

*Research Article***Maternal Near Miss in Minia maternity & children University hospital in 2018: A prospective study****Ahmed R. El-Adawy, Saad A. Ahmed El Gelany, Ayman M. Yousef Elsayed and Fouly H. Fouly Abdelzاهر**

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**Abstract**

**Introduction:** The maternal mortality ratio in developing countries in 2013 was 230 per 100 000 live births versus 16 per 100 000 live births in developed countries. There are large disparities within countries, between women with high and low income and between women living in rural and urban areas. **Aim of the Work:** To study the three delays of maternal mortality cases in Minia Maternity & Children University Hospital a tertiary teaching hospital in 2018 and comparing it with the previous 3 years (2015 & 2016-2017). **Patients and Methods:** Project title: **Maternal Near Miss in Minia maternity & children University hospital in 2018: A prospective study.** Study funding: There are no costs for this study; Patients' data were collected with the intent to review cases of maternal mortality and severe morbidity (near miss). Data was collected by reviewing the patients' admission files of the Obstetric Department at Minia University hospital and tracing questionnaires of maternal mortality cases at Minia Directorate of health after getting the official approval from the Ministry of health and maternal morbidity at Minia University. **Results:** Frequency distribution of different risk factors among studied sample (n=981) total no of cases of near miss sever preeclampsia 244 eclampsia 186 sever hemorrhage 505 sever sepsis 69 uterine rupture 71 admission to icu 365 obstetric hysterectomy 85 massive blood transfusion 509 intubation and ventilation 466 shock 223 cardiac arrest 8 acute cyanosis 4 gasping 0 sever tachycardia 20 sever bradycardia 5 respiratory dysfunction 20 neurological dysfunction 11 hepatic dysfunction 21 multiorgan failure 24 non responding oliguria 21 jaundice 2 DIC 5 prolonged uncons more than 12h 11 status epilepticus 2 stroke 2 global paralysis 3 sever acute thrombocytopenia 21 sever hyperbilirubinemia 3 vasoactive drugs 5 cardiac resus 6 dialysis for ARF 18. **Summary: W.H.O defined maternal death as follows:** The death of any woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

**Keywords:** maternal, mortality ratio, rural and urban areas**Introduction and Aim of the Work**

The maternal mortality ratio in developing countries in 2013 was 230 per 100 000 live births versus 16 per 100 000 live births in developed countries. There are large disparities within countries, between women with high and low income and between women living in rural and urban areas<sup>(1)</sup>

The risk of maternal mortality is highest for adolescent girls under 15 years old and complications in pregnancy and childbirth are the leading cause of death among adolescent girls in developing countries.<sup>(2)</sup>

Women in developing countries have an average many more pregnancies than women in

developed countries, and their lifetime risk of death due to pregnancy is higher. The probability that a 15 year old woman will eventually die from a maternal cause – is 1 in 3700 in developed countries, versus 1 in 160 in developing countries<sup>(3)</sup>.

Maternal mortality in resource-poor nations has been attributed to the “Three delays”: delay in deciding to seek care, delay in reaching care in time, and delay in receiving adequate treatment<sup>(4)</sup>

The first delay is on the part of the mother, family, or community not recognizing a life-threatening condition. Because most deaths occur during labor or in the first 24 hour

spostpartum, recognizing an emergency is not easy. Most births occur at home with unskilled attendants, and it needs skill to predict or prevent bad outcomes and medical knowledge to diagnose and immediately act on complications. By the time the lay midwife or family realizes there is a problem, it is too late<sup>(5)</sup>

The second delay is in reaching a health-care facility, and may be due to road conditions, lack of transportation, or location. Many villages do not have access to paved roads and many families do not have access to vehicles. Public transportation may be the main transportation method. This means it may take hours to reach a health-care facility.<sup>(6)</sup>

The third delay occurs at the healthcare facility. Upon arrival, women receive inadequate care or inefficient treatment. Resource-poor nations with fragile health-care facilities may not have the technology or services necessary to provide critical care to hemorrhaging, infected, or seizing patients. Omissions in treatment, incorrect treatment, and a lack of supplies contribute to maternal mortality.<sup>(7)</sup>

Maternal health and newborn health are closely linked. Almost 3 million newborn babies die every year 4, and an additional 2.6 million babies are stillborn<sup>(8)</sup>.

Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy. Other complications may exist before pregnancy but are worsened during pregnancy. The major complications that account for nearly 75% of all maternal deaths are:<sup>(9)</sup>

- Severe bleeding (mostly bleeding after childbirth)
- Infections (usually after childbirth)
- High blood pressure during pregnancy (pre-eclampsia and eclampsia)
- Complications from delivery
- Unsafe abortion.

Most maternal deaths are preventable, as the health-care solutions to prevent or manage complications are well known. All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by skilled health professionals, as timely management and

treatment can make the difference between life and death<sup>(10)</sup>

Severe bleeding after birth can kill a healthy woman within hours if she is unattended. Injecting oxytocin immediately after childbirth effectively reduces the risk of bleeding.<sup>(11)</sup>

Infection after childbirth can be eliminated if good hygiene is practiced and if early signs of infection are recognized and treated in a timely manner.<sup>(12)</sup>

Pre-eclampsia should be detected and appropriately managed before the onset of convulsions (eclampsia) and other life-threatening complications. Administering drugs such as magnesium sulfate for pre-eclampsia can lower a woman's risk of developing Eclampsia<sup>(13)</sup>

### **Aim of the Work**

To study the three delays of maternal mortality cases in Minia Maternity & Children University Hospital a tertiary teaching hospital in 2018 and comparing it with the previous 3 years (2015 & 2016-2017)

### **Patients and Methods**

#### **Project title:**

Maternal Near Miss in Minia maternity & children University hospital in 2018: A prospective study

#### **Ethical issues:**

Ethical approval of the study was obtained from the local ethical committee of the department. In our study, we sought advice from the authors of a previous work done in the same department who studied cases of maternal mortality in years (2015,2016 & 2017) and we compared the findings of the previous 3 years (2015 - 2017) with this year 2018, also our colleges have got approval from the authorities in the Egyptian Ministry of health to have access to the medical records to maternal mortality cases which helped us to fill the gaps in the reports of mortality cases.

#### **Study design:**

This is an observational descriptive study

#### **Study participants:**

We studied the cases of maternal near misses that were admitted to our hospital during the study period (cases of severe maternal morbidity) in addition to 31 maternal mortality cases

in 2018 compared to (41, 26 & 28) maternal mortality cases in (2015, 2016 & 2017).

#### **Inclusion criteria:**

Cases of near miss according to WHO criteria e.g

- Severe postpartum hemorrhage
- Severe pre-eclampsia
- Eclampsia
- Sepsis or severe systemic infection
- Ruptured uterus
- Severe complications of abortion
- Critical interventions or intensive care unit use
- Admission to intensive care unit
- Interventional radiology
- Laparotomy (includes hysterectomy, excludes caesarean section)
- Use of blood products
- Uterine dysfunction
- Uterine haemorrhage or infection leading to hysterectomy
- All causes of maternal morbidity may be ended with mortality

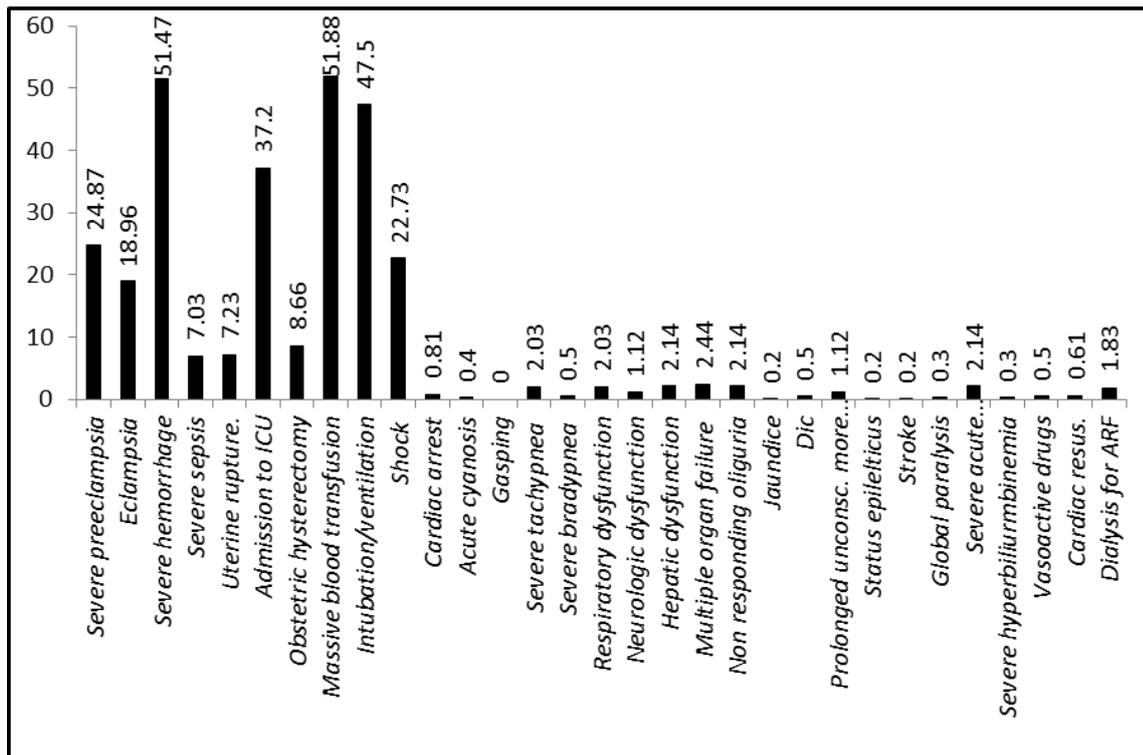
#### **Results**

**Table (1): Frequency distribution of different risk factors among studied sample (n=981)**

Variable	N	Percent
Severe preeclampsia	244	24.87
Eclampsia	186	18.96
Severe hemorrhage	505	51.47
Severe sepsis	69	7.03
Uterine rupture.	71	7.23
Admission to ICU	365	37.20
Obstetric hysterectomy	85	8.66
Massive blood transfusion	514	51.33
Intubation/ventilation	466	47.50
Shock	223	22.73
Cardiac arrest	8	0.81
Acute cyanosis	4	0.40
Gasping	0	0
Severe tachypnea	20	2.03
Severe bradypnea	5	0.50
Respiratory dysfunction	20	2.03
Neurologic dysfunction	11	1.12
Hepatic dysfunction	21	2.14
Multiple organ failure	24	2.44
Non responding oliguria	21	2.14
Jaundice	2	0.20
Prolonged unconsc. more than 12 H	11	1.12
Status epilepticus	2	0.20
Stroke	2	0.20
Global paralysis	3	0.30
Severe acute thrombocytopenia	21	2.14
Severe hyperbilirubinemia	3	0.30
Vasoactive drugs	5	0.50
Cardiac resuscitation.	6	0.61
Dialysis for ARF	18	1.83

**In this table**

Frequency distribution of different risk factors among studied sample (n=981) total n of cases of near miss sever preeclampsia 244 eclampsia 186 sever hemorrhage 505 sever sepsis 69 uterine rupture71 admission to icu 365 obstetric hysterectomy 85 massive blood transfusion 509 intubation and ventilation 466 shock 223 cardiac arrest 8 acute cyanosis 4 gasping 0 sever tachycardia 20 sever bradycardia 5 respiratory dysfunction 20 neurological dysfunction 11 hepatic dysfunction 21 multiorgan failure 24 non responding oliguria 21 jaundice 2 DIC 5 prolonged uncons more than 12h 11 status epilepticus 2 stroke 2 global paralysis 3 sever acute thrombocytopena 21 sever hyperbilirubinemia 3 vasoactive drugs 5 cardiac resus 6 dialysis for ARF 18



**Discussion**

The Maternal Mortality Ratio (MMR) is considered as a sensitive indicator to many parameters like adequacy and quality of Healthcare of women, access to care, as well as the Women’s status<sup>(14)</sup>.

In the developing countries, one woman dies in 16 compared to 1 to 2800 in the high income countries (Lewis et al., 2003) and most of such deaths due to pregnancy complications are preventable.<sup>(15)</sup>

The lag to achieve the targeted MMRs of the Millennium Development Goal (MDG), mostly is not due to absence of effective and evidence based interventions for such problems but due to difficulty to access timely to existing, emergency obstetric interventions which could

avert 88%-98% of the maternal deaths as World Health Organisation (WHO) estimated in the Mother-Baby Package: Implementing Safe<sup>(16)</sup>

According to the official reports of the Egyptian ministry of health, Egypt has maternal mortality ratio 52.5/100.000in 2013, MMR 51.8/100.000 in 2014, MMR 49/100.000 in 2015, MMR 45.9/100.000 in 2016. Extensive analysis of the causes of maternal mortality has resulted in three main causes are haemorrhage, preeclampsia and eclampsia (pregnancy induced hypertension) and sepsis<sup>(17)</sup>.

However, these causes may not result directly in maternal deaths, but through other factors like delay in receiving timely and appropriate care in the event of a pregnancy complication.

Such delays have been put forward as a major determinant in maternal mortality. In 1994,

There are many factors that can contribute to each delay. In developing countries, poor economic condition usually contributes to low educational status; poor infra-structures in the health facilities, and may also reflected on the qualification and skills of the health professionals in such countries. This means contribution to the three delays together as major determinants in maternal mortality<sup>(18)</sup>.

This study describes analysis of the maternal mortality in a public-sector tertiary teaching hospital in 4 years (2015, 2016 & 2017 and 2018) in relation to the three delays characteristics and does the contribution of each delay has different pattern than the other. and describe analysis of maternal near miss cases in Minia maternity & children University hospital in 2018 *this study was done for first time in Minia maternity & children University hospital*<sup>(19)</sup>

This analytic, observational study was undertaken in the Department of Obstetrics and Gynaecology, Minia Maternity & Children University Hospital, Egypt where the cases of maternal mortality within the hospital were studied from January 2018 to December 2018 and compare this study with the study of 2015 & 2016 and 2017 and study of near miss cases for first time. The health facility is the only public-sector tertiary teaching University Hospital in El Minya governorate, Egypt that serves as a referral centre for all the health facilities of nine general hospitals in nine big cities and its suburbs as well as the adjoining areas of rural territories distributed along 160 kilometres.<sup>(20)</sup>

## Summary

### W.H.O defined maternal death as follows:

The death of any woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes .

### Causes of maternal mortality:

#### Direct Obstetric Causes:

Include Hemorrhage, pregnancy induced hypertension, infection, Anesthesia and others (molar pregnancy and transfusion hemolysis)

#### Indirect Obstetric Causes:

Include cardiac diseases, vascular diseases as hypertensive vascular disease and vascular embolism, reproductive tract diseases (such as uterine and adnexal tumors), urinary tract diseases, hepatic diseases, Pulmonary diseases, metabolic diseases (such as Diabetes), others (such as appendicitis and peritonitis of non-puerperal origin).

#### Non-related Causes:

A death occurring during pregnancy or within 90 days of its termination from causes not related to the pregnancy or of its complications or management. Such as Communicable and infectious diseases, Blood Dyscrasias, Malignancy, Suicide and Murder.

#### The Three Delays Model

**Delay type one: Deciding to seek care**

**Delay type two: is due to Distance to health centers and hospitals**

**Delay type three: In Receiving adequate health care**

#### Material And Methods

This work was carried out to study maternal mortality in Minia Maternity Hospital during the period from the first of January 2018 to the end of December 2018 and its comparison with same study in prev. 3 years (2015 & 2016 - 2017) .

Data was collected by reviewing the patients' admission files of the Obstetric Department at minia university hospital and tracing questionnaires of maternal mortality survey team at minia Directorate of health after getting the official approval from the Minisrty of health .

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