

Increased Use of Facilities Helped Reduce Maternal Mortality in Bangladesh

A variety of factors—some related to health care provision and some not—have contributed to the recent dramatic decline in maternal mortality in Bangladesh, a wide-ranging analysis suggests.¹ Data from the Bangladesh Maternal Mortality Surveys indicate that between 2001 and 2010, the country's maternal mortality ratio fell from 322 to 194 maternal deaths per 100,000 live births, equivalent to an annual rate of decline of 5.6%. One likely reason for the decline was increased access to and use of health facilities (for example, the proportion of births that occurred in facilities tripled), though other factors, such as reductions in births to high-risk groups, probably also played a role. Overall, the authors estimate that half of the maternal deaths that otherwise would have occurred in 2010 were averted because of decreases in the risk of maternal mortality and other trends.

At present, Bangladesh is one of only nine countries on track to achieve Millennium Development Goal 5, which encouraged countries to try to reduce their maternal mortality ratio by 75% of its 1990 level by 2015. To explore the reasons for Bangladesh's success, Arifeen and colleagues used data from several sources, notably the 2001 and 2010 Bangladesh Maternal Mortality Surveys, which collected data from nationally representative

samples of about 100,000 and 174,000 households, respectively. Respondents provided information about their social and demographic characteristics, birth histories, health seeking behaviors and related topics. In addition, interviewers conducted verbal autopsies with relatives of all women aged 13–49 who had died in the three years before each survey; at least two independent physicians reviewed each case to assign a cause of death. To interpret trends in the mortality findings, the analysts drew on other data sources, including the Bangladesh Demographic and Health Surveys conducted between 1993 and 2011 and various government policy documents and technical reports.

The researchers calculated maternal mortality ratios (maternal deaths per 100,000 live births) and rates for the three years preceding each Maternal Mortality Survey. In addition, they conducted Poisson regressions to identify variables associated with changes in the risk of maternal death between 2001 and 2010, and used a nonlinear decomposition method and other calculations to analyze these changes.

The survey data indicated that between 2001 and 2010, the maternal mortality ratio for the previous three years declined from 322 maternal deaths per 100,000 live births to 194 per 100,000. This decrease is equivalent to an annual decline of 5.6%, slightly higher than the 5.5% annual rate required for countries to meet Millennium Development Goal 5. The rate of decline was similar in urban and rural areas.

Examination of government documents revealed that the decline in maternal mortality coincided with government initiatives to shift provision of health services from home-based care to community clinics, and with major investments in health care that resulted in the upgrading of facilities that provide emergency obstetric care, the training of skilled birth attendants and the strengthening of health education efforts. Moreover, the number of facilities offering routine and emergency delivery services rose substantially between 2001 and 2008, particularly in the private sector. For example, the number of private facilities providing comprehensive emergency obstetric care increased from 562 to 1,463. As a result, between 2001 and 2010, the proportion of women who lived within a hour of a public or private facility that provided delivery services increased from 74% to 91%, and the proportion who lived with two hours of such a facil-

ity increased from 93% to 99%.

Although home births remained the norm in Bangladesh, the proportion of births that occurred at a facility tripled between 2001 and 2011, from 9% to 29%. (The proportions at which a trained medical provider was present were slightly higher—12% and 32%, respectively—because such providers were also present at some home births.) While use of health facilities for deliveries increased among women in all socioeconomic strata, disparities remained. Among women in the wealthiest quintile, the proportion of deliveries that occurred in a facility doubled between 2001 and 2011, from 30% to 60%; among the poorest women, the proportion was substantially lower, even though it quadrupled from 2.5% to 10%. Similar disparities—and similar increases in facility usage—occurred by women’s education level.

While the use of facilities may have contributed to the decline in maternal mortality, contextual factors also likely played a role, according to the authors. For example, between 2001 and 2010, women’s educational attainment and economic status improved, residence in urban areas increased and the proportion of births that occurred to women in high-risk groups (e.g., teenagers and high-parity women) fell. To determine which of these factors may have contributed to the decline in maternal mortality, the researchers conducted a series of multivariate analyses. In the final model, the risk of maternal death was positively associated with having a fourth or higher-order pregnancy and with being 35 or older, and negatively associated with having a first pregnancy. In addition, there was a marginally significant negative association with the proportion of deliveries in a commu-

nity that were attended by a trained provider. However, analyses indicated that available measures explained only a third of the decrease in the risk, indicating that unmeasured or imprecisely measured factors explained a substantial proportion of the change.

Finally, the authors calculated that if fertility and maternal mortality rates by age and parity had remained constant between 2001 and 2010, then the number of maternal deaths in 2010 would have been 14,310 instead of 6,848. Thus, 52% of potential maternal deaths were averted—21% because of the decline in the country’s fertility rate, 7% because of changes in the characteristics of women who gave birth (e.g., fewer births occurred to high-risk women) and 24% because of reduction of risk within age and parity categories. The aversion of the latter deaths, the researchers believe, can be attributed to the improvements in access to and use of maternal health care.

Limitations of the study, according to the authors, include the lack of data on potentially relevant variables, such as women’s nutritional status and the prevalence of maternal complications. Nonetheless, they write, the findings suggest that “the decrease [in maternal mortality in Bangladesh] was the result of factors both within and outside the health sector,” and provide “a strong rationale” for improving access to “health-care facilities providing care for maternal complications and safe delivery services,” as well as for pursuit of “a broader developmental agenda” that should improve women’s status.—*P. Doskoch*

REFERENCE

1. Arifeen SE, Maternal mortality in Bangladesh: a Countdown to 2015 country case study, *Lancet*, 2014, 384(9951):1366–1374.