

A Review of the Trend in Maternal Mortality Ratio Between 2000 and 2020 in Low- and Middle-Income countries: A Recipe for Continued Improvement for Uganda.

Kizito Omona examines the global burden of maternal mortality, exploring its causes and preventive measures, with a specific focus on Uganda.

What is Maternal Mortality Ratio (MMR)?

World bank ⁽¹⁾ defines maternal mortality ratio (MMR) as the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. This means if a country has 500 maternal deaths and 100,000 live births in a year, the MMR would be $500/100,000 \times 100,000 = 500$ per 100,000 live births. The indicator, MMR, represents the risk associated with each pregnancy. It depicts the risk of maternal death relative to the number of live births. WHO ⁽²⁾ defines maternal deaths as the annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, expressed per 100,000 live births, for a specified time period. Similarly, live birth is defined as the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

Global Burden of Maternal Mortality

According to WHO ^(3,4), maternal mortality is unacceptably high. In the year 2020, about 287,000 women died during and following pregnancy and childbirth globally. Of this figure, almost 95% of all maternal deaths occurred in low and lower middle-income countries. With good healthcare, most of these deaths could have been prevented. Sub-Saharan Africa (SSA) and Southern Asia accounted for around 87% (253,000) of the estimated global maternal deaths that year 2020. Sub-Saharan Africa alone accounted for around 70% of maternal deaths (202,000), while Southern Asia accounted for around 16% (47,000).

Meanwhile, elsewhere, between 2000 and 2020, Eastern Europe achieved the greatest overall reduction in maternal mortality ratio: a decline of 70% (from MMR of 38 to MMR of 11). Despite its very high MMR in 2020, sub-Saharan Africa also achieved a substantial reduction in MMR of 33% between 2000 and 2020.

Why do women die? Causes of Maternal Mortality

Women die as a result of complications during and following pregnancy and childbirth ⁽²⁾; all of which are preventable with good healthcare. These complications develop during pregnancy although some of them may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman's care. The major complications that account for nearly 75% of all maternal deaths are;

1. Postpartum hemorrhage (severe bleeding after childbirth)
2. Puerperal sepsis (infections after childbirth)
3. Hypertensive disorders in pregnancy (pre-eclampsia and eclampsia)
4. Obstructed labor (complications from delivery)
5. Unsafe abortion

How Do We Prevent these Deaths?

All women need access to high-quality care in pregnancy, during pregnancy, and after childbirth ⁽²⁻⁴⁾. All childbirths must be attended by skilled health professionals, as timely management and treatment can make the difference between life and death of women and newborns.

1. Postpartum hemorrhage - Severe bleeding after birth can kill if left unattended to. Injecting oxytocics immediately after childbirth effectively reduces the risk of bleeding.
2. Puerperal sepsis - Infection after childbirth can be eliminated by practicing good hygiene, early detection of signs of infection and timely treatment with antibiotics.
3. Hypertensive disorders in pregnancy - Pre-eclampsia should be detected at antenatal care and appropriately managed before the onset of convulsions (eclampsia) and other life-threatening complications. Administration of magnesium sulfate for pre-eclampsia can lower a woman's risk of developing eclampsia.
4. Obstructed labor - All obstructed labor should be timely detected, and an emergency cesarean section should be done.
5. Unsafe abortion - Managing unsafe abortion involves providing prompt and comprehensive post-abortion care, including treatment of complications like infection and incomplete abortion, and ensuring access to contraception to prevent future unintended pregnancies.

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A mother receiving postnatal care courtesy of Eleanor Whitehead

Factors that Prevent Women from Receiving or Seeking Care During Pregnancy and Childbirth in Low- and Middle-Income Countries

Poor women in remote areas are the least likely to receive adequate health care ⁽⁵⁾. This is due to relatively low numbers of skilled healthcare providers, as seen in Sub-Saharan Africa and Southern Asia. Studies have shown that in most high-income and upper-middle-income countries, approximately 99% of all births benefit from the presence of a trained midwife, doctor or nurse but only 68% in low-income and 78% in lower-middle-income countries are assisted by such skilled health personnel ⁽⁴⁾.

Therefore, the factors that prevent women from receiving or seeking care during pregnancy and childbirth in low- and middle-income countries are:

1. Health system failures which eventually translate to (i) poor quality of care, including disrespect, mistreatment and abuse, (ii); insufficient numbers of and inadequately trained health workers, (iii); shortages of essential medical supplies; and (iv) the poor accountability of health systems
2. Social determinants, including income, access to education, race and ethnicity, that put some populations at greater risk
3. Harmful gender norms and/or inequalities that result in a low prioritization of the rights of women and girls, including their right to safe, quality and affordable sexual and reproductive health services
4. External factors that contribute to political instability and health system fragility, such as climate and

humanitarian crises.

This means to improve maternal health, these barriers that limit access to quality maternal health services must be identified and addressed at both health system and societal levels.

Trends of Maternal Mortality Ratio for Uganda, Sub-Saharan Africa and the Global Estimates

The maternal mortality ratio in Sub-Saharan Africa has improved from 802 in 2000 to 536 in 2020. Figure 1 shows that maternal mortality in Sub-Saharan Africa is still far higher than the world average while Uganda is faring much below SSA although it is higher than the global average, as well.

Thus, from 2000 to 2020, the global maternal mortality ratio (MMR) declined by 34 percent – from 339 deaths to 223 deaths per 100,000 live births ^(6,7). This translates into an average annual rate of reduction of 2.1 percent. Even though this decline seems substantive, it is only about one third of the 6.4 percent annual rate needed to achieve the Sustainable Development Goal (SDG) of 70 maternal deaths per 100,000 live births by 2030 ⁽⁷⁾. With the global MMR of 223 per 100,000 live births in 2020, achieving a global MMR below 70 by the year 2030 will require an annual rate of reduction of 11.6%.

For Uganda, the maternal mortality rate for 2020 was 284, meaning that there was a 2.74% decline from that of 2019 which was 292 deaths per 100,000 live births. Between 2017 and 2018, there was a 9.58% decline. This rate of decline is still quite small if the Sustainable Development Goal (SDG) of 70 maternal deaths per

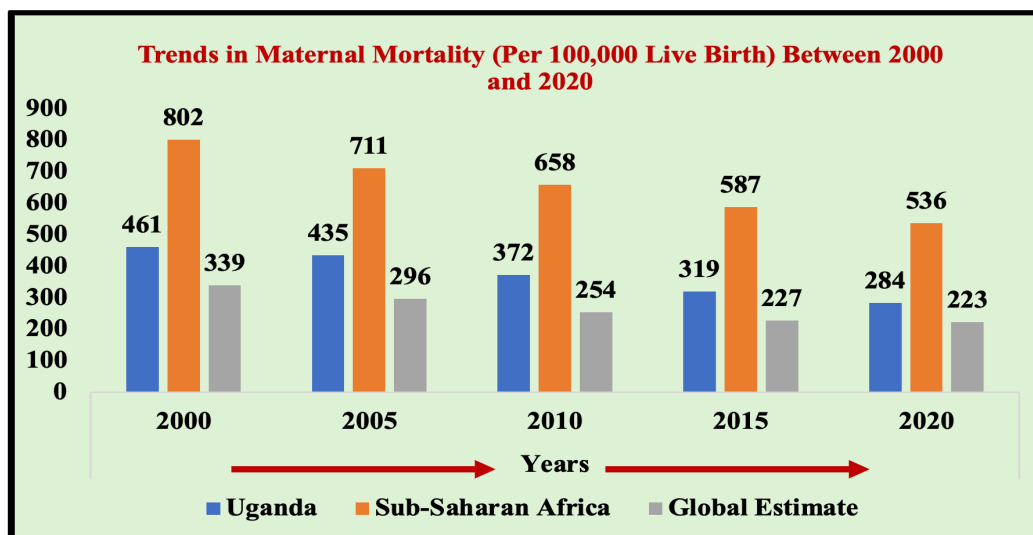


Figure 1: Trend in MMR (Data Source: World Bank, 2023)

100,000 live births by 2030 is to be achieved ^(8, 9).

Conclusion and Lessons Learned

With the recent and sustained surge focused on assuring the delivery of effective obstetric emergency care to reduce maternal mortality, it has led to the development of an intellectual framework that is largely applicable to global emergency. This revolves around seeking care, reaching care and receiving care all geared to address the three levels of delays.

Thus, reviving emergency systems, emergency services and care proved effective in many countries. Emergency systems are all organizations, institutions and resources whose primary purpose is to promote, restore and/or maintain health in medical and/or surgical emergencies.

Emergency services are the sum of all efforts to deliver effective health action in response to extreme risk under intense time pressure, including interventions at both the population level and the individual level.

Recommendations

To significantly improve maternal mortality in Uganda, and all other low- and middle-income countries, the author recommend;

1. Increasing skilled birth attendance – Ministry of health must ensure access to trained healthcare providers, promote institutional delivery and investing in training programs for health work force.
2. Increasing accessibility of essential Obstetric Care – This can be through expanding access to facilities, directly provide essential obstetric care and ensuring timely referral.
3. Service Quality Improvements – This involves ensuring that health facilities have adequate infrastructure, including clean water, sanitation, and electricity. It also involves enhancing data collection and monitoring and implementing quality improvement initiatives.
4. Adequate Antenatal Care – This involves encouraging mother for early and frequent antenatal visits and

ensuring access to essential antenatal services

5. Postpartum Care - Comprehensive postpartum care must be provided to all mothers, as well as addressing postpartum complications and promoting breastfeeding
6. Safe post abortion care - Ensure access to safe abortion services.
7. Family Planning - Promote family planning services and address unmet needs for family planning
8. Community Mobilization - Engage communities, raise community awareness about the problem and empower women about their rights to quality healthcare.

References:

1. World Bank, Metadata Glossary, 2025. Available at <https://databank.worldbank.org/metadataglossary/gender-statistics/series/SH.STA.MMRT>
2. World Health Organization. Maternal mortality ratio (per 100,000 live births), 2024. Available at <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/26>
3. WHO. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/ Population Division. Executive summary. Geneva: World Health Organization; 2023. Available at: <https://iris.who.int/bitstream/handle/10665/372247/9789240069251-eng.pdf>
4. World Health Organization and United Nations Children's Fund. WHO/ UNICEF joint database on SDG 3.1.2 Skilled Attendance at Birth. Available at: <https://unstats.un.org/sdgs/indicators/database/>.
5. Samuel O, Zewotir T, North D. Decomposing the urban–rural inequalities in the utilization of maternal health care services: evidence from 27 selected countries in sub-Saharan Africa. BMC Reproductive Health 18, 216 (2021). <https://doi.org/10.1186/s12978-021-01268-8>
6. World Bank. Sub-Saharan Africa, 2023. Available at: <https://genderdata.worldbank.org/en/regions/sub-saharan-africa>
7. UNICEF. Maternal mortality, 2025. Available at: <https://data.unicef.org/topic/maternal-health/maternal-mortality/>
8. Birabwa C, Banke-Thomas A, Waiswa P, et al. Maternal health in cities: analysis of institutional maternal mortality and health system bottlenecks in Kampala City Uganda, 2016–2021. Journal of Global Health Reports. 2024;8:e2024006. doi:10.29392/001c.116248
9. Anonymous. Uganda Maternal Mortality Rate 2000–2025, 2025. Available at: <https://www.macrotrands.net/global-metrics/countries/uga/uganda/maternal-mortality-rate>