ORIGINAL ARTICLE

Verbal Autopsy of Maternal Mortality in Rawalpindi District

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ABSTRACT

Objective: To identify the causes and risk factors leading to maternal mortality through verbal autopsy in the District of Rawalpindi, Pakistan.

Study Design: A retrospective, descriptive study.

Place and Duration of Study: The study was carried out in Community Department of Foundation University Medical College Islamabad from January 05, 2019, to December 25, 2019.

Materials and Methods: Data of 105 women died of causes related to death during pregnancy/ delivery between 01 April 2013 and 30 April 2018 was retrieved from the office of District Health Officer (DHO) Rawalpindi. A Verbal Autopsy was conducted to determine cause of death and the possible risk factors, through a structured questionnaire that was filled by close relatives of the deceased women. Analysis of data was done using SPSS version 25.0.

Results: The Mean age of the patients was 31 years, and it ranged from 15 to 49 years. In 26.7% of mothers cause of death could not be determined. Overall, the major and most obvious cause of maternal death was delivery related hemorrhage in 58% cases. Out of these, antepartum hemorrhage was the commonest cause occurring in 43.8% of the total cases. Postpartum hemorrhage occurred in 11.4% cases, while fatal hemorrhage during the delivery occurred in 2.8% mothers.

Eclampsia was the next common cause that occurred in 11.4% mothers. Difficult and prolonged labour was found to be cause of death in 2.8% cases, while 0.95% died of Sepsis.

Among the risk factors, lack of antenatal care emerged as the leading risk factor, present in 62% mothers, followed by anemia being present in 46.6% mothers. Multi-parity was found to be the next common risk factor being present in 26.6% mothers. Reduced interval in successive pregnancies was found in 21% cases. Systemic medical disorders like hypertension, renal disorders, Diabetes Mellitus, Pneumonia, hepatic failure, were found in 6.66% mothers. History of complications in previous pregnancies was present in 3.8% cases. History of lack of proper medical services in the hospital as possible factor leading to death was present in only 5 (4.8%) cases.

Conclusion: Hemorrhage related with delivery, especially the antepartum hemorrhage emerged as the commonest cause of maternal mortality, followed by eclampsia. At the same time, lack of antenatal care and anaemia emerged as the commonest risk factors in this regard.

Key Words: *Delivery related Hemorrhage, Maternal Mortality, Maternal Risk Factors, Unknown Maternal Deaths, Verbal Autopsy.*

Introduction

Pakistan, having a population of over 20 billion, is the sixth most populous country of the world as per the latest census conducted in the year 2017. The population growth rate recorded was 2.10 in 2016, and since then it has been increasing. This creates an overall burden on the economy of the country, where health indicators like maternal mortality remain a matter of great concern.

Most of the developing countries are facing Maternal Mortality as a major health issue. It is considered to be one of the top priority health issues in the formulation of health policies and research strategies in the developing world. It is a bitter reality that most of maternal deaths take place in the developing world and ironically, a vast majority of

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these are preventable.

According to WHO, any non-accidental maternal death, occurring during the pregnancy or childbirth or within 6 weeks of delivery, is considered as Maternal Mortality.[2] It depicts the health and development status of a country. Unfortunately, in Pakistan it figures around 30000 maternal deaths, which is a very high number like any other developing country.Thus the maternal mortality rate in Pakistan is calculated as 276 per 100,000 live births and it stand as 147th in the world for the year 2017. Pregnancy related hemorrhage is found to be the commonest cause of maternal mortality, being present in 47.7% deaths. Highest incidence of 35% was seen in 25–29-year age group.

Causes and risk factors leading to maternal mortality in developing countries vary greatly. According to WHO 75% of the causes of maternal mortality include hemorrhage, mostly post-partum, post-partum sepsis and eclampsia/ pre-eclampsia.

Though substantial decrease in maternal mortality in Pakistan has occurred since 1990, but is far lower than the targets set by the UN and also quite low as compared to other developing countries of the region. Pakistan has also been declared as the most risky place for a birth to take place. This lack of achievement of the target of low Maternal Mortality Rate is mostly due to many of the socioeconomic reasons like poverty, low female literacy rate, poor nutrition, and lack of access to the health facilities etc.

A decrease of 44% in the maternal mortality has been observed all over the world from 1990 to 2015. It has been observed that almost all of the maternal deaths occur in the low income countries. Even minimal modifications in the SOPs can lead to a decrease of 80% of maternal deaths even in the poor countries. UN SDGs of less than 70 per 100 000 maternal deaths is achievable by implementing a better accountability system. Many of the countries are moving towards achieving this goal by improving their accountability systems by introducing verbal autopsies and external enquiries to take measures to reduce maternal mortality.

It is an irony that most of the factors leading to maternal mortality can be prevented simply by proper registration of the patients so that information can be obtained about these mothers. Even in developed countries like UK, the actual number of maternal mortality is 60% higher than the reported figure. Hence it is not surprising that a lot of maternal deaths in Pakistan are not reported which makes it difficult to determine the exact numbers currently. This is mainly due to the lack of reporting of births and deaths to proper governing bodies. In order to fill the missing information, verbal autopsy is considered as an effective tool. Verbal Autopsy is defined by W H O as “a method to ascertain the cause of a death based on an interview with next of kin or other caregivers” and it is applicable on all those deaths where a death is not formally medically certified. Hence verbal autopsy provides an effective alternate tool to record causes of maternal deaths and has been implemented at various levels.

As many of the cases of maternal mortality are neither nor reported, it was felt that Verbal Autopsy can be carried out in such cases to determine the cause of maternal mortality. Hence a retrospective, descriptive study was carried to find out the causes and risk factors leading to maternal mortality, through verbal autopsy in the District of Rawalpindi, Pakistan.

Materials and Methods

A retrospective descriptive study was carried out in Community Medicine Department of Foundation University Medical College from January 05, 2019, to December 25, 2019. Data of 105 women died of the causes related to death during pregnancy/ delivery was retrieved from the office of District Health Officer (DHO) Rawalpindi, Pakistan by Convenient sampling technique and evaluated. Approval of the Institutional Ethical Committee for this study was obtained beforehand. Permission was obtained from DHO Office for this study. Informed consent of the next of kin was obtained and data confidentiality was assured.

Data of all the women, who died of the causes related to pregnancy or delivery, from April 2013 to April 2018 was included in the study. The data was collected by the team of authors along with a Senior Staff Nurse detailed by the DHO. Data of those subjects who could not be traced due to improper address entry or those women whose immediate family members did not cooperate during the study, were excluded. Through a modified version of questionnaire, developed by the National

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Committee for Maternal and Neonatal Health (NCMNH) and validated by National Institute of Population Studies Pakistan & UNICEF, a Verbal Autopsy was conducted to determine the cause of death and the risk factors. This questionnaire was translated in Urdu and was filled by a two-member team, comprising of a Medical Officer and a Staff nurse who were well versed in local language, while interviewing close relatives (Next of Kin or those who remained close to the deceased during her illness) of the deceased women at their homes/ villages in selected rural and urban areas of Rawalpindi District. In some cases, help of the local administration was also sought to convince the relatives for the interviews. Analysis of data was done using SPSS version 25.0 and was analyzed for frequencies and percentages.

Results

The Mean age of the patients was 31 years, and it ranged from 15 to 49 years. Regarding causes of maternal deaths as shown in Figure: 1, in 28 (26.7%) mothers, cause of death could not be determined even after Verbal Autopsy. Overall, the major and most obvious cause of maternal death was delivery related hemorrhage in 61 (58%) cases. Out of these, antepartum hemorrhage was the commonest cause occurring in 46 (43.8%) of the total cases. Postpartum hemorrhage occurred in 12 (11.4%) cases, while fatal hemorrhage during the delivery occurred in 3 (2.8%) mothers.

Delivery related hemorrhage was followed by eclampsia (fits) as the next common cause that occurred in 12 (11.4%) mothers. Difficult and prolonged labour was found to be cause of death in 3 (2.8%) cases. One (0.95%) mother died of Sepsis.

Among the risk factors, as shown in Figure: 2, lack of antenatal care emerged as the leading risk factor, as 62 mothers (59%) had only 1-4 antenatal visits, while 2 mothers (1.9%) never visited antenatal clinic. Anaemia followed it as the next commonest risk factor. It was present in 49 (46.6%) mothers. Multiparity (≥ 4 children) was found to be the next common risk factor being present in 28 (26.6%) mothers. Interval with previous pregnancy of 1 year or less was found in 22 (21%) cases. History of medical disorders like hypertension, renal disorders, Diabetes Mellitus, Pneumonia, hepatic failure, was found in 7 (6.66%) mothers. History of pregnancy related complications in previous pregnancies was found in 4 (3.8%) cases.

Regarding lack of proper medical services in the hospital as possible factor leading to death, the answer was affirmative in only 5 (4.8%) cases.

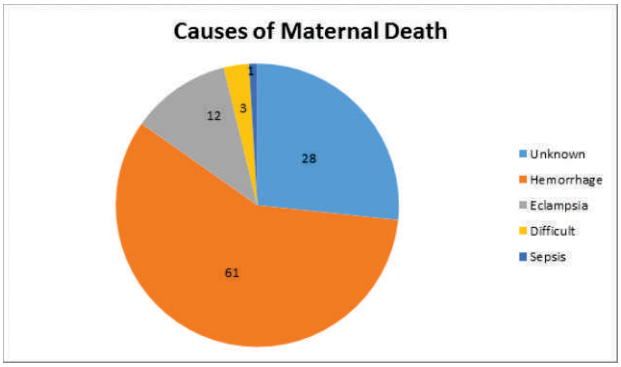

Figure 1: Causes of Maternal Mortality

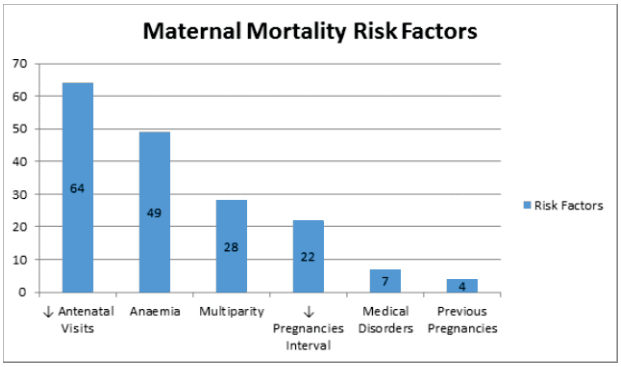

Figure: 2 Risk Factors for Maternal Mortality

Discussion

Maternal Mortality is one of the major health issues in the developing world, including Pakistan. Pakistan ranks 126 out of 149 on HDR-Gender Inequality Index due to the low women empowerment, limited contributions, and lack of maternal healthcare facilities. Data collection regarding Maternal Mortality serves to monitor and lower the rate. The purpose of our research was to identify the causes and risk factors leading to Maternal Mortality. Hemorrhage, related to delivery, emerged as the commonest direct cause of maternal mortality, followed by eclampsia. Among the risk factors, anaemia emerged as the biggest risk factor followed by multi-parity and reduced interval between successive pregnancies respectively. As shown by our findings, most of the causes of Maternal Mortality are modifiable and preventable. This information can help us elevate the health status of mothers in our country.

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Results of our study correspond to the study carried out by Sami & Baloch (2002) in which Maternal Mortality Ratio was calculated to be 560 out of 100000 live birds with delivery related hemorrhage accounting for 42% as the biggest cause of maternal deaths. Similarly in another study carried out in four districts of Afghanistan by Bartlett et al (2005), delivery related hemorrhage emerged as the leading cause of maternal mortality in three of the four districts, as found in our study. Yet in another study similar results showed hemorrhage to be the biggest cause of maternal mortality (36%) followed by eclampsia (17%). Similarly, Bhutta & Black (2013) showed hemorrhage (22.9%) as the biggest cause of maternal mortality. In a similar study by Perveen & Ilyas (2017), eclampsia was shown as the most common cause of maternal mortality, followed very closely by hemorrhage. Since this study was also carried out on a limited number of patients, such minor differences in data may not be considered very significant and the results are not much different than our study. In a study carried out in USA, after cardiac diseases, hemorrhage was still the most common cause of maternal mortality. Results of most of these studies show hemorrhage as the most common or one of the most common causes of maternal mortality as shown in our study.

A study conducted by Akseer et al (2018) showed that though the Millennium Development Goal (MDG) period saw immense achievements in health goals for improving child and maternal health, many of the Muslim countries had much higher maternal mortality rates as compared to the rest of the world, due to very similar factors as shown in our study.

A study carried out in Jharkhand, India by Khan & Pradhan (2013) showed similar causes of maternal deaths as shown in our study, but this study attributed these deaths to preventable factors like ignorance, illiteracy, and lack of nursing facilities.

According to yet another study by Austin et al (2014), multiple factors contribute to Maternal Mortality, including lack of medical facilities and lack of affordability of the available health facilities, and of course illiteracy further aggravating it.

As regards the risk factors, in our study, lack of antenatal care emerged as the biggest risk factor, followed by anaemia, multi-parity and reduced interval among successive pregnancies respectively. In a study by Mahmood et al (2018) multiparity was shown as the biggest risk factor for maternal mortality, although it was the third common risk factor in our study. Similar to our study, Astuti et al (2017) also show lack of antenatal care as one of the important risk factors in maternal mortality. Similar results regarding risk factors were shown in a study by Masturoh et al (2017) that showed lack of antenatal care and obstetric problems as the leading risk factors in maternal mortality. In yet another study, Bauserman et al (2015) showed lack of education, lack of antenatal care, obstetric causes and hypertension as the leading risk factors in maternal mortality. Yet another study by Diana et al (2020) showed anaemia and nutritional status, lack of antenatal care and obstetric complications as the leading risk factors for maternal mortality.

It is evident from these comparisons that results of our study also correspond to these studies regarding causes and factors leading to maternal mortality.

Our study has certain limitations too. A major setback of verbal autopsy is the lack of requisite resources needed to successfully conduct it on a large scale. Due to this shortcoming, we were compelled to keep the sample size limited to one district only. Hence inference from this study cannot be generalized.

Moreover, reaching out for data collection in rural communities is particularly difficult owing to unfavorable conditions brought on by the reluctance of the locals to associate with outsiders regarding such sensitive matters. Clearly, a general sentiment of mistrust towards outsiders prevails among these tightknit communities. This is reflected by the fact that family members or relatives of the deceased women were not very willing to give interviews.

Furthermore, at times, the volunteers were unable to recall events of the pregnancy that are pertinent to our research & many questions remained unanswered. In the light of our study following recommendations are made:

1. Employment of Trained Birth Attendants (TBA): Most of the deliveries in the developing countries like Pakistan are carried out at domestic set up, in the absence of any skilled attendant. Therefore, training of the traditional birth attendants should be ensured with adequate knowledge of midwifery skills along

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with emergency obstetric care so that the complications of labour are minimized.

2. Proper prenatal care should be ensured to minimize risks and complications. Conditions like hypertension, malnutrition, iron deficiency anemia should be addressed in prenatal assessments. Free, disposable and easily usable delivery kits should be made available to avoid any transmission of infection from mother or surroundings to the newborn.
3. Good antenatal care and obstetric care must be ensured.
4. Most importantly an awareness campaign should be launched at national level to improve quality of life especially in girls and women. They should be educated about health, family planning and hygiene. Moreover, community-based intervention packages may be introduced to reduce maternal mortality as shown in a study by Lassi & Bhutta (2015).

Conclusions

Hemorrhage related with delivery, especially the antepartum hemorrhage emerged as the commonest cause of maternal mortality, followed by eclampsia. At the same time, lack of antenatal care and anaemia emerged as the commonest risk factors in this regard. These are preventable and treatable causes.

This information can help us elevate the health status of mothers in our country. Although we could not establish cause of mortality in 28 patients even after the verbal autopsy, still this study establishes verbal autopsy as an effective tool in getting missing information about causes of maternal mortality.

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CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.