



The Maternal Mortality: Egyptian National Maternal Mortality Study

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Introduction and Background

The Egyptian Ministry of Health and Population (MOHP) launched the first national study of maternal mortality in 1992/93 in all Egyptian governorates (except for five frontier governorates). The specific objectives of the study were to:

- Obtain a national figure of maternal mortality in Egypt.
- Identify the main causes of maternal mortality.
- Determine the avoidable factors contributing to these maternal deaths.
- Provide data required to develop preventive programs to reduce maternal deaths.

The findings were to be used by the MOHP and senior policy makers to revise and implement an action program to reduce the numbers of maternal deaths.

In 1994, the *Egypt National Maternal Mortality Study 1992/93 (ENMMS 1992/93)* summarized the data collected and reported an overall maternal mortality ratio (MMR) of 174/100,000 (maternal deaths per live births). The five main causes of death were postpartum hemorrhage (25%), hypertensive disease (16%), antepartum hemorrhage (8%), puerperal sepsis (8%) and ruptured uterus (7%).

Furthermore, the study showed that the two main avoidable factors of death were substandard care on the part of health care providers (59%) and delays in seeking care on the part of the woman and her family (42%).

Subsequently, the *Egypt National Maternal Mortality Study 2000 (ENMMS 2000)* revealed a dramatic drop of 52% in maternal deaths to an MMR of 84/100,000.

Key Findings

This remarkable achievement of more than a 50% decrease in maternal deaths reflects Egypt's efforts to improve the quality of obstetric care, increase access to family planning, educate women

and families about seeking prompt medical care for problems during pregnancy and labor, and train *dayas* (traditional birth attendants) and midwives to refer women with obstetric complications. There were significant regional differences in maternal mortality, however,

With the highest levels of maternal death occurring in the frontier governorate and the lowest levels in metropolitan Egypt.

As in many other countries, the risk of maternal death was higher in mothers aged more than 40 years and in women who had already had five or more children. Most maternal deaths occurred during delivery and the 24 hours after delivery (49%), or during the six weeks after delivery (27%). Women who died were more likely to have delivered in a health facility and less likely to have delivered at home than women in Egypt in general. Statistics showed that 62% of maternal deaths took place in health facilities, 29% at home, and 9% during transportation. The majority of women who died (93%) sought medical help when they experienced problems. A disproportionate number of postpartum hemorrhage and cesarean section deaths occurred in private facilities, possibly due to lack of blood, poor back-up, or delays in transferring patients to hospital. The contribution of lack of transportation to the MMR was 4/100,000 live births in 2000, compared to 7/100,000 live births in 1992–93.

The *ENMMS 2000* also found that mortality in infants of women who die from maternal causes has declined. In 50% of cases of maternal death in 2000, the fetus or infant also died, whereas the figure for 1992–1993 was 57%. When maternal death occurred during delivery or postpartum, 34% of infants died at birth or soon after, compared to 43% in 1992–1993, suggesting that there may have been improvements in care of newborns.

Primary Medical Causes of Maternal Death

Medical causes of death were classified into two categories, direct causes and indirect causes. Based on the single main cause of death determined by Local Advisory Groups, direct obstetric causes

were responsible for 77% of maternal deaths and indirect causes for 20% of maternal deaths. For 3% it was not possible to determine a cause of death.

Hemorrhage before and after delivery was the leading direct cause of maternal death (43%), with most hemorrhage deaths due to postpartum hemorrhage. Other important direct obstetric causes of maternal death were hypertensive diseases of pregnancy (22%), sepsis (8%), ruptured uterus (8%), cesarean section (7%) and obstructed labor (5%). The proportion of deaths from ruptured uterus had increased since 1992–93, possibly associated with the increased use of drugs, such as oxytocin. Cardiac disease was the leading indirect cause of maternal death (13%), and the most common cardiac problem was rheumatic heart disease. Anemia was the second most important indirect cause of maternal death (11%).

There were 32 maternal deaths with hemorrhage per 100,000 live births. The MMR for hypertensive diseases was 18/100,000; for sepsis, 7/100,000; for ruptured uterus, 7/100,000; for cesarean section, 6/100,000; for obstructed labor, 4/100,000; for cardiac disease, 11/100,000; and for anemia, 9/100,000.

Main Avoidable Factors Contributing to Maternal Death

Avoidable factors contributing to maternal death were classified into three categories: health provider factors, health facility factors, and woman and family factors. Although the proportion of births attended by a skilled health provider has increased significantly since 1992–93, sub-standard care by health providers—particularly obstetricians and general practitioners—remains the most important avoidable factor, contributing to 54% of maternal deaths. Sub-standard care in the private sector is of particular concern, since deliveries in the private sector (26%) have

overtaken deliveries in the public sector (22%). General practitioners contributed disproportionately to maternal deaths, possibly due to delays in referral of women with obstetric complications and misuse of drugs used to speed up labor. In contrast, midwives and traditional birth attendants “*daya*” made a positive contribution, with the exception of sepsis deaths, where the risk was higher for home deliveries attended by a *daya*.

Shortage of blood was the most frequent avoidable health facility factor, contributing to 16% of maternal deaths and playing an especially important role in deaths from hemorrhage, ruptured uterus, and complications of cesarean section. Lack of blood was associated with 13 deaths per 100,000 live births. Delay in seeking care, mainly because of failure to recognize danger signs during pregnancy or delivery, was the most frequent patient and family factor, contributing to 30% of maternal deaths. Delay in seeking care was associated with 25 deaths per 100,000 live births. Delay was also associated with initial care seeking from general practitioners and private practitioners who were unable to manage obstetric emergencies or delayed referral to hospital. In addition, compared with women in Egypt in general, women who died were less likely to have been using modern contraception and more likely to have experienced contraceptive failure, and a higher proportion had unwanted pregnancies.

In most cases, deaths resulted from a combination of avoidable factors and medical causes. For example, sub-standard care by obstetricians, sub-standard care by *dayas*, and shortage of blood, were all important factors in postpartum hemorrhage deaths. Delays in seeking care, sub-standard care by obstetricians, and shortage of blood were all important factors in antepartum hemorrhage deaths.