

Maternal Near Miss in A Tertiary Care Hospital : An Observational Study

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Abstract

Background: The term maternal near miss refer to women who have escaped death either by chance or due to good health care after experiencing severe life threatening complications during pregnancy, labour and within six weeks after termination of pregnancy. Severe Acute Maternal Morbidity (SAMM) or Maternal Near Miss (MNM) is a complement of maternal mortality. The aim of this study is to state the need of patient's health education, importance of emergency transportation as well as to evaluate the standard of effective quality & evidence based care in the facility to reduce maternal mortality and morbidity.

Materials and methods : This observational study conducted for the period of January to December 2019 at Chattogram Maa-O-Shishu Hospital Medical College (CMOSHMC). Among 8976 total patients, MNM were 44 and total Maternal Death (MD) 13. Maternal Near miss clinical criteria – haemorrhage, hypertensive disorder of pregnancy, dystocia, sepsis & severe anaemia, organ dysfunction, based on management of ICU, blood transfusion, Maternal near miss are used to indicate quality of health care. Exclusion criteria- maternal death.

Results: Total admitted patients in Obs & Gynae department in this study period were 8976. Obstetric patient 7422 & total deliveries 6027. MNM 44 in number & MD were 13. Main causes of MNM were hypertensive disorders (Severe pre-eclampsia, Eclampsia, HELLP syndrome)-23 (52.3%), obstetric haemorrhage (Placenta praevia, abruption placenta, rupture uterus, rupture ectopic pregnancy, incomplete abortion with shock, DIC)-14 (31.8%) Cardiopulmonary dysfunction (Cardiac arrest, cardiomyopathy, heart failure) – 7 (15.9%). Among the 44 near miss management, LSCS – 32 (73%) vaginal deliveries – 4 (9%), laparotomy – 5 (11%), peripartum hysterectomy – 3 (7%). Women with life threatening condition (MNM & MD) – 57. MNM ratio 6.8 per thousand live birth, MNM & MD ratio – 3.4:1

Conclusion : SAMM or MNM is a pro-indicator to improve quality of obstetric care. Monitoring the near miss morbidity in conjunction with mortality surveillance could help to identify effective preventable measure for potentially life threatening morbidity.

Key words : MNM; Pregnancy; SAMM.

INTRODUCTION

A Maternal Near Miss (MNM) is an event in which a pregnant woman comes close to maternal death, but do not die - a "near miss". Traditionally, the analysis of maternal death has been the criterion of choice for evaluating women's health & the quality of obstetric care. Due to the success of modern medicine such deaths have become very rare in develop countries.

The prevalence of near miss case estimated to be 5.6 to 7.5/1000 (Live birth) hospital based delivery & overall MNM mortality ratio 9:1.¹

The WHO defines a maternal near miss case as "a women who nearly died but survived a complication that occurred during pregnancy", child birth or within 42 days of termination of pregnancy", child birth or within 42 days of termination of pregnancy. Near miss case definition was based on validated specific criteria comprising of five diagnostic features - haemorrhage, hypertensive disorder of pregnancy, dystocia, sepsis and anaemia.²

Near miss approach for maternal health 2011 defined criteria for poor resource setting based on near miss management ICU, need for blood transfusion, near miss clinical criteria (PET, PPH) and organ dysfunction.³

Review of near miss cases has the potential to highlight the deficiency & the positive elements in the provision of obstetric service in any health system.

Maternal near miss incidence, ratio, maternal near miss : Mortality ratio (MNM : MR), mortality index are the near miss indices. High MNM : MD & low mortality index indicated better quality of health care.⁴

Maternal near miss cases are investigated over maternal death as - ?Near miss are more common than maternal death.

- Near miss review is likely to yield useful information or same pathway that lead to severe morbidity & death.

- Investigating the case received may be less threatening to provide the cause of women survival.

- One can learn from women themselves since they can be interviewed about the case they received.

All the near miss should be interpreted as the free lesson & opportunity to improve the quality of service provision. It is also clear that maternal death nearly are the tip of ice-berg of maternal morbidity. Underlying disease process of near miss & mortality were almost same. So evaluation of circumstances surrounding near miss cases could act as proxy for maternal death.⁵

MATERIALS AND METHODS

An observational study conducted for the period of January to December 2019 at CMOSHC (Chattagram Maa-O-Shishu Hospital Medical College). The WHO based criteria for maternal mortality and near miss were identified for studying the cases.⁶

A predesigned & pretested questionnaire adopted from the WHO near miss approach for maternal health was used to collect the data. Data entry was done in Microsoft Excel & data were analyzed. The prevalence of MNM & MN is different age groups was analyzed. Permission for conducting this study was obtained from the ethical review board of the institute.

RESULTS

Table I Major grouping of admitted patients

Grouping	No.of patients	Percentage (%) of patients
Obstetric patients	7422	82.96
Total deliveries	6027	81.20
Conservatively managed	1395	18.80
Gynae patients	1554	17.04

Table I shows among the total patients, obstetric patients are commonest with 81.20 delivery.

Table II Maternal near miss ratio

Total deliverie	6027
MNM	44
MNM Ratio	6.8 per thousand live births

Maternal near miss ration was 6.8 per 1000 live birth.

Table III Age distribution of MNM

Range	Number	Percentage (%)
15-20 yrs	12	27
21-25 yrs	13	30
26-30 yrs	12	27
31-35 yrs	7	16
	44	100

Maternal near miss is more common below 30 years. About 81.20%, 27.27% being in teen age group (High risk group).

Table IV Parity of MNM

Point	Number	Percentage (%)
Primi para	17	38.64
2 nd para	8	18.18
3 rd para	13	29.55
4 th para	5	11.36
>4	1	2.27

Maternal near miss is more common in primi para, a high risk group for pre-eclampsia.

Table V Causes of MNM

	Number	Percentage (%)
Hypertensive disorder (S.PE, Eclampsia, HELLP)	23	52.3
Obstetric Haemorrhage	14	31.8
Cardiopulmonary dysfunction	7	15.9

Most of maternal near miss was due to Hypertensive disorder

Table VI MNM management

	Number	Percentage (%)
LSCS	32	73
VD	4	9
Laparotomy	5	11
Peri-partum hysterectomy	3	7

About 73% patients having caesarean section suffer maternal near miss

DISCUSSION

Despite the improvement in obstetric care over the few decades, maternal morbidity and mortality remain a challenge in the developing countries. Maternal mortality is "Just the tip of the ice berg" & has a vast base of the iceberg. Maternal morbidity,

which remains under scribed. Near miss cases generally occur more frequently than maternal death & therefore, it is more reliable indicator. Quantitative analysis of near miss cases provides a more comprehensive profile of health system functioning.

In this study period, a total 44 cases of MNM & 13 cases were MD. The mean age of MNM was 25.48.

A study done in a tertiary care hospital by Roopa et al at Karnataka, India & by Almeria et al in Syria shows similar age of the mother in both the groups.^{7,8} A study done by Rathod et al at Aurangabad, at tertiary referral centre of rural India shows a mean age of 23.63 in MNM group.⁹

However in all the studies, WHO near miss criteria were used & the reason for the difference in age might be the early age of marriage where women conceived early & because of which, chance of MNM are increased. In this study 56.82 (n25) women in MNM were primipara and para 2. Similar findings were found in the study done by Patandar et al in Maharashtra, India.¹⁰ However a study done in a rural referral hospital in Northern Tanzania by Nelissen et al shows more case of multipara in MNM.¹¹ Hypertensive disorder a risk factor for maternal near miss in common in primi & teen age pregnancy.

In the present study, 52.3 (n23) women experienced eclampsia & severe pre-eclampsia followed by 31.8 (n14) suffered from severe post partum haemorrhage. A similar findings was there in the study done by Shrestha et al in Nepal.¹² In a study done by Bakshi et al in North India, few cases of eclampsia were detected in a tertiary care hospital while cases of severe PPH were more than one third among women with potentially life threatening condition.¹³

Near miss : Death ratio was found to be 3.4:1 which means that for every three women, one women dies of complication what is similar to other studies.^{6,14,15} While in some other states, it was found to be higher.^{7,16,17}

Higher near miss : Mortality ratio indicate a better quality of care at that facility. Critical care facility in Chattogram Maa-O-Shishu Hospital (CMOSH) still needs further improvement.

As suggested by Campbell & Graham, “We should get on with what works” to reduce maternal mortality.^{18,19} The improvement lies in the implementation of evidence-based intervention such as the use of oxytocin immediately after delivery as AMTSL.¹¹ In the present study AMTSL done after delivery almost all women received oxytocin. However in another study done in Tanzania by Nelissen et al only half of the women received oxytocin after child birth.¹¹ In other study, it was comparatively low.²⁰ Evidence based intervention such as practicing AMTSL for all deliveries, ante-partum diagnosis of placenta praevia, arranging PPH kit, blood donor, multi-disciplinary treatment pre-operatively to manage PPH. Quality ante-natal care, gestosis scoring to predict pre-eclampsia by 11 to 13 weeks Doppler Ultrasonogram for presence of uterine artery notching with Aspirin prophylaxis reducing severe form of hypertensive disease & eclampsia.

The use of WHO near miss approach revealed opportunities to improve care with a clear indication of effective intervention & then the age of this specific intervention is assessed. In the present study, magnesium sulphate for the treatment of eclampsia & severe pre-eclampsia & prophylactic antibiotic during caesarean section were used in all women in this facility. However, a study done by Jabir et al in Iraq has shown that only two-third of the women with eclampsia received Magnesium sulphate & three-fifth of the women received prophylactic antibiotic during caesarean section.²¹

CONCLUSION

Maternal Near Miss (MNM) is a potential indicator to improve quality of obstetric care. They are analyzed to clarify the epidemiologic spectrum rapidly at hospital level and to prioritise the needs in maternal health care. Monitoring of near miss morbidity in conjunction with mortality surveillance could help to identify effective preventive measure for potentially life-threatening morbidity. Severe maternal outcome can be reduced by fostering the evidence based interventions, improving referral systems & optimizing the use of critical care.

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DISCLOSURE

All the authors declared no competing interest.

REFERENCES

1. Maysoun Jabir, Imad Abdul Salam, and Joao Paulo Souza: Maternal near miss and quality of Maternal healthcare in Baghdad,Iraq; BMJ.2013;13:1-60.
2. The WHO near miss approach for maternal health.Geneva WHO. 2011.
3. WHO,UNICEF,UNFPA and World Bank. Trends in maternal mortality: 1990 to 2008. Estimate developed by WHO,Geneva, Switzerland:WHO. 2010
4. Hill K, Thomas K, Abou Zahr C, Walker N, Say L, Inou M,et al. Estimates of maternal mortality would wide between 1990 and 2005: an assessment of available data.2007;370:1311-1319.
5. Cecatti JG, Souza JP, Parpinelli MA, Sousa MH, Amaral E:Research on severe morbidities and near-misses in Brazil:What we have learned.Reprod Heath Matters.2007;15(30):125-133.
6. Say L, Pattinson RC, Gulmezoglu AM. WHO Systematic review of maternal morbidity & mortality:The prevalence of severe acute maternal morbidity (Near miss). Reprod. Health.2004;1:3.
7. Roopa PS, Verma S, Rai L,Kumar, P, Pai MV, Shetty J. A study of near miss obstetric events and maternal deaths in a tertiary care hospital. Int J Adv Res. 2017;5:2172-2178.
8. Almerie Y, Almerie MQ,Matar HE, Shahrour Y,AI Chamat AA, Abdulsalam A. Obstetric near-miss and maternal mortality in maternity university hospital, Damascus, Syria:A retrospective study.BMC Pregnancy Childbirth.2010;10:65.
9. Rathod AD, Chavan RP, Bhagat V, Pajaj S, Padmawar A, Thool P. Analysis of near-miss and maternal mortality at tertiary referral centre of rural India. J Obstet Gynaecol India. 2016;66:295-300.
10. Patankar A, Uikey P, Rawlani N.Severe acute maternal morbidity (Near miss) in a tertiary care center in Maharashtra: A prospective study.Int J Sci Study.2016;4:134-140.
11. Nelissen EJ, Mduma E, Ersdal HL, Evjen-Olsen B, van Roosmalen JJ, Stekelenburg J. Maternal near miss and mortality in a rural referral hospital in Northern Tanzania:A cross-sectional study. BMC Pregnancy Childbirth. 2013;13:141.
12. Shrestha J, Shrestha R, Tuladhar R, Gurung S, Shreshtha A. Maternal near miss in a tertiary care teaching hospital. American Journal of Public Health Research.2015;3:17-22.
13. Bakshi RK, Aggarwal P, Roy D, Nautiyal R, Kakkar R. Indicators of maternal 'near miss' morbidity at different levels of health care in North India: A pilot study, Bangladesh J Med Sci.2015;14:254-257 .
14. Abha S, Chandrashekhar S, Sonal D. Maternal near miss: A valuable contribution in maternal care. J Obstet Gynaecol India. 2016;66:217-222.
15. Anuradha J, Srinivas PJ, Manjubhashini S.A prospective study on maternal near miss cases at a tertiary care hospital in Visakhapatnam. Journal of Dental and Medical Sciences. 2017;16:31-35.
16. Das I, Datta M, Samanta S, Mahapatra B, Mukherjee P. Cross-sectional study on post-partum severe acute maternal morbidity and maternal deaths in a tertiary level teaching hospital of Eastern India. Womens Health Reprod Sci. 2014;2:113-118.
17. Nacharaju M, Sudhir Ps, Kaul R, Reddy P. Maternal ner miss: An experience in rural medical college. Bangladesh J Med Sci. 2019;18:1-17.
18. Cambel OM, Graham WJ. Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: getting on with what works. Lancet.2006;368:1284-1299.
19. Sorrensen BL, Elsass P, Nielsen BB, Masawe S, Nyakina J, Rasch V. Substandard emergency obstetric care - A confidential enquiry into maternal deaths at a regional hospital in Tanzania. Trop Med Int Health.2010;15:894-900.
20. Gulmezoglu AM, editor. WHO guidelines for the management of postpartum haemorrhage and retained placenta. World Health Organization. 2009.
21. Jabir M, Abdul-Salam I, Suheil DM, Al-Hilli W, Abul-Hassan S, Al-Zuheiri A, et al. Maternal near miss and quality of maternal health care in Baghdad, Iraq. BMC Pregnancy Childbirth. 2013;13:11.