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

Farjana Ahmed Surovi1*
Serajun Noor1
S.M. Ishtiaque Ali2
Aklima Sultana1

1Department of Obstetrics & Gynaecology
Chattogram Maa-O-Shishu Hospital Medical College
Chattogram, Bangladesh.

2Department of General Surgery
Rangamati Medical College
Rangamati, Bangladesh.

*Correspondence to:
Dr. Farjana Ahmed Surovi
Resident Surgeon
Department of Obstetrics & Gynaecology
Chattogram Maa-O-Shishu Hospital Medical College
Chattogram, Bangladesh.
Mobile : +88 01748 77 01 40
Email : surovi.ss30@gmail.com

Date of Submission : 28.11.2021
Date of Acceptance : 12.12.2021

www.banglajol.info/index.php/CMOSHMCJ

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) were 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, abruptio 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 woman who nearly died but survived a complication that occurred during 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.

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.

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.

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

**MATERIALS AND METHODS**

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

A predesigned & pretested questionnaire adopted from the WHO near miss approach for maternal health was used to collected 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

<table>
<thead>
<tr>
<th>Grouping</th>
<th>No. of patients</th>
<th>Percentage (%) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetric patients</td>
<td>7422</td>
<td>82.96</td>
</tr>
<tr>
<td>Total deliveries</td>
<td>6027</td>
<td>81.20</td>
</tr>
<tr>
<td>Conservatively managed</td>
<td>1395</td>
<td>18.80</td>
</tr>
<tr>
<td>Gynae patients</td>
<td>1554</td>
<td>17.04</td>
</tr>
</tbody>
</table>

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

**Table II** Maternal near miss ratio

<table>
<thead>
<tr>
<th>Total deliveries</th>
<th>6027</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNM</td>
<td>44</td>
<td>7.3</td>
</tr>
<tr>
<td>MNM Ratio</td>
<td>6.8 per 1000 live birth</td>
<td></td>
</tr>
</tbody>
</table>

Maternal near miss ration was 6.8 per 1000 live birth.

**Table III** Age distribution of MNM

<table>
<thead>
<tr>
<th>Range</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-20 yrs</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>21-25 yrs</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>26-30 yrs</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>31-35 yrs</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>&gt;35 yrs</td>
<td>44</td>
<td>100</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Point</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primi para</td>
<td>17</td>
<td>38.64</td>
</tr>
<tr>
<td>2\textsuperscript{nd} para</td>
<td>8</td>
<td>18.18</td>
</tr>
<tr>
<td>3\textsuperscript{rd} para</td>
<td>13</td>
<td>29.55</td>
</tr>
<tr>
<td>4\textsuperscript{th} para</td>
<td>5</td>
<td>11.36</td>
</tr>
<tr>
<td>&gt;4</td>
<td>1</td>
<td>2.27</td>
</tr>
</tbody>
</table>

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

**Table V** Causes of MNM

| 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

<table>
<thead>
<tr>
<th>Point</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSCS</td>
<td>32</td>
<td>73</td>
</tr>
<tr>
<td>VD</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Laparotomy</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Peri-partum hysterectomy</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

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,
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.

Acknowledgement
Registars, Assistant Registrars, Medical Officers, Intern doctors, Staff nurses & Supporting staffs of Obstetrics & Gynaecology Department of CMOSHMC.

Disclosure
All the authors declared no competing interest.

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.
REFERENCES


