

MATERNAL MORTALITY IN A TERTIARY CARE HOSPITAL, LAHORE - A Four Year Review

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This study was carried out to determine the cause and frequency of maternal deaths in Jinnah Hospital, Lahore which is a tertiary care hospital. The study was performed between January 2000 and December 2003 at Gynae unit-I. The case notes of all patients who died during January 2000 to December 2003 period in Jinnah Hospital gynecological unit-I as a result of conditions associated with pregnancy, labor, and puerperium (6 weeks after pregnancy) were reviewed in an effort to identify the most common cause of maternal deaths. Final conclusion regarding the causes of death were drawn after consultation within the department as well as with the concerned department like Medical, Surgical, Anaesthesia and ICU. Total number of deaths recorded during this period was 46. Maternal mortality ratio, measuring the risk of deaths specifically during pregnancy, was calculated to be 289.58/100,000 live births. Direct obstetrical deaths were 43 (93.47%) and there were three indirect deaths. Obstetrical haemorrhage accounted for 14 cases (30.43%). Septicaemia was second most common (11 cases, 23.91%). Eclampsia accounted for 7 cases (15.21%). Maternal mortality rate has been improved in 2002 (198.91/100,000) as compared to 333.55/100,000 in 2000 but again there was rise in 2003 (308.64/100,000).

INTRODUCTION

The maternal mortality ratio (MMR) is a measure of the risk of death once a woman has become pregnant. It is measured as number of deaths of women from pregnancy related causes, when pregnant or within 42 days of termination of pregnancy per 100,000 births¹. During the 1990s, a number of international conferences set goals for a reduction of maternal mortality. In 1999, during appraisal of the Cairo Programme of Action, a reduction in maternal mortality was reiterated to be a high priority and countries agreed to strengthen information systems further to permit regular monitoring of maternal mortality².

Childbirth is of course a part of human survival and should be an event for the mother to celebrate. Pregnancy and childbirth are regarded as normal physiological events in a woman's life and most women as well as their families don't consider it essential for them to receive any antenatal care. It is not a disease as pregnancy related morbidity and mortality is preventable.

Maternal mortality ratio is a global indicator of status of women in a country. The intensity and the magnitude of the problem can be realized by the fact that 136 million women bear children annually³. The WHO estimates that there are over half a million maternal deaths every year in the world⁴. Ninety-nine percent of these belong to the

developing world⁵. Less than one percent of these deaths occur in developed countries, demonstrating that they could be avoided if resources and services were available⁶.

In addition to maternal death, women experience more than 50 million maternal health problems annually⁷. As many as 300 million women (more than one quarter of all adult women living in the developing world) currently suffer from short-or long term illness and injuries related to pregnancy and childbirth⁸. 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 child births⁹. Maternal mortality ratio (MMR) of Pakistan has been calculated by UNICEF (1997) as 340/ 100,000 live births⁹, whereas national health survey put the figure as 500/100,000 LB (1998)¹⁰. According to Dew Hursts MMR in Pakistan is 905/100,000 LB¹¹, which is maximum in the world. Maternal mortality ratio in Balochistan was calculated to be 560/100,000 LB¹². Maternal mortality is a complex factor, which is influenced by the women's social and economic status, age, and parity, by her nutritional status in childhood and adulthood. It is also an indicator of her access to antenatal care and delivery services and the quality of these

systems. Multiple pregnancies increase the risk of maternal deaths¹³. Monitoring mortality rate is one of the most basic ways of checking the effectiveness of a clinical service. In developing countries maternal and perinatal mortality rates are the main indicators of the quality of maternity services and they demand constant vigilance even in developed countries. This study was carried out to evaluate and establish the causes of maternal deaths in Jinnah Hospital, Lahore. Having a sound knowledge in this respect and understanding of maternal care is an important step towards designing and implementing interventions for positive behavior changes. This study is a step in this direction.

PATIENTS AND METHODS

The study was conducted at Gynecology unit-I Jinnah Hospital, Lahore, which is affiliated with Allama Iqbal Medical College, Lahore. This is a tertiary care hospital situated in southern Lahore nearest to motorway and a wide catchment area of several districts of Punjab. The case notes of all patients who died during January 2000 to December 2003 period, as a result of conditions associated with pregnancy, labour, and puerperium (6 weeks after pregnancy) were reviewed in an effort to identify the most common causes of maternal deaths. The information recorded included name, age, time of admission, condition and diagnosis at admission, investigations done, treatment given and final diagnosis. The cases were discussed within the department and as well opinion was taken from medical, surgical, and anaesthesia personnel, before the final diagnosis was made. Postpartum autopsy seldom was possible; consequently, the cause of death was based on clinical findings only. When the cause of death could be attributed to more than one factors, the most likely factor was assigned the cause of death. Frequency, ratio and proportions of different causes of maternal mortality were calculated.

Inclusion Criteria

All parturient admitted for delivery to gyne Unit that died during the course of pregnancy, labor or puerperium. Pregnant mothers referred from another hospital or from home, when an emergency developed, whether they were admitted to the Medicine, Surgery and the Obstetrics and Gynecology departments at the hospital.

Exclusion Criteria

Excluded were patients who were dead on arrival, those mothers with preexisting medical conditions of such a severity in which pregnancy is contraindicated.

RESULTS

Total maternities during study period were 15885. Total deaths recorded were 46. Maternal mortality during this period was 289.58. It was observed that maternal mortality in year 2000 was 333.55, in year 2001 was 381.55, in year 2002 was 198.91 and in year 2003 was 308.64. So there was a marked improvement in maternal mortality in year 2002 although cases managed were almost double, that is 5596 in 2002 as compared to 3029 in 2000. However, there was an increase in maternal mortality in 2003; which might be due to increased prevalence of hepatitis during pregnancy.

Table 1: A four-year overview.

	Maternities	Deaths	Maternal Mortality Ratio
2000	2998	10	333.55
2001	3145	12	381.55
2002	5530	11	198.91
2003	4212	13	308.64
Total	15885	46	289.58

Ratio per 100,000 maternities

The leading causes of maternal death during the period of 4 years included obstetrical haemorrhage in 14 (30.43%), septicaemia in 11 (23.91%), eclampsia in 7 (15.21%), ruptured uterus in 3 (6.52%), anaesthetic complications in 3 (6.52%), anaphylactic reactions 3 (6.52%), pulmonary embolism in 2 (4.34%), myocardial infarction in 1 (2.17%) and hepatic encephalopathy in 2 (4.34%).

Obstetrical haemorrhage was the most frequent direct obstetric cause of mortality, although there is some reduction in mortality due to haemorrhage in 2002(2 cases) as compared to 2000 (4 cases) thus indicating better management. There were 5 cases of haemorrhage in 2003 all these cases were referred late.

Second most common cause was septicaemia. Deaths due to septicaemia were 4 in 2000, 2 in 2001, 2 in 2002 and 3 in 2003, thus indicating need for improvement in the management. Third most common cause was eclampsia 7 cases, 1 in 2000, 2 in 2001, 3 cases in 2002 and 1 in 2003. Indicating improvement in its management. The fourth most common cause was deaths due to ruptured uterus, 3 cases. One in 2000, two in 2001 and there was no deaths due to ruptured uterus in 2002 and in 2003, indicating better management in this respect as well. The other important cause of maternal death was anaesthetic complication

Table 2: Causes of maternal deaths.

Direct Causes of Maternal deaths	2000	2001	2002	2003	Total died	Percentage
Haemorrhage	03	04	02	05	14	30.43
- PPH	2	2	1	03	08	17.39
- APH	0	2	0	02	04	8.69
- DIC	1	0	1	0	02	4.34
Septicaemia	04	02	02	03	11	23.91
Eclampsia	01	02	03	01	07	15.21
Ruptured uterus	01	02	0	0	03	06.52
Anaesthetic complications	0	0	03	0	03	06.52
Anaphylactic reactions	0	02	0	01	03	06.52
Pulmonary embolism	01	0	0	01	02	04.34
Indirect Causes of Maternal deaths						
Myocardial infarction	0	0	01	0	01	02.17
Hepatic encephalopathy	0	0	0	02	02	04.34
Total cases each years	10	12	11	13	46	100.00

(3 cases). All 3 cases were in year 2002 due to deficiency of experienced staff in anaesthesia department. Two patients (4.34%) died due to hepatic encephalopathy in 2003.

DISCUSSION

Maternal mortality is an index of socio-economic status of a country and the perinatal mortality rate of standards of obstetric and perinatal services available there. Collection of obstetrics bio-statistics is essential for planning health services. It allows obstetricians to compare their work with that of others. It also helps to find the specific field where the progress might be made or failure has occurred. The practice of developed countries to carry out a confidential enquiry in all cases of maternal deaths by the Maternal Deaths Review Committee at different levels is not followed. From such enquiries it has become apparent that there are avoidable factors in many cases of maternal deaths and by proper attention to these factors and their rectification, hence maternal deaths can be prevented.

Today, both maternal and perinatal deaths are so rare in the developed world that standards of obstetric care cannot be assessed in terms of mortality rate¹⁴, where the lifetime risk of a woman dying during childbirth as 1 in 2,800, while in developing countries it was 1 in 61. For Africa as a whole, the lifetime risk was 1 in 20¹⁵.

Maternal deaths are all the more tragic because they can be prevented in simple and cost-effective ways. Infections, blood loss, and unsafe

abortion account for the majority of deaths; all these causes are well within the abilities of health workers with midwifery skills to tackle. The management of these problems and surgical procedures, such as caesarean delivery, do not require high technology equipment or expensive drugs. What is lacking is not the level of national wealth, but the level of commitment to do something. Conscious decisions are required; China, Cuba, Iran, Malaysia and Sri Lanka have all been able to achieve and maintain significant reductions in levels of maternal mortality by deliberately allocating the resources where they were needed¹⁶. Reducing the number of women dying in childbirth by 75% by 2015 is one of the United Nations Millennium Development Goals¹⁷. These goals cannot be achieved without the renewed and full commitment of governments, local communities, civil society, the private sector and the international community.

Maternal deaths is defined by WHO as, death of a women while pregnant or/and within 42 days of termination of pregnancy) the origin of 42 days is no longer clear). Reporting mortality only up to 42 days after termination of pregnancy underestimates the level of maternal mortality and should be revised to include mortality up to 3 months, thus reflecting the true burden of pregnancy related problems for poor women in developing countries¹⁸.

Our study shows not only reduction in over all maternal mortality but also reduction in number of deaths due to obstetrical haemorrhage, septi-

caemia and ruptured uterus, suggesting an improvement in the quality of maternal health services as compared to the past. Studies of routinely collected data about maternal deaths and more recently, perinatal deaths have certainly being informative and may well have contributed to a reduction in the incidence of these disasters.

Maternal mortality rate in our country can be reduced by decreasing birth rate, preventing complications, early identification and treatment of complications, effective and accessible antenatal care, to promote safe delivery practices, to create awareness for the detection of situations that would require medical intervention and to have an access to appropriate emergency obstetric care. Decisions-makers at political, economic, social, religious and household levels (which tend to be dominated by men) have to realize that pregnancy and childbirth can and should be made safer, all that the very fabric of their societies depends on it.

CONCLUSIONS

Though maternal mortality figures from hospital-based studies are usually over-estimates of the true picture in the community they tend to provide a more thorough assessment of the underlying causes of death and their contributing factors, hence providing useful data for planning interventions in areas like:

- Pre-pregnancy care: Awareness of its importance, general health care, nutrition and folic acid supplementation, immunization and contraception.
- Antenatal care: Awareness of its importance, diet, iron and calcium supplements, immunization and recognition of danger signs.
- Intrapartum care: Training of TBAs, hygiene. Recognize danger signs and avoid delay in seeking care and referral.
- Postpartum care: Exclusive breast-feeding, maintain hygiene, immunization and recognition of danger signs in both mother and new born.

REFERENCES

1. Estimates of Maternal Mortality 2000: "A new approach" World Health organization. WHO bulletin 2000.

2. Report of the Ad Hoc Committee of the Whole of the 21st Special Session of the General Assembly, A/S-21/5/1Addl. New York, United Nations, 1999.
3. Ahmad N. maternal mortality in Pakistan-time for action, now. *Gynaecol.* 2000; 4-6.
4. Stuart Campbell and Christoph Lees. *Obstetrics by Ten Teachers* 17th edition. New York. 2000; 20.
5. Mehmood G. International workshop on safe motherhood November 23 – 25, 1999.
6. "Revised 1990 Estimates of Maternal Mortality: a new approach by WHO and UNICEF". World Health Organization, Geneva, 1996.
7. Tsui AO, Wasserheit JN, and Haaga JG. "Healthy pregnancy and child bearing," in reproductive health in developing countries: Expanding dimensions, building solutions. Washington, DC, National Academy Press, 1997.
8. The progress of nations. UNICEF, New York, 1996.
9. Fathalla FM. Keynote proposes 10 points for safe motherhood. (*Gynaecologist* 2000; 32).
10. Mahmud G, Nakasa T, Haq A, Khan S. Comprehensive maternal health data of Islamabad capital territory. *Gynaecologist* 2000; 34.
11. J.P.Neilson. Chapter 29: Statistics and effective care in obstetrics; Dew Hurst's, test book of obstetrics and gynaecology for postgraduates, 6th ed 1999; 355.
12. Sami S, Baloch SN. Maternal mortality in Balochistan: A challenge for obstetricians; *JCPSP* Aug2002 08: 12; 468-471).
13. Carla A. UNAIDS. Maternal Mortality: helping mothers live. Dec 2000.
14. Geoffery C, "Maternal Mortality" *Turnbull's Obstetrics* by Geoffery Chamberlain, 2nd Ed 1995; 865.
15. Brian C, WHO Report on Maternal Mortality Around the World. Feb 2004.
16. Hoj L et-al factors associated with maternal mortality in Rural Guinea-Bissau. A longitudinal population-based study *BJOG: an international journal of obstetrics and gynaecology* (July 2002, vol. 109; 792-799).
17. Unuigbo JA, Orhue AA, Oronsaye AU. Maternal mortality at the University of Benin Teaching Hospital Benin City, Nigeria. *Trop J Obstet Gynaecol.* 1988; 1(1): 13-8.
18. Wiebenga JE. Maternal mortality at Queen Elizabeth Central Hospital, 1989 to 1990. *Malawi Med J.* 1992 Apr; 8 (1): 19-23.