Indicator 3.1.1: Maternal mortality ratio

Target 3.1: By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Definition:
The maternal mortality ratio (MMR) is defined as the annual number of maternal 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, per 100,000 live births, for a specified year.

Concepts:
A maternal death refers to a female death 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. It is important to note that not all deaths which occur temporally to pregnancy are considered "maternal deaths". Maternal deaths are a specific subset of deaths which occur during pregnancy, childbirth and the puerperium and can be further divided into two groups, namely direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of the pregnant state (pregnancy, labour and puerperium); from interventions, omissions or direct treatment; or from a chain of events resulting in any of these. Indirect deaths result from previously existing disease or disease that developed during pregnancy and was not directly due to obstetric causes but was aggravated by the physiologic effects of pregnancy. Deaths which do not meet these criteria, such as those which occur as a result of accidents, are defined by the more general term, "death occurring in pregnancy, childbirth or the puerperium" (previously referred to as "pregnancy related deaths") and are excluded from the definition of maternal health.

A live birth is 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. Each product of such a birth is considered a live birth.

Rationale and Interpretation:
This indicator monitors deaths related to pregnancy and childbirth. It reflects the capacity of health systems to provide effective health care in preventing and addressing the complications occurring during pregnancy and childbirth.

Indicator values range from less than 10 in most developed countries, with an average of around 169 per 100,000 live births in the developing regions.

Data Sources and Collection Method
Primary sources of data include CRSV, population based household surveys, reproductive age mortality studies, disease surveillance or sample registration systems, special studies on maternal mortality, and national population censuses. Complete CRSV systems with accurate cause of death estimations are the most reliable data source for calculating maternal mortality and monitoring change over time. However, these are rare in developing countries. Official data are usually available from health service records, but in some locations few women in rural areas have access to health services. Therefore, in developing countries, survey data, especially those from the Demographic and Health Surveys (DHS) and similar household surveys constitute the most common source of data on maternal mortality.

Because maternal mortality is a relatively rare event, large sample sizes are needed when data are derived from household surveys. This is very costly and may still result in estimates with large confidence intervals.

The sisterhood method, used in DHS surveys and Multiple Indicator Cluster Surveys (MICS), reduces sample size requirements by asking survey respondents about the survivorship of sisters. Respondents are asked four simple questions about how many of their sisters reached adulthood, how many have died and whether those who died were pregnant at the time of death. While this method reduces sample size requirements, it produces estimates covering some 7-12 years before the survey, which renders data problematic for monitoring progress or observing the impact of interventions. The direct sisterhood method asks respondents to provide date of death, which permits the calculation of more recent estimates, but even then, the reference period tends to refer to 0-6 years before the survey.

**Method of Computation and Other Methodological Considerations**

**Computation Method:**

The maternal mortality ratio is calculated by dividing recorded (or estimated) maternal deaths by total recorded (or estimated) live births in the same period and multiplying by 100,000. The measurement requires information on pregnancy status, timing of death (during pregnancy, during childbirth, or within 42 days of termination of pregnancy), and cause of death. The following formula is used for calculating the maternal mortality ratio for a given time period:

$$\text{MMR} = \frac{\text{Recorded (or estimated) maternal deaths}}{\text{Total (recorded or estimated) live births}} \times 100,000$$

**Comments and limitations:**

Maternal mortality is often difficult to measure. Civil Registration Vital Statistics (CRVS) and health information systems in most developing countries are weak, and thus, cannot provide an accurate assessment of maternal mortality. Even figures derived from complete CRVS systems, such as those in developed countries, suffer from misclassification and underreporting of maternal deaths.

Due to very large confidence intervals, maternal mortality estimates might not be suitable for assessing trends over time. As a result, it is recommended that country level process indicators, such as attendance by skilled health personnel at delivery and use of health facilities for delivery, be used to supplement maternal mortality ratios for assessing progress towards the reduction in maternal mortality at the country level.

The maternal mortality ratio should not be confused with the maternal mortality rate (number of maternal deaths divided by person-years lived by women of reproductive age), which reflects not only the risk of maternal death per pregnancy or birth but also the level of fertility in the population. The maternal mortality ratio (whose denominator is the number of live births) indicates the risk of death once a woman becomes pregnant, and does not take fertility levels into consideration.

**Proxy, alternative and additional indicators:**

In addition to the MMR and MMRate, there exist two additional indicators:

1. The adult lifetime risk of maternal mortality for women in the population is defined as the probability that a 15-year old woman will die eventually from a maternal cause; and

2. The proportion of deaths among women of reproductive age that are due to maternal causes (PM) is calculated as the number of maternal deaths divided by the total deaths among women aged 15-49 years.

**Data Disaggregation**

A list of aspirational inequity measurements are proposed for disaggregation such as income level, residence (urban/rural), educational attainment, ethnicity, humanitarian settings, conflict zones and refugees as well as adolescent 15-19 years.

**References**
Official SDG Metadata URL

Internationally agreed methodology and guideline URL

Other references


Country examples
N/A

International Organization(s) for Global Monitoring

This document was prepared based on inputs from World Health Organization (WHO).

For focal point information for this indicator, please visit https://unstats.un.org/sdgs/dataContacts/