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Original Article

Maternal Mortality in a Tertiary Care Hospital: A Five Year Review

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Abstract

Background: To find out the maternal mortality in a tertiary care hospital.

Methods: In this retrospective study, data regarding maternal mortality was collected . Information recorded was age, parity, booking and literacy status, socio-economic status, cause of death and total stay in the hospital. Total number of live births was also calculated for the same time period.Maternal mortality rate for the study period was calculated.

Results:A total of 79 maternal deaths were noted out of 39704 live births. Age group 26–35 years showed higher number of maternal deaths, while in multiparous women and un-booked patients almost equal number of deaths were observed. Most were due to direct causes (70.88%), where as 29.11% were due to indirect causes. The leading direct causes of maternal mortality were obstetric hemorrhage in39.24% (n = 31), Eclampsia in 15.18% (n = 12)and puerperal sepsis in 8.86% (n =07). Among indirect causes, embolism accounted for 12.65%. Out of these, 03 cases resulted from Amniotic fluid embolism while rest of the 07 were due to pulmonary embolism.

Conclusion: Being a tertiary care hospital, our institute receives large number of complicated referred cases from neighbouring towns resulting in relatively high maternal mortality rate..On the other hand,most of the observed deaths were preventable, so there is a wide scope for improvement.

Key Words: Maternal mortality ratio, Maternal mortality, Prevention.

Introduction

Any health or health related problem which affects a vast majority of people and hampers the progress of an area or nation or which damages normal lifestyle of people and moreover which is preventable at least to a certain extent, can be called a public health problem.[1] In Pakistan, like most developing countries, the poorest women have the least options when it comes to family planning and access to antenatal care. They are also are most likely to give birth without the assistance of a doctor or midwife. This creates a alarming public health problem-high Maternal Mortality Ratio (MMR).[2]

World Health Organization (WHO) defines maternal death as "Death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management.[3] Globally every year over 500,000 women die of pregnancy related causes and 99% of these cases are in the developing countries. A decade ago, the Pakistan Demographic and Health Survey (PDHS) 2006-2007 estimated the country's MMR to be 276 per 100,000 live-births.[3]

As per current estimates, every year, Pakistan loses 14,000 women during childbirth; translating into one death every 37 minute. Pakistan's current maternal mortality ratio (MMR) is 178/100,000 live births.[4]Luckily,large number of these deaths are avoidable. Obstetric haemorrhage and Hypertensive pregnancy disorders represent the two major causes of maternal death in Pakistan. Thus these conditions must be kept at the forefront of future policy interventions; especially given that today both are easily preventable.[5,6] women's lives cannot be saved unless and until Skilled Birth Attendants (SBA) are integrated as part of a comprehensive referral system that includes the means to transport women in acute emergency to facilities providing the necessary level of specialized obstetric care.[6,7]Progress in maternal health has been uneven, inequitable, and unsatisfactory. United Nation (UN) report card on Millennium Development Goal-5 concluded that little progress had been made in sub-Saharan Africa where half of all maternal deaths take place. The progress shown by the

South Asian countries including Pakistan is also not impressive. [8]

Patients and Methods

DHQ Hospital Rawalpindi is a tertiary care center, gets a large number of referrals from maternity homes and primary health centers from near by rural parts of the country. The present study was a retrospective study, conducted in the department of Obstetrics and Gynecology department of DHQ Hospital, Rawalpindi. Data regarding maternal mortality was collected from maternal mortality Register after obtaining permission from the Medical Superintendent of the hospital. Information recorded was age, parity, booking and literacy status, socio-economic status, cause of death and total stay in the hospital. Total number of live births was also calculated for the same time period. The details of maternal deaths from January 2012 to December 2016 were collected and analyzed.Descriptive data was tabulated as absolute figures and percentages.The details of number of live births from January 2012 to December 2016 were collected from labor ward register.Maternal mortality rate for the study period was calculated by using the formula

$$MMR = \frac{\text{Total number of maternal deaths}}{\text{Total number of live births}} \times 100000$$

Results

During the study period, January 2012 to December 2016, there were a total of 39704 live births and 79 maternal deaths. The maternal mortality rate in the study period was 198/100000 live births. Maximum maternal deaths (48.10%) were reported in the age group of 26 to 35 years. More deaths were reported in multiparous women (63.29%) as compared to primiparas (18.98%).Maximum maternal deaths were reported in unbooked patients (63.29%) as compared to booked patients (26.58%) (Table 1). In the study period, 70.88% of maternal deaths were due to direct causes (Table 2). The classical triad of hemorrhage (39.24%), eclampsia (15.18%), and puerperal sepsis (8.86%) was the major direct causes of maternal deaths. In the study period, 29.11% of maternal deaths were due to indirect causes. Embolism, Anemia, and heart disease accounted for 12.65%, 3.79%, and 2.53% of maternal deaths respectively and miscellaneous cause like blood transfusion reaction accounted for 6.32% of maternal deaths (Table 3).

Table1:Epidemiological characteristics of maternal deaths (n = 79)

Patient characteristics	Number (n=79)	Percentages(%)
Age(years)		
15-25	21	26.58
26-35	38	48.10
36-45	13	16.45
Parity		
0	15	18.98
01-04	50	63.29
05 or more	14	17.72
Antenatal Care		
Booked	21	26.58
Un-booked	50	63.29
Referrals	08	10.12
Delivery Status		
Delivered	57	72.15
Undelivered	10	12.65
Aborted	05	6.32

Table 2: Year-wise distribution of direct causes of maternal deaths

Year	Direct Causes No(%)	Haem-orrhage No(%)	Eclampsia No(%)	Puerperal sepsis No(%)	Induced septic abortion No(%)	Rupture uterus No(%)
2012	5(78.94)	9(47.36)	02(10.52)	01(5.26)	02 (10.52)	01(5.26)
2013	13(65.00)	08(40.00)	04(20.00)	03 (15.00)	-	-
2014	12(85.71)	09(64.28)	03(21.42)	-	-	-
2015	9(69.23)	4(30.76)	02(15.38)	02(15.38)	-	01(7.69)
2016	7(53.84)	03(23.07)	01(7.69)	01(7.69)	01(7.69)	01 (7.69)

Table 3: Year-wise distribution of indirect causes of maternal deaths

Year	Indirect Causes No(%)	Embolism No(%)	Anemia No(%)	Heart Disease No(%)	Miscellaneous No(%)
2012	04 (21.05)	01(5.26)	01(5.26)	01(5.26)	01(5.26)
2013	07 (35.00)	03(15.00)	-	01(5.00)	03(15.00)
2014	02 (14.28)	01(7.14)	-	-	01(7.14)
2015	04(30.76)	02(15.38)	02(15.38)	- -	-
2016	06(46.15)	03(23.07)	-	-	03(23.07)

Discussion

MMR is basic marker of country's socioeconomic status and health system particularly maternal and infant health.[8] Poor socioeconomic situation of the

community, delayed referral of difficult cases and low quality of maternal services along with other factors contribute high incidence of maternal deaths.[8,9] Our study result showed mean maternal mortality rate 198/100000 births that is relatively high MMR, which may be due to the fact that being tertiary care hospital, it receives lots of complicated cases referred from remote areas at a very late stage.

In our study, age group of 26 to 35 years ,showed maternal deaths , i.e., 48.10%, as highest numbers of births are reported in this age group. While in multiparous patients, 63.29% of total maternal deaths were reported.There are higher number of maternal deaths in un-booked patients(63.29%) too.

Direct causes accounted 70.88% of maternal deaths.Among them, haemorrhage (29.11%), eclampsia (15.18%), and sepsis (8.86%) were leading direct causes of mortality.Major contributors of maternal mortality are preventable provided that optimum care is given on time.[9] In most of the cases, unfortunately, patients were referred too late, in serious condition, not accompanied by medical personnel. Many patients had to cover long distance in a private vehicle to reach our hospital. Most of these deaths are preventable if patients are given appropriate treatment at periphery and timely referred to higher centers.

About 29.11% of maternal deaths were due to Indirect causes at our hospital. Blood transfusion reactions, anaemia and heart disease were responsible for 6.94%, 4.16%, and 2.77% of maternal deaths, respectively. Provision of good quality health care facilities in remote areas would play significant role in reduction of maternal deaths. This can be done through better availability of certain basic emergency drugs, used in the management of eclampsia and obstetric haemorrhageas these are top most causes of maternal deaths.[10]High risk pregnancies should be timely screened and referred to a tertiary center for better treatment at early stage in order to reduce the complications of such pregnancies.Since many years, hypertensive disorders and maternal haemorrhage have been the main causes of maternal mortalities.[11] The sensible training of health care providers through programs like basic emergency obstetrics care (BEMOC) and skilled attendant at birth (SAB) training and provision of regular antenatal visits in order to pick-up complications early in the pregnancy can be an effective way to deal the morbidity and mortality associated with pregnancy problems.[12,13] Antenatal care that is easily reachable, can help to prevent these maternal deaths. For effective utilization of public health facilities,significant attention is needed for improvement offemale education. [14]

It has been seen that in countries having high rate of institutional delivery, MMR is less. Strong primary health care facility, home visit by female community health worker has reduced the problem in some areas.[15,16] Even in same country the culture, customs varies from community to community.[17] The people living in hilly and tribal area are in more critical condition. Less care of women from the childhood leads to a malnourished adolescent girl, malnourished pregnant mother and ultimately that mother gives birth to a malnourished baby. If the baby is female, the same procedure repeats. MMR is high in malnourished women.[18,19]Hospital data and community based reports from urban areas provides most of the information for maternal mortality , whereas significant number of maternal deaths take place in rural areas,so effective registration system is required at periphery.

Conclusions

1.A large number of maternal deaths are seen in patients from remote areas even in today's world, as poor booking, illiteracy and low socioeconomic status are major causative factors in these areas.

2. Major contributors of maternal deaths are haemorrhage, eclampsia and sepsis. Appropriate implementation of training programs, improved primary health care facilities and up gradation of hospitals at periphery can certainly bring down the number of maternal deaths.

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