

Towards
4+5
Research
Programme
Consortium

Progress towards MDG5

Explaining the reduction in maternal deaths in Bangladesh

Between 1990 and 2003, pregnancy-related deaths in Bangladesh fell from 514 deaths per 100,000 live births to 400. Verbal autopsy estimates, which exclude accidental or injury-related deaths, estimate the maternal mortality ratio (MMR) to be lower at 322 per 100,000 live births¹.

Whilst Bangladesh has made progress towards achieving the MDG5 of reducing maternal mortality, there are still over 11,000 maternal deaths every year, and to achieve the government's target of reducing the MMR by three quarters by 2015, the rate of decline must increase three-fold.

In Matlab, a rural area in Bangladesh, data on maternal mortality has been available since 1976 through the Health and Demographic Surveillance System (HDSS) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The ICDDR,B surveillance site in Matlab is divided into ICDDR,B and Government health service areas, with each covering a population of approximately 110,000.

In 1987 a Safe Motherhood Strategy was launched in the ICDDR,B service area, which aimed to increase the coverage of births attended by a skilled health professional. This involved posting trained midwives in health centres, establishing a clinic providing basic emergency obstetric care (BEmOC) in Matlab town, and providing transport to the clinic or referral to a comprehensive emergency obstetric care (CEmOC) facility when necessary.

The Towards 4+5 Research Programme Consortium is supporting researchers at ICDDR,B to review of over 215,000 pregnancies and 769 maternal deaths in Matlab during 1976 and 2005. This review has made it possible to compare the impact of different health interventions provided in the ICDDR,B and Government service areas, and to identify the factors that have contributed to the decline in maternal mortality.

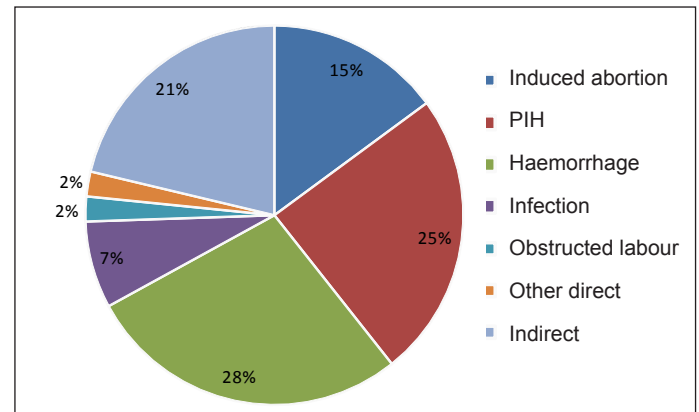


A physician at Matlab Hospital assists a woman in labour.
Photo courtesy of Photoshare, Jean Sack/ICDDR,B.

Causes of maternal death in the Government service area in Matlab

Figure one shows that in the Government service area, almost 80% of maternal deaths are the result of direct obstetric complications. Haemorrhage and pregnancy induced hypertension (PIH) are the two major causes of mortality and together are responsible for more than half of all maternal deaths. The causes of maternal mortality are changing over time. Whilst haemorrhage continues to be the leading cause of death, there has been a substantial reduction in deaths caused by this and by unsafe abortion. Indirect factors such as violence or heart disease are increasingly important causes of mortality.

Figure 1: Causes of maternal death, 1996-2005



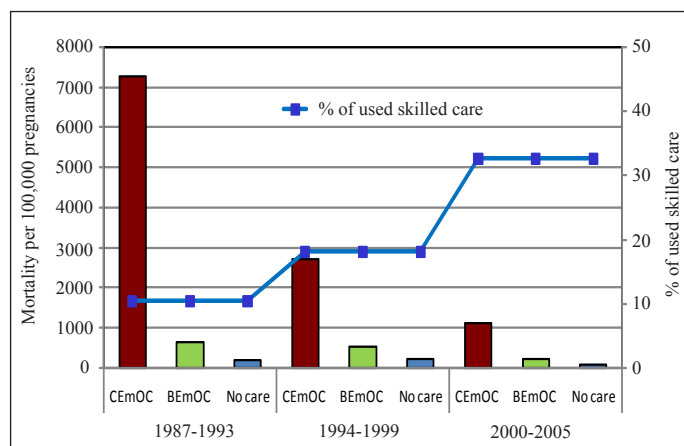
Factors contributing to the reduction in maternal deaths

An analysis of Matlab data published in several peer review journals has generated knowledge of the factors that contribute to reductions in maternal mortality. This will help determine which strategies and interventions are most likely to be effective in preventing further deaths.

Increased use of comprehensive emergency obstetric care

In Bangladesh, cultural practices, compounded by the relatively high cost of seeking care, means that most women give birth at home and rely on Traditional Birth Attendants to assist during delivery. Figure 2 shows that before the implementation of the Safe Motherhood Strategy in the ICDDR,B service area, 10% of women used skilled care, and the delays spent accessing services meant that mortality among those seeking care was high. By 2005 the percentage of women using a facility to give birth increased to nearly 40%. The percentage of births with a caesarean section to save a mother's life also increased from nearly zero in the early 1990s to 5% or more in 2005.

Figure 2: Maternal mortality and use of skilled care at birth, over time in EmOC facilities in the ICDDR,B service area



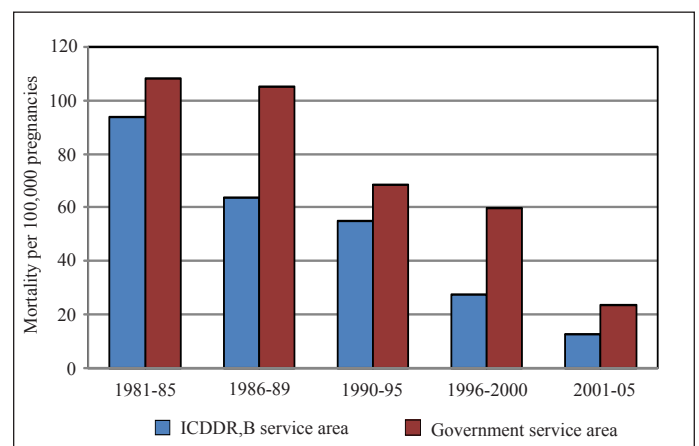
Between 1987 and 2005, as the quality of care improved and more women used services, there were large reductions in maternal mortality by up to 15% per year among users of CEmOC facilities. There were also declines in maternal mortality among BEmOC service users and among women that did not access skilled care, but these were much less pronounced.

Reduction in unsafe abortion practices

Since the late 1970s, the Government of Bangladesh implemented menstrual regulation (MR) services as part of a national family planning programme. MR consists of a manual vacuum aspiration (MVA) of the uterus in women with delayed menstruation. MR services should be available free of charge in government primary healthcare facilities.

Following the introduction of these services, deaths from induced abortion have consistently declined (Figure 3). Between 1981 and 2005 abortion-related mortality fell by 87% and 78% in ICDDR,B and Government service areas respectively.

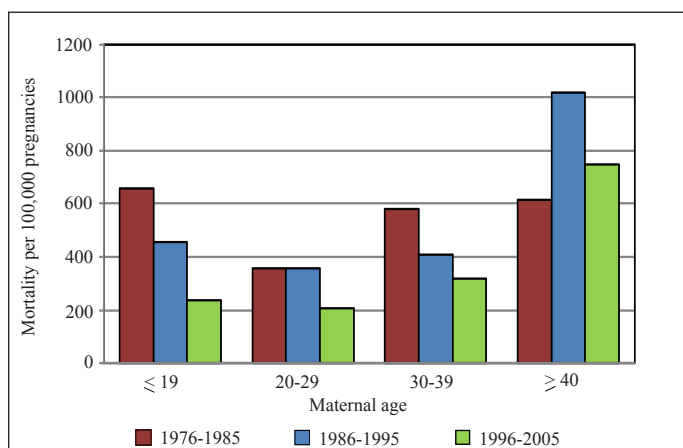
Figure 3: Trends in abortion-related mortality in Matlab during 1981-2005



Improved access to family planning services

In the ICDDR,B service delivery areas, family planning services have been available since the 1970s. Family planning has enabled women and families to better space pregnancies and reduce fertility. In the mid-1970s total fertility was 6.6 per woman, and by 2004 this fell to 3.0. Also during this time pregnancy in women aged less than 20 years halved. With this reduction in fertility, there was a corresponding reduction in maternal deaths as shown in Figure 4.

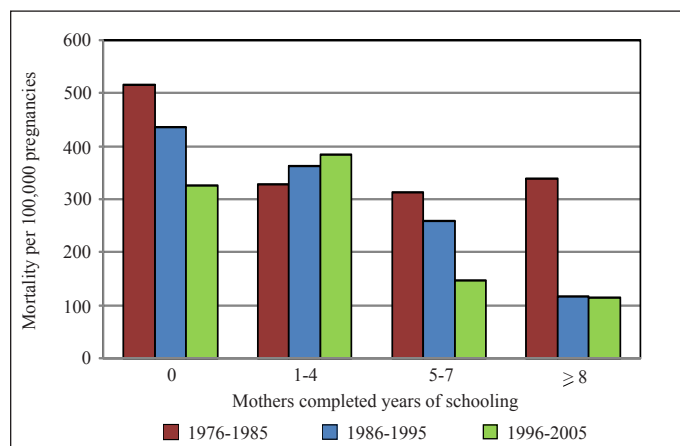
Figure 4: Trend in maternal mortality by maternal age, Matlab 1976-2005



Improved education of women

Education of women is strong predictor of maternal survival: maternal mortality is three times lower among women with 8 or more years of education compared to women without any formal education (Figure 5). Also, women with over 8 years of education are 11 times less likely to die as a consequence of abortion.

Figure 5: Trend in maternal mortality by maternal education, Matlab 1976-2005



Between 1976 and 2005 women's education and female literacy increased significantly. This is partly a result of government efforts to improve gender equity in schooling, and since the 1990s the initiation of secondary education projects for girls.

Actions needed to further reduce maternal mortality

The reduction in maternal mortality in Bangladesh has required strong Government commitment through national policies and programme implementation. In particular, there have been fewer deaths due to successful family planning programmes, safe MR services, CEmOC facilities and the expansion of female education.

However, strategies still have to fulfil their potential – less than one fifth of health facilities at the sub-district level are adequately staffed to provide emergency care and many experience problems retaining skilled birth attendants, especially in rural areas. There have only been small increases in the use of skilled birth care, partly because barriers to the uptake of care and perceptions of need have not been sufficiently addressed. The following section sets out actions that are required to overcome these barriers and increase progress in achieving the MDG5.

Reduce inequalities in the utilisation of maternal health services

Uptake of maternal health services in public sector facilities and amongst poor women has been much slower than in private facilities which are mainly used by relatively wealthy women. CEmOC is currently largely provided by

the private sector. In Bangladesh the rich: poor disparity for use of skilled care continues to be high. To reduce these inequities and encourage poor women to access care, the Government has introduced a maternal health voucher scheme which entitles pregnant women to antenatal, delivery and postnatal care services, and to treatment for pregnancy and delivery related complications. This scheme, which is currently being trialled in 33 sub-districts, needs to be evaluated before further expansion in other areas of the country. Strong supervision, monitoring and timely evaluations must also be in place to ensure that implementation is effective.

Increase the number of BEmOC services and health workers in public facilities

According to UN guidelines, for every 500,000 population, 5 EmOC facilities (1 Comprehensive and 4 basic EmOC) should be available. Whilst there are sufficient public sector comprehensive facilities in Bangladesh, there are not enough BEmOC facilities. To address this shortfall, the government has upgraded 1500 Family Welfare Centres to provide BEmOC. However, in many centres there are too few health workers to deliver services. Similarly, 24 hour CEmOC is not available in most facilities due to a lack of

health workers: in sub-district facilities about one third of obstetrician and anaesthetist job positions are vacant and there are severe shortages of nurses and other support staff.

To further reduce maternal deaths, there is an urgent need to enhance the capacity of BEmOC services, to improve the quality of care in existing CEmOC facilities, and to train and deploy additional health workers who can provide 24-hour care. Government needs to revise the current human resource strategy and devote more attention and resources towards increasing health worker numbers and capacity in the country.

Meet supplies and training needs

Studies also highlight shortages of essential drugs in public facilities including oxytocics and magnesium sulphate for prevention of post-partum haemorrhage and management of eclampsia - the two major causes of maternal mortality^{2,3}.

As well as ensuring and maintaining regular supplies of drugs to facilities, it is essential that health workers receive adequate training in dispensing drugs and are able to manage logistical issues such as their procurement and storage.

Increase demand for skilled care

The demand for skilled care at childbirth remains low, partly because many women and their families do not perceive complications to be serious enough to require facility care. Community Support Groups are one mechanism for increasing demand. Their objective is to sensitise pregnant women and their families about the need to use skilled care; to provide financial support for poor women and to arrange transport to a facility. Given the relatively high use of antenatal care in Bangladesh, this may also be an appropriate channel for communicating messages to convince women and decision-makers in their family about the importance of skilled care at birth.

Credits

This briefing paper was written by Dr. Mahbub Elahi Chowdhury, Ms. Rebecca Wolfe, Mr. Anisuddin Ahmed, Dr. Nafis Al Haque, and Dr. M A Quaiyum. It is based on the following publications.

- Chowdhury ME, Botlero R, Koblinsky M, Saha SK, Dieltiens G and Ronsmans C. Determinants of reduction in maternal mortality in Matlab, Bangladesh: a 30-year cohort study. *Lancet*. 2007; 370: 1320–28.
- Koblinsky M, Anwar I, Mridha MK, Chowdhury ME, and Botlero R. Reducing Maternal Mortality and Improving Maternal Health: Bangladesh and MDG 5. *Journal of Health Population and Nutrition*. 2008 Sep;26(3):280-294
- Chowdhury ME, Ahmed A, Kalim N, and Koblinsky M. Causes of Maternal Mortality Decline in Matlab, Bangladesh. *Journal of Health Population and Nutrition*. 2009 April;27(2):108-123

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1 Bangladesh Maternal Mortality Survey, 2001

2 Khan MSH, M H Faruquee MH, Nasrin T. 2008. Service availability mapping in four districts to assess adequacy of maternal and neonatal health (MNH) infrastructure and staffing including training needs. Associates for Community and Population Research (ACPR).

3 Mridha MK, Koblinsky MA, Ashraf A, Moran AC, et. al. 2009. Maternal, neonatal, child health and family planning care configurations in Bangladesh: availability and use. International centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B).

Towards4+5



About Towards 4+5

Towards 4+5 is a five year Research Programme Consortium on maternal and newborn health, funded by the Department for International Development (DFID), UK. The goal is to support evidence based policy and practice for maternal and newborn health to facilitate the achievement of the Millennium Development Goals 4 and 5.

Research is concentrated in five developing countries. These are Bangladesh, Burkina Faso, Ghana, Malawi and Nepal. It focuses on ways to improve mother and infant care at both the facility and community levels.

Partners

- Institute of Child health, London
- London School of Hygiene and Tropical Medicine
- International Centre for Diarrhoeal Disease Research (ICDDR,B), Bangladesh
- Perinatal Care Project (PCP), Diabetic Association of Bangladesh (BADAS) (formerly DAB)
- GREFSaD, Burkina Faso (formerly Centre Muraz)
- Kintampo Health Research Centre (KHRC), Ministry of Health/Ghana Health Services
- Maimwana project, Lilongwe Central Hospital, Malawi
- Mother and Infant Research Activities (MIRA), Nepal

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