparison to WHO (2007) statement related to in developing countries anaemia contributing between 12-17% as cause of maternal mortality and Vidhyadar et al¹¹ study (2.63%), Mukharjee et al¹⁶ (25%).

We observed that about 36% of maternal deaths happened to primiparous and 64% to multiparous women. And regarding mode of delivery 60.26% were normal deliveries, 25.82% cesarean deliveries and 13.9% were not delivered.

We got the MMR as 601.7 per one lakh live births for the three years period which is comparable with the findings of Mukherjee et al¹⁶ (518.7), Paul A, Prasantha R et al¹⁵ (625), Puri et al⁹ (690) and Arpita N et al¹³ (555). The reason behind this high figure is, this hospital receives more number of referrals not only from the home district, but also from the other adjacent districts and surprisingly we noticed that referrals also being coming from the other private medical college hospitals & newly established Government medical college hospitals located within the radius of 100 kms to this tertiary level care teaching hospital which is one of the oldest and famous Government hospital present in costal belt of Andhrapradesh state in India.

V. Recommendations:

- The low status of women in the society coupled with their low literacy levels prevents the women taking antenatal care even if services are available. There is an inverse relationship between life time risk of maternal death and the availability of the trained health worker during pregnancy and at the time of

delivery. So right from the street or ward level, a consistent process of identifying (Registering) and follow up of antenatal cases by the health assistants with the supportive & strengthened supervision by higher health cadre will definitely reduce the problem burden to a great extent.

- Maternal mortality ratio strongly reflect the overall effectiveness of health systems, which in many low-income developing countries suffer from weak administrative, technical and logistical capacity, inadequate financial investment and transport facilities and a lack of skilled health personnel. Filling up of this lacuna could sharply reduce both maternal and neonatal deaths.
- Enhancing women's access to family planning, adequate nutrition, improved water and sanitation facilities and affordable basic health care protection from abuse, violence, discrimination, empowerment of women, greater involvement of men in maternal and child care would lower mortality rates further still that women of reproductive age have right to expect.
- The social and environmental factors which influence human reproduction are a legion, viz., age at marriage, child bearing, child spacing, family size, fertility patterns, level of education, economic status, customs and beliefs, role of women in society should be subjected to studied in detail to improve the overall health status of women of reproductive age group which is an important aspect of **social obstetrics**¹⁷.
- In our study as many referrals were directly came from primary level centre's to the tertiary level hospital while bypassing the first referral units (FRUs), measures to be taken to utilize and strengthening the FRUs as per the requirement of the target population.
- The proposed novel approach "e – tracking system by the Government has to be followed scrupulously for better results towards the care of mother and child.

Since the MMR & IMR are the important parameters of influencing the GDP of our nation, we must take up this burning issue on a war foot basis and see that "the mother India is truly the India of worthy mothers" and it is the mother hood that makes the life of a married women, profound and profuse. The motherhood should be a precious bliss but not a vicious curse.

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