Measuring Maternal Mortality (MM)

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Session Outline

- Why Measure Maternal Mortality?
- Why is it difficult to measure maternal mortality
- Indicators of maternal mortality
- Methods of Measuring MM
- Progress made in Measuring MM
- Recommendations

Why Measure Maternal Mortality?

- Reliable data on the levels and causes of maternal death can be used for :
  - Planning, Monitoring & Evaluating programs.

- Priority setting and Advocacy,
  - which can help increase awareness about safe motherhood, encourage accountability, and raise funds.

Why is it difficult to measure maternal mortality

- Rare event, so large sample size required
- Lack of vital statistics
- Attribution of cause is not reliable underestimates
- Differentials in definitions
- Differentials in interpretation

Indicators of maternal mortality

- Number of maternal deaths
- Maternal mortality Ratio (MMR)
- Maternal mortality Rate (MMRate)
- Lifetime risk of death (LTR)

LTR = 35 * MMRate

Methods of Measuring MM

Civil registration systems

- This approach involves routine registration of births and deaths.
- BUT
  - even where coverage is complete and the causes of all deaths are identified based on standard medical certificates, in the absence of active case-finding, maternal deaths may be missed or misclassified

Methods of Measuring MM- Cont`d

- *Population based surveys*
  - Where civil registration data are not available, household surveys provide an alternative.
    - *Limitations*
      - the survey identifies pregnancy-related deaths (not maternal deaths);
      - requires large sample sizes and therefore they are expensive
      - even with large sample sizes, the obtained estimates are still subject to uncertainty (wide confidence intervals), making it difficult to <u>monitor changes</u> over time.

Methods of Measuring MM-Cont`d

Population based surveys

- Indirect Sisterhood Method
  - The original (indirect) sisterhood method was developed in the late 1980s as an efficient means of measuring maternal mortality through population-based surveys,

  - Adult respondents are asked four questions about the survival of all their adult sisters born to the same mother

Methods of Measuring MM-Cont`d

Population based surveys

- Indirect Sisterhood Method

  Advantages:

  - Uses small sample sizes
  - the four questions can be easily added to multipurpose questionnaires/surveys
  - it is particularly efficient in high fertility settings where respondents have large numbers of siblings
  - it can be used at national and sub-national levels
  - data processing and calculation of estimates is comparatively simple

Methods of Measuring MM-Cont`d

Population based surveys

- Indirect Sisterhood Method

Limitations:

  - it gives retrospective estimates (10-12 years before the survey)
  - it is less appropriate in settings with substantial migration
  - It is difficult to get additional information about deaths (causes, risk factors, timing, etc as sibling may not have such details)

Methods of Measuring MM-Cont`d

Population based surveys

- <u>Direct Sisterhood method</u>
  - Is a variant of the indirect Sisterhood Method,
  - Is currently used by Demographic and Health Surveys (DHS).
  - Targets of a more limited reference period for sister deaths. (0-6 & >6 years prior to the survey)
  - Uses a <u>more detailed</u> set of questions:
    - to ascertain deaths among <u>all siblings</u>
    - & those that are <u>pregnancy-relate</u>d as well as <u>when</u> the death occurred,
    - point estimates for maternal mortality are obtainable,

Methods of Measuring MM-Cont`d

Population based surveys

- Direct Sisterhood method

  Advantages:

  - Yields a more recent estimate than the indirect sisterhood (generally with one reference period 0-6 years prior to the survey and one 7-13 years prior to the survey versus 10-12 years for indirect sisterhood method)
  - Provides data that represents the population
  - Can be added to multipurpose surveys

Methods of Measuring MM-Cont`d

Population based surveys

- Direct Sisterhood method

  Limitations:

  - Requires larger samples than the original indirect sisterhood method
  - More complex data collection (more questions including age at death, the year in which the death occurred and the years since the death) and data analysis
  - Less appropriate in settings with substantial migration
  - Difficult to get additional information on deaths (causes, risk factors, timing, etc as the sibling may not have such details)

Methods of Measuring MM-Cont`d

Reproductive-age mortality studies (RAMOS)

- Involves identifying and investigating the causes of all deaths of women <u>of reproductive age</u> in a defined area/population by using multiple sources of data

- It provides a fairly complete estimation of MM

- It is complicated, time-consuming, and expensive

Methods of Measuring MM-Cont`d

Verbal Autopsy

- This approach is used to assign cause of death through interviews with family or community members, where medical certification of cause of death is not available.

- Records of births and deaths are collected periodically among small populations under demographic surveillance systems maintained by research institutions in developing countries.

Methods of Measuring MM-Cont`d

Verbal Autopsy

- Limitations
  - Misclassification of causes of reproductive-aged female deaths.
  - The accuracy of the estimates depends on the extent of family members' knowledge of the events leading to the death, the skill of the interviewers, and the competence of physicians who do the diagnosis and coding.
  - Demographic surveillance systems are expensive to maintain, and the findings cannot be extrapolated to obtain national MM indicators

Methods of Measuring MM-Cont`d

National Census:

- Part of the national housing & population census
  - a limited number of questions can be added to produce estimates of maternal mortality
- Allows identification of deaths in the household in a relatively short reference period (1–2 years), thus providing recent MM estimates
- Since it is conducted at 10-year intervals it limits monitoring of maternal mortality.

Challenges to Measurement of MM

- Incomplete records
- Population surveys that are often used to estimate maternal mortality, are expensive since they require a big sample size
- Estimates from hospital-based studies are not representative of the whole population
- Deaths are often misclassified and attributed to non maternal causes.

Progress made in Measuring MM

- No one tool can perfectly measure maternal death in all situations.
  - Multiple measurement approaches are needed.
- Different Organisations such as Measuring Maternal Impact are working around to develop new approaches which more efficiently collect data, at reduced costs and use fewer skilled personnel to carry out surveys.

Progress made in Measuring MM (additional Tools)

Sampling at Service Sites (SSS).

- women are interviewed at busy centres, such as markets or health facilities, about any maternal deaths among their sisters.

"Maternal Deaths from Informants" (MADE-IN).

- Uses village health workers, or the existing village administrative systems, to collect information on deaths of women of reproductive age in the past two years and, in particular, deaths that may have been pregnancy-related.

Follow-On- Review tool (MADE-FOR) is use to interview a relative, ask about symptoms and events around the time of death, and collect socioeconomic data about the woman.

Progress made in Measuring MM (additional Tools)

- Rapid Ascertainment Process for Institutional Death (RAPID):
  - is a tool designed to reveal underreporting of pregnancy-related deaths in hospitals, by comparing data from existing hospital records with routinely reported hospital figures.
- Interpretation of Verbal Autopsy-Maternal (InterVA-M)
  - is a computer model Immpact adapted that interprets data from interviews with the relatives of women of reproductive age who have died.

Recommendations to improve on Measures of MM

- Continued development and adaptation of tools to measure maternal death.

- Estimate maternal deaths using data from different sources.
  - New analytical methods should be developed.

Recommendations to improve on Measures of MM

- Combine information about maternal deaths from different sources.
  - Taking into account geographic or socioeconomic differences in populations, and imperfections in the data sources.

- Use partnerships to improve the quality and availability of maternal death data.
  - Partnering at multiple levels and among the various groups working on data collection, program planning, and policy development.

References

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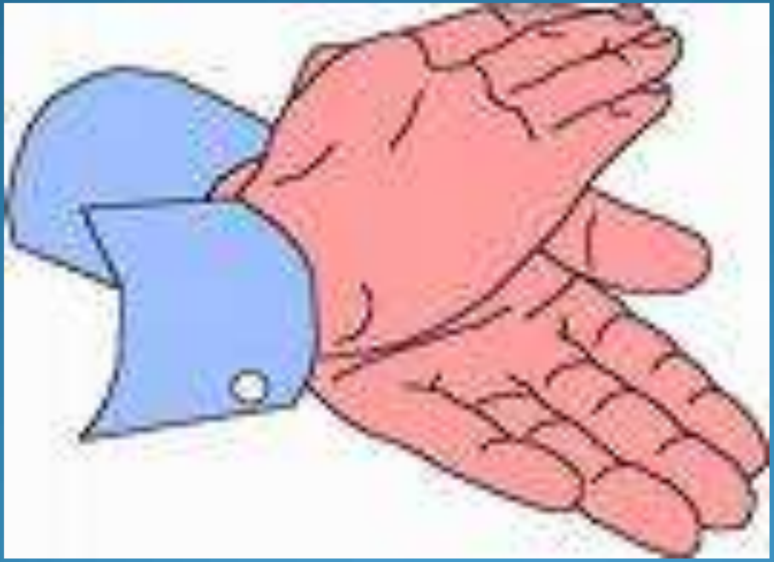Thank You for Your Attention