

AN ASSESSMENT STUDY OF MATERNAL MORTALITY RATIO DATABANK IN FIVE DISTRICTS OF NORTH WESTERN FRONTIER PROVINCE PAKISTAN

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Background: Maternal mortality ratio is an indicator to measure the summary of information about mother and child health. It is estimated that about 500 maternal deaths occur per 100,000 live births each year in Pakistan. It is a well known fact that all health statistics coming out of the developing countries are calculated “guesstimates” some are perhaps more close to the real figures than the others. There is a dire need to help generate information that can be used by health professionals, health care planners and managers to save women’s lives by improving the quality of care provided to turn away maternal mortality. The maternal mortality ratio for Pakistan as well as for NWFP is projected as 533 /100,000 live births for the year 1990-91 produced by National Institute of Population Studies, Pakistan. **Methods:** This was a retrospective cross-sectional quantitative study for the period (2001–2002) conducted in five districts of (NWFP) North Western Frontier Province, Pakistan. **Results:** National HMIS data opened the maternal mortality ratio for; Haripur as 0.168 and 0.173, Mansehra 00 and 00, Battagram 00 and 00, Swat 0.051 and 0.524 and Swabi 00 and 0.968 per/1000 live births, respectively. The small part exercise outcome (the study) endorsed more shadowy side of the actual maternal mortality ratio for the same period in the same districts. **Conclusion:** In our country there is a urgent need to institute an efficient mode of operation to get accurate maternal mortality database. Verbal Autopsy method is cost effective and feasible approach for implementation in a country like Pakistan.

Key Words: Maternal mortality, Verbal Autopsy.

INTRODUCTION

Pregnancy is a normal healthy state that most women aspire to at some point in their lives. Yet this normal life-affirming process carries with it serious risks of death and disability¹. Maternal mortality ratio is a measure of the likelihood that a pregnant woman will die from maternal causes². Maternal mortality is difficult to measure for both conceptual and practical reasons primarily because of under-reporting, rarity of the event and the expense incurred in population based studies. Globally and in Pakistan the major causes of maternal mortality are haemorrhage, hypertension disorders, sepsis, obstructed labour and un-safe abortions^{3,4}. More than half a million women die each year due to pregnancy related complications⁵. Maternal mortality in most developed nations has now been reduced to as low as 5 to 20 per 100,000 live births while in the developing countries it still ranges from 50 to as high as 2000 per 100,000 live births the main reason for such high rate of maternal mortality is poor socio-economic status, illiteracy, ignorance, and apathy.

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 complications⁶. An estimated 30,000 women die each year due to pregnancy related causes⁷. Recent estimates (WHO & UNICEF) place

the figure around 340/100,000 live births⁸ but in reality it may be higher because of under registration of deaths in the country and absence of cause of death information. It is a well known fact that all health statistics coming out of the developing countries are calculated “guesstimates” some are perhaps more close to the real figures than the others. To help generate some doable information for use by the health professionals, health care planners and managers to save women’s lives by improving the quality of care provided there is a dire need to keep monitoring overall levels of maternal mortality with specific emphasis on regional and national levels. Today, with better understanding of the difficulties involved in measuring levels of maternal mortality there is increasing interest in directing a larger share of limited resources into efforts to understand why the problem persists and what can be done to turn away maternal deaths. Answering these questions is vital for the program planners and service providers.

MATERIAL AND METHODS

This was a quantitative retrospective cross-sectional study for the period (2001–2002) conducted in five districts of (NWFP) North Western Frontier Province, Pakistan. During the exercise existing recording and reporting practices for maternal mortality were considered. Through an information-gathering questionnaire all the maternal mortality

data was collected from records and maternal mortality statistics of the year provided by the concerned authorities of the public sector health care delivery system of the districts. The data entry, editing, processing and analysis were done with the use of Epi-Info 6.03 D and MS Excel. The formula used for calculation of MMR was as per guidelines established by the WHO. The Maternal Mortality Ratio (MMR) was calculated by means of maternal deaths and total live births for each of the five districts. The number of live births used in the denominator was a proxy for the population of pregnant women who were at risk of a maternal death.

RESULTS

It is extremely difficult to assess levels of maternal mortality. There is no systematic mechanism of data collection in Pakistan. To conclude the activity the National Health Management Information System (NHMIS) was focused as the source for maternal deaths data bank available in the country. Maternal mortality figures available from NHMIS were found corresponding with the distinct maternal mortality numbers for the period (2001-2002). The data collected by NHMIS from the five districts of NWFP reveals that with improved and transcribe of antenatal care can result in reducing maternal deaths. However, National Program for Family Planning and Primary Health Care was found to be another appropriate foundation and initiative to address MMR issue, since 2003. The purpose was to assess the factual situation in the field. The distinct maternal mortality numbers showed under-reporting far beyond the maximum expected deviations from the projected national and regional levels. The findings as stated by the concerned public sector, NIPS, PIHS Pakistan, and WHO, UNICEF, UNFPA are deplorable reflecting highly startling MMR values. These are given as under:

- Maternal mortality recording / reporting system is deficient quantitatively even. No direct estimate of MMR is available at the national level.
- The recent MMR estimate is 533 /100,000 live births for the year 1990-91, produced by National Institute of Population Studies (NIPS) by using sisterhood method that is an indirect method.
- MMR of Pakistan is 350-450/100,000 live births for the year 1990-91, produced by Pakistan Integrated Household Survey (PIHS).
- A small part exercise outcome at issue revealed the actual Maternal mortality ratio for the year (2001-2002); Haripur as 0.168 and 0.173, Mansehra 00 and 00, Battagram 00 and 00, Swat 0.051 and 0.524

and Swabi 00 and 0.968 per/1000 live births, (Graph 1-2, Table 1), respectively.

- A small part exercise outcome (the study) added the shadowy side of the actual maternal mortality ratio for the same period in these districts (Table 2-3, Fig 3-4).

DISCUSSION

The most common causes of maternal mortality are hemorrhage 21%, hypertension diseases 18.6%, sepsis 13.3%, abortion 11% and others 36% (1989-90 SOGP survey).⁹ The causes of maternal mortality are multiple, inter-related, complex and almost always preventable.¹⁰ Maternal mortality ratio is defined as the estimated number of deaths to women while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.¹¹

The lifetime risk of a woman dying of pregnancy related causes in developing countries are 1:40 as compared to 1:3600 in the developed world.¹² Pregnancy related morbidity and mortality are preventable.¹³ Routine vital registration systems in developing countries often underreport deaths, particularly maternal deaths, and special demographic surveillance systems have been set up in some countries.¹⁴⁻¹⁸

Mortality Ratio measurements are difficult and complex. As a matter of fact under-registration is frequent in both developing and developed countries. WHO and UNICEF develops estimates of maternal mortality primarily with the information needs of countries either data without or with incomplete data on maternal mortality in mind but also as a way of adjusting for underreporting. A dual strategy is used that adjusts existing country information to account for problems of underreporting and misclassification and uses simple statistical model to generate estimates for countries without reliable data. High cost of measuring such ratios through survey operations and their limited direct usefulness for planning or improving care has led the international community to look for alternative indicators. Mortality Ratio measurements should be simple, affordable, effective, and evidence-based particularly in poorer countries. The information collected must be used to help improve maternal health outcomes and empower health professionals to examine their current practices or those of the facility in which they work, very similar to the guidelines for the evidence-based data bank enunciated from the community.

Table-1:

District	2001			2002		
	Total Deliveries	Stillbirths	Total Live Births	Total Deliveries	Stillbirths	Total Live Births
Haripur	2400	31	2369	3508	51	3457
Mansehra	2824	99	2725	684	25	659
Battagram	186	2	184	19	0	19
Swat	13654	316	13338	20042	603	19439
Swabi	7347	118	7229	8761	88	8673

Abbreviations: EDO (H): Executive District Officer (Health), SLCF: Secondary Level Care Facility, AIHS: Assistant Inspector Health Services, NP: National Programme for Primary Health Care & Family Planning, NHMIS: National Health Management Information System, MD: Maternal Death, LB: Live Birth, MMR: Maternal Mortality Ratio

Table-2: Maternal Deaths Reported By Public Sector Health Care Delivery System

District	2001				Total MD	Total LB	MMR /10000 LB
	EDO (H)			SLCF			
	AIHS	NP	NHMIS	DHQ Hospital			
Haripur	5	Not applicable	4	3	12	2369	0.0050
Mansehra	Not available	Not applicable	0	0	0	2725	0
Batagram	Not available	Not applicable	2	Not applicable	2	184	0.0108
Swat	Not available	Not applicable	7	11	18	13338	0.0013
Swabi	2	Not applicable	7	3	10	7229	0.0013

Abbreviations: EDO (H): Executive District Officer (Health), SLCF: Secondary Level Care Facility, AIHS: Assistant Inspector Health Services, NP: National Programme for Primary Health Care & Family Planning, NHMIS: National Health Management Information System, MD: Maternal Death, LB: Live Birth, MMR: Maternal Mortality Ratio

Table-3: Maternal Deaths Reported By Public Sector Health Care Delivery System

District	2002				Total MD	Total LB	MMR /100000 LB
	EDO (H)			SLCF			
	AIHS	NP	NHMIS	DHQ Hospital			
Haripur	3	Not applicable	6	3	12	3457	0.0034
Mansehra	Not available	Not applicable	0	0	0	659	0
Batagram	Not available	Not applicable	3	Not applicable	3	19	0.1578
Swat	Not available	Not applicable	1	9	10	19439	0.0005
Swabi	2	Not applicable	0	7	9	8673	0.0010

Abbreviations: EDO (H): Executive District Officer (Health), SLCF: Secondary Level Care Facility, AIHS: Assistant Inspector Health Services, NP: National Programme for Primary Health Care & Family Planning, NHMIS: National Health Management Information System, MD: Maternal Death, LB: Live Birth, MMR: Maternal Mortality Ratio

Within the health facilities most of the clinical recommendations endorse data collection activity from a series of registers and case notes, including admission, delivery, discharge, referral, intensive care and surgical registers on obstetric complications.¹⁹⁻²¹

Certain feasible and actionable ways and means should be adopted through an inbuilt mechanism and a regular part of MCH system that performs its function on self-sufficient grounds. Changes in service delivery must be backed up by facts and figures. For correct estimation of maternal mortality it requires knowledge of death of pregnant women and cause of death. Because action is the ultimate goal it is important that those with the ability to implement the changes actively participate in the process. It therefore needs to be agreed at the outset that the information obtained will be used as the basis for action. The concept of best practice or evidence-

²² based practice may be unfamiliar to health professionals in some countries. Therefore, there should be an objective method built into the system to monitor how the recommendations are being implemented. This has the major benefit that it provides a stimulus for health sector action based on firm evidence. The action must be evidence-based arising from analysis of the data collected otherwise they can be open to challenge. Deaths are the most extreme adverse events in pregnancy, and viewing the circumstances leading to a maternal death highlights not only areas of clinical relevance, but also avoidable or remediable health sector, community or public health factors. There are certain focused ways to establish the problems with the community identification of maternal mortality. Ideally, one would like to be able to include all maternal deaths that occur within an area. Involving the community in identifying maternal deaths is not only very important for ensuring accurate data but

also, and perhaps even more importantly, it raises community awareness of the issues and facilitates advocacy. Health promoters and community health workers can be trained to report these events as part of their jobs, as can Traditional birth attendants (TBAs) who provide prenatal care and attend deliveries. Traditional birth attendants (TBAs) should also be encouraged to identify and report maternal deaths. Key informants—a village leader or designated person—may be given the responsibility of watching for maternal deaths and conveying the information to the local health care system that one has occurred. Patient records from hospitals or other health care facilities may be another good source for identifying maternal deaths, especially for hospital-based investigations such as criterion-based clinical and facility-based case reviews. In the health facility, patient records are usually the key source. Health centers and /or district health offices can be focal points for coordinating the identification of cases of maternal death. If regular staff meetings are held, the events can also be identified from a review of the case notes from these meetings. Pakistan is among those countries in the world where maternal deaths like other vital events go unrecorded. No adequate method or technique is used to spot maternal death. An efficient mode of operation is needed to get accurate maternal mortality database. There are different methods for measurement of maternal mortality. The vital events registration system is unfortunately not currently fully functional in Pakistan. Direct household survey method would be a very comprehensive and logistically demanding exercise. The indirect method is not appropriate for use in settings where fertility levels are low (total fertility rate (TFR) <4) The direct method does not provide a current estimate of maternal mortality Reproductive Age Mortality Surveys are time consuming, costly and availability of some data from routine systems to estimate the “adjustment factor”. A number of countries have used the census to generate maternal mortality figures, and work is under way to assess the extent to which such approaches may prove of value in measuring maternal mortality.²³ Periodically, UNICEF and WHO evaluate these data and make adjustments to account for the well documented problems of underreporting and misclassification of maternal deaths and to develop estimates for countries with no data.²⁴ High cost of measuring such ratios through survey operations and their limited direct usefulness for planning or improving care has led the international community to look for alternative indicators. WHO defines verbal autopsy as process designed to facilitate the identification of maternal

deaths through a reconstruction of events surrounding the deaths in the community.²⁵

CONCLUSION

Verbal Autopsy method is the cost effective and easier to implement capacity, especially in a country like Pakistan. The main aim of verbal autopsy exercise is to generate statistics and compute MMR from this data. The results can form a baseline against which the success of changing practice can be monitored. National Program for Family Planning & Primary Health Care Pakistan does verbal autopsy exercise, currently. It may prove to be a good source of maternal death verification process. Continuous monitoring and evaluation must strengthen this initiative not only by an inbuilt mechanism but also by some other self-regulating connected cohorts. Such research based exploring vigilance can unlock new outlets for more vision and to address such issues of paramount importance.

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