PREVALENCE AND INDICATORS OF MATERNAL NEAR MISS CASES IN A MAIN MATERNITY HOSPITAL IN BAGHDAD

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ABSTRACT

Background: Despite the global agreement in the 1990s to reduce maternal death, as stated in the Millennium Development Goals and Sustainable Development Goals, maternal mortality remains high. Because the fundamental reasons and causes for both MNM and maternal mortality are similar, a study of MNM cases will offer vital information about severe morbidity that may lead to death if interventions are not implemented promptly.

Objective: To estimate the prevalence and indicators of MNM in a main Maternity Teaching Hospital in Baghdad.

Methods: A descriptive cross sectional study with analytic elements conducted through hospital based record review of all patients admitted during the study period, carried out in Al- Elwyiah Maternity Teaching Hospital in Baghdad. MNM and maternal death’s data obtained from medical records from the 1st of Jan. to the end of December, 2020. A modified questionnaire was used, which was based on the WHO structured data collection form.

Results: Of 22089 total admissions, there were 21360 deliveries during a total one year, 16762 live births, 166 were SMO, of these 161 were MNM cases and 5 deaths. MNM ratio was 9.61/ 1000 live births and maternal mortality ratio (MMR) was 29.83/ 100 000 live births(Lb.). Whereas maternal near miss mortality ratio was 32.2: 1 and mortality index was 3%. The result showed that the mean age of near miss cases was (30.1± 6.3), most of them 143/161 (88.8%) were among (20-39) years old, majority of women were house wives 148/161 (91. 9%) and more than half of MNM cases 92/161(57.2%) resided in urban area.

Conclusion: MNM prevalence and maternal near miss mortality ratio were higher than the previous studies in Iraq, while mortality index was lower than these studies However, maternal mortality ratio was less than the Iraqi annual report of Ministry of Health. Most common age of MNM cases was third and fourth decade of life.

Key wards: maternal near miss, prevalence.

I. INTRODUCTION:

According to the WHO’s report on maternal mortality trends, about 295 000 women died during and following pregnancy and childbirth in 2017. (1) Similarly, according to the WHO's 2019 maternal mortality fact sheet, nearly 810 women die per day as a result of pregnancy-related problems. The vast majority of these deaths (94%) happened in low-income communities, and most of them could have been avoided. (2) The aim of sustainable development goal in 2030, is to reduce the global MMR to 70 per 100,000 live births, with no country having a ratio higher than that (140 per 100,000 Lbs.). (3)

The concept of MNM is gaining traction in the scientific community as a standard indicator for evaluating population-wide maternal health outcomes, which has advantages over a mortality-based review. The concept of maternal near miss arose from the fact that mortality figures are by definition a negative endpoint, regardless of
the interventions. (4) The study of women who have survived a life-threatening problem allows for the identification of failure and successes regarding assistance, and it also enables clinicians to deepen the understanding of the disease process from the patient’s point of view, situations that are not possible in cases of maternal death. (5, 6)

Thus, systematic and regular evaluation of the quality of maternal care could have a critical role in providing the necessary standards of involved facilities, because the maternal mortality strongly depends on the quality of care. (7) In countries where maternal mortality has decreased, evaluation of severe maternal morbidity is considered as the most significant indicator of maternal health. (8)

WHO define maternal near-miss case (MNM) is “a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy” (9) A systemic near miss approach was developed by WHO for assessing the quality of obstetric care provided to women with complication related pregnancy. (10)

The maternal near miss inclusion criteria are categorized in three aspects: clinical criteria, laboratory-based criteria and management-based criteria. WHO near miss criteria could identify all cases of maternal death and almost all cases who experienced organ failure. (11, 12)

This study aimed to estimate the prevalence and indicators, as well as the critical intervention provided to women with maternal near miss events in a main maternal tertiary hospital in Baghdad.

II. METHODOLOGY:

A descriptive cross sectional hospital- based record study with analytic elements, conducted in Al – Elwiyah Maternity Teaching Hospital that lies in Al Rusafa side in Baghdad. The aim of choosing this hospital was to take into account its qualities as a large public referral teaching hospital with skilled health professionals and a significant case load. It serves about (1000 000 – 1 250 000) women received from all public and private hospitals, PHC centers and private clinics as well as districts and province around Baghdad. It offers primary antenatal health care services, it has outpatient’s clinic for both gynecological and obstetric that works for 24 hrs.

It contains (265) beds, also provides I.C.U and R.C.U services. This hospital has neonatal intensive care units (N.I.C.U.). In addition, it has 24 hr. blood bank services providing blood components. The overall number of specialists were 25, resident doctors were 76, and nurses of different qualifications were 241. (13)

The time needed for collecting data was four months that began from the 1st of November / 2020 till the end of February 2021. Records all woman admitted to Al –Elwiyah Maternal Teaching Hospital during the study period from the (1st of Jan to the end of Dec, 2020) and met WHO identification criteria, were included in this study.

A modified questionnaire based on the WHO structured data collection form has been adopted. Modifications were done by adding other obsetrical conditions to potentially life- threatening conditions, and other medical problems associated with severe maternal outcome(SMO). WHO recommended a set of 25 criteria based on clinical, laboratory, and management-based parameters for identifying MNM, that focused on the presence of organ and system dysfunctions (cardiovascular, respiratory, renal, coagulation/hematological dysfunction, hepatic, neurologic, and uterine dysfunctions). (9).

The study included all pregnant women who are in labor, have delivered or aborted within 42 days after giving birth, and have serious maternal problems or a life-threatening condition (organ dysfunction). During the study period, all patient files that were registered in statistics records and had pregnancy-related problems were revised.

All of the patients have a potentially life-threatening condition (severe PPH, severe PET/ HELLP (hemolysis with low platelet counts and elevated liver enz.), eclampsia, sepsis or severe systemic infection, severe complications of abortion and those with ruptured uterus, and complications of ectopic pregnancies, placenta Previa and apuration of placenta), in addition, patients suffer from life threatening complications (with organ dysfunction) and death cases were included. Information from delivery wards, blood banks, I.C.U. records, and morning meeting reports was cross-checked with data from patient records.
The collected data included information about socio-demographic characteristics, obstetrical characteristics (current and past history), time of beginning of MNM event, time of hospital admission, pregnancy outcome, severe complication affecting MNM women (PLTC), contributory factors associated with MNM cases, information about critical interventions, organ system dysfunctions (life threatening conditions) and their identification criteria and the use of process indicators.

Maternal death was recorded (death during pregnancy, labor, or within 42 days following pregnancy termination).

Data analysis was done by using the available statistical package of SPSS – 27 (Statistical Packages for Social Sciences- version 27).

Data was presented using tables and graphs. Simple frequency, percentages, mean, and standard deviation measurements were used to present the data.

Specific MNM indicator: (9)

1 Maternal near miss (MNM): It refers to the woman who nearly died but survived a complication during pregnancy, labour or within 42 days after giving birth.

2 MNM ratio (MNMR): it refers to number of near misses / 1000 live births

3 MNMR = MNM / live births X1000

This indicator estimates how much care and resources would be required in a certain area or facility.

Maternal deaths (MD): defined as the death of woman while she is pregnant or within forty-two days of termination of pregnancy or its management, but not from accidental or incidental causes.

$$\text{MMR} = \frac{\text{No. MD}}{\text{Total live births}} \times 100,000$$

Severe maternal outcome ratio (SMOR): It is the number of women with life threatening conditions (MNM + MD) /1000 live births. This indicator provides an estimate of how much care and resources would be required in a certain area or facility.

$$\text{SMOR} = \frac{\text{MNM} + \text{ND}}{\text{live births}} \times 1000$$

Maternal near miss mortality ratio: define the ratio between maternal near misses and maternal death, the higher ratio indicates better care.

$$\text{MI} = \frac{\text{MNM}}{\text{MD}}$$

Mortality index: is a performance indicator, a high index of more than 20% implies poor quality obstetric care for severe cases, with more women dying as a result. In contrast, a low index of less than 5%, as recommended by WHO, suggests better care, with fewer women dying from serious illnesses.

Mortality index (MI): it’s the number of maternal deaths divided by the number of patients with life threatening conditions that’s expressed as a percentage.

$$\text{MI} = \frac{\text{MD}}{(\text{MNM} + \text{MD})} \times 100$$

III. THE RESULTS:

A total of 22089 women who were pregnant, during childbirth or postpartum up to 42 days, that admitted to Al – Elwiyah Maternity Teaching Hospital during the study period. Of these, 2947 (13.34%) developed complications, 271/2947 (9.2%) showed potentially –life threatening condition. Severe maternal outcome (SMO) that met WHO maternal near misses’ criteria were 166 /271 (61.3%). Of these, 161/166 (97%) were maternal near miss cases and 5/166 (3%) were died.
The maternal near miss ratio (MNMR) was (9.61 per 1000) live births and severe maternal outcome ratio (SMO) ratio was (9.9 / 1000) live births. MNM mortality ratio (MNM: MD) (32.2: 1), it means for every 32 maternal near miss cases there was one case of maternal death. Maternal index (MI) was (3%), Both MNM:MD and MI rate are used to evaluate quality of care provided to pregnant women (WHO,2011). Finally, Maternal mortality ratio was (29.83/ 100 000) live births. (Table 1)

Table (1): MNM indicators in women delivered in AL Elwiyah maternal hospital in 1s Jan. – 31st December,2020 (N = 161)

<table>
<thead>
<tr>
<th>Overall Near Miss Indicators</th>
<th>No. of MNM/TLB x 1000</th>
<th>9.61/1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Near Miss Ratio</td>
<td>No. MNM+ No. MD/TLB x 1000</td>
<td>9.9/1000</td>
</tr>
<tr>
<td>SMO ratio/1000 TLB</td>
<td>No. MD/TLB x 100 000</td>
<td>29.83 /100 000</td>
</tr>
<tr>
<td>MMR</td>
<td>MNM/MD= 161:5</td>
<td>32.2 :1</td>
</tr>
<tr>
<td>Maternal Mortality Ratio</td>
<td>MD/(MNM+MD) x 100</td>
<td>3%</td>
</tr>
</tbody>
</table>

The highest admission of MNM cases were during December 21/161(13%), followed by August 18/161 (11.1 %) and the least was during January 3/ 162(1.9%). (Figure 1)

Figure 1: Distribution of maternal near miss cases according to hospital admission by month

The distribution of MNM cases according to sociodemographic characteristics was shown in table (2). The result showed that the mean age of near miss cases was (30.1± 6.3) range (15-44 years). Most of them 143/161 (88.8%) were among (20-39) years old, majority of women were house wives 148/161 (91. 9%), and more than half of MNM cases 92/161(57.2%) resided in urban area. Concerning the level of education, nothing was mentioned in patient’s medical records.

Figure (2) illustrated the distribution of MNM cases according to place of referral. 128/161 (79.5%) were self-referred (home), 25/161 (15.5%) from hospitals, 5/161 (3.1%) from PHC and 3/161 (1.9%) from private clinic.

In the current study, 140/161(87%) of maternal near miss condition was present at arrival. The remaining 21/161(13%) developed after 12hrs. of hospital admission. (Figure 3)
Among 161 MNM cases, nearly all cases were admitted to ICU 158/161 (98.14%), out of them, 155/158 (98.1%) of patients stayed for (1-4) days. Massive blood transfusion was documented in 125/161 (77.64%), where 35/125 (28%) received three pints of blood. Laparotomy was done in 67/161 (41.6%), 16/161 (10%) cases of salpingectomy after ruptured ectopic pregnancy and 24/161 (15%) of cases had hysterectomy. (Table 3)

Regarding the use of special intervention, Oxytocin was used in 88/91 (96.7%) for the prevention of PPH, and was given to all near misses as treatment of PPH. Magnesium sulfate (MgSO4) was used in all cases of eclampsia 10/10 (100%). This study demonstrated that cesarean section was carried out in (84) cases, of these 15/84 (17.9%) were given prophylactic antibiotics during the operation, but all cases of sepsis were treated by antibiotics 7/7 (100%). 20 out of 30 (66.7%) who delivered after three hours of hospital admission were received corticosteroid for stimulating lung maturation in premature livebirths. (Table 4)

**IV. DISCUSSION:**

In the current study, one hundred sixty-one women met the criteria of MNM during the twelve months’ study period with a MNM ratio of (9.61/1000) live births, lesser figure was reported in Iraq/ in Baghdad (14) and Erbil (15) which were (5.06/1000 Lbs.), (8.2/1000) Lbs., respectively. These variations may be related to under estimation of cases because data were collected in aggregate as stated by the author (Jabir M et al,2013). Al Elwiyah is a tertiary referral teaching hospital, making it a center for all complicated cases that are referred from other public and private hospitals. In addition, the facility's high patient load may have a negative consequence on care quality as it deals with all cases of obstetrics and gynecology even antenatal care in which should be managed by primary facilities.

![Figure 2: Maternal near miss according to place of referral](image1)

![Figure 3: Maternal near miss according to development of MNM event](image2)

**Table (2): Distribution of MN misses according to socio –demographic characteristics.**

<table>
<thead>
<tr>
<th>Socio-demographic characters</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20 y</td>
<td>7</td>
<td>4.4</td>
</tr>
<tr>
<td>20—39 y</td>
<td>143</td>
<td>88.8</td>
</tr>
</tbody>
</table>
≥ 40 y
Total
Occupation
Housewife
Worker
NR*
Total
Residence
Urban
Rural
NR
Total

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housewife</td>
<td>148</td>
<td>91.9</td>
</tr>
<tr>
<td>Worker</td>
<td>7</td>
<td>4.4</td>
</tr>
<tr>
<td>NR*</td>
<td>6</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>161</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residence</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>92</td>
<td>57.2</td>
</tr>
<tr>
<td>Rural</td>
<td>67</td>
<td>41.6</td>
</tr>
<tr>
<td>NR</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>161</td>
<td>100</td>
</tr>
</tbody>
</table>

*NR: Not recorded

Table (3): Distribution of maternal near miss according to the critical interventions or admission to intensive care unit *. N = 161

<table>
<thead>
<tr>
<th>Special intervention</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission to ICU</td>
<td>158</td>
<td>98.14</td>
</tr>
<tr>
<td>Massive blood and blood products transfusion:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood pints:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 pints</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>5 pints</td>
<td>29</td>
<td>32</td>
</tr>
<tr>
<td>4 pints</td>
<td>19</td>
<td>23.2</td>
</tr>
<tr>
<td>7 pints</td>
<td>12</td>
<td>9.6</td>
</tr>
<tr>
<td>8 pints</td>
<td>7</td>
<td>5.6</td>
</tr>
<tr>
<td>(9-16) pints</td>
<td>23</td>
<td>18.4</td>
</tr>
<tr>
<td>Laparotomy</td>
<td>67</td>
<td>41.6</td>
</tr>
<tr>
<td>Indication for laparotomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salpingectomy</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Ligation of arteries to stop bleeding</td>
<td>14</td>
<td>8.7</td>
</tr>
<tr>
<td>Suture ruptured uterus</td>
<td>13</td>
<td>8.1</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>24</td>
<td>15</td>
</tr>
</tbody>
</table>

*the of more than one in the same patient.

Table (4): Distribution of MNM according to special intervention. N = 161

<table>
<thead>
<tr>
<th>Special intervention</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of postpartum hemorrhage by using:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total no. of MNM delivery (delivered by C/S or NVD)</td>
<td>91</td>
<td>56.5</td>
</tr>
<tr>
<td>Oxytocin *</td>
<td>88</td>
<td>96.7</td>
</tr>
<tr>
<td>Other uterotonics: Misoprostol</td>
<td>64</td>
<td>70.3</td>
</tr>
<tr>
<td>Ergotamine</td>
<td>13</td>
<td>14.3</td>
</tr>
<tr>
<td>Treatment of postpartum hemorrhage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total no. of women suffer from PPH</td>
<td>71</td>
<td>44.1</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>71</td>
<td>100</td>
</tr>
<tr>
<td>Misoprostol+ Oxytocin</td>
<td>67</td>
<td>94.4</td>
</tr>
<tr>
<td>Ergotamine+ Oxytocin</td>
<td>29</td>
<td>40.8</td>
</tr>
<tr>
<td>Tranexamic acid</td>
<td>13</td>
<td>18.3</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>24</td>
<td>33.8</td>
</tr>
<tr>
<td>Artery ligation (uterine/ hypogastric/ internal iliac artery)</td>
<td>14</td>
<td>19.7</td>
</tr>
<tr>
<td>Removal of retained product</td>
<td>9</td>
<td>12.7</td>
</tr>
<tr>
<td>Abdominal packing</td>
<td>4</td>
<td>5.6</td>
</tr>
<tr>
<td>Balloon or condom tamponade</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>B- Lynch suture</td>
<td>2</td>
<td>2.8</td>
</tr>
</tbody>
</table>
**Use of anticonvulsants**
- Magnesium sulfate: 10 (6.2)

**Use of antibiotics during CS as prophylactic**
- 15 (17.9)
- Therapeutic (parenteral): 7 (100)

**Corticosteroids use for fetal lung maturation**
- 20 (66.7)

* Combination of uterotonic drugs were used in the same patient.

** Studies in Guinea (9.1 /1,000 live, and Zimbabwe (9.3) were in line with the current result (16, 17). The maternal near-misses’ ratio of current study less than the range of MNMR reported among the developing nations (12.3 - 82.3)/1000 live births (18)

Lower figures were documented in other countries, China (5.9) /1000 live births (19) and Turkey (5.06)/1000 live births (20). The use of a broader definition of MNM which included complications of abortion and ectopic pregnancy may relate to this discrepancy in the results (17).

According to WHO, higher SMOR (e.g., over 10 per 1,000 live births) suggests that a significant number of mothers will require more extensive management in order to survive difficulties. (9).

The present study revealed that SMOR was (9.9/1000) Lbs., which is much higher than (14) in Baghdad (5.69/1000) Lbs., but it is approximately close to the figure reported in Erbil/ Iraq (8.8/1000) Lbs. (15)

The maternal mortality ratio demonstrated in the current study was (29.83/100 000 Lbs.), which was less than the Iraqi annual report of Ministry of Health, that recorded (31.5/100000) Lbs. (21) and (34.2/100000) Lbs. (22). but similar to the result (30.04 per 100 000) live births reported by (23).

Complete recovery was shown in 150/161 (93.2%) of maternal near missed cases, while minority were referred to other higher complexity level hospitals for further interventions. Rapid and proper management of serious cases, the provision of highly equipped facility, well trained staff to deal with such complication, ICU with sufficient beds and blood banks services might contribute to this result.

This study revealed that maternal near misses’ mortality ratio was (32.2 :1). Thus for every thirty-two maternal near miss conditions, one maternal death occurred. The figures reported by other workers in Iraq were (9 :1), (12.9 :1) (14, 15), respectively, also lower figures were reported by (24,25). While higher figure seen in Turkey (20).

The Maternal Mortality Index is often regarded as the most trustworthy indicator of maternal health. The variations documented in this work with other results may be due to accessibility of blood transfusion and magnesium sulfate in studied setting. (26)

The Mortality index found in the current work was 3 % which is less than the figure reported by other workers in Iraq (11.3% and 7.18%) (14) and (15). But nearly close to other studies, in China 1.1%, Turkey 1.57%, Malaysia 4.1 % and Oman 4.4% (19, 20, 27, 28) respectively

It’s important to mention that Al Elwiyah hospital applied the near-miss approach at the beginning of 2020, Peak frequency was observed in December and August, which may be attributed to timely and better diagnosis and management of MNM cases during the last third of the year. The lowest figure was in January, when the launch of Covid 19 exist, this may limit patients from seeking hospital care services.

Because this is the most prevalent reproductive age, the majority of maternal near misses in our study occurred in women in their third and fourth decades of life. As a result, the majority of complications occur in this age group, accordingly, there was a high risk of being MNM and maternal death (29).
Women's education improves their access to relevant information and can make it easier for them to obtain the financial resources needed to pay for transportation and treatment. These factors may have an impact on mothers' understanding of the need to look for better quality medical care, includes delivery in a health facility (30). Unfortunately, in the current study nothing was recorded medical files about the level of education of all eligible patients.

Majority of women in this work were housewives and resided in urban areas. These results could be related to the study’s location, which was a major tertiary referral hospital that received complicated cases referred from other hospitals in Baghdad and other provinces. These studies were in parallel with (30, 31)

The present work showed that self-referral was identified in more than two thirds (79.5%) of near misses, (15.5%) from other public hospitals, these results were coincided with (14) results in Baghdad.

The explanation could be that women who were admitted without formal referral may be due to a defect in referral system and/or failure of the primary health care units to detect a pregnant woman with severe morbidities, which reflects a delay in either seeking or reaching care. (14, 31)

Analysis of the result showed that most of near miss cases 140/161 (87%) occurred at arrival, and the remaining (13%) developed after that. This indicated that probably there was a delay in referring and / or in the detecting pregnant mothers with life-threatening complications due to delay in seeking care or in arrival to health facility. Same findings were noticed in Iraq (14, 15), India (32) and in Nigeria (33).

The present study, showed that the commonest intervention was ICU admission, 158/161 (98.14%) of near misses were admitted to ICU, that was above than (70%) the recommended standard by WHO (9). Jabir et al,2013, (14) stated that the low ICU admission rates observed in the previous study suggested a significant shortage of beds in the intensive care unit, which is supported by a significant proportion of women experiencing organ dysfunction.

A high proportion of massive blood transfusion 125/161 (77.64%) was observed in the present finding as the second common intervention. In this study, blood transfusion of three units and more of RBC indicates severe hemorrhage and a measure for life-saving, same finding reported by (15). While another study in Rwanda considered the use of two pints of blood and more as a life saving measure (34). However, the use of four units of blood was recorded by study in Namibia (35).

Laparotomy was another critical intervention that accounted for 67/161 (41.6%), salpingectomy was the highest procedure 16/161 (10%), this result was higher than other studies in Iraq (0.78%) and (8.4%) recorded by (14, 15) respectively. Bleeder’s ligation accounted for 14/161 (8.7%), then suture ruptured uterus13/161 (8.1%). Hysterectomy accounted for 24/161 (15 %) that was done mostly after PPH, APH, ruptured uterus, abnormal placentation, and after cesarean section. In UK, hemorrhage due to placenta Previa especially after repeated C/S was a significant indication for emergency peripartum hysterectomy (47 %) (36)

In the current study, all patients received oxytocin for the treatment of PPH, in addition, misoprostol and ergotamine in combination with oxytocin sometimes were given for the same purpose. Lower figure (86.36%) for this regime was recorded in a previous study in Baghdad (14). Administration of oxytocin, as the best choice medication for the prevention and the treatment of uterine atony. Oxytocin is the cornerstone for the treatment of PPH, due to its effect in reducing postpartum hemorrhage risk by 40%–60% (37, 38).

In this work, hysterectomy used for the treatment of PPH was reported in more than one third of near misses 24/71 (33.8%), it was lower than (59.52%) the figure registered by (14). According to reports, 0.20 to 5.09 of every 1000 postnatal women worldwide have undergone an emergency hysterectomy. (39). The most common reasons for an emergency hysterectomy were uterine atony and uterine rupture. However, the most common indication, according to studies, is placenta accreta. (39) and have most likely contributed to the rise in the number of cesarean deliveries over the 20 years ago. (40)

In the current study, magnesium sulfate was used to treat all eclamptic women. The magnesium sulfate improves the blood flow in the lung, kidneys, liver, central nervous system, and circulations of placenta, thereby delays the need for delivery, may be one of the potential advantages of using magnesium sulphate for preventing or treating
seizures starting at least than 34 weeks of gestation and continue until term. (41). A study in Southern Nigeria was in line with the current finding (42).

Therapeutic antibiotics administered parenterally for the treatment of sepsis used in all MNM patients in this work, which coincided with Malaysian study. (27) However, the use of prophylactic antibiotics during cesarean section was limited to 15/84 (17.9 %) of cases, that was used in specific conditions, i.e. (premature ruptured membrane), this suggested underuse of them in the studied hospital. However, treatment by combination antibiotics were provided to all patients postoperative. A higher result was mentioned in Baghdad (60.75%) in which antibiotics were given prophylactically during cesarean section.

Regarding the use of corticosteroids, the study showed that 20 out of 30 (66.7%) who delivered after three hours of hospital admission were received corticosteroid for stimulating lung maturation in premature livebirths.

The possible explanation by the fact that 87 percent of women admitted to the hospital were in a critical condition that required immediate intervention. So there was no enough time for corticosteroid administration

V. CONCLUSIONS AND RECOMMENDATIONS

MNM prevalence and maternal near miss mortality ratio were higher than the previous studies in Iraq, while mortality index was lower than these studies.

MNM events occurred more among women in the third and fourth decade of life, housewives, resided in urban areas, self-referral was identified in more than two thirds of near misses and most of near miss cases occurred at arrival. All near misses should be viewed as free lessons and opportunities to upgrade quality of service provision.

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13 Personal communication: Assistant manager of Al Elwiyah hospital.
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