

Maternal mortality in Faisalabad and Millennium Developmental Goals

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ABSTRACT

Objective: Maternal mortality remains a great challenge to health systems in developing countries. Reliable maternal mortality rate in Pakistan is not exactly known. The estimated range of maternal mortality is 190-1700 deaths per 100,000 live births. Our objective was to find out the maternal mortality rate and its main causes in a tertiary care centre in Faisalabad.

Methodology: This is an observational descriptive study. Maternal death which took place in Gynaecology Unit of Allied Hospital/Punjab Medical College Faisalabad from April 2006 to March 2010 were included in this study. Accidental incidental maternal death, patients with medical and gynecological problems and those beyond 42 days post partum were excluded.

Results: Total of maternal deaths during these four years was 168 in 24667 births with MMR of 6.81/1000. The common causes of maternal deaths were obstetrical hemorrhage in 58(34.5%), hypertensive disorders in 31(18.45%), puerperal septicemia in 23(13%) and unsafe abortion in 20(11.9%). Other direct causes were found in 12 (7.1%) patients. One forty eight (88.09%) patients belonged to uneducated class, 110(65.48%) from rural area whereas 95(56.5%) hadn't received any antenatal care.

Conclusion: High MMR (Maternal Mortality Rate) can be prevented with timely and proper antenatal and post natal facilities.

KEY WORDS: Maternal Mortality Rate (MMR), Millennium Development Goals (MDG) Maternal Mortality.

Abbreviations: Para (P), Traditional birth attendant (TBA).

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INTRODUCTION

A maternal death is defined according to the World Health Organization, 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.

Maternal mortality rate is defined as the number of maternal deaths related to childbearing divided by the number of live births (or by the number of live births + fetal deaths) in that year. Live birth refers to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life.

More than half a million women die annually worldwide due to complications of pregnancy and child birth.² Majority of these complications occur as a result of hemorrhage, hypertensive disorders, sepsis, obstructed labour and unsafe abortions. About 90-95% of these women belong to developing countries.³ Globally there were more than five lac maternal deaths in 2005.⁴ It was reduced to 342,900 maternal deaths worldwide estimated in 2008. Ninety- nine percent of all maternal deaths in the above period occurred in developing regions.⁵ More than 50% of these maternal deaths were met in six developing countries (India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of the Congo).⁶

It is estimated that each year in Pakistan five million women become pregnant, out of these 0.7 million are anticipated to have various obstetrical and medical complications.⁷ An estimated 30,000 women die each year owing to pregnancy related causes.^{3,8} W.H.O. and UNICEF estimates revealed maternal mortality of Pakistan around 340/100,000 live births, which according to Pakistan Demographic and Health Survey (PDHS) 2006-07, has decreased to 297 from 350 in 2000-01 per 100,000 live births.⁹ The National Health Policy aimed to reduce the maternal mortality rate to 250 per 100,000 live births by 2010.

In September 2000, the United Nations agreed at fifth Millennium Development Goals (MDG). Out of the eight MDG, No 3, 4 and 5 have great concern about women and children. MDG No.3 encourages gender equality and empowerment of women while MDG No.5 concentrates on improving maternal health and reducing the maternal mortality rate - by three quarters by 2015 from 1990 level.^{10,11}

Pakistan is the 7th most populous country of the world with an estimated population of 172.8 million with fertility rate of 4.1 percent births and contraceptive use rate of 30 percent¹². Total expenditure on health in Pakistan is 2.6-2.7% of its GDP (percent of gross domestic product) in 2006-2009. Total expenditure is the sum of public and

private health expenditure which provides both curative and preventive health services¹³.

METHODOLOGY

This study was conducted in Gynaecology department of Allied Hospital, Faisalabad over a period of four years (2006-2010). This was a retrospective observational analysis. The catchments area of this hospital is approximately 4-5 million population as Faisalabad district alone has a population of 2889675. The nature of admissions is mostly emergency and referred from other district hospitals in critical and moribund condition.

Inclusion criteria; all antenatal and post-partum patients entering labour ward, obstetrics care unit and Gynaecology in patient department.

Exclusion criteria; accidental incidental maternal death, patients with medical and gynaecological problems and those beyond 42 days post partum were excluded from study. Data was collected from patients' case records and maternal mortality register. Patients' age, parity, socio-economic status, antenatal care, education and level of care were analyzed.

RESULTS

A total of 24667 birth occurred during the study period and there were 168 maternal deaths with maternal mortality rate of 6.81 /1000 births (0.68%). Ages ranged from 18 to 47 years. Peak age group was 20-29 years where maximum 97(57.74%) death occurred followed by 30-39 years lowest maternal deaths occurred in 40 and above group (Table-I) the highest maternal mortality was found in P₅ (para five) and above which accounted for 53.57% of maternal deaths followed by least in P₁-P₂ (Table-II)

Approximately 56% patients did not ever had any Antenatal visits and 10.71% had more than three visits. Most 79(47.02%) patients were delivered by traditional birth attendant followed by 25.60% deliveries by lady health worker/midwifery services. Duration of patient stay in our setup was

Table-I: Maternal mortality according to age group.

	Age group	No. of. patients	%
1	<20	17	10.12
2	20-29	97	57.74
3	30-39	46	27.38
4	40 ->40	08	04.76
		168	100

Table-II: Distribution of maternal death according to parity.

Parity	No. of. patients	%
P0	26	15.48
P1- P2	19	11.31
P3- P4	33	19.64
P5 and above	90	53.57
Total	168	100

less than one hour to seven days Maximum patients 77(45.83%) had duration of stay in tertiary care ranged 1-8 hours. Least 17(10.12%) stayed for 1-7 days. (Table-III)

The common causes of maternal deaths were obstetrical hemorrhage in 58(34.5%), hypertensive disorders in 31(18.45%), puerperal septicemia in 23(13%) and unsafe abortion in 20(11.9%). Other direct causes lead to 12(7.1%) death. Out of 168 maternal deaths Indirect Causes were detected in 24(14.29%) patients. which include Cardiomyopathy, anemic heart failure, blood transfusion reaction +DIC, anesthesia complication, respiratory and other medical problem (Table-IV)

DISCUSSION

Maternal mortality is an important measure of women's health and pinpoints towards the performance of health care systems.¹⁴ There is now a large agreement that maternal mortality cannot be reduced in the absence of increased utilization of high-quality health care services. Where MMR is high, it can be concluded that the health care system is ineffective, either in the form of lack of access of women to healthcare facilities or quality of care provided to them or it may be a combination of both factors.¹⁵

A high maternal mortality can leave a long-term effect on the whole society, creating endless social problems for families left without the protective, guiding, assisting and encouraging role of a mother. Maternal deaths are difficult to identify precisely because this requires information about deaths among women of reproductive age, pregnancy status at the time of death and the medical cause of death.¹⁶

In Pakistan, hospital based Maternal Mortality Rate is variable ranging from 17 per 100,000 births in private tertiary care hospital to 2736 per 100,000

Table-III: Distribution of maternal death by delivery related characteristics N=168.

<i>Antenatal visits by patients</i>	<i>No.</i>	<i>Percentage</i>
0	95	56.55
1	35	20.83
2-3	20	11.90
>3	18	10.71
Delivery / intervention carried out by:		
Traditional birth attendant	79	47.02
Lady health worker/midwife	43	25.60
Doctor	32	19.04
Undelivered / unintervented	14	8.33
Place of delivery		
Home	113	67.26
Hospital	16	9.52
Health centers	15	8.93
Private clinic	10	5.95
Undelivered / unintervented	14	8.33
Duration of stay in tertiary care		
< I hour	23	13.69
1-8 hours	77	45.83
9-24 hours	51	30.36
More than 24 hours to 7 days	17	10.12

births in a public tertiary hospital.¹⁷ In spite of all efforts to achieve MDGS, trend for maternal mortality seems to be static or increasing if we compare it with local studies especially one at Faisalabad in 1990.¹⁸ During this decade maternal mortality dropped to 0.86/1000 largely as a result of referral of complicated cases to the hospital in time, availability of Faisalabad Flying Squad service and an emergency ambulance equipped with medicines and trained staff that could rapidly shift women to the hospital, whenever complications were imminent to develop during delivery. In the present study it was especially noted that patients were either reached or referred from other health facility systems in severely compromised and

Table IV: Causes of maternal mortality

<i>Direct Causes</i>	<i>No. of patients</i>		<i>Indirect Causes</i>	<i>No. of patients</i>	
Hemorrhage	58	34.52%	Cardiomyopathy	2	1.19%
Eclampsia & Hypertensive disorder	31	18.45%	Anemic heart failure	3	1.79%
Puerperal septicemia	23	13.69%	Hepatic encephalopathy	5	2.98%
Unsafe abortion	20	11.90%			
Obstructed labor	02	1.19%	Blood transfusion reaction +DIC	3	1.79%
Other direct causes					
Prolong labor					
chorioamnionitis	10	5.95%	Anesthesia complication	1	0.59%
-	-	-	Respiratory and		
			Other medical problems	10	5.95%
Total	144	85.70		24	14.29%

critical conditions which naturally lead to increase in maternal mortality

In the present study direct causes account for 85.7% of deaths. Indirect causes of maternal deaths 14.23% consist of anemia, heart failure, cardiac diseases, hepatic encephalopathy, blood transfusion reaction, DIC (disseminated intravascular coagulation) and anesthesia complications. The study is not different from local and other studies,¹⁹⁻²² which revealed that nearly eighty percent maternal deaths are due to direct causes.

The major cause of mortality was haemorrhage (34.5%) in present study. It is almost the same in similar circumstances in Pakistan.²³ Hemorrhage followed by hypertensive disorder and infections were the chief causes of death reported in a good number of the studies conducted in Pakistan.^{19,23-26} Hemorrhage (ante partum/postpartum, no matter associated with early pregnancy complications) stays one of the most important killers of child bearing women all over the world.²¹ These deaths due to haemorrhage are preventable, if they would reach in time to hospital and provided immediate and effective resuscitative measures.²¹ Our study is contrary to many studies²⁷⁻³⁰ where hemorrhage is not on the top of the list. Instead in those studies hypertensive disorders were the most common cause of maternal mortality.

In our study after hemorrhage, other important causes of maternal mortality are: hypertensive diseases 18.4%, puerperal sepsis 13.69% and unsafe abortion 11.90%, showing almost same trend as in survey presented by SOGP³¹ (Society of Obstetricians and Gynecologists Pakistan). Worldwide sequences of maternal death came out hemorrhage 25%, hypertension 25%, infections 15%, unsafe abortions 15% and indirect causes 20%.^{21,22}

Obstructed labor was another frequent cause of maternal death in the past which did not occur in our study. The reason might be the changing trend that patients are being delivered by L.H.W. (Lady Health Worker) and midwives who refer patients earlier to hospitals for caesarian section. The procedure can be expedient and rewarding for general practitioners but carries risks for the woman, mostly when conducted in less than optimal conditions. Rates higher than 15% indicate inappropriate use of the procedure.¹⁴

Our study showed mortality was slightly higher among women <20 years then it increased sharply among women 20-29 years and fell down to the lowest among women 40 and above age. It is contrary to Farid Midhet study³² but similar to results found

in other studies.^{33,34} DHS survey³⁴ revealed two out of five maternal deaths happened from pregnancy-related causes for 25 to 29 year age group indicating that early marriages, teenage pregnancies and increasing parity might be responsible for rising maternal mortality in this age group. This study revealed 53.5% mortality in P₅ and above similar high mortality holds true in many other studies.^{23,32,35} The present study shows P₁-P₂ to be the safest group. The results are in accordance with the study.³²

When we focus on antenatal care, 56.55% had no antenatal check up which is almost same as in other alike condition²⁸ and 20.83% had only one antenatal examination. According to the PDHS³⁴ one-third of pregnant women do not get any prenatal care by any means.

In our study 19.04% delivered by doctors while 72.61% by T.B.A, L.H.W and midwifery services. We can say that collectively 72.61% deliveries are performed by persons who are not experienced and trained enough to handle intra and post partum complications. In one study³⁶ it was concluded that in Pakistan, 70% of women, generally from rural areas, do not receive antenatal care and most of deliveries take place at home, only in 35% of cases trained personals are available.³⁶ Maternal deaths worldwide has dropped by a third as revealed by a new report from world health organization.³⁷ It is a substance of great apprehension that maternal mortality is yet alarmingly high in Pakistan which can be prevented with timely and proper antenatal and post natal facilities.

CONCLUSION

Poor socio-economic conditions, un-educated status, rural residency and lack of availing benefits of already existing antenatal and health facilities are important contributors to maternal mortality. It was also noted that deficiencies such as problems with blood transfusions, availability of trained medical staff and shortages of necessities in the existing health services at primary, tehsil and district level are responsible for referral of patients in moribund condition which may further worsen the situation.

We need enthusiastic efforts and aggressive work in order to achieve the motivated millennium development goals to reduce maternal mortality by 75% (from 1990 levels) by the year 2015. It is required that refresher courses and workshops must be arranged at all level, so that we can improve quality of already existing health care system and avert maternal mortality. Electronic and print media may also address to the serious and gloomy

view of maternal health. There must be regulations to interrupt the unlawful practices and laws should be amended to apprehend the people involved in malpractices. Neat, clean, skilled and expert private practice should be provided to reduce maternal mortality.

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