Original Article

Maternal Mortality Ratio and its causes

Maternal Mortality Ratio and its Causes at Nishtar Hospital Multan

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ABSTRACT

Objective: To determine the maternal mortality ratio and its causes at Nishtar Hospital Multan.
Study Design: Prospective observational study
Place and Duration of Study: This study was conducted at the Department of obstetrics & Gynaecology at Nishtar Hospital Multan over a period of 3yrs from January 2015 to October 2017.
Materials and Methods: It included all the mortalities in labour ward due to direct and indirect causes during pregnancy, labour and puerperium. The descriptive statistics were used for age, parity, cause of death and possible factors responsible for death were identified.
Results: There were total of 34394 deliveries and 34050 live births. Total 339 maternal deaths occurred during 3years period from January, 2015 to 31, October 2017 with MMR 995.6/100,000 live birth. The highest maternal mortality age group was less than 30yrs. Majority of the patients were between P_2-P_4. Obstetrical hemorrhage was the most frequent cause (41.29%) followed by hypertensive disorders (30.9%), blood transfusion reactions (10.3%), septicemia (8.8%), thromboemobolic events (5.8%), ruptured uterus (5.3%), operative complications leading to internal haemorrhage (3.5%) &cardiac disease (1.7%), less frequent causes were ectopic pregnancy (1.1%) and hepatic failure (0.8%).
Conclusion: Most of these deaths are preventable. Sustained reduction in maternal mortality will only be possible if modern obstetrics care is made available through a system of professional qualified midwifery and referral system along with political commitment and accountability of health providers. Concentrated efforts are required to obtain missing data, accurate data collection, health education awareness and transport facilities to prevent many deaths.
Key Words: Maternal Mortality rate, Hemorrhage, Pregnancy

Citation of articles: Siddiq S, Qadir SY, Sarfraz Z, Rao SI. Maternal Mortality Ratio and its causes at Nishtar Hospital Multan. Med Forum 2019;20(1):48-51.

INTRODUCTION

Maternal mortality has been called “The most related tragedy of our times". The tragedies are multifunctional in origin, involving interrelated factors and we have to look beyond the medical complications like society attitudes towards woman during infancy, childhood and adolescence the socioeconomic and cultural environment. Childhood is a biological process that gives joy to the mother and family but this become tragedy when woman loses her life in performing this familial & social obligation. Pregnancy and childhood is a physiological process, but by no means a risk free.
Maternal health care begins from her in utero life. Lack of awareness & delay in seeking health care facility are also important factors where woman’s educational status plays an important role.

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Received: August, 2018
Accepted: November, 2018
Printed: January 2019

Every year globally an estimated 5, 29,000 maternal deaths occur[1]. Maternal mortality has a serious impact on the deaceased family. Inspite of several initiatives and improvements in the health care facilities there has been no substantial reduction in the maternal mortality in all developing countries which contributes to approximately 98% of all maternal deaths[2]. One of the MDG is to reduce the maternal mortality by 75% between 1990 and 2015[3].
According to recent survey the MMR in Pakistan is 260per 100,000 live births. In comparison the MMR in United States is 8 per 100, 000 live birthsin 2005[4] and it increased to21-22/100,000 in 2013-14(p-0.001)[5]. Sloan observed that Nigeria contributes more than any other country in globally in maternal mortality than others[6]. The causes of maternal mortality are obstructed labour, hemorrhage, hypertensive disorders in pregnancy (Eclampsia), Sepsis & unsafe abortion. Reduction of maternal mortality is not achieved because of limited awareness of the magnitude in underdeveloped countries. Lack of political will, governmental support and adequate allocation of resources are compounding factors. The poverty, woman empowerment, cultural believes and family constraints all contribute to underutilization of professional delivery services even when they do exist[7]. Nabana observed the improvement in health status indicator in last three decades, however maternal mortality is still high. He also observed that

institutional birth rate has increased. He stated that richest women were 5.45 times more likely to give safe births[8]. Akashi stated that providing the continuity of care (CoC) is important strategy to improve MNCH in Japan[9]. Then allocation of resources is again very important as in MDG, financial resources were allocated but Martisen observed that individuals of large population receive less assistance so inclusion of population size in allocation of resources can be considered[10].

One factor that contributes to high maternal mortality is the delayed use of emergency obstetrics care (EMOC) services[11]. While Khetan observed that community health workers have played major contribution in improving maternal and child health[12]. PPH accounts for about 25% of the total & claiming an estimated 150,000 maternal mortalities annually[13]. Anemia and unsafe abortion are important public health problem accounting for 13% of maternal mortality [14]. The other important cause of indirect cause of death is cardiac disease. Mogos observed that heart failure and death has risen significantly from 4.9%to 7.1%[15]. While Sacoor observed that tuberculosis is a second leading cause of death after eclampsia in his community[16]. Delay in the provision of adequate care is another important factor in the maternal mortality[17].

MATERIALS AND METHODS

This is prospective observational study conducted from Jan 2015 to Oct 2017 in Obstetrics & Gynaecolgy Department of Nishtar medical university and Hospital Multan. It is a public sector tertiary care, 1500 bedded hospital and drains the far flung areas of not only the southern Punjab but also the various remote areas of Baluchistan. It serves as the major referral center for other public & private hospitals. The reason for admission, condition at arrival, possible factors related to and cause of death were identified. Other information's included age, parity, booking Status and relevant features of index pregnancy were also noted. The proforme and records were reviewed in mortality meetings of the department to analyse and find out the factors responsible for maternal mortality.

RESULTS

There were total of 34394 deliveries and 34050 live births. Total 339 maternal deaths occurred during 3years period from January, 2015 to 31, Oct 2017 with MMR 995.6/100,000 live birth. The highest maternal mortality age group was less than 30yrs. Majority of the patients were between P_2-P_4. Out of 339 maternal deaths, obstetrical hemorrhage was the most frequent cause (41.29%) followed by hypertensive disorders (30.9%), Blood transfusion reactions (10.3%), Septicemia (8.8%), Thromboemobolic events (5.8%), ruptured uterus (5.3%), operative complications leading to internal haemorrhage (3.5%) & Cardiac disease (1.7%), Less frequent causes were ectopic pregnancy (1.1%), & hepatic failure (0.8%).

Table No.I: Age Distribution of Maternal mortality.

Age in Years	Number	Percentage
≤20	10	4.2%
21-30	153	65.6%
31-40	33	14.1%
≥40	27	11.15%

Table No.2: Causes of Maternal Mortality.

S No.	Causes of Death	No.	%age
1	Obstetrical Hemorrhage	118	50.6
2	hypertensive disorders	58	24
3	Ruptured uterus	18	7.7
4	Cardiac disease	11	4.7
5	Operative complications internal hemorrhage	8	3.4
6	Thromboembolic event	5	2.1
7	Hepatic failure	5	2.1
8	Blood Transfusion	5	2.1
9	Septicemia	3	1.2
10	ectopic pregnancy	1	0.4
11	anesthetic complication	1	0.4

DISCUSSION

Maternal death makes a happy moments of giving childbirth to tragic incidence. The index of the quality of health care delivery system of a country is reflected by its maternal mortality rate.

If the definition of maternal death is to include all deaths due to pregnancy & childbirth it must include deaths taking place before childbirth (eg abortion, ectopic pregnancy) those taking place during childbirth (e.g antepartum, intrapartum and postpartum hemorrhage) as well as deaths taking place sometime after actual event of childbirth (eg sepsis). Moreover, not all maternal deaths are directly due to condition resulting solely from pregnancy. Some are caused by preexisting conditions which have been aggravated by pregnancy (eg hepatitis). This definition is clearly made in the Ninth & Tenth revisions of International Classification of Disease (ICD 9 and 10) which define maternal death as follows.

A maternal death is defined as the death of a woman while pregnant or within 42days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy, its management but not from accident or incidental causes.

One Pakistani woman loses life every 30 minutes due to reproductive health complications [18]. In Pakistan each year 5 million woman become pregnant, of these 0.7million (15% of all pregnant woman) are likely to experience some obstetric & medical complications. An estimated 30,000 woman die each year due to pregnancy related causes[19]. Reduction in maternal

mortality is an important MDG of special concern in low income countries like Pakistan. Direct causes of maternal mortality are still the leading causes in our institution, similar to the other teaching institution of the country as in the other developing countries.

Hemorrhage, eclampsia, ruptured uterus and puerperal sepsis were responsible for 80% of maternal mortality in this institution during the study period. This is mainly due to late referral of complicated cases to the hospital. In the present study obstetrical hemorrhage was the leading cause of maternal deaths. Majority of these deaths were due to postpartum hemorrhage and the patient delivered outside the hospital ether at their homes or of some small private maternity care centers. These women were brought moribund, in inevitable hypovolemic shock. Sometime there were delays in the availability of laboratory investigations and arrangement of blood & blood products.

Deaths due to hypertensive disorders of pregnancy, particularly eclampsia constituted 24% of all deaths. This is also comparable with other studies of developing countries and the other teaching institutions of this country. Indian studies stated that eclampsia is the leading cause of maternal mortality rather than PPH.

Among the indirect causes the major killer was the blood transfusion reactions, hepatic failure and thromboembolic events. During the study period eight patients died because of the operative complications mainly due to internal hemorrhage. These were the patients who operated at periphery for placenta previa followed by obstetrical hysterectomy and referred to the tertiary care center with shock because of internal hemorrhage.

CONCLUSION

Maternal deaths in our region are still very high in comparison with developed countries. Reduction in maternal mortality will only be possible if high- quality obstetrics care is made available to all woman through a system of efficient midwifery and proper referral system along with political commitment. Health care commission has to put great efforts to obtain exact data along with good quality health care system and improve transport facilities to prevent many deaths.

In this study we have noticed a very high maternal mortality ratio in tertiary care hospital. There are various reason for this high mortality; like

- Delay in referral to tertiary care center
- Lack of Infrastructure
- Lack of proper facilities at primary and secondary levels
- Lack of awareness
- Low literacy rate
- Problems in the transport facilities

In addition to above mentioned reasons, we noticed that there are problems which we face in the tertiary care hospitals while managing our obstetric patients:

- Overcrowding in the hospitals
- There is delay in the laboratory reports
- Poor blood bank facilities
- Lack of availability of Anesthetist
- Lack of Para Medical Staff
- Inadequate Operation theater facilities

It is now three decades since the launch of the Global Safe Motherhood initiatives in
1987 but woman are still dying during childbirth. Fortunately we can prevent their deaths if we invest a few safe and affordable health services.

Recommendations: There are some solutions of these problems.

- Improving Literacy rates
- Better infrastructure
- Construction of New Hospitals to overcome the problem of overcrowding
- Provision of the laboratory in the vicinity of labour ward.
- Availability of blood bank facilities for the arrangement of blood and blood products round the clock.
- Training of more doctors in the field of anesthesia.
- Increase the number of operation theaters.
- Availability of ICU in the labour ward.
- Good training of the residents to deal with obstetrical problems.
- Make child & maternal survival a core national & global health concern.
- Make sure that the appropriate government ministries are accountable to the public about the performance of investments in maternal health.

Women & girls are the driving force in our economies & when women are healthy they play a crucial role in the development of countries.

Author's Contribution:

Concept & Design of Study:	Shazia Siddiq
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Data Analysis:	Zahid Sarfraz, Shahid Irshad Rao
Revisiting Critically:	Shazia Siddiq, Saima Yasmin Qadir
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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Ronsmans C, Grahan WJ. Maternal survival 1: Maternal mortality: Who, when, where, and why. Lancet 2013;368:1189-1200.

2. Donny F. Maternal maternal survival in developing countries: what has been done, what can be achieved in next decade. Int J Gynaecol Obstet 2014;70 (1):89-97.
3. Rosmans C, Grahan WJ. Lancet survival series steering group. Lancet 2013;30;368(9542): 1189-200.
4. Pilal G. Reducing deaths from pregnancy and childbirth. Asia link's 2014, 9(5):11-3.
5. .Moaddab A, Dildy GA, Brown HL, Bateni ZH, Belfort MA, Sangi-Haghpeykar H, et al. Health care disparity and pregnancy related mortality in the United States,2005-2014.Obstet Gynecol 2018, 10:1097
6. Sloan NL, Storey A, Fasawe O, Yakubu J, McCrystal K, Wiwa O, et al. Advancing SErvival in Nigeria: A pre-post evaluation of an integrated maternal and neonatal health program. Mater Child Health J 2018;doi: 10.1007.
7. Wilder Smith. A current status "essential obstetric care activities internationally; a literature review. Trop Doct 2013;33(3):135-8.
8. Nababan HY, Hasan M, Marthias T, Dhital R, Rahman A, Anwar I. Trends and inequities in use of maternal health care services in Indonesia,1986-2012.Int J Womens Health 2017;10:11-24
9. Akashi H, Ishioka M, Hagiwara A, Akashi R, Osanai Y. Core factors promoting a continuum of care for maternal, newborn, and child health in Japan. Biosci Trends 2018.
10. Martinsen L, Ottersen T, Dieleman JL, Hessel P, Kinge JM, Skirbekk V. Do less populous countries receive more development assistance for health per capita? Longitudinal evidence for 143 countries, 1990-2014.BMJ Glob Health 2018 Jan 3;3(1).
11. Ghazi Tabatabaie M, Moudi Z, Veddadhir A. Home birth and barriers to referring women with obstetric complications to hospitals: a mixed-methods study in Zahedan, southern Iran. Report Health 2012;20(9): 515-19.
12. Khetan A, Patel T, Hejjaji V, Barbhaya D, Mohan SKM, Josephson R, et al. Role development of community health workers for cardiovascular disease prevention in India. Eval Program Plann 2018;67:177-183.
13. Gowri Ram Anathan, SabaratnamAruklkumaran. Postpartum haemorrhage. J Obstet Gynaecol Can 2013;28(11):967-973
14. Okonofua F. Abortion and maternal mortality in the developing world. J Obstet Gyaecol Can 2014; 9 28(11):974-
15. Mogos MF, Piano MR, McFarlin BL, Salemi JL, Liese KL, Briller JE. Heart failure in pregnant women:A concern Across the pregnancy continuum. Circ Heart Fail. 2018;11(1):e004005.
16. Sacoor C^1, Payne B^2, Augusto O^1,et al , CLIP Working Group. Health and sociodemographic profile of women of reproductive age in rural communities of southern Mozenbique.PLoS One 2018;13(2):e0184249.
17. Rubina Ali, Ayesha Khawar, SaminaKousar. Maternal mortality: An ICE berg one year review at DHQ hospital, Faisalabad. APMC 2012;6:156-9.
18. Mustafa R, Hashmi H. Maternal mortality in a community based hospital. Med Forum 2011; 19(5):767- 9.
19. Government of Pakistan, ministry of population welfare notional institute of population studies. Population growth and its implications. Islamabad: NIPS,2013.