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Contents lists available at ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo



FIGO LOGIC INITIATIVE

Improving maternity care in Ethiopia through facility based review of maternal deaths and near misses

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ARTICLE INFO

Keywords:

Ethiopia
 FIGO LOGIC initiative
 Maternal death review
 Maternity care
 Near-miss review
 Public health facility

ABSTRACT

The present study aimed to initiate facility based review of maternal deaths and near misses as part of the Ethiopian effort to reduce maternal mortality and achieve United Nations Millennium Development Goals 4 and 5. An in-depth review of all maternal deaths and near misses among women who visited 10 hospitals in four regions of Ethiopia was conducted between May 2011 and October 2012 as part of the FIGO LOGIC initiative. During the study period, a total of 2774 cases (206 deaths and 2568 near misses) were reviewed. The ratio of maternal deaths to near misses was 1:12 and the overall maternal death rate was 728 per 100 000 live births. Socioeconomic factors associated with maternal mortality included illiteracy 1672 (60.3%) and lack of employment outside the home 2098 (75.6%). In all, 1946 (70.2%) women arrived at hospital after they had developed serious complications owing to issues such as lack of transportation. Only 1223 (44.1%) women received prenatal follow-up and 157 (76.2%) deaths were attributed to direct obstetric causes. Based on the findings, facilities adopted a number of quality improvement measures such as providing 24-hour services, and making ambulances available. Integrating review of maternal deaths and near misses into regular practice provides accurate information on causes of maternal deaths and near misses and also improves quality of care in facilities.

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1. Introduction

Ethiopia currently has one of the highest maternal mortality rates. According to the Ethiopia Demographic and Health Survey, the maternal mortality rate in 2011 was 676 deaths per 100 000 live births [1]. Although reported figures vary widely by source and are highly controversial, the best estimate for Ethiopia suggests that over 9000 women and girls die each year owing to pregnancy related complications [1]. Moreover, an overwhelming majority of births occur at home, with only 10% of all births attended by skilled health workers. Finally, more than 200 000 Ethiopian women and girls annually experience disabilities, such as fistula, ruptured uterus, or pelvic inflammatory disease, as a result of complications during pregnancy and childbirth [1].

As Ethiopian mothers continue to die needlessly from preventable conditions before, during, and after childbirth, the initiation of maternal death review (MDR) and near-miss review (NMR) could provide the means necessary to recognize the underlying factors and so develop potentially lifesaving solutions. The key objectives of MDR and NMR are three-fold: to facilitate the collection and strategic use of data for

steering and monitoring public health initiatives; to influence quality of care and improve maternal and perinatal health outcomes by intensifying field-related practices [2]; and to support community efforts to increase awareness of women and their needs by using evidence generated by the review process.

United Nations Millennium Development Goals 4 and 5 aim to improve maternal and newborn health worldwide by 2015. As part of the national effort to meet these targets, the Ethiopian Society of Obstetricians and Gynecologists (ESOG) has worked with the Ethiopian Government and other partners—such as the FIGO Leadership in Obstetrics and Gynecology for Impact and Change (LOGIC) Initiative in Maternal and Newborn Health—to introduce facility based MDR and NMR to public hospitals.

The present study aimed to initiate facility based review of maternal deaths and near misses as part of the Ethiopian effort to reduce maternal mortality and achieve United Nations Millennium Development Goals 4 and 5.

2. Methodology

2.1. Study design

An in-depth review of all maternal deaths and near misses that occurred at health facility level was conducted using standardized information collection between May 1, 2011, and October 31, 2012.

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Between November 1, 2010, and February 1, 2011, a formal letter from ESOG was presented to each of the four major regional health bureaus of Ethiopia (Addis Ababa, Oromia, Amhara, and Southern Nations, Nationalities, and Peoples) that stated the purpose and details of the study. Following consultation with these bureaus, ESOG selected 10 public hospitals for participation: two each from Amhara and Oromia, and three each from Addis Ababa and Southern Nations, Nationalities, and Peoples. Furthermore, these public hospitals were each linked with five health centers, and each health center was further linked with five satellite health posts.

Key members from each hospital board (head of the zonal health department, medical director, and hospital general manager) endorsed the proposal and subsequently signed a memorandum of understanding with ESOG. One focal individual and five relevant technical staff were nominated from each hospital to establish a technical review standing committee to oversee the conduct of MDR and NMR. These committees comprised gynecologists, midwives, and other health professionals that represented the health facilities.

2.2. Study population

All cases of maternal death and near miss were reviewed among women who randomly visited the participating facilities during the study period to obtain appropriate healthcare services.

2.3. Operational definitions

Maternal mortality was defined as any death that occurred during pregnancy or within 42 days of abortion (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 [3].

Direct obstetric deaths were defined as those that resulted from complications of the pregnancy, labor, or puerperium, as well as maternal deaths arising from interventions, omissions, or incorrect treatments. By contrast, indirect obstetric deaths were defined as those that resulted from either pre-existing or new-onset medical conditions aggravated by the physiologic process of pregnancy.

Maternal near miss was defined as survival of a severe life-threatening condition that occurred during pregnancy, child birth, or within 42 days of abortion [3].

The operational definition of near miss was based on validated disease-specific criteria in the following diagnostic categories: hypertensive disorders in pregnancy, obstetric hemorrhage, dystocia, infection, and anemia. Obstetric hemorrhage included postpartum hemorrhage, antepartum hemorrhagic, incomplete abortion, gestational trophoblastic disease with deranged vital signs, and active bleeding that required urgent lifesaving intervention, such as blood transfusion, plasma volume expanders, and laparotomy.

Indirect obstetric causes of maternal morbidity and mortality included severe malaria, stage 4 cardiac diseases, hepatic failure, and renal failure.

2.4. Data collection and analysis

Data were collected on a daily basis throughout the study period by members of the Technical Review Standing Committees using a standardized structured questionnaire that was developed for the purpose and pretested. The questionnaire included information on sociodemographic characteristics, reproductive history, current obstetric diagnosis, interventions, outcome of mother and neonate, delays in seeking care, access to care and health services, and avoidable risk factors. The information collected was reviewed to implement institute appropriate interventions at the respective facilities. All data collected from the facilities were compiled, and entered and analyzed at ESOG's Office. SPSS version 19 (IBM, Armonk, NY, USA) and EPI Info version

3.5.3 (CDC, Atlanta, GA, USA) were used for data entry, cleaning, and analysis.

3. Results

3.1. Overall maternal morbidity and mortality

A total of 35 047 deliveries were recorded during the study period; there were 7181 cesarean deliveries, 32 541 live births, and 2604 stillbirths (Table 1). During the same period, a total of 2774 cases were reviewed; 2568 were near misses and 206 were maternal deaths (Table 1). Neonatal death occurring within 7 days of delivery was reported in 519 cases. The ratio of maternal death to near miss was 1:12, whereas the overall maternal mortality ratio (MMR) in the study facilities was 728 per 100 000 live births.

As shown in Table 1, Durame Zonal Hospital in the Southern Nations, Nationalities, and Peoples Regional State recorded high rates of maternal mortality and severe morbidity per 100 000 live births, with a 7% case fatality rate. The overall near-miss rate for the study population was 9079 per 100 000 live births, whereas the overall case fatality rate was 8%.

3.2. Demographic and socioeconomic characteristics

3.2.1. Age

The mean age of all cases was approximately 27.4 ± 6 years (median, 35 years; range, 13–48 years). The mean age was the same for both maternal death and near miss. The age-specific standard deviation was 5.9 years with a modal age of 25 years. Twenty-six (12.6%) maternal deaths and 366 (14.3%) near misses occurred in the group aged 16–20 years (Table 2).

3.2.2. Sexual and reproductive characteristics

Sexual and reproductive characteristics of the study population are outlined in Table 3. Of all maternal deaths and near misses, 969 (34.9%) had undergone female genital cutting in early childhood, while 2294 (82.7%) had married before 18 years of age. The current pregnancy was reported as unwanted among 2388 (86.1%) women. A total of 2475 (89.2%) women (deaths and near misses) were in their teenage years during their current pregnancy.

3.2.3. Other demographic variables

The majority of women ($n = 2624$, 94.6%) in the study population were married (Table 4). A total of 2098 (75.6%) women lacked employment outside the home and were economically dependent on their husbands. More than 60% of the women were illiterate (Table 4); of the women who died, 166 (80.6%) were recorded in the present study as illiterate. Regarding religion, 103 (50.0%) maternal deaths and 1583 (61.6%) near misses were among women who were Orthodox Christians, whereas a total of 692 (24.9%) women were Muslim.

3.3. Healthcare delivery system

The present study evaluated whether women obtained appropriate obstetric care and other reproductive health services during pregnancy, during delivery, and the postpartum period.

A total of 2431 (87.6%) women were critically ill with serious complications or medical conditions at hospital admission and 9 (4.4%) women died on arrival. The reasons for the various delays in obtaining care are outlined in Table 5. In all, 1946 (70.2%) women were delayed at home owing to poor health-seeking behaviors and low socioeconomic conditions. Lack of transportation to reach the nearest appropriate health facility was cited as the reason for delay in 1335 (48.1%) cases. Even after reaching the hospital, 963 (34.7%) women experienced delay in receiving care owing to a shortage of skilled health professionals or a lack of appropriate medical supplies. Furthermore,

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