

MATERNAL MORTALITY IN BALOCHISTAN: A CHALLENGE FOR THE OBSTETRICIANS

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ABSTRACT

Objective: To identify the main causes contributing to high maternal mortality rate at Quetta, Pakistan

Design: An analytical, hospital-based study.

Place and Duration of Study: From January 1996 to December 2000 at Gynaecology Unit-I, Sandeman (Provincial) Hospital, Quetta, Pakistan.

Patients and Methods: Referral level hospital surveyed by questionnaires, using verbal autopsy of the attendants and the next of kin of the dying women. The questionnaire contained specific informations regarding medical and obstetrical complications leading to the death of mothers. All the relatives were required to answer the supplied questionnaires independently and a final conclusion, regarding the cause of death, was drawn by the senior obstetrician of the department on the basis of verbal autopsy report.

Results: Maternal mortality ratio, measuring the risk of death specifically during pregnancy, was calculated to be 560/100,000 LB (live births). Obstetrical hemorrhages accounted for 43 cases (42%), obstructed labour/ruptured uterus were the second most common with 22 cases (21%). Direct obstetrical deaths were 101 (99%) out of 102 maternal deaths, one indirect death, excluding 2 fortuitous deaths due to carcinoma of cervix and ovary. Out of direct deaths, 61 (60%) were in the postpartum period.

Conclusion: A high proportion of potentially preventable maternal deaths indicate the need for improvements in education for both patient and health care provider, if we are to reduce maternal mortality ratio (MMR) to half by the end of this century, which is the goal of safe motherhood initiative (SMI).

KEY WORDS: *Maternal Mortality. Hemorrhage. Uterine Rupture. Maternal Health Services.*

INTRODUCTION

Maternal mortality is still a major issue for the health planners and policy makers of developing countries like Pakistan. The intensity and the magnitude of the problem can be realized by the fact that 136 million women bear childrens annually.¹ Out of these, nearly half a million die and 99% of these are from the developing countries. So frighteningly colossal are the figures that every minute of each day, 380 women get pregnant; and 190 of these are unplanned pregnancies; 110 women experience pregnancy related complications; 40 women face an unsafe abortion and at least one woman dies due to complicated childbirth.² In Pakistan alone, 20,000-30,000 mothers die annually.³ Maternal mortality rate (MMR) of Pakistan has been calculated by UNICEF (1997) as 340/100,000 live births⁴, whereas National Health Survey put the figure as 500/100,000 LB (1998).⁴

Balochistan, geographically the largest province of Pakistan, has a population of 65 lakhs, of which females comprise 46%. Almost 76% of population is rural with antenatal care available to only 17% of them.⁵ MMR can be used to measure the quality of maternal health services available and the impact of sociocultural taboos on the rights of women.⁶ Only 3-5% of births in the rural population are conducted at the Hospitals

and more than 80% are attended by traditional birth attendants (T.B.As).⁷ Maternal mortality ratio (MMR) calculated for Balochistan during 1991-94 period was 650/100,000 LB with a total fertility rate (TFR) of a Pakistani woman being 5.03 and national contraceptive prevalence being 18%.⁸

The purpose of this study was to establish the main causes contributing to high maternal mortality ratio at Quetta and study the major omissions and commissions in an effort to reduce the high MMR in this province.

MATERIAL AND METHODS

This study was conducted from January 1996 to December 2000 at Gynaecology, Unit-I, Sandeman (Provincial) Hospital, which is affiliated with Bolan Medical College, Quetta, This is the only tertiary care teaching hospital of the province, hence, patients travel from far away places to make it to the hospital with all sorts of complications.

INCLUSION CRITERIA

1. As per the definition, all direct and indirect maternal deaths in Gynaecology, Unit-I were included.
2. All maternity wards and outpatient department admissions (booked cases) were studied.
3. Only those maternal deaths were scrutinized in which the patient (before her death) and her relatives conceded to answer the questionnaire.
4. All obstetrical cases of Gynaecology, unit-I were included.

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EXCLUSION CRITERIA

1. The cases of Gynaecology Unit-II, were excluded.
2. Fortuitous deaths (unrelated to period of pregnancy) were not included.
3. Deaths in women with early pregnancy, which were not confirmed by either pregnancy test or ultrasound, were excluded.
4. Deaths occurring after the completion of puerperium were excluded.

DATA COLLECTION AND ANALYSIS

The referral level hospital survey was conducted through a semi-structured verbal autopsy questionnaire with an open-ended section to record the respondent's 'verbatim' account of deceased's final illness. The closed ended section was designed to identify specific signs and symptoms. The questions on contributing factors were newly constructed, and the reviewers were asked to specify whether any of the listed factors, structured in pre-defined categories, had either probably contributed to the death. Lastly, it was reviewed independently by one of the senior obstetricians of the department. Autopsy was not performed in any case where consent was not given by the relatives. Where the cause of death could be attributed to more than one factor, the most likely factor was assigned the cause of death.

The information extracted from the questionnaire included maternal age, parity, social and booking status, gestational age, and relevant features of index pregnancy. Categorization of socioeconomic status was based on monthly income. The cases were divided into two social classes, poor class- earning <Rs.2000 per month and middle class earning >Rs.2000 per month. Questions regarding the index pregnancy included presence of medical problems during the index pregnancy like diabetes mellitus, hypertension, chronic renal disease, cardio pulmonary problems, presence of any acute or chronic infection, maternal malnutrition and hemoglobin status. Obstetric complications studied were hypertensive disorders of pregnancy, antepartum hemorrhage (APH), obstructed labour, ruptured uterus, *Dai* (TBA) manipulation and surgical interventions and its complications.

The data compiled was then analyzed statistically by Chi square test, and measures of morbidity and mortality (incidence rates).

RESULTS

The maternal mortality ratio calculated for the five years period from January 1996 to December 2000 was 560/100,000 LB, and total maternal deaths were 102, excluding two fortuitous deaths. During the above-mentioned period a total of 18,649, emergency admissions were made, total number of live births were 17,931 and total number of deliveries were 16,437. Maternal mortality ratio during the study period is shown in (Table I).

TABLE I A 5 - year overview

Year	Total No. of admissions	Live births	Total deliveries	Maternal deaths	Maternal mortality Ratio
1996	3201	3108	2879	26	836
1997	3552	3415	3102	22	644
1998	3826	3602	3254	13	360
1999	3326	3100	3020	20	64
2000	4744	4706	4352	21	446

The leading causes of maternal deaths during the period of five years included obstetrical hemorrhages in 43 (42.5%) cases, obstructed labour/ruptured uterus in 22 (21.5%) cases, deaths due to eclampsia in 11 (10.7%), puerperal sepsis/septicemia deaths in 10 (9.8%) and abortions in 6 (5.8%) (Table 2).

TABLE II A cause related contribution in MMR:-

Causes	ICD No.	Total No.	%age
A/ DIRECT			
1. Hemorrhages	(641,666)	43	42.5
a. Abruptio	-----	21	20.5
b. Ruptured uterus	-----	20	19.6
c. Postpartum hemorrhage	-----	14	13.7
d. Placenta Previa	-----	08	7.8
e. Ruptured ectopic pregnancy	-----	02	1.96
2. Eclampsia	(642)	11	10.7
3. Puerperal sepsis	-----	10	9.8
4. Abortions	(639)	06	5.8
5. Pulmonary embolism	(673)	04	3.9
6. Anaesthesia complications	(668)	01	0.9
7. Others	-----	04	3.92
B/ INDIRECT			
Cardiac disease	-----	1	0.9
Total		102	100

Severe hemorrhage was the most frequent direct obstetric cause of morbidity and mortality with a rate of 4.6 per 100 pregnant women. The second commonest cause was severe dystocia resulting in obstructed labour due to fetopelvic disproportion (160 cases), fetal malpresentation (88 cases) and prolonged labour. Out of 248 cases, 22 died giving an incidence rate of 8.87. Hypertensive disorders of pregnancy affected 460 women, 86 of whom had eclampsia and 11 died. (I.R=2.39 per 100 pregnant women).

Women dying in 62 cases out of 102 maternal deaths belonged to poor socio-cultural class (monthly income < Rs.2000/-), with only 12 utilizing antenatal care as compared to 24 cases from a total of 40 of better earning families but again 16 women of such families did not utilize antenatal care due to illiteracy ($\pi 2=17$ df=1 $P<0.001$).

Youngest age recorded in maternal deaths was that of a 15 years old girl due to postpartum hemorrhage and the oldest age recorded was 45 years dying due to ruptured uterus and fatal hemorrhage (Table 3).

Most of the maternal deaths occurred in women with parity of more than five (Table 4). Highest parity recorded was of 20G 19P who died due to antepartum haemorrhage.

TABLE III Age distribution in maternal deaths

Age in years	Total No.	% age
15-20 Yrs.	10	9.8
21-25 Yrs.	13	12.7
26-30 Yrs.	23	22.5
31-35 Yrs.	31	30.3
36-40 Yrs.	18	17.6
40 Yrs and above	07	6.8
Total	102	100.00

TABLE IV Parity distribution in maternal deaths

Parity	Total No.	%age
Primigravidae	15	4.7
2-4	34	33.3
5 and above	53	53.0
Total	102	100.0

Of the women referred from far-flung area 60 (58.8%) died after delivery in the hospital; 17 (16.6%) had already delivered at home, 15 (14.7%) died undelivered and 11 (10.7%) died due to abortions and ectopic and molar pregnancies. Overall, maximum number of deaths occurred in the postpartum period, 62 (60.7% cases), followed by antepartum deaths in 30 (29.4%) and intrapartum deaths in 04 (3.9%).

About 47% of the dying women were from proper Quetta city. Patients from within the city could also be categorized according to the utilization of antenatal care, with more deaths recorded in that obstetrical population living more than 10 kilometers away who never utilized the available antenatal care (48), whereas in women living less than 10 kilometers away, 48 deaths occurred with 18 utilizing antenatal care ($\chi^2=3.9$ $df=1$ $P<0.05$).

Only three cases were booked out of the total 102 maternal deaths and these were the cause of death in women one each from P.I.H, placenta previa-II, and molar pregnancy.

Majority of complicated cases were referred by T.B.As when it was too late to resuscitate the patient (Table 5).

Of the women who died after delivery in the hospital 21 (35.5%) had spontaneous vaginal deliveries, 08 (13.5%) had instrumental deliveries, while cesarean sections and hysterectomies were done in 19 (32.2%) and 11 (18.6%) cases respectively. The majority of cesarean sections were undertaken for the indications of obstructed labour (57.8%) and antepartum hemorrhage (26.31%).

TABLE V Status of health in dying mothers on arrival at hospital

Condition on arrival	No.	Time interval between arrival and death	No.
1. Dead	06	Dead on arrival	06
2. Moribund	23	Immediately	18
3. Very serious	42	Within 2 hours	
4. Serious	20	Between 2-12 hrs	27
		Between 24-48 hrs	11
5. Apparently stable	11	3-7 days	04
		After 1 week	02
Total	102		102

DISCUSSION

A study was conducted at the same hospital during 1991-94, which stated MMR as 650/100,000 LB. The main causes of deaths in that study were 53% due to hemorrhage, followed by 25% due to eclampsia.

Our study shows not only a reduction in overall MMR but also reduction in number of deaths due to eclampsia from 12% to 10%, suggesting an improvement in the quality of maternal health services as compared to the past.

At the current MMR, Quetta can be ranked 4th after Larkana (47/1000 LB), Hyderabad (26/1000 LB), Peshawar (14.2/1000 LB) and some of the lowest MMR values being for Karachi (JPMC=4-6/1000 LB), Lahore (S.G.R.H=2.25 /1000 LB) and Faisalabad (0.8/1000 LB)⁹.

A comparison of various causes of maternal deaths shows that postpartum hemorrhage was the main cause of death in Larkana⁹ and Peshawar (LRH).¹⁰ In Lahore it was hypertensive disorders of pregnancy¹¹ and sepsis¹² in Hyderabad.

An international comparison further highlights the facts that a developing country like India, despite its larger population, has less MMR than that of Pakistan i.e. 340/100,000 LB. Latin American countries have MMR of 270/100,000 LB; USA 5/100,000 LB, U.K 5/100,000 LB, Japan 16/100,000 LB and China 44/100,000 LB also have values significantly and understandably lower than that of Pakistan. The only countries in the world having MMR more than that of Pakistan are the African countries with an average MMR of 540/100,000 LB.¹³

In a country like rural Gambia with no established community health services, the largest causative factor in maternal deaths is obstetrical hemorrhage, with majority of deaths occurring in the postpartum period.¹⁴ Even in developed country like United Kingdom, substandard care was the most common factor accounting for about 65% deaths from hemorrhage and ectopic pregnancy.¹⁵

In order to establish the avoidable factors in our study, a series of events leading to maternal deaths were analyzed and it was realized that most of the deaths were due to errors of omission i.e. delays at home, during travel and at the hospital. Based on the verbal autopsy report factors responsible for high MMR in Balochistan can be summarized as: -

- 1. ADMINISTRATIVE LEVEL:** (a) Nonavailability of basic health facilities: (b) Underutilization of available health facilities:
- 2. COMMUNITY LEVEL:** Poor health and education, large number of children and lack of established referral system.
- 3. HEALTH CARE LEVEL:**

Failures in diagnosis of high risk patients, onset of complications and delay in decision to seek care, transportation and appropriate emergency treatment at hospital, constraints of limited supply of emergency drugs, lack of emergency obstetric theatre equipment and poor blood transfusion facilities add to this catastrophe.

CONCLUSION

Various governments have launched a number of projects to reduce MMR, mainly through the Ministry of Population Welfare.¹⁶ It has already been suggested that lack of prenatal care is markedly associated with high risk of maternal deaths.¹⁸ Furthermore, MMR figures on comparison between government hospitals and private hospitals show a difference (7.4/1000 LB V/s. 0.9/1000 L.B),¹⁹ urgently pointing towards the need of improved prenatal care at government hospitals as well as provision of basic amenities of antenatal health care to the rural community.

A reduction in illiteracy in general and awareness about this national calamity in particular would produce educated mothers making their daughters also educated.

The standards of emergency obstetric care can be improved by generating awareness amongst the professionals with peer reviews and audits; in the community by mass media and at governmental level by budget allocation and, planning for target populations within specified duration of time period. Promotion of projects such as safe motherhood, women's health project at grass roots level in the community can also prevent the mothers from dying untimely death.

The reduction of appalling figures of M.M.R in Balochistan requires more than just a good obstetric care, it requires major social changes, in particular, commitment to education of both men and women.

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