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Maternal Mortality in a Tertiary Care Hospital : Three Years Retrospective

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Abstract

The current study was done to assess the maternal mortality ratio and the causes of maternal deaths over a period of three years at a tertiary care hospital. A retrospective study was conducted in the department of Obs and Gynae jinnah hospital lahore on 2025 to december 2026 data was analysed manually using case sheets and maternal death audit forms. In the study period, there were 49421 live births and 45 maternal deaths giving a MMR of 91.O5/1,00,000 live births. The direct causes of maternal mortality were haemorrhage (22.22%), hypertensive disorders (Eclampsia 20%,severe pre-eclampsia 2.22%),pulmonary embolism (8.89%) and Sepsis(6.67%). Indirect obstetric deaths were anaemia (22.22%), heart diseases (8.89%), anaphylactic shock (4.44%), hepatitis (2.22%) and postabortal choriocarcinoma (2.22%). Most of the deaths occurred in age group 20 and30 years, Multigravidas, Unbooked cases and patients belonging to rural areas. Haemorrhage and pregnancy induced hypertension including eclampsia were found to be leading direct causes and anaemia the leading indirect cause of

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maternal death. Emphasis on health education, need for regular antenatal checkups and proper training of health personnel is required to reduce maternal mortality.

Key Words

Maternal mortality ratio, haemorrhage, Anaemia, Eclampsia

Introduction

Maternal death is a tragic situation as it occurs during or after a natural process. Maternal death is defined as "The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes."(1)

Direct maternal death is the result of a complication of pregnancy, delivery or management of the two. Indirect maternal death is a pregnancy related death in a patient with a pre-existing or newly developed health problem unrelated to pregnancy or non-obstetrical deaths.

With 16% of the world's population, India accounts for over 20% of maternal deaths. A woman dies from complications of child birth every two minutes.(2) The major factors contributing to maternal mortality in India are uncontrolled fertility, inaccessibility or inadequate utilization of health care facilities, illiteracy, ignorance and gender discrimination.Maternal mortality ratio is the ratio of the number of maternal deaths during a given time period per 100,000 live births during the same time period1. Maternal mortality ratio of India is 178 per 1 lakh live births (3) which is far behind the target of less than 100 maternal deaths per 1 lakh live births by 2015 as mandated in millennium development goals.(4)

Maternal mortality is a reflection of the standards of obstetric service and quality of healthcare. The audit of such mortality would help in identifying the problems and prevent recurrence by taking appropriate measures. Hence the present study was conducted at tertiary care

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hospital to review the maternal deaths and causes of maternal mortality.

Material and Methods

This retrospective study was conducted in the Department of Obstetrics and Gynaecology,jinnah hospital lahore 2025 to DEC, 2026.

All the maternal deaths were analyzed using case sheets and maternal death audit forms manually. Various factors likely to be related to maternal deaths such as age, mode of delivery, parity, and antenatal registration, and admission-death interval, mode of delivery and causes of deaths were reviewed.

Results

Total 45 maternal deaths occurred between April 2012-March 2015 and live births were 49421 during the same time period resulting in a mean MMR of 91.05 /lakh live births. Year wise distribution of MMR is shown in *Table No. 1.* As evident from *Table 2*, majority 84.44 % of women belonged to rural areas where as 15.56 % women belonged to urban area. 73.33% of deaths occurred among the unbooked cases. By parity 42.22% were primigravidas and 57.78% were multigravidas. Majority of the mothers 66.67% were in the age group of 20-30 years. Maternal deaths in age group above 30 years and below 20 were 31.11% and 2.22% respectively.

As shown in *Table 3*, 13.33% deaths occurred within one hr of admission,28.89% deaths between 1-6 hrs,11.11% deaths between 7-12 hrs,17.78% deaths between 12-24 hrs,11.11% deaths between 25-48 hrs and 17.78% deaths occurred after 48 hrs of admission. Within 1 day of admission 71.11 % of deaths occurred.

As evident from *table 4*, there were 55.55% maternal deaths with onset of complications before admission and nearly one third patients presenting late to hospital. The cases which developed complications after admissions were 44.45%. As evident from *Table 5*, most of deaths, 62.22% occurred in the post natal period. Antenatal deaths include 31.11%. Deaths due to post abortal complications accounted for 4.44%. Ectopic pregnancies accounted for 2.22% of maternal deaths.

Among postpartum maternal deaths, 18 (64.29%) maternal deaths occurred after vaginal delivery and 10(35.71%) maternal deaths occurred after LSCS. 5 cases had undergone peripartum hysterectomy and 2 cases cesarean hysterectomy. Post abortal complications led to 4.44% of the deaths, one was referred case of

uterine perforation with hemoperitoneum after suction & evacuation in moribund state at the time of admission and one was metastatic choriocarcinoma following abortion. Ruptured Ectopic pregnancy constituted 2.22% of maternal deaths which was again a referred case admitted in irreversible shock at the time of admission.

As shown in Graph 1, the direct causes of maternal mortality were hemorrhage 22.22% (10/45), hypertensive disorders 22.22% (Eclampsia 9/45, severe preeclmpsia with pulmonary edema 1/45), pulmonary embolism 8.89%(4/45) and Sepsis 6.67% (3/45). Indirect obstetric deaths were due to anaemia 22.22% (10/45), heart diseases 8.89% (4/45), anaphylactic shock 4.44%(2/45), hepatitis 2.22%(1/45) and postabortal choriocarcinoma 2.22%(1/45). Causes leading to haemorrhage in our study are shown in *Fig-2*

Discussion

Death of mother is a tragic event. In practical life, it has a severe impact on the family, community and eventually, the nation. Reduction of maternal mortality is the aim of millennium development goals.(4)

In the present study, MMR during the study period was 91.05 per lac live births. SMGS Hospital is a tertiary care centre catering patients from all the districts in Jammu province. Nevertheless MMR in our hospital is well below the national MMR and MMR reported in other studies like 358.69/lakh live births reported by Saini and Gupta (5) and 690/lakh live births reported by Puri A *et al* (6).

Majority of the mothers 66.67% were in the age group of 20-30 years. Teenage pregnancies constituted only 2.22%. Maternal deaths in age group above 30 years were 31.11%. Saini and Gupta5 also reported 81.69% deaths in age group 20-30 years. Similarly Puri A *et al*

(6) showed 71.53% of deaths occurred in 20-30 years age group. In the present study, 57.78% deaths occurred in multigravidas and 42.22% among primigravidas as was observed in other studies, Bangal VB *et al* (7) reported 57.89% deaths among multigravidas and 42.10% among primi; Saini & Gupta (5) reported 83.49% of deaths among multigravidas; Puri A et al6 reported 51.53% of deaths among multigravidas. It reflects the need to strengthen family planning services so that every pregnancy is wanted and planned.

In the present study ,73.33% of deaths occurred among the unbooked cases.This is similar to reported by studies by Puri A *et al* (6) and Bangal VB *et al* (7) who

Table 1. Year-wise distribution of maternal deaths, live births and MMR

Year	Maternal deaths	Live births	MMR/100,000 live births
2012-2013	20	14340	139.47
2013-2014	11	16310	67.44
2014-2015	14	18771	74.58
Total	45	49421	91.05

Table 2. Maternal Deaths and its Characteristics

Characteristics	Maternal deaths	Percentage
AGE		
<20	01	2.22
20-30	30	66.67
>30	14	31.11
PARITY		
Primi	19	42.22
Multi	26	57.78
ANTENATAL CARE		
Booked	12	26.67
Un- booked	33	73.33
LOCALITY		
Rural	38	84.44
Urban	07	15.56

Table 3 Maternal Deaths in Relation to Admission-Death Interval

Admission death interval in hours	Maternal deaths	percentage
<1	6	13.33
1-6	13	28.89
7-12	5	11.11
12-24	8	17.78

25-48	**5**	**11.11**
>48 hrs	**8**	**17.78**

Table 4 Maternal Deaths in Relation to Onset of Complications and Admission Interval

Onset of complication and admission interval	**Maternal deaths**	**percentage**
<12 hrs	12	26.67
12-24 hrs	08	17.78
24-48 hrs	05	11.11
Complications after admission	Maternal deaths	percentage
<6 hrs	6	13.33
6-24 hrs	3	6.67
24-48hrs	4	8.89
>48 hrs	7	15.56

reported 92.31% and 71.06% maternal deaths among unbooked patients respectively. It reflects the need of Regular antenatal check- ups which help to identify high risk pregnancies, associated medical disorders, improve anaemia, prevent eclampsia and gives an opportunity for counseling of patients to adopt contraceptives and safe abortion services

In this study, 62.22% deaths occurred in the post natal period followed by 31.11% deaths in the antenatal period. Similar results have been obtained in other

Table . 5 Maternal Deaths in Relation to Period of Gestation

Period of gestation	Maternal deaths	Percentage
Antenatal	14	31.11
Post-partum	28	62.22
Postabortal	02	4.44
ectopic	01	2.22
Total	45	100

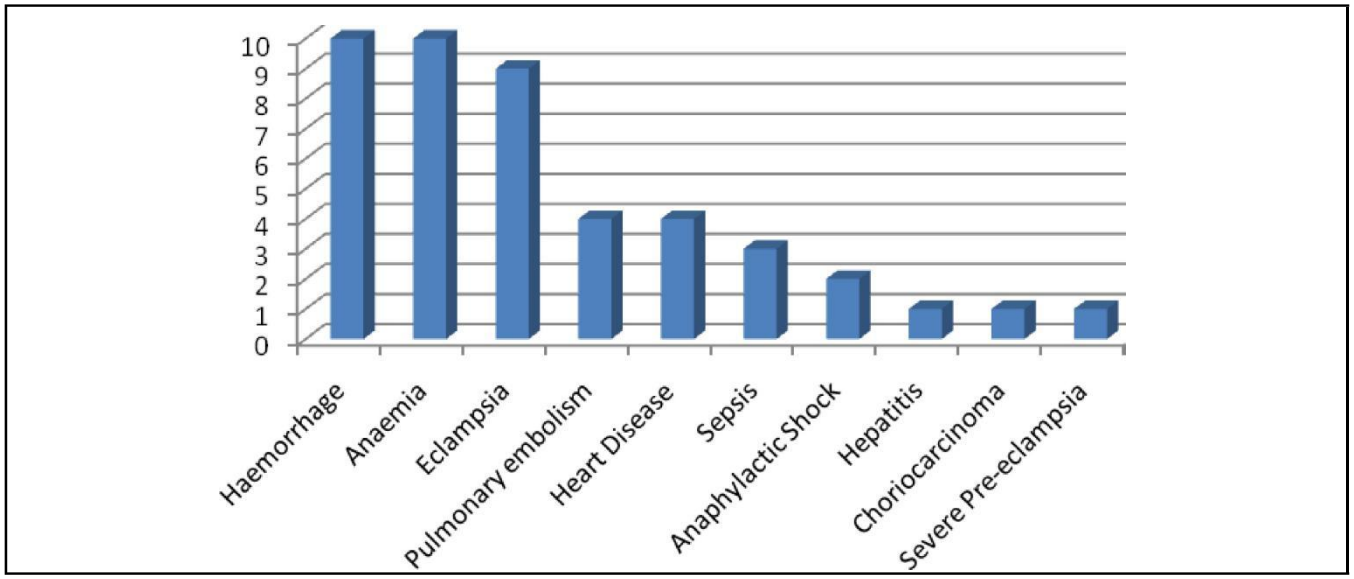
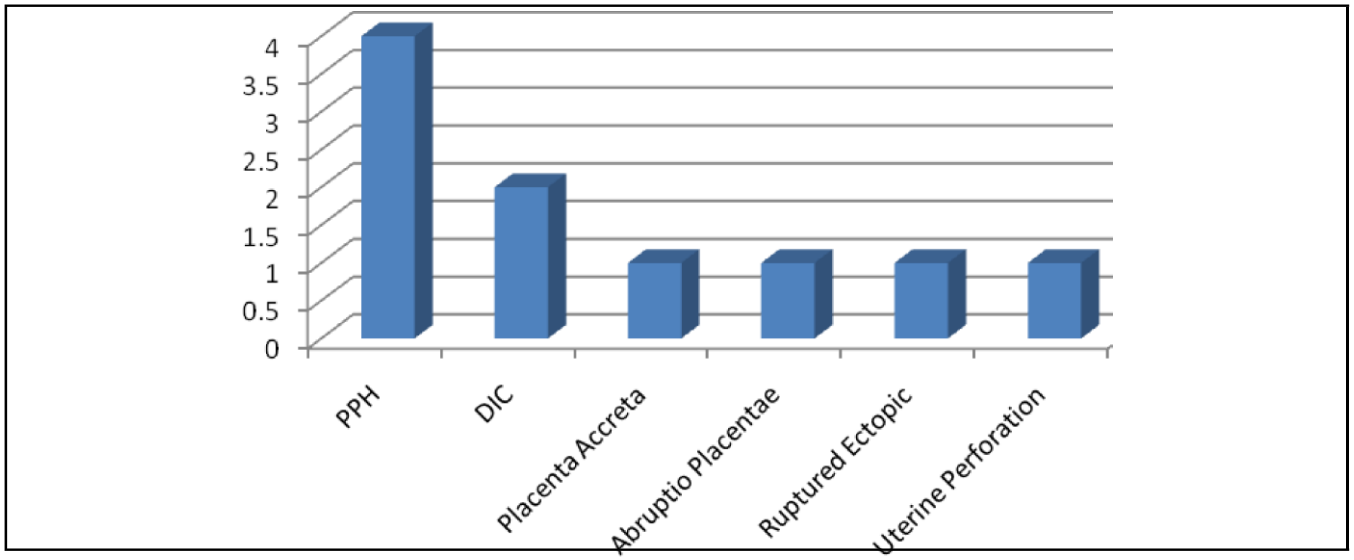


Fig.1 Showing Causes of Maternal Deaths in Our Study

Fig.2 Showing Causes of Haemorrhage in Our Study



studies; Saini and Gupta (5) reported 66.1% of post natal deaths; Puri A *et al* (6) showed 63.08% of deaths in postnatal period. In the present study, Within 1 day of admission 71.11 % of deaths occurred. Similarly Priya N *et al* (8) showed that 54.63% of deaths were within 24 hours of admission, Puri A *et al* (6) 45% of deaths within 24 hours of admission. This was due to late reporting of the patients after the onset of complications

to the hospital. Most of the patients were in moribund state at the time of admission. In the present study, direct causes contributed to 66.67% of maternal deaths and indirect causes resulted in 33.33% deaths. Direct causes were haemorrhage 22.22%, hypertensive disorders 22.22%, pulmonary embolism 8.89% and sepsis 6.67%. Indirect causes include anaemia 22.22%, heart disease complicating pregnancy 8.89%, postabortal choriocarcinoma 2.22% and acute fulminant hepatitis 2.22%. Similar results were seen in studies by Priya N *et al* (8) who found postpartum haemorrhage 35.05% as the leading cause followed by hypertensive disorders 27.83% and anemia 25.7%; Yadav K *et al* (9) who reported haemorrhage 43.16%, hypertension33.09% and sepsis 12.67% as direct causes and anemia 26.8% as leading indirect cause. Kittur S10 found causes of maternal deaths as haemorrhage 35%, hypertensive disorders 27.50% anaemia 10%, pulmonary embolism 10% and heart disease 2.5% So it is clear from our and other studies that haemorrhage, hypertensive disorders and anemia are leading causes of maternal deaths. Preexisting anaemia worsens as pregnancy advances leading to cardiac failure and death. It also impedes the mother's ability to resist infection or cope with haemorrhage and increases the likelihood of her dying in childbirth by a factor of four.(1)

Conclusion

The analysis of maternal deaths in our study reflects ignorance and poor health education regarding importance of antenatal checkups. The need of the hour is proper functioning of JSY and JSSK scheme under NRHM which encompasses the registration of antenatal cases, identification of high risk cases like anaemia, hypertension etc, their timely treatment, free cashless institutional deliveries, free to and fro transport, cash assistance, general public awareness regarding danger signs, importance of intake of proper iron rich diet, maintenance of personal hygiene and small family size. To prevent mishaps in deliveries, early referrals and prompt transportation services are required. The network of well trained ASHA workers should be strengthened which form link between pregnant women and health system.

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