Analysis paper

# Maternal mortality reported trends in Afghanistan: too good to be true?

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The Afghanistan Mortality Survey 2010 reports maternal mortality of 327 deaths per 100,000 live births. An earlier estimate from 2002, of 1,600 deaths/100,000 live births, suggests a rapid decline over 8 years, a change that has been described as "too good to be true". Our analysis indicates that there are indeed significant reasons to be sceptical of the figures generated by the survey. This is a critical concern given that maternal mortality is a key health development indicator, and an exaggeration of progress in this area could affect funding decisions, to the detriment of the women of Afghanistan and their newborns.

This briefing explains why donors and policy makers need to be cautious in using the maternal mortality data presently available. Supposing the 2002 survey figure to have been approximately correct, it would be difficult to explain the reported sharp decline in mortality when, at the time of the 2010 survey, two-thirds of deliveries still took place at home without skilled assistance. There are no precedents in other countries, including those with greater stability than Afghanistan, for such a major decline taking place on a time scale anything like as condensed as this data claims. If the decline were accurate, Millennium Development Goal 5a, to reduce the maternal mortality ratio by 75% from the 1990 level, would have been achieved five years ahead of the target date, the end of 2015.

## Introduction

Since 2002 healthcare across Afghanistan, provided free at the point of delivery, has been funded by the international community, with the World Bank, USAID and the European Union each funding approximately one third. Understandably, these institutions could not be expected to provide more than modest funds on a continuing basis until the country could pay for its own health services from taxation. Equally understandably, building healthcare services has been challenging, especially given the insecurity, poor health infrastructure and the serious healthcare needs of much of the population.

Maternal health is sometimes considered a yardstick for assessment of the health system of a country. However, high maternal mortality is not only the result of poor healthcare services, but also about the accessibility of services and therefore about roads, transport and security. It is also about the underlying health status of adolescent girls and women, including levels of anaemia, chronic malnutrition, and stunting, as well as other important reproductive health indicators such as age of first birth and use of family planning or birth spacing measures. In 2002, maternal mortality in Afghanistan was estimated to be the highest in the world[1].

In most cases pregnancy complications cannot be predicted before the onset of labour. The Ministry of Public Health therefore aims, in accordance with the guidance of the World Health Organisation (WHO), for all births to take place in the care of a skilled birth attendant (SBA). But many preventable maternal deaths worldwide are due to delays in women and their families deciding whether or when to make the often perilous journey from home to the health centre when a woman goes into labour or experiences a complication of pregnancy or delivery[2]. In rural and remote areas of Afghanistan that journey, on foot or by donkey, may take four hours or more. With journeys of such length women risk giving birth on the way, since labour, after the first birth, lasts an average of

approximately five hours. In addition, in Afghanistan most births are said to take place at night. (Women, it is said, often do not seek help until the day's work is done.) Villagers then face a difficult decision on whether to start the journey to the health centre or not, and as a result in rural areas most women still give birth on the floor at home, without any skilled help. Village Community Health Workers, who are relatively accessible and who in other countries are often at the frontline in preventing maternal deaths, are not trained or authorised to provide assistance at births in Afghanistan. Improvements have been considerably more in urban centres than remote areas.

**Summary of findings of the maternal mortality surveys in 2002 and 2010 with explanation of differences in methodology, geographic coverage etc and possible impact on findings**

There have been only two published primary surveys of maternal mortality in Afghanistan. A survey carried out in 2002 by the US Centers for Disease Control and Prevention, UNICEF and the Ministry of Public Health[1] estimated a maternal mortality ratio (MMR) of 1,600 deaths per 100,000 live births (Cf. 8 in England and Wales in 2013). This survey was a retrospective cohort study conducted in four districts of Afghanistan selected to represent varying levels of remoteness. The survey covered nearly 14,000 households, using verbal autopsy interviews conducted by trained physicians and midwives. Less than a decade later, the Afghanistan Mortality Survey (AMS), funded by USAID and carried out in 2010 by the Ministry of Public Health and the Central Statistics Organization[3] estimated a much lower MMR of 327 deaths per 100,000 live births. This survey covered 24,000 households and included both verbal autopsy methods at the household level and sibling history.

This briefing aims to explain why donors, policy makers and programmers need to be cautious in using the data presently available.

Both surveys are subject to serious limitations that could have impacted on their maternal mortality findings. The earlier survey included a non-representative sample of only 4 of 360 districts in the country at that time. Similar to the AMS 2010 findings, this survey found a much lower risk of maternal deaths in urban areas compared to rural and very remote areas. The national-level estimate of 1,600 maternal deaths per 100,000 live births was based on extrapolation of the risk of maternal death from 3 districts (excluding one with exceptionally high mortality) to all 360 districts, assuming areas with similar population densities had similar risks of maternal deaths to those districts in which data was collected. This is an important assumption, particularly given the wide variation of risk of maternal death across geographic areas of the country.

As for the AMS 2010, some of the personnel involved in the data collection have reported[4] that they were confident of its accuracy in cities, but not in rural areas on account of the following:

- Some villagers were not present and there was not enough time to await their return. In such cases the surveyors asked a neighbour, but they would not necessarily know of all deaths of family members living elsewhere.
- In insecure areas the trained surveyors were replaced by untrained and largely illiterate local villagers.
- Women did not always know about the deaths of sisters-in-laws who had married out of their village.

Insecure areas are often remote or isolated places with limited access to good-quality healthcare, and this can be expected, with the above factors, to have skewed the results.

**Other estimates of maternal mortality**

A Harvard T.H. Chan School of Public Health computer-based policy modelling approach that has previously been applied in other high maternal mortality settings such as India[5] and Nigeria[6] estimated a model-projected MMR for Afghanistan for 2007–08 of 1,600 (1070–3140) per 100,000 live births[7]. This estimate falls within the range of other estimates from the literature for that time frame, including Hill et al.'s 1,800 (730–3200) for 2005[8], Hogan et al.'s 1575 (594–3396)[9] and WHO's 1400 (740–2600) for 2008[10]. This estimate was based on calibrating a decision analytic model using the key indicators from the earlier (2002) maternal mortality survey.

These and other estimates of maternal mortality have been made from proxy indicators. The Global Burden of Disease Study 2013 estimated Afghanistan's MMR to be 885 per 100,000 live births[11]. WHO has revised its figures to 400 deaths per 100,000 live births in 2013[12]. However, estimates can only be as sound as the primary sources upon which they are based. WHO cites its sources as UNICEF, United Nations Population Fund and the World Bank. Its Multiple Indicator Cluster Surveys (MICS) do not ask about maternal mortality, and its main primary data source appears to be the Afghanistan Mortality Survey 2010.

**Summary of national-level estimates of Afghanistan's Maternal Mortality Ratio**

| | Type of estimate | Reference year(s) | MMR | Range |
|---|---|---|---|---|
| Hogan et al. 2010 | Systematic analysis | 1980 | 1640 | 632-3527 |
| Hogan et al. 2010 | Systematic analysis | 1990 | 1261 | 491-2703 |
| Bartlett et al. 2005 | Primary data collection | 1999-2002 | 1600 | 1600 – 2200 |
| WHO 2005 | | 2000 | 1600 | 1070–3140 |
| Hogan et al. 2010 | Systematic analysis | 2000 | 1957 | 729 – 4356 |
| UN 2005 | Based on Bartlett et al. 2005 [a] | 2002 | 1600 | 1600 - 2200 |
| Hill et al. 2007; WHO 2007 | Systematic Analysis | 2005 | 1800 | 730 – 3200 |
| Carvalho et al. 2013 | Modelled projections | 2007-2008 | 1600 | 1070–3140 |
| Hogan et al. 2010 | Systematic analysis | 2008 | 1575 | 594 – 3396 |
| WHO 2010 | | 2008 | 1400 | 740 – 2600 |
| AMS 2010 | Primary data collection | 2003-2009 | 327 | 260 – 394 |

a. The UN 2005 estimate is based on the UNICEF/CDC study [Bartlett 2005], using a more conservative estimate for the national estimate, excluding the high MMR estimate found in the province of Badakhshan.

b. Maternal mortality estimates correspond to a period covering the 7 years preceding the survey.

**Making sense of the trends in maternal mortality**

If the reduction in MMR seen from the two surveys conducted in Afghanistan were true, Millennium Development Goal 5a, to reduce the maternal mortality ratio by 75% from the 1990 ratio, would have already been achieved five years ahead of 2015. At the time of the last survey two-thirds of deliveries still took place at home[13]. There have been charges that the results of the AMS 2010, after only 8 years, were "too good to be true" (*ibid).* Given what we know about the high number of women living in remote areas with poor access to health care and the risks of unassisted deliveries at home, there are good reasons for questioning whether that may indeed be the case.

Because of problems of establishing certainty of cause of deaths, maternal deaths are notoriously difficult to measure accurately, particularly in areas with limited availability of good quality vital registration systems. The true maternal mortality ratio is not known. Any exaggeration of results could affect funding and resource decisions and would clearly be to the detriment of the women of Afghanistan and their newborns. Unfortunately, there is also little reliable evidence on coverage, utilisation and quality of community health services for basic and emergency obstetric care. Furthermore, data from rural health centres are routinely falsified[4].

When mortality is as high as that of the 2002 estimate, most maternal deaths are preventable by basic, low-cost interventions, but a fall as steep as signified by these two surveys has never occurred in any country, except in industrialised countries related to the discovery of antibiotics. In Sri Lanka and Malaysia, which made massive investments in maternal and reproductive health care and were major successes, such progress took five to six decades. A World Bank monograph[14] asks the question: "Can current program strategies reduce maternal mortality more quickly than the decades required" in Malaysia and Sri Lanka? The second sentence is: "The answer

reached after conducting case studies and primary research on safe motherhood programs in seven counties is, no". Three of the countries did make substantial progress in reducing maternal mortality in a decade. But they did not have to contend with the deep and entrenched poverty, gender inequality, devastated healthcare system, instability and security challenges faced by Afghanistan.

In Afghanistan with a predominantly remote, rural population, substantial, verified reduction in maternal mortality is unlikely until trained birth assistance is available at community level, until women have greatly improved access to prenatal care, and until rural roads and transport have been greatly improved. The Basic Package of Health Services is delivered for c. $4.5 per capita per annum[15]. Total per capita healthcare spending was $49 in 2013 (cf. $3,598 in UK)[16], indicating that the great majority of healthcare funding is spent on hospitals and management. This is not enough to deliver an adequate maternity service, let alone provide the public health education for promotion of reproductive health and safer maternity. There is no referral system that works. The Caesarean section rate is 1% of births[17] - well below the WHO recommended minimum of 5%. So what happens to those girls married off in adolescence, before their pelvises are fully mature?

In addition women in Afghanistan face cultural difficulties to giving birth in a facility. In the AMS 2010, 19% of women reported not delivering in a health facility because it was "not customary", 13% reported not going to a health facility because of a lack of female healthcare providers. Many did not know that delivering with an SBA is important to reduce risk.

There has been real progress made over the last decade, particularly in training SBAs and improving the capacity of health facilities to provide delivery care. According to the AMS 2010, around 7 in 10 facilities were capable of providing delivery care, up almost 3 times the proportion in 2004[3]. There has been an increase in contraception use from close to 10% use of modern methods reported in the 2003 Multiple Indicator Cluster Survey to approximately 20% in AMS 2010 (ibid).

Despite these improvements, the rate of progress in the decline of Afghanistan's MMR from 2002 to 2010 does not appear realistic. Two-thirds of births still occur outside of health facilities[3]. Only one third of births are attended by an SBA (ibid). The Harvard T.H. Chan School of Public Health maternal mortality policy model simulations of how Afghanistan's MMR would change following improvements in healthcare infrastructure and transport projected only a modest decline in MMR (to 1,500 per 100,000 live births) in a modelled scenario with 30% skilled birth attendance, 30% use of family planning methods and half of all women having access to transport from home to a health facility[7]. Further improvements in MMR to below 800 were only possible when 3 out of 4 women delivered in a facility with an SBA, 7 in 10 women had access to transport from home to a facility, the quality of care in health facilities was much higher, and 60% of women used family planning methods (ibid).

The mountainous geography of much of Afghanistan, with a widely dispersed rural population, contributes immensely to maternal mortality. For as many years as it will take to improve village roads and provide motor transport or to provide midwives in clusters of villages, many women will give birth at home. Even if every midwifery post in every health centre was filled, maternal mortality would still only fall to a certain level determined by the above factors. Afghanistan's Ministry of Public Health has made a good start by training midwives recruited from rural areas. However, there is need for additional monitoring of the utilisation of the health services in relation to its quality.

One policy, that all births should take place in the care of a skilled birth attendant, may not fit all countries, regardless of their geography and level of development. The standard is set too high for Afghanistan to achieve for many years to come, and as a result, those women who cannot reach a health centre will receive no help with birth unless they turn to the village traditional birth attendant. And at present traditional birth attendants, who can be life-saving in detecting complications of pregnancy or childbirth and referring women with complications to health facilities, operate completely outside the system and are therefore untrained and unsupported.

**Moving forward**

In order for the effectiveness of measures to reduce mortality to be evaluated, it is necessary to ascertain the baseline maternal mortality ratio as accurately as possible. A further survey of maternal mortality is needed and should be a major priority of both the Ministry of Public Health and donors, taking note of the lessons that can be derived from the problems encountered in implementing the methods of measurement used in surveys to date.

Spurred by the Millennium Development Goals, and now by the Sustainable Development Goals, advances are continuing to be made both in methods of assessing the level of maternal mortality and in its reduction. There is a place for Afghanistan to become a major stakeholder in both processes.

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