

# Pregnancy Termination in Matlab, Bangladesh: Trends And Correlates of Use of Safer and Less-Safe Methods

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**CONTEXT:** Menstrual regulation (MR), a relatively safe form of pregnancy termination, is legal in Bangladesh during the early stages of pregnancy. However, little is known about the factors associated with whether women who terminate pregnancies choose this method or a less-safe one.

**METHODS:** Data from the Matlab Demographic Surveillance System on 122,691 pregnancies—5,221 (4.3%) of which were terminated—were used to examine trends between 1989 and 2008 in termination and in use of safer methods (MR or dilation and curettage) and less-safe (all other) methods of pregnancy termination. Logistic and multinomial logistic regressions were used to assess factors associated with whether women terminate pregnancies and whether they use safer methods.

**RESULTS:** Sixty-seven percent of pregnancy terminations were by safer methods and 33% by less-safe means. The proportion of pregnancies that were terminated increased between 1989 and 2008; this increase was entirely due to increased use of safer methods. Women younger than 18 and those 25 or older were more likely than women aged 20–24 to terminate their pregnancies (odds ratios ranged from 1.5 among women aged 16–17 or 25–29 to 26.1 among those aged 45 or older). Among women who terminated their pregnancies, those aged 25–44 were more likely than those aged 20–24 to use a safer method. Compared with women who had no formal education, those with some education were more likely to terminate their pregnancies and to do so using safer methods.

**CONCLUSION:** A growing proportion of pregnancies in Matlab are terminated, and these terminations are increasingly done using safer methods.

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As the preceding article in this issue shows, in Matlab, Bangladesh, the risk of maternal mortality is lower among women who terminate pregnancies by menstrual regulation (MR) or dilation and curettage (D&C) than it is among those who do so by other methods (which we refer to as abortions).<sup>1</sup> Furthermore, studies have found that unsafe abortions are associated with short- and long-term morbidity, including infertility;<sup>2</sup> globally, such abortions are estimated to lead to five million disabilities per year, some of which are permanent.<sup>3,4</sup> In contrast, pregnancy terminations performed by trained personnel in hygienic conditions can be safer than childbirth.<sup>3</sup>

Bangladeshi women may choose to terminate their pregnancies through clandestine abortions instead of MR, in spite of the former's greater health risks, for several reasons. Because of stigma and confidentiality concerns, some women may not seek MRs from trained providers or at official facilities (where cases are registered),<sup>5</sup> even though confidentiality is mandatory at such facilities. A national survey conducted in 2010 documented significant health system-related barriers to women's receiving MR services: More than one in four women who requested MR were

turned away by facility staff; more than three in 10 facilities reported rejecting some potential clients because the women were too young, were unmarried or did not have their husband's consent, or for other social or cultural reasons; and one in three facilities that could potentially provide MR lacked necessary equipment, trained staff or both.<sup>6</sup> Also, women's knowledge about MR services was limited.

Although studies have examined influences on pregnancy termination in Bangladesh and elsewhere,<sup>7–12</sup> little is known about characteristics associated with choice of termination method. In this study, we used high-quality data from Matlab, Bangladesh, to look at correlates of whether women used a relatively safe or less-safe method. We included data both from the area of Matlab covered by the Maternal and Child Health–Family Planning (MCH-FP) project, which provides intensive, high-quality reproductive health care and maternal and child health services, and from the comparison area, which receives standard government health and family planning services.

## METHODS

### Data and Sample

Like the preceding article,<sup>\*1</sup> this analysis used data from the Matlab Demographic Surveillance System (DSS) on pregnancy outcome in 1989–2008. It excludes 2001, as

\*We refer readers to that article for further information about pregnancy termination in Bangladesh, about the setting for this research and about the data used.

the DSS, for unknown reasons, did not distinguish among methods of pregnancy termination in that year. As in our companion study, we combined the relatively few cases of D&C with the cases of MR; we refer to these methods as safer methods, since the risk of maternal mortality is relatively low among women who use them. All other methods are considered less safe; most of the terminations in this category, which we call abortions, were performed by untrained providers. The sample in this study differs somewhat from that in the companion study, as that study excluded multifetal pregnancies (because women with such pregnancies may have different mortality risks than do women with singleton pregnancies) and, in some analyses, pregnancies ending in stillbirths or miscarriages; all of these pregnancies are included here.

In total, we consider 122,691 pregnancies that occurred between 1989 and 2008. Of these pregnancies, 5,221 (4.3%) were terminated. Sixty-seven percent of these pregnancy terminations were by safer methods (3,389 by MR and 106 by D&C), while 33% (1,726) were by other, most likely less-safe, means.\*

### Variables

We included several variables in our multivariate analyses. Appendix Table 1 (page 126) shows the means for these variables for the full sample of pregnancies and for those that were terminated.†

• **Age.** We classified women's age at the time of the pregnancy outcome as 15 or younger, 16–17, 18–19, 20–24, 25–29, 30–34, 35–39, 40–44, or 45 or older. We expected that the probability of pregnancy termination would be highest for the youngest and oldest women, as they are the least likely to want to have a child and hence should be the most likely to terminate any pregnancies they have. Because older women may be more knowledgeable than younger women about methods of pregnancy termination and have had more time to observe the experiences of friends who terminated a pregnancy (or to terminate one themselves), we expected that the likelihood that a pregnancy termination was by safer rather than less-safe

\*The other methods of pregnancy terminations were recorded in layman's terms in the Demographic Surveillance Survey and included internal manipulation of the female genitalia (821 cases), drug application (595 cases), manipulation of the abdomen (80 cases), injections (74 cases) and drug ingestion (47 cases). Method was not reported for 109 cases; we considered these pregnancy terminations to be less safe as well.

†In an earlier study, we identified a number of other variables that were associated with pregnancy termination in Matlab between 1979 and 2008.<sup>12</sup> We initially included the same variables in the current analysis, but many of them did not explain the choice of termination method and were not included in the analyses reported here. These variables are number of living children at the time of the index pregnancy, sex composition of living children, duration of the preceding interpregnancy interval, whether the previous pregnancy resulted in multiple births, death of the last-born child, sex of the last-born child if it died, husband's education, household space and religion.

‡The variable for 1999–2003 encompasses only four years, since the sample excludes data on terminations done in 2001.

§One reason is that parents have increasingly realized the importance of educating their children, which entails expenses they would not have incurred in the past.

methods would increase with a woman's age.

• **Education.** We also expected, for a variety of reasons, that the likelihood of pregnancy termination would be positively related to a woman's level of education, and that educated women would be more likely than other women to use safer methods of pregnancy termination. Although use of contraceptives is positively related to women's education level in Bangladesh,<sup>13</sup> women with more years of schooling are less likely than those with fewer years of education to use permanent methods of contraception and are more likely than such women to use nonpermanent methods, with high failure rates, such as condoms, pills or traditional methods;<sup>13</sup> educated women thus may be more likely than other women to have an unintended pregnancy. In addition, the opportunity costs of an unplanned birth may be greater for educated women than for other women. Moreover, compared with other women, educated women may have better access to information and services concerning pregnancy termination (e.g., they may be more likely to know about safer methods and about the risks associated with less-safe methods) and have greater decision-making power. Finally, educated women are likely to live in households with higher incomes and hence should be better able to afford MR and D&C, which tend to be more expensive than other termination methods.

We categorized women's years of education as none, 1–5, 6–10 or 11–16. In addition, we included a dichotomous indicator of whether their level of education was unknown. Two-fifths of the pregnancies in our sample were to women who had no education, and more than a quarter were to women who had 1–5 years of schooling (Appendix Table 1).

• **Calendar year.** We included dichotomous indicators for four five-year time periods: 1989–1993, 1994–1998, 1999–2003 and 2004–2008.‡ We expected that the likelihood of pregnancy termination has increased as the cost of raising children has risen in Bangladesh,<sup>8</sup> though the decrease that has occurred in the incidence of unintended pregnancy<sup>14,15</sup> could have offset this. The increasing availability of MR has reduced some of the costs of pregnancy termination (particularly the psychic costs of concerns about illegality and health consequences) and may have led to increased use of this method. Similarly, increases in income during the study period should have made MR and D&C more affordable.

• **Study area.** Rates of contraceptive use, and the proportion of users who rely on effective methods, have been higher in the MCH-FP area than in the comparison area.<sup>16</sup> An earlier study found that pregnancies in the MCH-FP area were more likely than those in the comparison area to be intended and, as a result, less likely to be terminated.<sup>14</sup> In recent years, however, contraceptive use has increased more rapidly in the comparison area than in the MCH-FP area;<sup>16</sup> hence, the gap in the incidence of pregnancy termination may have shrunk. As described below, we tested for interactions between calendar year and study area to explore this possibility.

## Analyses

•*Descriptive.* We performed a descriptive analysis that shows trends in the proportion of pregnancies that were terminated each year and decomposes the terminations into their safer and less-safe components.\* We examined these trends separately for the MCH-FP and comparison areas and used t tests to assess whether differences between areas are statistically significant.

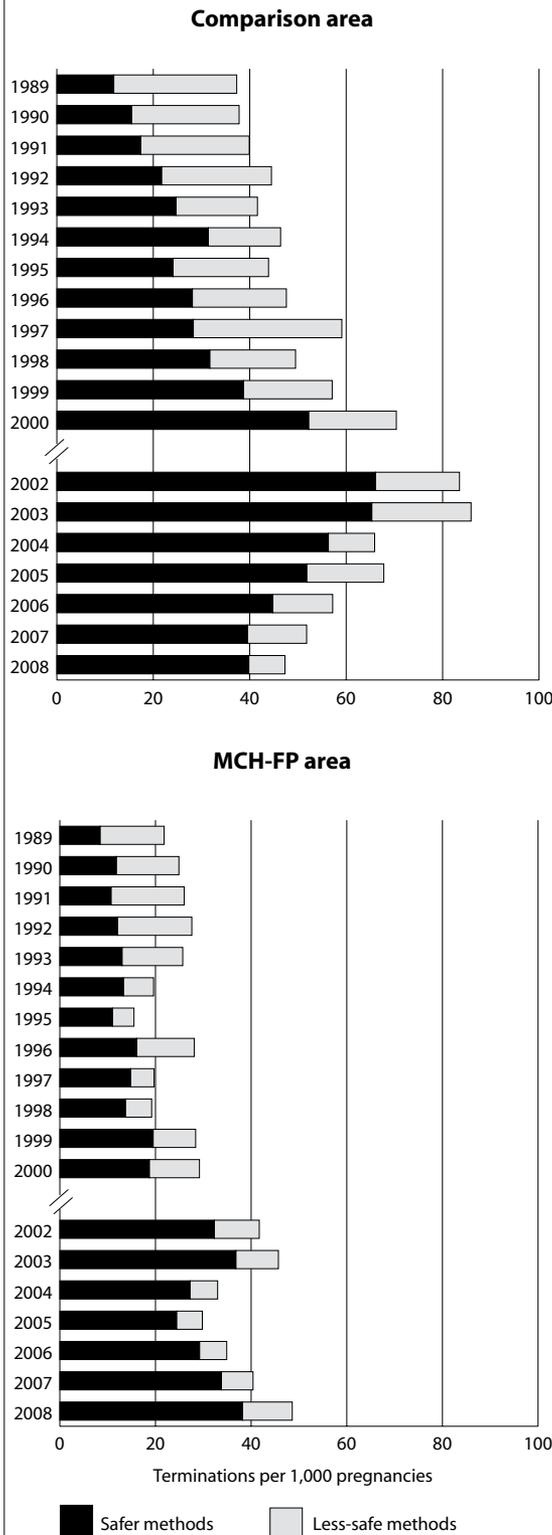
•*Multivariate.* We first estimated a logistic regression explaining whether pregnancies were terminated by any method (model 1). We also estimated a multinomial logistic regression model to assess the odds that a pregnancy was terminated by a safer method instead of not being terminated, or the odds that a pregnancy was terminated by a less-safe method instead of not being terminated (model 2). The reference category included miscarriages and stillbirths as well as live births. We included miscarriages and stillbirths in our sample because those outcomes typically occur after decisions about whether to terminate a pregnancy are made. (The median and average durations of pregnancies that end in each type of termination are shorter than those for miscarriages and, of course, for live births and stillbirths.<sup>12</sup>) Our use of a multinomial model was based on the assumption that women decide among the three options (terminating the pregnancy by a safer method, terminating by a less-safe method or not terminating) and that the availability of safer methods affects the probability that a pregnancy is terminated, which we think is possible.

Another possibility is that women first decide to terminate a pregnancy (regardless of which methods of termination are available) and then decide what method to use. To our knowledge, no studies have examined which model of decision making is more appropriate. If the second possibility is a more accurate reflection of women's decision making, one would first estimate a model explaining which women terminate (our model 1) and then a model restricted to terminated pregnancies that explains which method was chosen. Because we do not know which decision-making model is more appropriate, we estimated a logistic regression for the sample of terminations that examined whether the termination was by a safer or less-safe method (model 3). This model also allowed us to test whether any associations with explanatory variables differed between the two categories of pregnancy terminations that we considered.

All of our multivariate analyses used the *vce* option in STATA to adjust standard errors for the fact that some women had more than one pregnancy. The 122,691 pregnancies that were included in the analysis occurred to 57,331 women.

To explore whether the gap in the incidence of pregnancy termination between the MCH-FP and comparison areas has shrunk, we included interactions between area

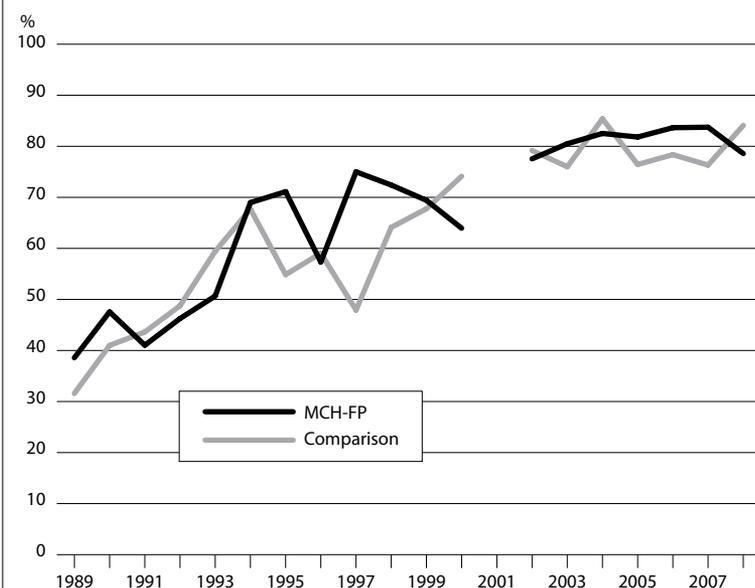
**FIGURE 1. Proportion of pregnancies that were terminated, by method of termination and area, according to year, Matlab, Bangladesh, 1989–2008†**



†Data not available for 2001. Note: MCH-FP=Maternal and Child Health-Family Planning.

and calendar year in our regression analyses. We did this in two ways. First, we examined interactions between the dichotomous indicators for the five-year periods and the

\*Our companion study compared two time periods (1989–1999 and 2000–2008), but did not look at changes in annual rates, as we do here.

**FIGURE 2. Percentage of pregnancy terminations performed using safer methods, by area, according to year, 1989–2008†**

†Data not available for 2001. Note: MCH-FP=Maternal and Child Health–Family Planning.

dichotomous indicators for each area of Matlab. This enables us to see the trend over time in each area. Second, we performed an alternative regression that included the dichotomous variables for the calendar-year periods and terms for the interactions between each year category and the indicator for the MCH-FP area. In this specification, the coefficient of the interaction shows how the probability of pregnancy termination in the MCH-FP area differed from that in the comparison area in the relevant time period; the statistical significance of differences was assessed using *t* tests.

## RESULTS

### Descriptive Analyses

The proportion of pregnancies that were terminated was greater in the comparison area than in the MCH-FP area in all years except 2008 (Figure 1, page 121). The differences were generally substantial: Between 1989 and 2006, the proportion was 50% to 220% larger in the comparison area than in the MCH-FP area. However, the proportion of pregnancies terminated has risen since 2005 in the MCH-FP area, whereas it has fallen since 2003 in the comparison area. In 2008, the proportion of pregnancies that were terminated in the MCH-FP area exceeded that in the comparison area, though the difference was not statistically significant.

The higher proportions of pregnancies that were terminated in the comparison area relative to the MCH-FP area during most of the study period were generally matched by higher probabilities of each type of pregnancy termination. The probability of pregnancy termination by safer methods was significantly higher ( $p < .05$ ) in the comparison area than in the MCH-FP area in all years except 1989,

1990, 2007 and 2008, and the probability of termination by less-safe methods was significantly higher in the comparison area in all years except 1993, 2004 and 2008.

Between 1989 and 2008, there was a shift in both areas of Matlab toward the use of safer methods of pregnancy termination. The proportion of pregnancies terminated by safer methods increased in the MCH-FP area from eight per 1,000 pregnancies to 38 per 1,000, and in the comparison area from 12 per 1,000 to 40 per 1,000 (after reaching a high of 66 per 1,000 in 2002). The proportion of pregnancies terminated by less-safe methods fell in the MCH-FP area from a high of 16 per 1,000 in 1991 to five per 1,000 in 2005, though it increased to 10 per 1,000 in 2008. In the comparison area, the proportion of pregnancies terminated by less-safe methods fell from 26 per 1,000 in 1989 to eight per 1,000 in 2008, though it briefly rose to 31 per 1,000 in 1997.

The proportion of pregnancy terminations done using safer methods increased between 1989 and 2008 from 39% to 79% in the MCH-FP area, and from 32% to 84% in the comparison area (Figure 2). Since 1993, most pregnancy terminations in Matlab have been done by safer methods. The proportion of terminations performed using safer methods did not systematically differ between the MCH-FP area and the comparison area; the difference between areas was statistically significant only in 1997, when the proportion was greater in the MCH-FP area.

### Multivariate Analyses

The first of our three logistic regression models examined the likelihood that pregnant women chose to terminate their pregnancies. The second was a multinomial regression analysis examining the likelihood that a pregnant woman had a safer pregnancy termination rather than no termination (the latter generally meant that the pregnancy was carried to term) or had a less-safe pregnancy termination rather than no termination. In the third model, we considered only terminated pregnancies and estimated a logistic regression explaining whether these pregnancies were terminated using safer rather than less-safe methods, enabling us to test whether any differences seen in model 2 between use of safer and use of less-safe methods of termination were statistically significant.

The relationship between women's age and the likelihood of any type of termination was J-shaped, as women in the youngest and oldest age-groups were more likely than those aged 20–24 to terminate their pregnancies (Table 1). For example, the likelihood of termination was significantly higher among women aged 15 or younger (odds ratio, 3.2) or 16–17 (1.5) than among those aged 20–24 (model 1); this pattern was evident for both safer and less-safe methods of pregnancy termination (model 2). The likelihood that a pregnancy was terminated was lowest for women aged 18–24 and then increased with age, both overall and for each method (model 1); the odds of any type of termination were particularly high for the oldest women—those aged 35–39 (6.7), 40–44 (14.1) or 45 or

older (26.1). Compared with women aged 20–24, younger women were as likely to use safer methods of termination as to use other methods (model 3); however, when older women terminated their pregnancies, they were more likely than women aged 20–24 to use safer methods than to use less-safe methods (1.5 for women aged 25–29, 35–39 and 40–44, and 1.6 for women aged 30–34).

The likelihood that pregnancies were terminated was greater for women with some education than for those with none (odds ratios ranged from 1.2 for women with 1–5 years of education to 1.4 for those with 6–10 years). This was entirely due to their elevated likelihood of having a safer termination, as the likelihood of termination by less-safe methods of pregnancy termination did not differ from the likelihood of not terminating (model 2). Model 3 shows that among women who terminated their pregnancies, the likelihood that they did so using a safer method rather than a less-safe one was positively related to level of education.

In the comparison area, the likelihood of pregnancy termination was lowest in the earliest period (1989–1993); it increased during the next two periods (odds ratios, 1.3 and 1.8, respectively) and then decreased (though it remained elevated relative to 1989–1993) in the last one (1.4). The increase during the two middle periods was entirely due to an increase over time in the use of safer

methods of pregnancy termination: The odds that a woman in the comparison area had a safer termination rather than no termination in 1999–2003 were about three times those in 1989–1993. The likelihood that a woman had a less-safe termination rather than no termination decreased monotonically over time in the comparison area. The pattern of results was generally similar for the MCH-FP area: The likelihood that a woman had had a safer termination rather than no termination increased monotonically over time, and the likelihood of termination by a less-safe method relative to no termination was highest in the earliest period and lower in subsequent periods.

Among women who terminated their pregnancy, the odds that a safer rather than a less-safe method was used increased monotonically over time in both areas (model 3). In the comparison area, the likelihood that a safer rather than less-safe method was used was substantially higher in 2004–2008 than in 1989–2003 (odds ratio, 4.5). The comparable ratio was even larger in the MCH-FP area.

Our alternative specification enabled us to examine more directly the differences between areas in each time period (Table 2, page 124). In each time period, women who lived in the MCH-FP area had a substantially lower likelihood of terminating a pregnancy relative to those who lived in the comparison area. This was true for pregnancy terminations overall and for both safer and less-safe

**TABLE 1. Odds ratios from logistic and multinomial logistic regression analyses examining relationship of selected measures and interactions with pregnancy termination and pregnancy termination method**

Measure	Model 1‡	Model 2§		Model 3‡
	Whether pregnancy terminated	Whether pregnancy terminated by safer method (relative to not terminated)	Whether pregnancy terminated by less-safe method (relative to not terminated)	Whether termination was by safer method (relative to less-safe method)
<b>Maternal age</b>				
≤15	3.20***	3.51***	2.72**	1.34
16–17	1.51***	1.51**	1.52*	0.98
18–19	1.07	1.12	0.99	1.17
20–24 (ref)	1.00	1.00	1.00	1.00
25–29	1.51***	1.69***	1.23*	1.45**
30–34	3.10***	3.58***	2.39**	1.61***
35–39	6.67***	7.71***	5.16**	1.51***
40–44	14.05***	16.41***	10.71**	1.50**
≥45	26.11***	30.54***	20.02**	1.42†
<b>Maternal education</b>				
None (ref)	1.00	1.00	1.00	1.00
1–5 yrs.	1.24***	1.35***	1.07	1.45***
6–10 yrs.	1.37***	1.53***	1.11	1.80***
11–16 yrs.	1.27*	1.43*	0.93	2.17**
Unknown	1.28**	1.34**	1.19	1.14
<b>Time period x area</b>				
1989–1993 x comparison area (ref)	1.00	1.00	1.00	1.00
1994–1998 x comparison area	1.25***	1.63***	0.96	1.68***
1999–2003 x comparison area††	1.79***	2.96***	0.85†	3.56***
2004–2008 x comparison area	1.35***	2.35***	0.52**	4.54***
1989–1993 x MCH-FP area	0.66***	0.67***	0.66***	0.97
1994–1998 x MCH-FP area	0.51***	0.77	0.30**	2.51***
1999–2003 x MCH-FP area††	0.84**	1.37***	0.41**	3.24***
2004–2008 x MCH-FP area	0.84**	1.48***	0.30**	4.84***
<i>Log likelihood</i>	–19,576.9		–22,648.3	–3,056.5

\*p<.05. \*\*p<.01. \*\*\*p<.001. †p<.10. ‡Logistic regression. §Multinomial logistic regression. ††Data not available for 2001. Notes: Models 1 and 2 include all eligible pregnancies; model 3 is restricted to pregnancies that were terminated. ref=reference category. MCH-FP=Maternal and Child Health–Family Planning.

**TABLE 2. Odds ratios from logistic and multinomial logistic regression analyses examining relationship of time period and interaction between time period and area with pregnancy termination and pregnancy termination method**

Measure	Model 1‡	Model 2§		Model 3‡
	Whether pregnancy terminated	Whether pregnancy terminated by safer method (relative to not terminated)	Whether pregnancy terminated by less-safe method (relative to not terminated)	Whether termination was by safer method (relative to less-safe method)
<b>Time period</b>				
1989–1993 (ref)	1.00	1.00	1.00	1.00
1994–1998	1.25***	1.63***	0.96	1.68***
1999–2003††	1.79***	2.96***	0.85†	3.56***
2004–2008	1.35***	2.35***	0.52*	4.54***
<b>Time period x MCH-FP area</b>				
1989–1993 x MCH-FP area	0.66***	0.67***	0.66***	0.97
1994–1998 x MCH-FP area	0.41***	0.48***	0.32***	1.49**
1999–2003 x MCH-FP area††	0.47***	0.46***	0.48***	0.91
2004–2008 x MCH-FP area	0.62***	0.63***	0.57***	1.07

\*p<.05. \*\*p<.01. \*\*\*p<.001. †p<.10. ‡Logistic regression. §Multinomial logistic regression. ††Data not available for 2001. Notes: Odds ratios for maternal age and education are same as in Table 1. Models 1 and 2 include all eligible pregnancies; model 3 is restricted to pregnancies that were terminated. ref=reference category. MCH-FP=Maternal and Child Health–Family Planning.

methods. In 1994–1998, women in the MCH-FP area were more likely to terminate with a safer method rather than with a less-safe method relative to those in the comparison area (1.5); however, no such differences between the two areas were evident in the other time periods.

## DISCUSSION

In both areas of Matlab, the proportion of pregnancies that were terminated was higher in 2008 than in 1989. However, in the most recent years we consider, the patterns differed between the two areas: The proportion of pregnancies terminated declined between 2003 and 2008 in the comparison area, whereas it increased between 2005 and 2008 in the MCH-FP area. These differences may reflect the relatively greater improvements in contraceptive practice that have occurred in the comparison area in recent years. The recent decrease in pregnancy terminations in the comparison area is consistent with the national decline in unintended pregnancy since 1999–2000.<sup>15</sup>

Mirroring prior studies,<sup>10,14,17</sup> we found that in most years pregnancies were less likely to be terminated in the MCH-FP area (which has better family planning and health services) than in the comparison area. However, this was not true in 2008, when termination rates in the two areas were not significantly different. This may reflect the narrowing of the gap in contraceptive use between the two areas of Matlab.

The incidence of both safer and less-safe methods of termination was lower in the MCH-FP area than in the comparison area in every year except 2008 (when there was no significant difference between areas in the incidence of less-safe methods). The proportion of pregnancy terminations done by safer methods increased in both areas between 1989 and 2008; the proportion was not system-

atically greater in one area than in the other. Since 1993, most pregnancy terminations in Matlab have been done using safer methods. Our estimates that in 2008 79% of pregnancy terminations in the MCH-FP area and 84% of those in the comparison area were done using safer methods are similar to a recent estimate that 75% of terminations performed in 2009–2010 at 74 selected facilities in Bangladesh were done by MR.<sup>18</sup> Both studies' estimates are much higher than Singh and colleagues' estimate, made using indirect methods, that 50% of all terminations in Bangladesh in 2010 were by MR.<sup>19</sup> Furthermore, Singh and colleagues concluded that little change occurred between 1995 and 2010 in either the rate of induced abortion (a measure similar to our category of less-safe termination methods) or the rate of MR (similar to our category of safer methods), whereas we found a substantial increase during this period in the incidence of safer pregnancy terminations and a decrease in the incidence of less-safe methods. In the comparison area, which is typical of rural Bangladesh, the share of terminations done by safer methods increased from 32% in 1989 to 84% in 2008.

Our multivariate analyses indicated that a woman's age and education level were related to the likelihood that she terminated a pregnancy and to the method she used. If pregnant, women younger than 18 and those 25 or older were more likely than women aged 18–24 to terminate their pregnancies; this was true for both safer and less-safe methods of termination. Data from other countries show similar patterns for the proportion of pregnancies terminated, although, compared with Matlab, the lowest proportion occurs at older ages (around 25–29) in the more developed countries studied and at younger ages (before age 20) in some countries in Eastern Europe and Central Asia.<sup>7</sup>

If pregnant, older women in Matlab are more likely than younger women to terminate the pregnancy using a less-safe method than to not terminate it. However, if they do

\*Our estimates for safer methods include terminations done by D&C as well as those done by MR; however, the former accounted for only 3% of all safer pregnancy terminations in our sample.

terminate a pregnancy, older women are relatively more likely than younger women to use a safer method than a less-safe method. This may be because older women are more likely than younger women to know about safer methods and better understand the risks associated with less-safe terminations.

The likelihood of termination by any method was higher among women with some education than among those with no education. This finding has been reported in other studies of Matlab.<sup>10,12</sup> One reason that more-educated Bangladeshi women have higher termination rates may be that they are more likely than less-educated women to use temporary (rather than permanent) methods of contraception, resulting in more unintended pregnancies. Another may be that they consider the costs of having an unplanned child to be higher than their less-educated counterparts do. However, when educated women terminate their pregnancies, they are more likely than less-educated women to use safer methods. This may be because more-educated women are more likely to have information about the services available from trained providers and about the differences in safety of various pregnancy-termination methods, and can better afford to pay for safer methods, which are generally more costly than less-safe methods. The higher incidence of pregnancy termination among more-educated women was entirely due to their greater use of safer methods; contrary to our expectations, use of less-safe methods was not related to women's education level.

In our multivariate analyses, the odds of both types of pregnancy termination were significantly lower among women in the MCH-FP area than among women in the comparison area. As noted earlier, other studies have found a lower incidence of pregnancy termination in the MCH-FP area,<sup>12,14</sup> but they did not distinguish safer methods from less-safe methods.

The already strong desire of many Bangladeshi couples to limit their family size may grow even stronger in the near future as rapid social transformation and increases in population density and crowding continue. However, the most recent data indicate that unmet need for contraception is still fairly high in Bangladesh—14% in 2010–2011.<sup>20</sup> This unmet need may continue to lead to high numbers of pregnancy terminations if pregnancies that could have been prevented by contraception instead occur and are terminated; this scenario most likely has contributed to the increase in the pregnancy termination rate we observed during the study period.

Finally, although it is encouraging that the use of less-safe methods of pregnancy termination is decreasing in Matlab, the recent increase in use of such methods in the MCH-FP area merits further investigation.

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Appendix Table 1 and foreign-language translations of abstract continued on page 126.

**APPENDIX TABLE 1. Percentage distribution of pregnancies and pregnancy terminations, by selected measures, Matlab, Bangladesh, 1989–2008†**

Measure	Pregnancies (N=122,691)	Pregnancy terminations (N=5,221)
<b>Maternal age</b>		
≤15	0.4	0.6
16–17	3.1	2.2
18–19	8.6	4.4
20–24	31.7	14.8
25–29	27.7	18.7
30–34	17.6	23.4
35–39	8.2	22.0
40–44	2.3	11.1
≥45	0.4	2.9
<b>Maternal education</b>		
None	41.1	42.9
1–5 yrs.	28.1	29.0
6–10 yrs.	26.0	22.7
11–16 yrs.	1.8	1.7
Unknown	2.9	3.7
<b>Calendar year</b>		
1989–1993	28.2	22.1
1994–1998	25.3	21.2
1999–2003†	21.7	28.9
2004–2008	24.8	27.8
<b>Area</b>		
MCH-FP	47.0	33.3
Comparison	53.0	66.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

†Data not available for 2001. Notes: Percentages may not total 100.0 because of rounding. MCH-FP=Maternal and Child Health–Family Planning.

## RESUMEN

**Contexto:** La regulación menstrual (RM), una forma relativamente segura de terminar el embarazo, es un procedimiento legal en Bangladesh durante las etapas tempranas del embarazo. Sin embargo, es poco lo que se sabe acerca de los factores asociados con el hecho de que las mujeres que terminan sus embarazos elijan este método o un menos seguro.

**Métodos:** Se usaron datos del Sistema de Vigilancia Demográfica de Matlab sobre 122,691 embarazos–5,221 (4.3%) de los cuales fueron terminados–para examinar las tendencias, entre 1989 y 2008, de la terminación y el uso de métodos más seguros (RM o dilatación y legrado) y menos seguros (todos los otros) métodos de terminación del embarazo. Se aplicaron métodos de regresión logística y logística multinomial para analizar los factores que se asocian con la decisión de las mujeres de terminar sus embarazos y de usar métodos más seguros.

**Resultados:** Sesenta y siete por ciento de las terminaciones de embarazos se realizaron mediante métodos más seguros y 33% por medios menos seguros. La proporción de embarazos que fueron terminados aumentó entre 1989 y 2008; este aumento se debió en su totalidad a un mayor uso de métodos más seguros. Las mujeres menores de 18 años y las mayores de 25, tuvieron mayor probabilidad que las mujeres de 20 a 24 años de terminar sus embarazos (los cocientes de probabilidades variaron de 1.5 entre las mujeres en edades de 16 a 17 o de 25 a 29, a

26.1 entre las de 45 años o mayores). Entre las que terminaron sus embarazos, las mujeres en edades de 25 a 44 años tuvieron mayor probabilidad que las de 20 a 24 de usar un método más seguro. En comparación con las mujeres sin escolaridad formal, aquellas con algún grado de escolaridad tuvieron mayor probabilidad de terminar sus embarazos y de hacerlo mediante métodos más seguros.

**Conclusión:** Una creciente proporción de embarazos en Matlab son terminados y cada vez con un mayor uso de métodos más seguros.

## RÉSUMÉ

**Contexte:** La régulation menstruelle (RM), une forme relativement sûre d'interruption volontaire de la grossesse (IVG), est légale au Bangladesh en début de grossesse. Les facteurs associés à la décision des femmes de choisir cette méthode d'IVG ou une autre moins dénuée de risque restent cependant peu connus.

**Méthodes:** Les données du Système de surveillance démographique de Matlab concernant 122 691 grossesses–dont 5 221 (4,3%) interrompues–ont servi à examiner les tendances, entre 1989 et 2008, relatives à l'interruption de la grossesse (IVG) et au recours aux méthodes plus (RM ou dilatation et curetage) ou moins sûres (toutes autres). Les facteurs associés à la décision d'IVG et au recours aux méthodes plus sûres ont été estimés par régressions logistiques et logistiques multinomiales.

**Résultats:** Soixante-sept pour cent des interruptions de grossesse ont été pratiquées selon les méthodes plus sûres et 33% selon celles moins dénuées de risque. La proportion des grossesses interrompues augmente entre 1989 et 2008, sous l'effet, pour la totalité, du recours accru aux méthodes plus sûres. Les femmes âgées de moins de 18 ans et celles de 25 ans et plus paraissent plus susceptibles que celles de 20 à 24 ans d'interrompre leur grossesse (RC compris entre 1,5 dans les tranches de 16 à 17 ans ou de 25 à 29 ans et 26,1 parmi les femmes âgées de 45 ans et plus). Parmi les femmes ayant choisi l'IVG, celles de 25 à 44 ans sont plus susceptibles que celles de 20 à 24 ans d'avoir eu recours à une méthode plus sûre. Par rapport aux femmes sans instruction formelle, celles ayant bénéficié d'une certaine scolarisation sont plus susceptibles d'avoir recours à l'IVG, et d'utiliser les méthodes plus sûres.

**Conclusion:** Les grossesses sont interrompues en proportion grandissante à Matlab, selon un recours grandissant aussi aux méthodes plus sûres.

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