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RESEARCH ARTICLE

REVIEW OF MATERNAL MORTALITY AT A TERTIARY CARE HOSPITAL - A ONE YEAR STUDY

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Abstract

Background: Mothers are the nurturing pillar of the family. When a woman dies, the consequences have the potential to affect not only the woman herself, but her family, society and the nation as well.In 2015 globally 303,000 women died of various causes related to maternity.

Aim: To determine the Maternal Mortality ratio at the tertiary care hospital for a period of one year and to identify the causes and factors leading to Maternal mortality.

Material and Methods: This was a retrospective observational study carried out in the department of Obstetrics and Gynaecology at Andhra MedicalCollege and King George Hospital, Visakhapatnam, which is atertiary care centre of North Andhra.The hospital runs one ICU and Obstetric HDU, one blood bank and emergency operation theatre round the clock to provide emergencyobstetric services and critical care to their patients.The female deaths which met the WHO Criteria for Maternal Death were included in this study.The details of all the maternal deaths from January 2021 toDecember 2021 were collected from the individual case sheets and facility-based maternal death review forms.

Results: During the study period January 2021 to December 2021, therewere 18,892 live births and 86 maternal deaths. The MMR in thestudy period was 455.2/100,000 live births.The maximum number of maternal deaths was seen in the age group 20-25 years, 61 cases (70.93%).The number of maternal deaths were maximum in the low socioeconomic status group with 71 cases (82.55%). Type I delay was seen in 49 cases (56.97 %). Direct causes of maternal death in the study was due to abortion in 3 cases (3.4%), hypertension in 37 cases (43.02%), obstetric hemorrhage in 22 cases (25.58%), infection/sepsis in 21 cases (24.41%) and embolism in 3 cases (3.4%) The most common indirect cause of maternal death was anemia seen in 51 cases (59.3%)

Conclusion: Hypertension, hemorrhage and sepsis continue to be the leading causes of direct maternal deaths and anemia indirect cause of maternal death. Majority of deaths are preventable and with proper strategies and focusing on the 3 delays, maternal deaths can be reduced.

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Introduction:-

Mothers are the nurturing pillar of the family.When a woman dies, the consequences have the potentialto affect not only the woman herself, but her family, societyand the nation as well.According to the WHO, "A maternal death is defined asdeath of a woman while pregnant or within 42 days oftermination of pregnancy, irrespective of the duration andsite of pregnancy, from any cause related to or aggravatedby pregnancy or its management but not from accidental coincidental causes" (ICD-10) In 2015 globally 303,000 women died of various causes related to maternity[1].

Maternaldeaths are most commonly caused by complicationsassociated with pregnancy or delivery or a combination ofboth[2]These complications include hemorrhage, unsafeabortions, infections postpartum, hypertensive disorders during pregnancy, obstructed labor etc which accounts formore than 75-80% of direct maternal deaths [3].The riskmultiplies when more than one factor is involved.

Aim:

1) To determine the Maternal Mortality ratio at the tertiary care hospital for a period of one year.
2) To identify the causes and factors leading tomaternal mortality.

Materials And Methods:-

This was a retrospective observational study carried out in the department of Obstetrics and Gynaecology at Andhra MedicalCollege and King George Hospital, Visakhapatnam, which is atertiary care centre of North Andhra.The hospital runs one ICU and Obstetric HDU, one blood bank and emergency operation theatre round the clock to provide emergencyobstetric services and critical care to their patients.The female deaths which met the WHO Criteria for Maternal Death were included in this study.The details of all the maternal deaths from January 2021 toDecember 2021 were collected from the individual case sheets andfacility-based maternal death review forms.

This was later followed by a monthly meet in the hospital, with experts from different fields ofMedicine and also a quarterly meet in the districtand the state.These data were analysed with respect to thefollowing parameters: age, parity, socioeconomicstatus, residence, booking status, condition ofadmission, prevalence of anaemia, admission deathinterval, causes of death and type of delaysidentified.Total 86 maternal deaths were carefully studiedand analysed using SPSS version 24.

Maternal mortality ratio for the study period wascalculated using the formula:
MMR = (Total no of maternal deaths ÷ Total no of livebirths) ×100000
Types of delay according to Maternal Death Review form is summarized as follows:
Type I delay—delay in decision making to seek help
Type II delay—delay in transport due to unavailability of vehicles and delay in referral
Type III—delay in treatment at institutional level

Results:-

During the study period January 2021 to December 2021, therewere 18,892 live births and 86 maternal deaths. The MMR in the study period was 455.2/100,000 live births.
SOCIODEMOGRAPHIC CHARACTERS OF MATERNAL DEATH

Table I:- Age Wise Distribution Of Maternal Death.

AGE	NUMBER OF CASES (N=86)	PERCENTAGE
<20 YRS	6	6.9%
20-25YRS	61	70.93%
25-30YRS	14	16.27%
30-35 YRS	3	3,4%
>35 YRS	2	2.3%
TOTAL	86	100%

The maximum number of maternal deaths was seen in the age group 20-25 years, 61cases (70.93%) [TABLE I]

Table II:- Parity Wise Distribution Of Maternal Death.

PARITY	NUMBER OF CASES (N=86)	PERCENTAGE
PRIMI	51	59.3%
SECOND GRAVIDA	13	15.11%
THIRD GRAVIDA	18	20.93%
GRAND MULTI	4	4.6%
TOTAL	86	100%

51 cases (59.3%) were PRIMIGRAVIDA and 18 cases (15.11%) were third GRAVIDA [TABLE II]

Table III:-Socio Economic Status And Distribution Of Maternal Death.

SOCIO ECONOMIC STATUS	NUMBER OF CASES (N=86)	PERCENTAGE
LOW SOCIOECONOMIC STATUS	71	82.55%
MIDDLE SOCIOECONOMIC STATUS	13	15.11%
UPPER SOCIOECONOMIC STATUS	2	2.3%
TOTAL	86	100%

The number of maternal deaths was highest in the low socioeconomic status group with 71 cases (82.55%) [TABLE III]

Table IV:-Duration Of Hospital Stay.

DURATION OF HOSPITAL STAY	NUMBER N=86	PERCENTAGE
<24 HOURS	14	16.27%
24-48 HOURS	25	29.06%
>48 HOURS	47	54.65%
TOTAL	86	100%

In 14 cases (16.27%) duration of hospital stay was lessthan 24 hours; in 47 cases (54.65%) of hospital stay was more than 48 hours [TABLE IV]

Table V:- Type Of Delay.

TYPE OF DELAY	NUMBER N=86	PERCENTAGE
TYPE I	49	56.97%
TYPE II	33	38.37%
TYPE III	4	3.44%
TOTAL	86	100%

Type I delay was seen in 49 cases (56.97 %). [TABLE V]

Table VI:- Direct Causes Of Maternal Death.

DIRECT CAUSES OF MATERNAL DEATH	NUMBER N=86	PERCENTAGE
ABORTION	3	3.4%
HYPERTENSION	37	43.02%
OBSTETRIC HEMORRHAGE	22	25.58%
INFECTION/SEPSIS	21	24.41%
EMBOLISM	3	3.4%

Direct causes of maternal death in the study was due to abortion in 3 cases (3.4%), hypertension in 37 cases (43.02%), obstetric hemorrhage in 22 cases (25.58%), infection/sepsis in 21 cases (24.41%) and embolism in 3 cases (3.4%)

Table VII:- Indirect Causes Of Maternal Death.

INDIRECT CAUSES OF MATERNAL DEATH	NUMBER N=86	PERCENTAGE
ANEMIA	51	59.3%
HEART DISEASE	9	10.46%
RESPIRATORY DISEASE	13	15.11%
GASTRO INTESTINAL DISEASES	4	4.6%
NEOPLASM	2	2.3%
OTHERS	7	8.13%

The most common indirect cause of maternal death was anemia seen in 51 cases (59.3%)

Discussion:-

The maternal mortality ratio (MMR) in the study by Doddamani U et al was 364 per 1,00,000 live births which is very much higher than national standards of MMR in India that is 103 per 1,00,000 live births.[4]The MMR in the present study was 455.2/100,000 live births which could be due to the fact that our hospital is a tertiary care hospital and receives a lot of complicated referrals from rural areas. In a study by Tayade et al [5] reported an MMR of 242 at Wadgwa, Maharashtra whereasShivkumar et al [6] reported MMR of 974 at VIMS Bellary, Karnataka. Most mothers died in the age group 20-24 years (49.2%). Majority of them were unbooked (60%) and multigravidae (55.8%). In the study by Doddamani U et al demographic characteristics of maternal death were comparable to Pathak et al [7] and SashikalaMootha[8]Haemorrhage was the leading cause of maternal death followed by hypertensive disorders and sepsis. Even today a large number of maternal deaths are due to classic triad of haemorrhage, hypertensive disorders and sepsis.

In the study by Suresh et al [9]majority of the deaths belonged to 26-30 years age group, which can be due to the social situation seen in our community, where most of the pregnancies happen in this age group similar to the present study in which 70.93% deaths occurred in the age group 20-25 years.Most mothers died in the age group 20-24 years (49.2%) in the study by Doddamani U et al.

High prevalence of anemia was seen in mothers who died in the study done by Pratima et al (15%)[10]. Anemia is one condition which can be the causative factor for almost all obstetric complications leading to maternal death.The most common indirect cause of maternal death was anemia in the present study seen in 51 cases (59.3%).

Authors	Haemorrhage	Hypertensive disorder	Sepsis
Vidhyadhar B et al[11]	21.5%	10.5%	7.8%
Sundari KPM et al12]	17.8%	26.7%	12.5%
Shasikala M et al[8]	28.9%	47.9%	23.4%
Present study	25.58%	43.02%	24.41%

In the present study maternal death due to hemorrhage was 25.58%, hypertensive disorder was 43.02% and sepsis was 24.41%similar to study by Shasikala M et al [8] where maternal death due to hemorrhage was28.9 %, hypertensive disorder was47.9 % and sepsis was23.4 %.

Conclusion:-

Hypertension, hemorrhage and sepsis continue to be the leading causes of direct maternal deaths and anemia indirect cause of maternal death. Majority of deaths are preventable and with proper strategies and focusing on the 3 delays, maternal deaths can be reduced.

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