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Maternal Mortality at Al-Wahda Tertiary Hospital/ Derna -Libya

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Abstract

Maternal mortality is one of the major challenges which face the developing countries throughout the world. The maternal mortality ratio (MMR) is the main public health indicator that determines the quality of health care services and the women's status. However, maternal mortality is much higher in developing countries compared to developed nations due to lack of adequate medical care; high prevalence of infectious diseases, higher total fertility rate and due to health care system difference. Countries with high maternal mortality ratio have less reliable vital statistics registry system; as a result level of maternal mortality is usually underestimated and little information is available regarding locally specific risk factors for maternal death. The aim of this study is to calculate, identify the risk factors and the causes of maternal mortality at Al-Whahda Tertiary hospital/Derna-Libya. This was a retrospective descriptive study of ten years conducted at Al-Wahda hospital Derna, Libya. Detailed retrospective reviews of the data were undertaken from the casenotes of 31782 admissions in the obstetrics unit during 10 years period from 2013 to 2022. The information was retrieved from the case notes available in the medical records department of the hospital as well as from the daily records in the maternity and delivery worlds of the hospital during the study period. There was a total of 31782 deliveries conducted during the study period. The maternal mortality ratio was 34.84 per 100,000 live-births in the year 2013 to 2022. The mean age of maternal deaths was34.36±5.54 years. Most of deaths occur in postpartum period. The major causes of deaths were pulmonary and amniotic fluid embolism followed by postpartum haemorrahge. The maternal mortality is high despite the availability of comprehensive emergency obstetric care at the hospital. Pulmonary and amniotic fluid embolism are the leading causes of death in one of the tertiary care teaching hospitals in Libya.

Keywords: Maternal Health, Maternal Mortality Rate, Libya, Derna**.**

INTRODUCTION

Maternal mortality is one of the major challenges which face the developing countries throughout the world. The maternal mortality ratio (MMR) is the main public health indicator that determines the quality of health care services and the women's status (WHO, 2013). The maternal mortality ratio showed a significant reduction in maternal deaths globely, which decreased by 38% from 342 to 211 deaths per 100,000 live births from 2007 to 2017, according to United nations (UN) interagency estimates. However, 94% of all maternal death has occurred in low income countries. The MMR in low-income countries in 2017 was 462 per 100,000 live- births versus 11 per 100,000 live-births in high-income countries (WOH, 2019). According to The

World Bank in 2017, Libya has a maternal mortality rate (MMR) of 72 deaths per 100,000 live-births (The World Bank).

WHO found that, the majority of maternal deaths are due to hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy and obstructed labor. The major causes of deaths are poverty; inadequate, inaccessible, and unaffordable health care; low status of women, and illiteracy (Abyeji, 1998; WOH, 2019). However, maternal mortality is much higher in developing countries compared to developed nations due to lack of adequate medical care; high prevalence of infectious diseases, higher total fertility rate and due to differences in health care system. The developing countries with high maternal mortality ratio have less reliable vital statistics registry system; which result in underestimation of maternal mortality level and little information is available regarding locally specific risk factors for maternal death (WHO & Organization, 2010; WOH, 2019). Reduction of the preventable maternal and perinatal deaths can be achived by improving access to health care and quality care in pregnancy. So, MMR indicator is necessary for planning, implementing and monitoring initiatives to improve maternal health.

Objective: The aim of this study was to calculate, identify the risk factors and the causes of maternal mortality, in Al-Wahda hospital Derna, is a tertiary care center located in the Eastern part of Libya, where almost high number of deliveries occurs in a year.

MATERIALS AND METHODS

This was a retrospective descriptive study of ten years period conducted at Al-Wahda hospital Derna, Libya. Data were collected from record files. After obtaining permission from the department of obstetrics and gynecology and medical affair at Al Whadal hospital/ Derna for conducting this study. Detailed retrospective reviews of the data were undertaken from the case notes of 31782 admissions in the obstetrics unit during the period from 2013 to 2022. The information obttained was age of women, gravaidity, time of death **(**antenatal, intrapartum, postpartum) and the cause of death.

RESULTS

The calculated maternal mortality ratio (MMR) was 34.84 per 100,000 live births from which the total 31782 deliveries and 31445 live-births over the study duration of ten years. During this period, there were 11 maternal deaths and the mean age and standard deviations of women was 34.36±5.54 and ranged from 28 to 42 years. The mean and standard deviations of parity was 2.45±2.42 and mean and standard deviations of gravidity was 4.00±2.32 (Table 1).

Table (1). Maternal mortality and its characteristics (n = 11)

	No	%
Age		
≤35	7	63.6
≥ 36	4	36.4
Gravidity		
Primgravida	1	9.1
Multigravida	10	90.9

There were variations in the maternal mortality rate during the period of study (Figure 1). The maternal mortality ratio decreased from 2014 to 2021 (50.49 and 32.89 per 100 000 live- births

respectively). There was no maternal deaths in year 2015, 2018 and 2020. However, the MMR increase in 2022 to be 110.98 per 100000 live births (Table 2).

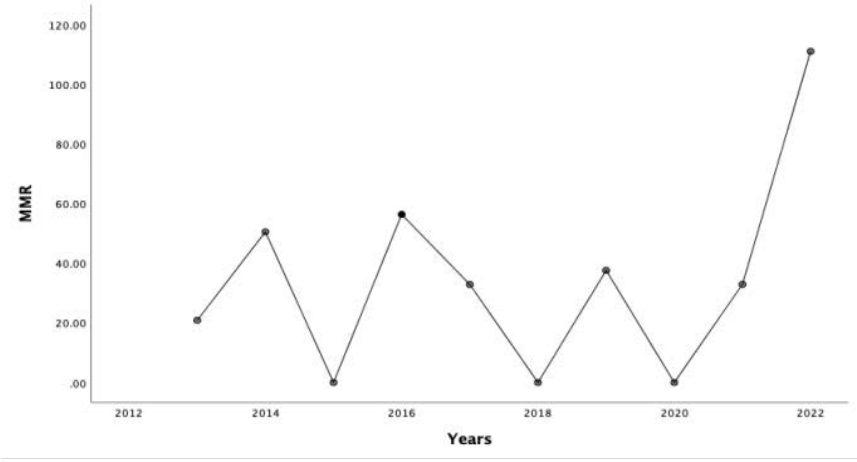

Figure (1). Trends in maternal mortality ratio (MMR) from 2013 to 2022

Table (2). Maternal mortality ratio (MMR) from 2013 to 2022

Year	Number of deliveries	Number of live births	Still Birth	Maternal deaths	Maternal Mortality rates
2013	4773	4794	55	1	20.85
2014	3930	3961	32	2	50.49
2015	2921	2929	37	0	0.0
2016	3548	3550	43	2	56.33
2017	3041	3044	30	1	32.85
2018	1977	1982	20	0	0.0
2019	2665	2660	44	1	37.59
2020	3197	3209	28	0	0.0
2021	3036	3040	24	1	32.89
2022	2694	2703	24	3	110.98

Table (3). Time of death

	No	%
Antenatal	3	27.3
Intrapartum	2	18.2
Postpartum	6	54.5

Among 11 women 6 (54.5%) of them were died during the postpartum period, only 3 (27.3%) had died on antenatal period and 2 (18.2%) women had died during the intrapartum period (Table 3).

The main cause of death in the 10 years was three cases pulmonary embolism; one of them due to covid 19 (27.27%) follow by amniotic fluid embolism two cases (18.18%).Two cases PPH; one case rupture uterus, and other case vaginal septum(18.18%) and the others due to different causes; DM, pneumonia, abruptio placenta(DIC), acute fulmenant hepatitis (autopsy) and sever peeclampsia and pulmonary odema, adult respiratory distress syndrome (ARDS) (Table 4).

Table (4). Cause of death

Cause of death	No	%
DM, pneumonia	1	9.09
Abruptio placenta, DIC	1	9.09
Acute fulmenant hepatitis (Autopsy)	1	9.09
Amniotic fluid embolism	2	18.18
Pulmonary embolism/ COVID-19	3	27.27
Postpartum haemorrahge (PPH)	2	18.18
Sever PE	1	9.09

DM: diabetes millatus, DIC: disseminated intravascular coagulopathy, PE:preeclampsia, PPH: postpartum haemorrahge.

DISCUSSION

Maternal death indicates the quality of maternal services provided to women in thesociety. A high rate of MMR shows poor antenatal care, latere ferral, illiteracy and low socioeconomic status. The maternal mortality ratio is 34.84per 100,000 live-births in the year 2013 to 2022 from total of 31782 deliveries conducted during the study period, which is lower as compared to the study done in developing countries for example, in a tertiary care centre in Eastern Nepal; the maternal mortality ratio was 129.34 per 100,000 live-births in the year 2015 to 2020 (Sitaula et al., 2021), in Paropakar Maternity and Women's Hospital (PMWH) Thapathali Kathmandu, Nepal was 356.64/100000 live birth (Upadhyaya, 2014) and in the department of Obstetrics and Gynaecology at the Government Mohan Kumaramangalam Medical College Hospital, Salem, India was 802/1,00,000 live births (Sundari et al., 2016).While in India the MMR declined by about 70% from 398/ 100 000 live births in 1997–98 to 99/100 000 (90–108) in 2020 which is higher than this study (Meh et al., 2022). The higher incidence of deaths is due to late referral of cases from periphery and delayed interventions. The higher rates in other developing countries could be attributed to poor management by obstetricians and delays in seeking medical care by women and their families.

In the tertiary care hospital experience in upper Egypt the maternal mortality ratio decreased progressively from 2009 to 2014 (228 and 89 per 100000 live birth respectively) in spite this the rate is higher than ours.

However, in China the overall MMR was 15.91 per 100,000 live- births, the MMR due to direct and indirect obstetric causes shown a downward trend ($P<0.001$) and the gap between them narrowed to 14.29% during 2015–2022 (Wang et al., 2023).

In the present study most of the deaths 63.6% occurred at ≤35 years age groups and the mean age and standard deviation of maternal deaths was 34.36±5.54 years. Which are similar to the studies that reports maximum deaths occurred at 21-30 years age group (Sundari et al., 2016; Verma et al., 2008).Other studies found the most deaths occurred at 21-25 years (64.2%) age group and (58%) of the death women were at 20–29 years (Meh et al., 2022).

In our study 90.9% of maternal deaths among multigravida.Similar observation was seen from New Delhi in India (Mediratta et al., 2015).More deaths occurred among multi parous women in other studies in India conducted by (Garg, 2016; Khandale et al., 2017; Murthy et al., 2013; Patel et al., 2018). However, more than half of maternal mortality (50.49%) were among primigravidae in Kerala, India study (Sreekumari et al., 2018).

Post-partum deaths accounted in about 54.5% whereas in other studies was 70% (Khumanthem et al., 2012), 93% of death had occurred in the postpartum period (Sitaula et al., 2021) and

Post-partum deaths accounted for about 92.5% whereas in other studies it was only 70% (Khumanthem et al., 2012).

The main causes of deaths were pulmonary and amniotic embolism followed by postpartum haemorrahge as compared to study done in a tertiary care centre in Eastern Nepal;Obstetric hemorrhage, hypertensive disorder of pregnancy and sepsis were the main causes of maternal death. The main causes of maternal death were obstetric haemorrhage (47%; higher in poorer states), sepsis (12%) and hypertensive disorders of pregnancy (7%) (Meh et al., 2022).In a study conducted in Nigeria, found six leading causes of maternal mortality were hemorrhage, eclampsia/ preecampsia, sepsis, ruptured uterus, complications of abortion, and prolonged obstructed labor. Among these causes, 43.4% accounted for hemorrhage followed by 36.0% of preeclampsia and eclampsia which coincides with the finding seen in our study (Sitaula et al., 2021). However, the delay in seeking health care andreaching health care facility are prime contributory factors (type I delay:40.9%) (Sitaula et al., 2021).

Moreover, we found that the indirect causes of maternal mortality accounted for 24.9 % of all mortalities. As regards the direct causes of maternal mortality, preeclampsia remained the major cause and represented 27.7 % of the avoidable causes. The second most frequent cause of direct maternal death was postpartum hemorrhage (PPH), which represented 26.8 % (Abbas et al., 2016).

The is no aviable information about antenatal care and socioeconomic factors of women.

CONCLUSION

As compared to developing countries MMR in our hospital is low but still higher than that in developed countries.

The maternal mortality is high despite the availability of comprehensive emergency obstetric care at the hospital. Pulmonary and amniotic fluid embolism are the leading causes of death in one of the tertiary care teaching hospitals in Libya.

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