

Measuring Pregnancy-related Mortality via a National Population Census

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- ❖ *The data we have are not the data we want*
- ❖ *The data we want are not the data we need*
- ❖ *The data we need are not available...*

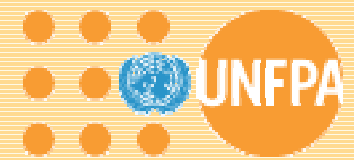
Finangel's Laws

Measuring Maternal Mortality: Methods and Issues



- ❖ We need it : Target and Indicator for MDG 5
- ❖ Challenges: hard to record deaths, age, cause, timing
- ❖ Vital registration
- ❖ Direct HH Surveys
- ❖ Indirect Sisterhood method
- ❖ Direct Sisterhood method
- ❖ Reproductive Age Mortality studies (RAMOS)
- ❖ Verbal Autopsy
- ❖ Estimates (WHO/UNICEF/UNFPA)
- ❖ Census: Direct measure, simple in theory, difficult in practice

Measuring Pregnancy-related Mortality via a National Population Census



My objectives:

- ❖ Discuss definitions
- ❖ Describe the measurement of pregnancy-related mortality via a census;
- ❖ Discuss the pros and cons of using the census to measure pregnancy-related mortality;
- ❖ Present results from 5 countries which have used the census to measure pregnancy-related mortality AND have evaluated/adjusted their results;
- ❖ Advocate for it !

Are we discussing maternal mortality or pregnancy-related mortality?



- ❖ **ANSWER: Pregnancy-related mortality**
- ❖ **ICD 10 definition of maternal death: death from ANY cause related to or aggravated by pregnancy or its management, BUT NOT from accidental or incidental causes**
- ❖ **Direct obstetric causes**
- ❖ **Indirect obstetric causes**

- ❖ **Pregnancy-related Death**: irrespective of the cause, only related to Timing: during pregnancy or within 42 days of its termination
 - Includes so-called « concomitant » causes, incidental or accidental, often actually related
 - However, in developing countries, pregnancy-related deaths, particularly from early and/or unsafe abortion, are generally under-reported

Why turn to the census for measuring pregnancy-related mortality when at least 4 other methods exist?



- 1. Vital registration: not complete in many countries**
- 2. Hospital-based studies: not representative of the population**
- 3. Community-based surveys: current/traditional approaches are flawed by sample size constraints, sampling errors and non-sampling errors (data collection, processing, cause, timing, classif)**
- 4. Large scale population-based surveys: even with large samples, pregnancy-related mortality estimates are generally very imprecise (confidence intervals often \pm 20-30% of the estimate)**
 - Example: Bangladesh Maternal Mortality/Morbidity Survey sample ~103,000 women; MMR = 382 (CI: 320-446)**
 - Sibling-based estimates are also imprecise due to sample size PLUS they cannot provide geographic differentials (urban/rural) because one does not know where the sister lived/died.**

Why turn to the census for measuring pregnancy-related mortality? - *continued*



5. Ideally, pregnancy-related or maternal mortality data should be collected by an agency external to those responsible for implementation of health programs
 - Their skill-based is often not sufficient for this type of data collection
 - Burden of data collection should not detract from their mandate of service provision
6. The census is going to be done anyway. The additional questions add negligibly to the work load of the census
 - If already measuring deaths in the household, 1-3 additional questions are required BUT these questions are posed for only ~1% of adult females

Why turn to the census for measuring pregnancy-related mortality? - *continued*



7. The census can provide differentials in pregnancy-related mortality re: province, urban/rural, age of woman, other SES characteristics of the household: Big benefit for program planners

8. The census can provide all four indicators of pregnancy-related mortality (the (pregnancy-related) MMRatio, MMRate, Proportion of adult female deaths that are maternal, Lifetime risk of MM)

9. Measurement of deaths in the household in the recent period (last 12 months) is recommended in the *UN Principles and Recommendations for National Population and Housing Censuses* for the 2010 round of censuses (currently in revision) for countries with inadequate vital registration. PLUS, (new recommendation): simplified cause of death data for pregnancy-related deaths is also promoted in these countries

How is pregnancy-related mortality measured via a census?



- ❖ All live births in the household in the last 12(-24) months are recorded
- ❖ All household deaths (plus sex and age at death) for the last 12(-24) months are recorded
- ❖ Only for adult female deaths:
 - Did the deceased die:
 - during pregnancy?
 - during childbirth?
 - within 42 days (6 weeks) of the termination of pregnancy?
- ❖ **TO REDUCE COST/EFFORT:** one could restrict data collection to a large sub-sample of the country

Optional/Supplemental questions:



- ❖ Where did she die (in hospital, at home, en route to hospital, other outside home)?
- ❖ Follow up questions using a verbal autopsy to discern maternal from pregnancy-related death for all or a sub-sample of adult female deaths
- ❖ a very interesting, but major additional undertaking
- ❖ Involves noting down the exact address and name of the deceased, visiting the HH a few months later by medically-trained interviewers (or female CHWs), interviewing female relatives, interpreting the facts, and assigning probable causes of death (I, II, other)

Once the data are collected:



- ❖ The decision to collect these data must be accompanied by a commitment to evaluate, and adjust if necessary, the data
- ❖ Standard demographic techniques are used to evaluate/adjust the completeness of reporting on:
 - Deaths: using the growth balance method
 - Births: using reverse projection techniques or P/F (parity to cumulated fertility) ratios
 - SEE UN Manual X or Measure/Evaluation Project Manual on measuring maternal mortality via a census
- ❖ Currently, no standard methods exist to evaluate or adjust the pregnancy-related mortality data
 - Adjustments are made to the adult female mortality data or birth data;
 - Then, the observed proportion maternal is applied to adjusted mortality data

Results from 5 country experiences



Country	Benin (1992)	Islamic Rep of Iran (1996)	Lao People's Dem Rep (1995)	Madagasc ar (1993)	Zimbabwe (1992)
Adjustment Factor: births	1.34	1.30	1.65	1.0	1.0
Adjustment Factor: deaths	2.7	3.0	1.6	2.5	1.0

NOTE: Adjustment for deaths almost always > for births. Must be prepared for this magnitude of adjustment. Can be hard to accept.

Source: Stanton et al. 2001. Bulletin of the WHO 79(7)

Results from 5 country experiences

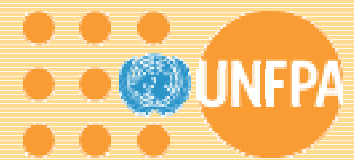


Country	Benin	Islamic Rep of Iran	Lao People's Dem Rep	Madagascar	Zimbabwe
Unadjusted MMR	168	39	821	NA	395
Adjusted MMR (high, low variants)	338 (250-375)	88 (58-95)	796 (746-871)	NA (NA)	395 (NONE)
MMRs from external sources	498 (DHS)	NA	NA	NA	393 (DHS)

NOTE: Some adjustments are very large. The benefit of no sampling error should be judged against unmeasurable non-sampling error, plus the validity of assumptions underlying the high/low variants. IN SUMMARY: there are many advantages, but this is far from perfect.

Source: Stanton et al. 2001. Bulletin of the WHO 79(7)

Which other countries have tried to measure pregnancy-related mortality via the census?



❖ Lesotho, ...

Which countries are planning?

❖ In Asia: Pakistan, E.Timor, ...

❖ In Africa: BurkinaFaso, Mozambique, ...

❖ In LAC: Nicaragua, Honduras, Paraguay, El Salvador, ...

What are the drawbacks of measuring pregnancy-related mortality via the census?



- 1. Governments need to be committed to using the data before questions are added to a census**
- 2. Governments/donor agencies must be committed to evaluating and adjusting, if necessary, census data on pregnancy-related mortality. It is highly likely that adjustments will be needed.**

- 3. Censuses circumvent many pregnancy-related mortality measurement problems – but they add their own problems:**
- The adult mortality questions are so infrequently asked, some interviewers may just stop asking them (ie, leads to under-reporting);
 - Households may dissolve after a maternal death;
 - Interviews are short – no time to establish rapport etc as can be done in a survey;
 - Reporting of age at death is often exaggerated in a census;
 - Issue of monitoring trends in MMR: 10 years is a long time span!
What in-between?

However, many of these problems could be lessened by:

- ❖ **Careful training**

- ❖ **Supervision**

- ❖ **... the two most difficult aspects of a census.**

Possible solutions to consider:

- **Experiment with increased supervision in selected regions**

- **Restrict pregnancy-related death questions to a sub-sample of regions/districts**

In summary:



- ❖ **Using the census to measure pregnancy-related mortality offers many advantages to traditional approaches**
- ❖ **BUT, it is not a magic bullet. It comes with its own limitations and results should be interpreted accordingly**
- ❖ **The Measure/Evaluation project has produced step by step Guidelines in English/French/Spanish on the evaluation/adjustment of such data. See: www.cpc.unc.edu/measure/publications/index**

How can UNFPA help?



- ❖ **Advocate for PRM measurement**
- ❖ **Provide technical assistance**
- ❖ **Mobilize resources**
- ❖ **Organize training in new methods**
- ❖ **Assist in analysis and interpretation**
- ❖ **Promote exchange of experience**
- ❖ **Document processes**
- ❖ **Disseminate results**

- ❖ **MMR / PRM seem to have increased in countries with high HIV-AIDS prevalence (SAF, ZIM, MLW,...)**
- ❖ **HIV-AIDS increases PRM through:**
 - 1. Direct obstetric causes (sepsis)**
 - 2. Indirect obstetric causes (TB, malaria, infections,)**
 - 3. Deterioration of the H.System & Resources (Human R, equipments, drugs, blood,)**
 - 4. Discrimination & stigma**
 - 5. Overall poverty, reduction of family resources**
- ❖ **Impact on measurement: deaths under-registered, mis-classification, live births-based denominator underestimated, questions about trends assessment**