

# ONE YEAR ANALYSIS OF MATERNAL DEATHS AT LIAQUAT UNIVERSITY HOSPITAL HYDERABAD

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## ABSTRACT

**OBJECTIVE:** To analyze the risk factors for maternal deaths and to assess if these deaths could have been avoided in our set up.

**SETTING:** Department of Gynaecology and Obstetrics (Unit III), Liaquat University Hospital, Hyderabad, Sindh – Pakistan, from January to December 2005.

**DESIGN:** Descriptive case series.

**SUBJECTS AND METHODS:** Case records of all maternal deaths were reviewed for the demographic features, parity/ booking status and other risk factors. Frequencies and percentages were calculated by using SPSS 10.0 in this regard.

**RESULTS:** During this study period, there were 3011 maternity admissions with 2786 live births. Among them, 43 maternal deaths were recorded with maternal mortality ratio (MMR) of 1543 per 100,000 live births. Majority of cases (88.3%) were unbooked, belonged to age group >25 – <35 years with parity <4. Most of patients (90.6%) were anemic with hemoglobin% <10 gm/dl. Most common risk factors found were hypertensive disorders (30.2%), hemorrhage (20.9%) and sepsis (18.6%) respectively. Third phase delay appeared as the most frequently observed delay (62.7%).

**CONCLUSION:** Maternal mortality is very high in our set up due to multiple interrelated factors. This analysis depicts the fact that many of the deaths could have been avoided if appropriate care has been offered to them. Hemorrhage, sepsis and hypertensive disorders are still the leading factors which need top priorities to be focused on. These maternal deaths can be reduced by promoting health awareness, enhancing women's participation in the antenatal program and providing them effective obstetric care at doorstep.

**Keywords:** Maternal mortality. Sepsis. Hypertension. Pregnancy. Obstetrical Hemorrhage.

## INTRODUCTION

Maternal deaths in the developed countries are almost on decline. However, the poor women of the developing countries are yet deprived of their fundamental right to live. Each year, nearly 600,000 women die worldwide due to pregnancy related causes, with overwhelming majority from developing countries. There is a gross difference of maternal mortality rates worldwide, with a variation of life time risk of maternal death from 1:2800 in developed countries to 1 in 16 in Sub Saharan Africa. Pakistan is being ranked 3<sup>rd</sup> among the developing countries where higher maternal deaths occur<sup>2</sup> (26000/year). The persistence of avoidable maternal deaths in our country is symptomatic of a pervasive neglect affecting mostly the poor women. Sepsis, complicated labour, hemorrhage and hypertensive disorders are no more the main killers in developed world<sup>3</sup>. Nevertheless, these factors do contribute to majority of deaths in developing countries<sup>4</sup>. The wide disparity among ratios of maternal deaths has been mainly related to economic status; however, the historical records demonstrate that economic status is not the main determinant, rather than appro-

appropriate key interventions can change the spectrum of life<sup>5</sup>. In developing countries, audit approach is one of the most effective methods to assess the performance of existing facilities and to design or modify the key interventions. Continuing maternal deaths deserve prompt attention for a properly organized and motivated obstetrical care system to make the pregnancy and childbirth a safe journey. Keeping the relevance and importance of maternal mortality as a predictor of assessing obstetrical health care system in our area, this study was planned.

The objective of this study was to analyze the risk factors of maternal deaths and to assess if these could have been avoided.

## SUBJECTS AND METHODS

We conducted retrospective review of all cases of maternal deaths between 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2005 at Department of Gynaecology and Obstetrics (Unit III), Liaquat University Hospital Hyderabad, Sindh – Pakistan. This hospital is a major tertiary care facility that receives all emergency cases including referrals from all the peripheral/ rural areas of Sindh excluding Karachi. It has three units for attend-

## ONE YEAR ANALYSIS OF MATERNAL DEATHS

ing gynaecological and obstetrical emergencies having an average admission of 30-40 patients per day. We included all maternal deaths which occurred due to pregnancy, aggravated by pregnancy or its management. Accidental deaths and deaths beyond 42 days post partum were excluded. Case records of all these women were reviewed from maternal mortality register and patient's files. Details regarding socio-demographic features, and events leading to maternal deaths were recorded on a performed proforma. Data were analyzed through SPSS version 10.0 to interpret the results.

### RESULTS

During the study period, there were 3011 maternity admissions with 2786 deliveries. Among them, 43 maternal deaths were recorded showing maternal mortality ratio (MMR) of 1543/100,000 live births. Age ranged between 18 to 42 years. The highest mortalities occurred in age group >25 – 35 years (n=27, 62.7%); and parity group 3 – 4 (n=15, 34.8%). Most of the cases (72%) were brought from outside Hyderabad city. Hypertensive disorders, sepsis and hemorrhage were the major risk factors of death (**Table I**). Doctors were primary care providers in 46.5% of cases (**Table II**). Third phase delay was seen as the major contributing factor for the deaths (n=27, 62.7%) due to non-recognition of problem, mismanagement, and lack of facility (**Table III**). No single patient died at the time of arrival, however, 5 patients (11.6%) died within one hour of arrival.

**TABLE I:  
RISK FACTORS OF MATERNAL DEATHS (n=43)**

Direct Causes	Number of Cases	Percentage
(a) Hypertensive disorder	13	30.2
(b) Sepsis	08	18.6
(c) Hemorrhage*	09	20.9
(d) Uterine rupture	03	6.9
(e) Embolism	04	9.3
<b>Indirect Causes</b>		
(a) Anemic failure	02	4.6
(b) Anaphylaxis	01	2.3
(c) Liver disease (cirrhosis)	03	6.9
(d) Cardiomyopathy	01	2.3
<b>Unexplained</b>	02	4.6

\*4 patients had Antepartum Hemorrhage (APH), 2 had Postpartum Hemorrhage (PPH) and 3 had intra peritoneal hemorrhage secondary to uterine rupture

**TABLE II:  
FIRST CARE PROVIDERS OF PATIENTS (n= 43)**

Family Member	12	27.9%
Traditional Birth Attendant	04	9.3
Lady Health Worker Or Nurse	06	13.9
Doctor	20	46.5

**TABLE III:  
DELAYS IN SEEKING MEDICAL CARE AND MANAGEMENT**

Delay	n=43	%
1st PHASE DELAY	09	20.9
2nd PHASE DELAY	07	16.2
3rd PHASE DELAY	27	62.7
(1) Delay in recognition of problem	12	44.4
(2) Mismanagement	09	33.3
(3) Lack of facilities	01	3.7
(4) Non-availability of operation theatre at tertiary care	03	11.1
(5) Non arrangement of Blood	01	3.7
(6) Delay in giving consent for operation	01	2.3

### DISCUSSION

Motherhood still remains an unsafe journey for our poor women as depicted by high number of maternal deaths in this study. In most of the cases, there was no single answer to the death due to multiple interrelated factors. Hypertensive disorders, sepsis and hemorrhage have been cited as main causative factors in developing countries<sup>6</sup> and findings of this study also suggest that the situation is not changed yet. In this study, MMR of 1543/100,000 live births is higher than reported by Shamsad<sup>7</sup>, Iqbal<sup>8</sup> and Fikree<sup>9</sup>. This may be related to the fact that Liaquat University Hospital is the main centre for attending emergencies from all over Sindh province excluding Karachi city. Provision of well organized obstetrical care is the key of success for achieving reduction in maternal mortality in developed countries. More recently, Sri Lanka has witnessed significant reduction in maternal mortality in a relatively shorter period by expansion of midwifery skills and contraceptive usage<sup>10</sup>. Similar interventions

can also be applied here to improve the prospects of life in this regard.

In contrast to reports from Bangladesh and Africa,<sup>11</sup> we found majority of deaths in age group >25 years – < 35 years. However, these findings correlate with other Pakistani studies<sup>7</sup>. High parity has been reported as a risk factor for maternal deaths in developing countries<sup>11</sup> but, the current study did not find it as a risk factor. This can be probably related to the fact that most of the multiparous ladies usually have their deliveries at home and deaths could have been under reported. Hypertensive disorders appeared as top leading cause of maternal deaths. This was found in contrast to Shamshad<sup>7</sup>, Fikree<sup>9</sup>, Kumar<sup>12</sup> and Sudha<sup>13</sup>, who ranked hemorrhage as the leading cause. Life threatening eclampsia is a rare event in developed countries<sup>14</sup> but in this study, it contributed to 20.9% of maternal deaths. Good antenatal care, prompt detection and quick management can prevent the mortality related to hypertensive disorders. Social taboos and illiteracy are also important issues to be focused. One of a primigravida having eclampsia was taken to Peers and had been there for 2 days to get rid of Saya or Jin (under super natural forces). Public awareness and improving literacy can overcome these issues.

Hemorrhage continues to be a major contributor of maternal mortality. In Pakistan, the reported figures vary from 21% to 34%<sup>7</sup>. Good nutrition and prompt obstetric care has reduced the maternal mortality related to hemorrhage in developed countries. Most of women in this study were unbooked; 90.6% were anaemic, and majority was received without the maintenance of intravenous line and not being counseled about the need of blood transfusion. This situation led to further delay in reaching at tertiary care hospital. Good antenatal care with built up of iron stores can increase the tolerability to shock. Standard guidelines should be followed while dealing hemorrhage to reduce the attending morbidity and mortality. Sepsis contributed to 8 maternal deaths. Aseptic techniques and judicious use of antibiotics have also reduced the number of deaths in the developed countries<sup>15</sup>. However, deaths related to sepsis are commonly observed in the developing countries<sup>16</sup>. Ensuring hygienic condition at birth, prompt detection of infection and proper use of antibiotics could have prevented these deaths. Three maternal deaths were contributed by uterine rupture. It is gloomy that all these were from Hyderabad city. Two cases were with unscarred uterus being mismanaged by prostaglandins and oxytocics while one patient with a scarred uterus was given a prolonged trial of labour at poorly equipped centre. Though vaginal birth after caesarean section is considered safe but only when offered in appropriately selected patient at well equipped place<sup>17</sup>. The unsafe

use of prostaglandins and oxytocics shall be prohibited as these can be lethal in unskilled hands<sup>17</sup>. Three patients died of severe liver disease (Cirrhosis) due to Hepatitis C. Wide usage of unsterilized syringes, instruments and unnecessary parenteral therapies are the main source for spreading infection in our community. A sixteen years review from India<sup>18</sup> found viral hepatitis contributing to more than a quarter of indirect obstetrical causes of maternal deaths. This is a high time to create community awareness about the preventive measures with the help of media and unsafe blood transfusion practice should be abandoned.

In six cases, exact cause of death could not be ascertained. However, the clinical scenario was suggestive of thromboembolism in four cases. There is lack of advanced equipments and insufficient intensive care units at our hospital and this need to be focused in health plans. Venous thromboembolism is among the leading causes of maternal deaths in developed countries<sup>19</sup>. The less number of deaths in studies due to embolism can simply be related to relative increased number of deaths by other causes. One patient died soon after admission due to severe respiratory distress. She had a dilatation and curettage one hour ago at a local hospital. The other patient had severe polyhydromnios and died within half an hour of complaining abdominal pain while theatre arrangements were made for exploration. One patient died of cardiomyopathy. She was a grossly anaemic primigravida, being mismanaged at a local hospital with excessive intravenous drips to cure her generalized weakness. Early identification and proper management could have improved the survival of patient. The pathway to maternal deaths has been related to the three phase delays. It was difficult to exactly relate the cause of death merely due to the individual delay, since in most of the patients a combination of events was observed. The first delay was seen in nine patients who did not have the insight of problem mainly due to illiteracy and poverty. Seven patients had reached the medical facility with great difficulty due to financial problems and poor transport system. One such patient had uterine rupture after prolonged labour with hand prolapse for more than twenty hours, simply due to non availability of any vehicle for the transport to health facility. It was gloomy that third phase delay was seen in more than half of the cases. At health facility, delays due to non recognition of problem, such as prolonged obstructed labour and mismanagement by giving an unnecessary trial of vaginal deliveries for high risk patients such as with abruptio placenta, severe pre eclampsia, eclampsia and scarred uterus were noted. Though in majority of cases nurses, lady health workers and doctors were the primary care providers yet there were delays in referring the patients to tertiary care centres for ap-

propriate intervention. Majority were brought by own transport without proper referral notes. The likely need of surgery and need of arrangement of blood was even not explained to the patients and their attendants and this led to further delay at tertiary care. Same factors have been highlighted in UNICEF's report from India<sup>20</sup>. Hence, there is a need to create a good communication and rapid transport networks among the peripheral and central health facilities. The flaws in management at the health centers are to be addressed by non condemned policy. The adequacy of quality health services should be continuously monitored both at private and government sectors. In three patients, delay at our hospital was seen due to non availability of operation theaters. Hence, there is dire need to extend the surgical facilities to meet the heavy workload and this should be a top priority. Advancements for provision of individual blood components should be made since whole blood transfusions are no more practiced world wide and such provision can avoid the mortalities related to hemorrhage.

### CONCLUSION

In conclusion, maternal mortality is very high in our set up. In majority of the cases, there is no single answer, rather a cascade of events led to deaths. However; hemorrhage, sepsis and hypertensive disorders need prompt attention to develop and implement the key interventions.

### RECOMMENDATIONS

A sensitive collaborative approach involving community, religious leaders, family peers, and traditional birth attendants with health facilities should be made for health care delivery to every pregnant woman. The health system should be monitored for quality services and shall provide the advanced technologies accordingly.

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