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MATERNAL MORBIDITY AND MORTALITY IN PAKISTAN - AN OVERVIEW OF MAJOR CONTRIBUTORS

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ABSTRACT

Objective: To assess the trend of the proportion of maternal mortality ratio (MMR) due to common direct causes that are the major contributors in Pakistan.
Study Design: Descriptive method study.
Place and Duration of Study: The study was conducted in Jun 2014.
Material and Methods: Descriptive method study was conducted in June 2014. Data collected in different time periods from articles published between 01 Jan 2005 to 31 Dec 2012 in medical journals, proceedings of workshops/conferences as well as from newsletters of the National Committee of Maternal Health (NCMH) along with global borden of disease (GBD) 2013 to estimate MMR. Data were later tabulated accordingly in June 2014.
Results: In the hospitals over 80% of the deaths are due to direct causes. Direct causes account for 78.1% of deaths, hemorrhage being the most common followed by sepsis, eclampsia, rupture of the uterus, and abortions. The contributors were greater in booked multi-gravid as of 20 to 40 years, para 3 to 5, under matric education and with less than Rs. 10,000 monthly income.
Conclusion: Massive hemorrhage and uncontrolled hypertension are major contributors of maternal morbidity in Pakistan.

Keywords: Anti partum hemorrhage, Eclampsia, Hypertension, Maternal mortality, Morbidity, Post-PArtum hemorrhage.

INTRODUCTION

Millennium development goal five requires a 75% reduction in MMR by 2015. Maternal mortality defined as death during pregnancy, childbirth or in 42 days after delivery-remains a major challenge world wise. A total of 30,000 women a year in Pakistan die due to pregnancy related causes and the maternal mortality ratio is approximately 340 per 100,000 live births. Together India, Pakistan and Bangladesh account for 46% of the world's maternal deaths[1]. However, with only one year remaining before the 2015 deadline, Pakistan's progress significantly lags behind its south Asian neighbors.

The MMR of a country is indicative of its health and development status. Information on maternal mortality is required to determine this status and to set priorities for policy making and programmatic and operation research strategies. Data from around the world shows that there is great disparity between the maternal mortality of the developing and developed world. Even among the developing countries the MMRs vary widely. A large number of maternal deaths are reported from most of the developing countries but the exact numbers are not known. Registration of vital events like deaths and births is incomplete and at times inaccurate. Surveys and studies to determine the magnitude and causes of maternal deaths on a national basis are both complex and costly. Hence population based data, especially nationwide, is scarce. Hospital-based data are more easily available, and although it is well known that hospital data are not representative of the general population and are biased, and do not serve as a basis for policy

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making, for advocacy and for determining trends over a period of time.

In Pakistan each year over 5 million women become pregnant, out of these 0.7 million (15% of all pregnant women) are likely to experience some obstetrical and medical complication. The major causes of maternal mortality world over are hemorrhage, hypertensive disorders, sepsis, obstructed labor and abortions. It has been estimated that around 15% of women during child birth develop potentially life threatening complications and 1-13% will die in the absence of major surgical or medical intervention. While a couple of years ago most of the research was focused on maternal mortality, now there is an evolving concept of MMR as with new advances in health, mortality is a rarer event in developed world as is examplified by UK confidential enquiries into maternal deaths. According to a recent WHO systematic review, the global prevalence of MMR varies from 0.01%-8.23%, with an inverse trend with the development status of the country[2].

Pakistan has a specific traditional culture of childbirth in its rural areas. Thus, high levels of maternal mortality and morbidity in Pakistan are a direct result of the interplay between a variety of factors such as low status of women in society; poor nutrition; a significant proportion of high-risk pregnancies (such as those to grand-multiparous women); lack of family planning, poor access to health services, deliveries conducted by non-professionals, lack of antenatal and postnatal care, poverty, and illiteracy. Women's health is a neglected area in developing countries. Despite at least 50% maternal deaths occurring during the postpartum period, very limited research has been carried out to assess morbidities. In developing countries, the role of traditional health practitioners and their practices have a strong influence during the antepartum, and postpartum period.

Table-I: MMR trends are time.

MMR per 100,000 live birth			Annualized Rate of change MMR%		
1990	2003	2013	1990	2003	2013
423.9 (317.2 to 521.6)	486.5 (360.07 to 595.6)	400.6 (233.0 to 560.8)	1.1% (-1.6 to 3.7)	-2.1% (-7.7 to 2.4)	0.3% (-2.9 to 1.8)

Pakistan (The Lancet Global Health, Vol 2 Issue 6 June 2014)

Table-II: Trends in mortality rate in tertiary hospitals of Pakistan.

Hospital Name	Years Of Survey	MMR
Jinnah Post Graduate Medical Center Karachi	1991-1999	883
Liaquit Medical Collage and Hospital Hyderabad	1999-1995	2321
Lady Reading Hospital Peshawar	1991-1992	1420
CMH Quetta	2007-2008	450
CMH Landi Kotal (Khyber Agency)	2004-2005	1051
Global Perspective (Lancet 2014)	2014	8.3%

MATERIAL AND METHODS

This descriptive study was conducted in Jun 2014. Data were collected in different time periods from articles published between 01 January 2005 to 31 December 2012 in medical journals, proceedings of workshops/conferences as well as from newsletters of the NCMH along with GBD 2013 to estimate MMR. Data were later tabulated accordingly in June 2014.

RESULTS

To estimate maternal mortality, for the cause of death database GBD 2013 was used. It extends from 1990 to 2013, Naghavi and collegues the lancet 2014 provide substantial detail about inclusion criteria and data processing of studies

across all causes. It shows data of 188 countries, MMR of Pakistan is stated in table-I.

Five tertiary hospitals and global perspective have reported figures over different periods of time. This shows very little change in trends. Community based data were not sufficient to be tabulated, though the trends there also shows equally little change as shown in table-II.

Information, which was not clearly stated, has been excluded. The cause of death has been based on clinical features alone as post mortems were not carried out in any case. The most common cause in each study has been highlighted in the table-IV. Over 80% of the deaths are due to direct causes. In the majority of the studies hemorrhage is the leading cause. In six studies it is sepsis and eclampsia. The contribution of abortion data of which is given in 12 studies, ranges between 2.5% and 15.7% with a mean of 8.5%. Anaesthetic complications are a significant cause of death ranging from 2.6 to 10.5% (mean 5.6%). Among the indirect causes two early reports, show severe anemia as the most common cause of death (39% and 18.1%). Hepatitis too contributes significantly (2 to 9.7%) (table-III).

The most common cause of death amongst the women as personally experienced is hemorrhage (63%, of which 42% were postpartum hemorrhage) followed by eclampsia (19.3%) ruptured uterus (9.3%) and acute inversion of uterus (6%). The table-IV shows some of the major contributors of maternal morbidity in Pakistan (Pakistan Armed Forces Medical Journal 2008).

In the community 78.1% of the deaths were due to direct causes and 21.9% to indirect causes. Hemorrhage was responsible for over half the

Table-III: Direct and indirect cases of MMR.

AUTHORS		DIRECT (%)							INDIRECT (%)		
		Heomorrhage	Hypertensive Disorders of pregnency	Sepsis	Obstructed Labor/Rupture of Uterus	Abortions	Anesthetic Complications	Pulmonary Embolism	Severa Anemia	Hepatitis	Heart Disease
Aziz S A	LMC	9.2	17.2	-	10	5.7	-	-	39	-	9
Jaffery SN	JPMC	15.8	13.7	8.8	1.32	5.7	6.1	6.1	18.1	9.7	5.3
Jaffery SN	JPMC	21.2	18.6	13.3	8.7	11	6.9	4.8	3.1	5.7	3.1
Jaffery SN	30 Hospitals	21.1	19.8	15.3	5.5	10	9.5	3.4	3.4	7.9	5
janjua S	13 Hospitals	28	14	31	8	-	-	2	-	8	6
	10 hospitals	23	13	28	8	-	4	8	4	2	1
Ahmed z	CHK	21	13	21	6	11	3	5	7	9	2
Majid SS	LRH	34	15	17	6	-	7	8	-	2	-
Farooq S M	LMC	14.9	20.2	27.3	5.9	4.7	24	7.7	-	7.1	-
Sachdev P S	LMC	14.1	19.8	20.5	14.2	5.6	4.5	1.8	2.3	6.3	2.2
Qazi G R	KMC	32.5	20	17.5	-	2.5	5	7.5	-	2.5	-
Najmi R S	FJMC	23	26.1	7.7	4.6	9.23	6.1	1.5	3.2	6.1	3.2
Tayyub S	DMC	33.3	17.9	14.1	12.8	128	2.6	1.3	1.3	2.6	1.3
Korejo R & noorani K	JPMS	25.1	23.1	10.8	5.4	8.5	5.4	4.4	4.8	3.9	2.1
Mahmund G	PMS	26	21	5.2	-	15.7	10.5	-	-	-	-
Malik T	LWH	37.3	19.2	37.3	-	-	-	2.4	-	2.4	-

JPMA DEC 2002-SN JAFAREY

deaths i.e. 52.9%. The second most common cause was sepsis (16.3%) followed by eclampsia (14.4%) and obstructed labor (6.5%). Abortion caused 5.2% of the deaths. Among the indirect causes hepatitis was the most common (14%) followed by heart disease (9.3%) (table-IV).

A study was carried out to establish the factors that caused delay in women reaching hospital in time. The reasons for delay were economic, like non-availability of transport and lack of finances (3.6%), socio-cultural factors including absence of husband from home (34%), inadequate and inefficient maternal health services (2.1%). In 9% the reason for delay could not be determined.

information about the causes as well as trends over the years. However hospital studies need to conform to a standard uniform pattern of reporting. Studies in the community are few and on small scales. More data, which are nationally representative, are necessary. It is of vital importance that all births and deaths throughout the country are registered.

Three major public teaching hospitals from which data are available, the maternal deaths are due to direct causes, an indication of the poor maternal health status and inadequate health care. Hemorrhage is the overall leading cause followed by eclampsia and sepsis, though a few hospitals report sepsis and one reports eclampsia

Table-IV: Maternal Mortality cause in Pakistan.

Causes of Maternal Mortality	Number of Cases	Percentage
Hemorraghe	52	52
Antepartum haemorrhage (APH)	24	-
Post-partum hemorrhage (PPH)	20	-
APH+PPH	06	-
Uterine Rupture	02	-
Hypertension (HTN)	32	-
HELLP	06	32
Eclampsia	08	-
Sever Pre-Eclampsia	18	-
HTN and Hemorrhage	10	10
Ruptured Ectopic Pregnency	04	04
Sepsis	02	2
Puerperal Sepsis	01	-
Septic Inducted Aborion	01	-

JPMA AUG 1985 Zahida Ahmed.

DISCUSSION

The objective of this paper was to compile overview on the ratios and contributors of maternal mortality in Pakistan for ready reference. Nevertheless the information collated highlights the continuing high ratios of maternal mortality. This is of deep concern and requires discussion on future directions, policy and programmatic, to be taken by all concerned.

Most of the currently available data on maternal mortality are truly reflective of the situation in the community, it does give

as the most common cause. In the 6 to 13% of deaths due to abortion, the causes are hemorrhage, sepsis and visceral injury[3]. This last complication is almost definitely a result of unsafe abortion even though the women do not admit having resorted to it.

Among the indirect causes of death, severe anemia per se was high during the 1960s i.e. 18.1% at JPMC, Karachi. Subsequent figures from the JPMC show it to be much lower at 3.1% and 4.8%. Recently data from Civil Hospital, Karachi shows anemia to be responsible for a greater

number of deaths (11.8%) again. Is this a result of increasing malnutrition, or is it just a sporadic finding? There are anecdotal accounts that anemia is on the increase.

Of other medical disorders, hepatitis is also a significant cause accounting for between 2.5 to 9.7% of the deaths. Data on the type of hepatitis are not available, though it is known that hepatitis E during pregnancy is associated with a high maternal mortality[4].

Community data reveals that more than half of the deaths were due to hemorrhage (52.9%). The high proportion of deaths due to hemorrhage among women who die in the community and also among those who died before reaching hospitals (63%) indicates the urgent need for help in cases that are bleeding. Immediate help if not forth coming kills the women[5]. Misoprostol, an essential lifesaving drug, can be used for both prevention and treatment of postpartum hemorrhage.

What do the continuing high MMR figures from the hospitals indicate? Is it that the proportion of women who are dying has now increased? Is it that the proportion of deaths has decreased in the community and increased in the hospitals? Is it that as a result of greater awareness of pregnancy related complications by both the community and the health care providers, and more facilities for transport, a greater number of women are now reaching hospitals but not in time to be saved? Is it that sub-standard care is given to women who come with complications to the hospitals? Is it that more accurate data is now being collected by the hospitals? Unfortunately, most of these questions cannot be answered as the trend in the number of deaths in the community is not known.

In Pakistan over 80% of the deliveries are still taking place at home, majority of them being conducted by the traditional birth attendants (TBAs). A large number of these TBAs, about 40,000 to 50,000, have undergone training under one of the many initiatives for safe motherhood taken by the Government[6]. The TBAs are however not supervised in their work and there is no back up support in time of need. A review of TBA training and utilization of programs in 70 countries over the past three decades shows that there are limited examples of their successful utilization. In countries where the TBA's have been adequately supervised the strategy has shown some positive results. In other words for effective functioning, TBAs require constant supervision, more than other health care providers do.

A different policy approach is now required which is comprehensive and comprises of short and long term goals. The time has come for a critical evaluation of all safe motherhood programs, both in the public and private sector, be conducted to form the foundation of a national safe motherhood strategy. In the meantime, the potential strategy of preparing a cadre of appropriately trained midwives for maternal care during pregnancy, labor and the postpartum period should be pursued. In Europe particularly Sweden, even before the advent of modern technology, professionally trained midwives helped reduce maternal morbidity and mortality.

In Pakistan midwifery is a neglected profession. Though there are more than 10,000 nurses who have been trained in midwifery, very few are practicing as midwives[7]. Moreover their training, especially in skills, is deficient. The lady health visitors (LHVs), a cadre of health care providers who are trained to deliver women in the community, do practice midwifery both in health facilities and in the community but their exact numbers are not known. Their training too, especially skills' training leaves much to be desired. Moreover back up support to them is lacking.

Midwifery training needs to be geared towards competency based skills. Midwives need to be motivated to work in the rural areas and their roles and career pathways well defined. They should, as a short-term measure, supervise existing trained TBAs in their work. As a long-

term strategy TBA's should be phased out and replaced by midwives.

Nevertheless, no matter how skilled the attendant is at the time of delivery, very little can be done when life-threatening complications arise and there is no access to emergency care. Recent studies done to evaluate the status of emergency obstetric care (EmOC) in selected districts of Sindh have shown that there is an extreme shortage of health care facilities providing EmOC[8]. In those that are present, majority have multiple deficiencies. The deficiencies identified include lack of drugs, essential supplies, equipment and services as well as inadequate knowledge and skills of health care providers. Support services like blood bank and laboratories were not in place. There was no proper referral system. Though similar studies have not been conducted in other provinces of Pakistan, there is reason to believe that this situation is present all over the country.

This state of affairs needs to be corrected urgently. A national strategy for safe motherhood is urgently needed. The national committee on maternal health (NCMH), a technical body of the government that works in collaboration and partnership with other health and professional bodies, has been given the responsibility of developing it. It is hoped that a comprehensive strategy, which includes actions to be taken by health and other relevant sectors, will soon be formulated, and more importantly implemented, in order to reduce maternal mortality and morbidity in Pakistan.

CONCLUSION

Massive hemorrhage and uncontrolled hypertension are the major contributors of maternal morbidity.

RECOMMENDATION

The health system should be upgraded and strengthened and the deficiencies identified corrected. A strong functional referral system should be put in place for appropriate and timely transfer of women in need of a higher level care.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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