MATERNAL NEAR-MISS

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ABSTRACT

The rate of maternal mortality is considered as the most important criterion of maternal health in all around the world. Among the millennium health goals determined by the World Health Organization (WHO) a comprehensive fight against maternal mortality and reducing the mortality rates to the lowest level are included. In this respect, metabolic and surgical severe patients due to obstetric complications gain a special importance. While some of these patients are lost, the ones who get timely intervention and receive sufficient medical/surgical care are rescued and they are named as near-miss mothers. The ideal approach in the improvement of maternal health is to define, quantify, and take precautions against both mortality and morbidity cases. It is possible to save the majority of them by providing basic antenatal and emergent obstetric treatment and more success can be achieved with an aggressive approach such as providing advanced life support to the mother with severe organ dysfunction and detecting, defining the near-miss cases.

Keywords: Maternal near-miss, near-miss, near-miss mother.

INTRODUCTION

The complications experienced antenatal, during birth and postnatal procedure are the main reason of mortality and disability in the developing countries among the women at the reproductive ages. In 2013, 289.000 women died because of the preventable reasons related to pregnancy and birth. 99% of these deaths occurred in the developing countries and more than half of them occurred in sub-Saharan Africa and almost one-third of them occurred in South Asia (WHO, 2016).

In all around the world, the ratio of the women who received care for at least one time at the antenatal process was 83%, while the ratio for four times or more care was 64% between the years 2007-2014. In many parts of the world while the level of antenatal care enhances, in low-income countries only 46% of the women received care for one time. While in high-income countries all of the women received at least four times care, in low-income countries only 1/3 of the women received four times care. In high-income countries 99% of births are made under the control of healthcare personnel; however, this ratio is 46% in low-income countries. Despite the declining birth rates among adolescent mothers who are more prone to unsafe miscarriage and premature birth, a among the 135 million live births in all around the world 15 million are composed of the adolescent births. In low- and moderate-income countries the most important cause of death among 15-19 years old women is complications related to pregnancy and birth. The possibility of a 15 years old woman's death because of the reasons related to maternity is 1/3700 in developed countries while this rate is 1/160 in developing countries. According to the 2014 health statistics of World Health Organization (WHO), maternal mortality rate is 210 in one hundred thousand live births. Among the World Health Organization Regions, the highest rate is in Africa (500) while the lowest rate is in Europe (17). In low-income countries, it is 450 in one hundred thousand live births, while in high-income countries it is 17. This rate is 16 in the developed countries, while it is 230 in the

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developing countries. In the 'Enhancing maternal health' goal which is the fifth of thousand years development goals it was aimed that decreasing the maternal mortality rate by 75% between 1990-2015 and enabling universal access to the reproductive health services, and the maternal mortality rate was reduced by 45% between the years 1990-2015 (WHO, 2014; WHO, 2016).

Under the Health Transformation Program which has been applied since 2003 in our country, paying special attention to mother and child health has been considered under the primary issues. As a result of the efforts within this framework, in maternal and child death rates a much higher decrease was achieved compared to the previous years. While the maternal mortality rate was 64 in every a hundred thousand live birth in 2002, in the National Study of Maternal mortality which was carried out in 2005, the rate was decreased to 28,5, it was decreased to 16,4 in 2010, 15,4 in 2012, and 14,7 in 2015. Along with the overall development in our country, the increase in the healthcare personnel in the priority regions mainly in eastern and southeastern regions, the developments in the adult and newborn intensive care units of the hospitals, improvements in the antenatal, during birth, and postnatal care services, enabling giving birth in hospital, and developments in the 112 emergency help and rescue services have contributed to a great extent (Ministry of Health-Turkey, 2015; Ministry of Health-Turkey, Annual Health Statistics, 2015).

The most important causes of maternal mortality which are responsible for the 75% of all maternal mortality in the world are causes such as severe bleeding, high blood pressure, infections, birth complications, unsafe miscarriage. As in the world, in Turkey, among the maternal mortality causes, bleeding, hypertensive disorders, infections are considerably important (WHO, 2016; Ministry of Health-Turkey, 2014; Sungur & Çöl, 2016).

The maternal mortality rate is considered the most important criterion of maternal health in all around the world. A comprehensive fight against maternal mortality and decreasing the mortality rates to the lowest level are among the millennium health goals of WHO. In this respect, metabolic and surgical severe patients due to obstetric complications gain a special importance. While some of these patients are lost, the ones who are treated timely and receive sufficient health-surgical care can be rescued and they are called as near-miss mothers (Ministry of Health-Turkey, 2015; Europe PMC Funders Group, 2014).

The patients who develop obstetric complications during pregnancy, birth, or at postnatal process until 42nd day but manage to live are defined as maternal near-miss patients by WHO (Say et al., 2009).

The most important causes of near-miss maternal morbidity are obstetric bleeding and complications due to the hypertensive diseases of pregnancy. On the other hand, another important point is that the rescued near-miss patients' risk of long-term morbidities such as renal impairment, respiratory-tract problems, and severe anemia and the risk of sudden death within a year is increased compared to the normal population. Especially the mortality and morbidity due to obstetric bleedings can be prevented to a large extent with sufficient and timely medical and surgical treatment (Şimşek et al., 2012; Roopa et al., 2013; Oliveira, 2015; Nakimuli et al., 2016).

The ideal approach in the improvement of maternal health is to define, quantify, and take precautions against both mortality and morbidity cases. It is possible to save the majority of them by providing basic antenatal and emergent obstetric treatment and more success can be achieved with an aggressive approach such as providing advanced life support to the mother with severe organ dysfunction and detecting, defining the near-miss cases (Halder et al., 2014; Dias et al., 2014).

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Recently in Turkey and in the world, near-miss studies are conducted. The near-miss studies have the advantage of investigating the causes of maternal morbidity and mortality. Access to correct information is easier in these investigations. Regarding care, the near miss case itself can give information. These studies give information about the sequel patients in addition to deaths. In Turkey, the health policies towards reducing the maternal mortality rates have been accelerated since 2000. The maternal mortality rates were lowered thanks to the spread of effective antenatal care, the increased availability of the emergency patient transfer, and the establishment of healthy data banks such as National Maternal Mortality Study. In the current situation, in terms of maternal mortality rates among the countries which are in the high-moderate income group of WHO where Turkey is also included the maternal mortality rates in the lowest order (Ministry of Health-Turkey, 2014).

WHO Near-Miss Criteria and Procedure

WHO has started the process of a standard definition and development set to monitor and improve an obstetric care which aims the revision and facilitation of the near-miss cases and recommended a list of defining criteria. At the same time, in the monitoring/evaluation of the quality of obstetric care the procedures towards checking the near-miss case (Say et al., 2009).

Inclusion criteria for baseline assessment of quality of care

Severe maternal complications
- Severe postpartum haemorrhage
- 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

Life-threatening conditions (near-miss criteria)
- Cardiovascular dysfunction
  - Shock, cardiac arrest (absence of pulse/ heart beat and loss of consciousness), use of continuous vasoactive drugs, cardiopulmonary resuscitation, severe hypoperfusion (lactate >5 mmol/l or >45 mg/dl), severe acidosis (pH <7.1)
- Respiratory dysfunction
  - Acute cyanosis, gasping, severe tachypnea (respiratory rate >40 breaths per minute), severe bradypnea (respiratory rate <6 breaths per minute), intubation and ventilation not related to anaesthesia, severe hypoxemia (O2 saturation <90% for ≥60 minutes or PAO2/FiO2 <200)
- Renal dysfunction
  - Oliguria non-responsive to fluids or diuretics, dialysis for acute renal failure, severe acute azotemia (creatinine ≥300 µmol/ml or ≥3.5 mg/dl)
- Coagulation/haematological dysfunction
  - Failure to form clots, massive transfusion of blood or red cells (≥5 units), severe acute thrombocytopenia (<50 000 platelets/ml)
- Hepatic dysfunction
  - Jaundice in the presence of pre-eclampsia, severe acute hyperbilirubinemia (bilirubin >100 µmol/l or >6.0 mg/dl)
- Neurological dysfunction
  - Prolonged unconsciousness (lasting ≥12 hours)/coma (including metabolic coma), stroke, uncontrollable fits/status epilepticus, total paralysis
- Uterine dysfunction
  - Uterine haemorrhage or infection leading to hysterectomy

Maternal vital status
- Maternal death

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The Near-Miss Studies in Turkey

In 2014 the Ministry of Health formed a Maternal Mortality Preliminary Investigation Commission named as "*Approach to the Rescued Mothers*". In this commission, 2 Midwives from the Department of Women's and Reproductive Health of the Public Health Institution of Turkey, 1 Practitioner, 4 Obstetricians and Obstetricians, 1 Internal Medicine Expert, 1 Anesthesiologist and Reanimation Expert were involved. As for the Central Investigation Commission; the Head of the Public Health Institution of Turkey, Vice-President of the Public Health Institution of Turkey, Head of the Department of Women's and Reproductive Health, Head of the Public Hospitals Association Hospital Services Department, Head of Family Medicine Monitoring and Evaluation Department, Head of Health Services Standards Department, Ankara Province Public Health Director, 5 gynecologists and obstetricians, 2 internal medicine specialists, 2 child health and disease specialists, 1 cardiology specialist, 1 cardiovascular specialist, 3 anesthesiology and reanimation specialist, 1 urology specialist, 1 infectious disease specialist, 1 neurology specialist, 1 brain surgery specialist, 3 pathology specialists, 1 public health specialist, 1 midwife were involved (Ministry of Health-Turkey, 2014).

As for data collection method first, the retrospective data collection from the pilot hospitals and in the light of these data collecting prospective data was decided. A total of 21 hospitals were identified, including 10 public hospitals, 6 private hospitals and 5 university hospitals for the Near-Miss Study. The file numbers of these 21 hospitals were determined according to the ICD-10 for Maternal Near-Miss. The WHO form was modified to include socio-demographic and scientific parameters and used in the investigation of the pilot hospitals. A study group was formed to investigate the files (Ministry of Health-Turkey, 2014).

CONCLUSION

As a result, healthy mothers give birth to healthy children, the children raised by the healthy mothers become healthy, and healthy children mean a healthy society. Mothers' health in particular concerns child health and in general concerns community health. Mother and child is a high priority group in terms of health. Protecting mothers' health is an important investment for the society. Mother-child health is one of the important and priority issues of general health problems in Turkey due to the reasons such as the size of their share in the general population, potential risk ratios in terms of physiological characteristics such as growth and development, pregnancy, childbirth and puerperium and health levels not being at the desired level. Reducing maternal mortality is an important international development goal. Programs that aim maternal mortality require reliable and valid information such as evidence-based health policies (Erci et al., 2016; Khan et al., 2006; Kalhan et al., 2017).

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