Modern Contraceptive Use Following an Unplanned Birth in Bangladesh: An Analysis of National Survey Data

CONTEXT: *Ineffective use or nonuse of contraceptives following an unplanned birth can contribute to the risk of a subsequent unintended pregnancy; however, the literature on the relationship between unintended pregnancy and postpartum contraceptive use is sparse, especially in low- and middle-income countries.*

METHODS: *Data on 4,493 women from the 2014 Bangladesh Demographic and Health Survey were analyzed; the subjects of the analysis had had a live birth in the three years prior to the survey and were currently at risk of pregnancy. Multilevel logistic regression analysis was used to examine associations between the intendedness of a woman's last pregnancy resulting in a live birth and her current modern contraceptive use adjusting for individual, household and community-level variables.*

RESULTS: *Twenty-six percent of women reported that their last pregnancy resulting in a live birth had been unintended (15% mistimed and 11% unwanted); 61% reported current use of a modern contraceptive method. Compared with women who reported the pregnancy as having been wanted, those who reported the pregnancy as mistimed had greater odds of current modern contraceptive use (odds ratio, 1.6); no association was found between having had an unwanted pregnancy and subsequent modern contraceptive use. Other important correlates of modern contraceptive use included women's autonomy and desire for children, time since last birth and community-level poverty.*

CONCLUSIONS: *Bangladeshi women who experience an unwanted pregnancy may have an elevated risk of subsequent unintended pregnancy. Broader coverage of family planning services, and integration of family planning with maternal health care, may increase modern contraceptive use following an unplanned birth.*
International Perspectives on Sexual and Reproductive Health, 2020, 46:77–87; doi: https://doi.org/10.1363/46e8820

By Md Nuruzzaman Khan, Melissa Harris and Deborah Loxton

Md Nuruzzaman Khan is lecturer, Department of Population Sciences, Jatiya Kabi Kazi Nazrul Islam University, Mymensingh, Bangladesh, and a doctoral candidate, Priority Research Centre for Generational Health and Ageing, School of Medicine and Public Health, University of Newcastle, Newcastle, Australia. Melissa Harris is DECRA Postdoctoral Research Fellow and Deborah Loxton is professor–both with the School of Medicine and Public Health, University of Newcastle.

Unintended pregnancy remains a serious problem in low- and lower-middle-income countries (LLMICs). An estimated 88 million unintended pregnancies occur to women in such countries each year, resulting in approximately 28 million unplanned births (i.e., those resulting from an unintended pregnancy) and 36 million induced abortions—most of which are unsafe.[1–3] Unsafe abortion, in turn, results in the hospitalization of an estimated seven million women in LLMICs per year due to complications, as well as a substantial proportion of the 192,000 maternal deaths in such countries annually.[4]

In Bangladesh, the setting of this study, an estimated 48% of the nearly six million pregnancies occurring annually are classified as unintended—either mistimed (i.e., the woman did not want to become pregnant at the time of conception) or unwanted (the woman had no plans to become pregnant).[5] The unintended pregnancy rate in Bangladesh is 67 per 1,000 women of reproductive age, which is high relative to the estimate of 59 per 1,000 women for South Central Asia overall.[1,6] Unintended pregnancy poses serious health challenges in Bangladesh in terms of unsafe abortion: As many as 1.2 million induced abortions are performed each year, often by traditional and untrained providers, resulting in 257,000 women being treated for complications.[6] In addition, births resulting from unintended pregnancies may be associated with adverse outcomes, such as those related to short birth intervals, lower use of maternal health care services, maternal morbidity and mortality, and undernutrition and mortality among children.[7–13]

Ensuring access to effective contraceptive methods is key to reducing the occurrence of unintended pregnancy and its associated adverse consequences.[14] Provision of modern contraceptives (e.g., the pill, injectable, implant, condoms, IUD and sterilization) remains a challenge, particularly for socioeconomically disadvantaged women and those living in rural areas—although successful implementation of the Millennium Development Goals has seen contraceptive use increase among women aged 15–49 in LLMICs (from 52% in 2000 to 62% in 2015), including in Bangladesh (from 43% in 1990–2000 to 62% in 2014).[14,15] Limited choices and problematic access to contraceptives (e.g., because of rural residence or lower socioeconomic status), fear or experience of side effects, cultural or religious opposition, poor quality of available services and gender-based barriers all contribute to nonuse of modern contraceptives, or to the use of traditional or less effective methods (e.g., periodic abstinence and withdrawal).[16] Consequently, about half of in-union women of

reproductive age in LLMICs lack access to modern contraceptive methods.[14] Other factors found to be associated with contraceptive use are fertility preferences, as well as a range of sociodemographic factors, including women's age, women's educational level and that of their partner, socioeconomic status and mass media exposure.[17–22]

One relationship that has received little attention to date—especially in LLMICs—is that between a woman's experience of an unintended pregnancy and her subsequent contraceptive use, despite the fact that up to 43% of all pregnancies in LLMICs are unintended,[1] and that a history of unintended pregnancy has been shown to be positively associated with subsequent unintended pregnancy.[23,24] The few available studies have been limited by a focus on specific subgroups (e.g., unmarried adolescents, women at high risk of STIs) or by a lack of methodological rigor, or have been conducted in developed countries.[25–27] For example, studies conducted in the United States among adolescents have found that, compared with nonexperience of unintended pregnancy, experience of unintended pregnancy is associated with increased use of modern contraceptives.[25,26] This finding is consistent with that of a small-scale study conducted in the urban slums of Kenya,[28] which also found, through subgroup analysis, that subsequent to an unintended pregnancy, middle-income and wealthy women were more likely than poor women to use modern contraceptives.

An analysis of nationally representative Demographic and Health Survey (DHS) data from Burundi, Kenya, Rwanda, Tanzania and Uganda found different associations between unintended pregnancy and subsequent modern contraceptive use across classifications of pregnancy intention.[29] Importantly, among women in Burundi, Kenya, Rwanda and Uganda, the odds of using a traditional method or no method rather than a modern method were 16–33% lower following a mistimed pregnancy than following a wanted pregnancy, and in Uganda, the odds of traditional method or no method use rather than modern method use following an unwanted pregnancy were about 33% lower than after a wanted pregnancy; pregnancy intention was not associated with subsequent modern contraceptive use in Tanzania. Such differences in the relationship between unintended pregnancy and subsequent contraceptive use might arise because of differences in countries' family planning policies, as well as the inclusion of women with a child aged younger than six months in the analysis (as this is when women are more likely to rely on lactational amenorrhea for contraception rather than a modern contraceptive method).[30,31] Moreover, the study used a single-level analysis technique for analyzing hierarchical DHS data and primarily adjusted analyses with individual-level factors. These techniques limited the study's findings, as the single-level analysis violated the assumption of independence[32] and ignored the potential influence of social networks (such as clusters or communities that share the same physical and socioeconomic characteristics) on individual health behaviors.[33]

Previous research conducted in Bangladesh has provided few insights into modern contraceptive use, as much has focused only on women's sociodemographic and health system–related characteristics.[17,34] However, no attempt has been made to study modern contraceptive use following an unintended pregnancy, even though the occurrence of unintended pregnancy and subsequent unintended pregnancy have been found to be high.[17,22,35] Given these gaps in the literature, the present study aims to examine the relationship between unintended pregnancy and subsequent modern contraceptive use in Bangladesh, by analyzing data from a nationally representative sample of women who are at risk of pregnancy again after having had a child, while controlling for individual, household and community characteristics.

METHODS

Data and Sample

For this study, we used publicly available, nationally representative, cross-sectional data from the 2014 Bangladesh Demographic and Health Survey (BDHS).[15] The BDHS was based on a two-stage stratified sample of households. In the first stage, 600 enumeration areas (clusters) were drawn from the 296,718 enumeration areas prepared for the 2011 national population and housing census. In the second stage, systematic random sampling was used to select 30 households from each enumeration area, and each married woman aged 15–49 in the selected households was included. The BDHS collected information on maternal and child health; use of health care services; fertility preferences; awareness, approval and use of contraceptives; and sociodemographic characteristics. More information regarding the survey sampling procedure and the data collected has been published in the BDHS survey report.[15]

For this analysis, we relied on the BDHS subsample of 17,893 women, and we included those who had had at least one live birth in the three years preceding the survey. Other inclusion criteria were being fecund, having had at least one episode of sexual intercourse in the month prior to survey and not being pregnant or experiencing lactational amenorrhea at the time of the survey. Women were classified as experiencing lactational amenorrhea if they responded negatively to each of three questions: "Have you had a menstrual bleed?", "Are you giving regular supplementary foods or fruits or fluids to your baby in addition to breastfeeding?" and "Is your infant older than six months of age?" These criteria were chosen to ensure that all women in the sample were at risk of pregnancy at the time of the survey. The final analytic sample consisted of 4,493 women.

Measures

• *Explanatory variable.* Women's current contraceptive use status was derived from two questions. Each surveyed woman was asked, "Are you currently doing something or using any method to delay or avoid getting pregnant?" Women who responded "Yes" to this item were then asked, "Which method are you using?"

and could select their method from the following list: the pill, injectable, implant, IUD, condoms, female sterilization, male sterilization, periodic abstinence and withdrawal. In cases in which women reported multiple methods, the method they used most frequently was selected. Responses were coded as 1 for modern method use (i.e., the pill, injectable, implant, IUD, condoms, and female and male sterilization) and 0 for contraceptive nonuse (responded "no" to the first question) or for use of traditional methods (i.e., periodic abstinence or withdrawal). For some analyses, modern methods were further subcategorized as highly effective (IUD, implant and sterilization) or not (pill, injectable and condoms).

• *Exposure variables.* The main exposure variable was the intendedness of a woman's last pregnancy resulting in a live birth that occurred in the three years prior to the survey. Each woman who had had a birth during that time frame was asked, "When you got pregnant with [name of last child born within three years of survey date], did you want to get pregnant at that time?" Women responding "No" were asked, "Did you want to have a baby later on, or did you not want any (more) children?" Responses were categorized as wanted (if the response to the first question was "yes"), mistimed (if the response to the follow-up question was "later") or unwanted (if the response to the follow-up question was "no more").

Potential confounding variables were identified through a comprehensive literature search and were categorized as individual, household or community-level factors, as per the ecological model of health.[17–22] Individual measures included the woman's age at the birth of her last child, her level of education (none, primary, secondary and higher than secondary), a dichotomous measure of whether she worked outside the home for money, parity at the time of survey (treated as a continuous variable), the length of the preceding birth interval (≤2 years, 3–4 years, >4 years),* time elapsed since last birth (treated as a continuous variable) and desire for more children at the time of the survey (within two years, after two years or no more).

A composite measure of women's autonomy (treated as a continuous variable) was also developed and included as an individual-level factor. For this, we used multiple classification analysis (MCA) on women's responses to four questions about who usually makes decisions about their own health care, major household purchases, their children's health care and visits to relatives' houses.[36] One of the following five responses was reported separately for each question: respondent, respondent and husband/partner jointly, husband/partner, someone else or other. MCA produces a mean score (ranging from −1 to 1, where −1 represents low autonomy and 1 high autonomy) for each respondent through adjustment of the compositional differences of these responses. We use the mean score (continuous) rather than presenting a dichotomous variable.

*The entire analytic sample consisted of women who had had at least two children at the time of survey.

Partner education (none, primary, secondary or higher than secondary), partner's occupation (agricultural worker, nonagricultural laborer, services, business or other) and wealth quintile (poorest, poorer, middle, richer and richest) were included as household measures. We also included a dichotomous measure of household size (fewer than four members, or four or more members).

The major community-level variables considered were women's place of residence (urban or rural) and region of residence (Barisal, Chattogram, Dhaka, Khulna, Rajshahi or Sylhet). Other community-level measures were not directly available from the data set used; therefore, we constructed them by aggregating individual and household factors at the cluster level.[37,38] First, we included a community-level literacy variable measuring the proportion of literate women in a community, categorized as low (<25%), moderate (25–50%) or high (>50%). Next, we included a community-level poverty variable consisting of four categories. Women who lived in a community composed only of women in the middle, richer and richest wealth quintiles were categorized as living in a "middle-to-richest" community. All other women were categorized on the basis of the proportion of households in their community in the lowest two wealth quintiles: low (≤15%), moderate (26–40%) and high (>41%). In addition, individual data on children ever born were used to measure community-level fertility, with communities classified as low (a total fertility rate of no more than 2.1) or high (total fertility greater than 2.1), on the basis of the average total fertility rate of women in the study sample.

Analysis

We used descriptive statistics (weighted) to characterize the demographic profile of women included in this analysis. Pearson chi-square tests were conducted to assess the significance of differences in intendedness of the last pregnancy resulting in a live birth and current modern contraceptive use across selected covariates.

In the BDHS, respondents were nested in households and households were nested in clusters; therefore, women from the same household and cluster were more likely to be similar in lifestyle and would behave more alike than those from a different household and cluster. For this type of clustered, hierarchical structure of data, we deemed multilevel logistic regression analysis to be the most appropriate approach.[39] We ran four different multilevel logistic regression models to examine associations between intendedness of a woman's last pregnancy resulting in a live birth and modern contraceptive use of at the time of the survey. First, we fitted a null model without covariates to assess the influence of unobserved factors on overall variation in contraceptive use. Our second model included individual and household factors only; these were considered together because of their strong correlation, and because the average number of women per household in the BDHS was small, so household measures could not be analyzed separately. The third model included community-level factors only, while the final model included all variables. Where

appropriate, the presence of multicollinearity was checked among variables using variance inflation factors (VIFs) at a cut-off point of 10. If a VIF was more than 10, the relevant variable was deleted and the model was run again.

We report logistic regression results as odds ratios with 95% confidence intervals. We calculated the intraclass correlation (ICC) value for each model by dividing the between-clusters variance of modern contraceptive use (random intercept variance) by the total variance of modern contraceptive use (the sum of the between-clusters variance and the within-cluster [residual] variance of modern contraceptive use).[40] Moreover, evidence suggests that current behaviors are more aligned with current desires than with those from three years ago,[29] so a sensitivity analysis excluding women's desire for children at the time of survey completion was conducted. All statistical analyses were conducted using Stata software version 15.1.

RESULTS

Descriptive Statistics

On average, women in the sample had their most recent birth at age 25, had a little more than six years of education and had had about two children (Table 1); 14% of women had had no education. Three-fourths of women were not currently working outside the home for money. On average, women's autonomy fell within the middle of the range. Twenty-six percent of women reported that their last pregnancy resulting in a live birth had been unintended, including 15% whose pregnancy was classified as mistimed and 11% whose pregnancy was unwanted. A little more than half of the sample (53%) reported a desire for no more children, and 43% wanted to delay childbearing for at least two years. The mean time elapsed since their last birth was 25 months.

In regard to household and community-level measures, partner's educational attainment was lower than that for women, as 24% of partners were reported as having had no education; partners worked primarily as agricultural workers (26%) or nonagricultural manual laborers (44%). Sixty-eight percent of women lived in households consisting of more than four members, and three-quarters lived in a rural area; the largest proportion of women lived in Dhaka (35%), followed by Chattogram (22%). About half of the sample (53%) lived in communities with moderate literacy, while more than one-third (36%) lived in high-literacy areas; 79% of women lived in high-fertility communities. Seventeen percent of women in the sample lived in a community composed only of women in the top three wealth quintiles. The remaining 83% lived in a community that included some proportion of women in the lowest two wealth quintiles—47% were living in a high-poverty community, 23% in a moderate-poverty community and 13% in a low-poverty community.

Two-thirds of women in the sample reported using some type of contraceptive method at the time of the survey (Table 2). Sixty-one percent were using a modern method, most commonly the pill (32%), followed by the injectable (16%) and condoms (8%). Some 6% used a modern method classified as highly effective, mostly female sterilization (3%) and the implant (2%). Overall, 5% of women reported using a traditional method of contraception, and 33% were not practicing contraception. About 68% of women whose last pregnancy resulting in a live birth had been mistimed reported using a modern contraceptive method, including 8% who were using a highly effective method (Table 3). Modern contraceptive use was reported by 63% of women whose pregnancy had been unwanted and 60% of those whose pregnancy had been wanted; the proportions using highly effective contraceptives among these two groups were 18% and 3%, respectively.

Bivariate Results

Women's experience of an unintended pregnancy varied by all included variables (Table 4). For example, a greater proportion of women aged 20–34 than of younger or older women reported that their last pregnancy resulting in a live birth had been unintended (18% vs. 6% and 2%, respectively). Unintended pregnancy was also greater among women who reported wanting no more children than among those who wanted a child within two years

TABLE 1. Selected characteristics of women who had a live birth within the three years preceding survey participation and were currently at risk of pregnancy, Bangladesh Demographic and Health Survey, 2014

Characteristic	N	% or mean
Mean age at last live birth	4,493	24.57 (5.75)
Mean education (in yrs.)	4,493	6.31 (3.82)
Education		
None	606	14.1
Primary	1,235	28.0
Secondary	2,130	47.7
>secondary	522	10.2
Employed		
No	3,508	76.3
Yes	983	23.7
Missing data	2	na
Mean autonomy score (range, −1 to 1)	4,493	0.05 (1.09)
Mean parity	4,493	2.16 (1.41)
Intendedness of last pregnancy resulting in a live birth		
Wanted	3,362	74.1
Mistimed	670	15.0
Unwanted	461	10.9
Desire for more children		
Within two years	160	3.9
After two years	1,939	43.0
No more	2,329	53.2
Missing data	65	na
Preceding birth interval (in yrs.)		
≤2	324	7.5
3–4	792	17.9
>4	3,377	74.6
Time since last birth (in mos.)	4,493	25.08 (5.76)
Partner's education		
None	1,029	23.9
Primary	1,353	30.0
Secondary	1,419	31.8
>secondary	690	14.4
Data missing	2	na
Partner's occupation		
Agricultural worker	1,073	25.8
Nonagricultural laborer	1,975	44.0
Services	295	5.9
Business	1,016	21.6

continued

or after two years (17% vs. 0% and 7%). Similarly, use of modern contraceptives differed by all included characteristics. For example, 41% of women aged 20–34 reported current modern method use, compared with 18% of those aged 19 or younger and only 3% of those aged 35 or older; 32% of women who wanted to limit their childbearing and 27% of those who wanted to space their childbearing were currently using a modern method, compared with 1% who reported wanting another child within two years.

Multivariate Results

As described earlier, we ran four multivariate models to assess variables associated with modern contraceptive use. The first (the null model), which included none of the covariates, produced an ICC of 13% variance in modern contraceptive use (Table 5); this indicates the extent of variance seen across community clusters without taking other factors into account. However, the ICC was reduced to about 7%, once individual, household and community-level factors were included in the final model.

In the second model, which included individual and household characteristics, we found that relative to women whose last pregnancy resulting in a live birth had been wanted, those whose pregnancy had been mistimed had 70% greater odds of subsequent modern contraceptive use (odds ratio, 1.7); in contrast, having had an unwanted pregnancy was not associated with the outcome. When community-level factors were added in the final model, the association between having had a mistimed pregnancy and modern contraceptive use was slightly attenuated but remained significant (1.6), and having had an unwanted pregnancy remained unrelated to use. Findings from a sensitivity analysis excluding the childbearing desire measure produced a similar result regarding mistimed pregnancy (1.6; 95% CI, 1.27–1.93; p<.01—not shown).

In the final model, various individual and household measures were found to be associated with modern contraceptive use. Women who wanted to space or limit their childbearing were more likely than those who wanted a child within two years to report current use (odds ratios, 6.7–6.8). Time since last birth was also positively associated with modern contraceptive use (2.0). In addition, women's age at last live birth was negatively associated with use: With every one-year increase in the age, women's odds of using a modern method decreased by 52% (0.5). Similarly, the odds of modern contraceptive use were negatively associated with autonomy (0.8), and with having a partner who is a nonagricultural worker or whose employment was categorized as "other" (0.8 and 0.5, compared with those whose partner is an agricultural worker).

Regarding the community-level characteristics, we found greater odds of modern contraceptive use among women living in communities with moderate or high literacy rather than low literacy (odds ratios, 1.4 for both). A gradient increase in the odds of modern contraceptive use was also found across community-level poverty: Compared with the women living in communities with high poverty, those living in communities with moderate or low poverty had increased odds of the outcome (1.3 and 1.5, respectively). In addition, women living in Rangpur were more likely than those residing in Barisal to be using modern contraceptives (1.6); however, women

TABLE 1 (continued)

Characteristic	N	% or mean
Other	120	2.8
Data missing	14	na
No. of household members		
≤4	1,399	31.8
>4	3,094	68.2
Wealth quintile		
Poorest	939	21.7
Poorer	855	18.9
Middle	860	19.1
Richer	946	20.6
Richest	893	19.7
Place of residence		
Urban	1,451	26.1
Rural	3,042	73.9
Region of residence		
Barishal	532	5.8
Chattogram	862	21.9
Dhaka	795	35.3
Khulna	531	8.0
Rajshahi	546	10.0
Rangpur	549	9.7
Sylhet	678	9.3
Community-level literacy†		
Low	528	10.9
Moderate	2,531	53.3
High	1,434	35.9
Community-level poverty‡		
Middle-to-richest	686	16.6
Low	654	12.7
Moderate	1,128	23.3
High	2,025	47.4
Community-level fertility§		
Low	1,041	21.5
High	3,452	78.5

†Low is defined as literacy in the community below 25%, moderate as between 25% and 50%, and high as above 50%. ‡Women living in a community consisting of only women in the top three wealth quintiles were categorized as living in a "middle-to-richest" community; all other women were categorized on the basis of the proportion of households in their community in the lowest two wealth quintiles: low (≤15%), moderate (26–40%) and high (>41%). §Measured as total fertility rate, with low and high defined as at or below 2.1 and above 2.1, respectively. *Notes:* All values are weighted percentages unless otherwise noted; percentages may not add to 100% because of rounding. Figures in parentheses are standard deviations. na=not applicable.

TABLE 2. Percentage distribution of women, by current contraceptive use at time of survey

Contraceptive use	% (N=4,493)
Modern method	**61.4**
Pill	31.9
Injectable	16.2
Condoms	7.8
Female sterilization†	2.8
Male sterilization†	0.4
IUD†	0.5
Implant†	2.0
Traditional method	**5.2**
Periodic abstinence	3.3
Withdrawal	1.8
None	**33.4**
Total	**100.0**

†Highly effective contraceptive methods. *Notes:* All percentages are weighted; percentages may not add to 100% because of rounding.

TABLE 3. Percentage distribution of women, by current contraceptive method use at time of survey, according to intention status of last pregnancy resulting in a live birth

Method use	Wanted (n=3,362)	Mistimed (n=670)	Unwanted (n=461)
None/traditional	40.3	32.3	37.3
Modern, not highly effective	56.4	60.1	44.6
Modern, highly effective	3.3	7.6	18.1
Total	100.0	100.0	100.0

Notes: All percentages are weighted. Female and male sterilization, IUD and implant are considered modern highly effective contraceptive methods; modern, not highly effective methods include the pill, injectable and condoms.

TABLE 4. Percentage of women reporting that their last pregnancy resulting in a live birth was unintended, and percentage reporting current use of a modern contraceptive at time of survey—both by selected characteristics

Characteristic	Unintended pregnancy	Modern contraceptive use
Age at last live birth	***	*
≤19	5.9	17.9
20–34	18.1	40.7
≥35	1.9	2.6
Education	***	*
None	5.2	8.1
Primary	8.6	16.0
Secondary	10.2	30.8
>secondary	1.9	6.4
Employed	***	*
Yes	7.3	46.3
No	18.6	14.9
Parity at the time of survey	***	***
≤2	13.2	42.8
3–4	9.2	15.1
>4	3.5	3.3
Desire for more children	***	***
Within two years	0.3	1.2
After two years	7.0	27.4
No more	17.4	32.3
Preceding birth interval (in yrs.)	***	*
≤2	3.8	4.9
3–4	7.0	10.3
>4	15.1	46.1
Partner's education	***	***
None	8.1	14.0
Primary	8.5	18.3
Secondary	6.5	19.6
>secondary	2.8	9.5
Partner's occupation	***	***
Agricultural worker	7.8	15.3
Nonagricultural laborer	10.8	26.3
Services	1.3	3.8
Business	5.6	14.6
Other	0.3	1.1
No. of household members	***	***
≤4	6.8	20.4
>4	19.1	40.9
Wealth quintile	***	***
Poorest	7.6	12.0
Poorer	5.4	11.5
Middle	4.9	11.9
Richer	4.6	12.9
Richest	3.5	13.0
Place of residence	***	***
Urban	5.5	17.9
Rural	20.4	43.4
Region of residence	***	***
Barishal	1.5	3.8
Chattogram	4.7	11.5
Dhaka	9.7	22.1
Khulna	2.1	5.4
Rajshahi	3.1	7.3
Rangpur	2.3	7.1
Sylhet	2.4	4.0

continued

living in Chattogram and Sylhet had lower relative odds of using modern methods (0.5 and 0.3). Finally, women's rural place of residence was found to be negatively associated with modern contraceptive use (0.8).

DISCUSSION

Among the women in our sample (i.e., participants of the 2014 BDHS who reported having had at least one birth in the three years preceding the survey and currently being at risk of pregnancy), 61% reported current use of a modern contraceptive method. Modern method use varied considerably by pregnancy intention, and in multivariate analyses, experiencing a mistimed pregnancy that resulted in a live birth was associated with 60% greater odds of modern contraceptive use as compared with experiencing a wanted pregnancy. We found no association, however, between women's experience of an unwanted pregnancy resulting in a live birth and subsequent modern contraceptive use. These findings—which were robust, even after we controlled for multiple individual, household and community-level factors—suggest that the experience of an unplanned birth resulting from an unwanted pregnancy may not have an influence on Bangladeshi women's subsequent use of modern contraceptives, which in turn suggests that such women may have elevated risk of a subsequent unintended pregnancy. If so, policies and programs that aim to increase the use of modern contraceptive methods among women who have experienced an unwanted pregnancy, broader family planning coverage and integration of family planning services into maternal health care services are all imperative to help them avoid subsequent unintended pregnancies.

Our findings regarding the association between mistimed pregnancy and subsequent modern contraceptive use are similar to those of two previous studies conducted in LLMICs that have investigated the linkage between women's contraceptive use patterns and the intendedness of their most recent pregnancy.[28,29] Yet we did not find an association between unwanted pregnancy and use of modern contraceptive methods, although a previous study found a positive association for Uganda.[29] Such a discrepancy is likely at least in part due to the complex interplay between women's sociodemographic, reproductive health and psychological responses following birth across different pregnancy statuses. In Bangladesh, as in other LLMICs, mistimed pregnancies often occur to younger women and those with fewer lifetime births.[41] Women at this stage of life often report ambivalence toward pregnancy, concerning not only the desire for a birth, but also the timing of one.[28] An increase in modern contraceptive use following a mistimed birth may indicate a clear intention regarding future reproductive goals, or the pregnancy may act as a learning experience or "wake-up call" regarding the importance of using an effective contraceptive method. Thus, a mistimed pregnancy may provide a woman with the self-motivation she needs to use a modern contraceptive. In addition, for women who take their pregnancy to term,

utilization of antenatal and postnatal health care services may offer opportunities for providers to counsel them on postpartum family planning, which too may lead to modern contraceptive use.[42,43]

By contrast, women having an unwanted pregnancy are more likely to be socioeconomically disadvantaged or older, or to have already reached their desired number of children—all factors linked with poor contraceptive practice in previous research.[44] Moreover, unwanted pregnancies often occur because of barriers to contraceptive use, such as religious and social prohibitions, husbands' opposition and women's lack of contraceptive knowledge, which are mostly overlooked in current family planning programs in Bangladesh.[45] These factors left unchanged may continue to impede contraceptive use among women who experience a live birth resulting from an unwanted pregnancy.[46] Our finding that use of highly effective contraceptives was greatest among women who experienced an unwanted pregnancy, however, suggests that these women may be learning from their experiences and to some extent able to overcome access barriers.

Furthermore, the characteristics associated with unwanted pregnancy could also contribute to lower utilization of maternal health care services, either because of women's tendency to rely on prior pregnancy experiences or because of their unawareness of being pregnant and of the importance of maternal health services. These would further limit opportunities for health care providers to encourage women's acceptance of a modern contraceptive following a birth.[11] Higher rates of prenatal and postpartum depression among women experiencing an unwanted pregnancy (relative to those with a mistimed pregnancy) could also contribute to their lower utilization of health care services and modern contraceptive use following a birth.[47,48]

In addition, several individual, household and community-level characteristics were found to be associated with modern contraceptive method use; however, understanding how these factors differ by pregnancy intention was beyond the scope of this study. The odds of modern contraceptive use were lower among women residing in rural areas, and in the Chattogram and Sylhet regions—which is consistent with other studies finding urban-rural and geographic differences in contraceptive use in Bangladesh.[16,18,23] Family planning policies in Bangladesh are designed to provide high-quality family planning services, including frequent home visits, a wide array of contraceptive method choices and follow-up care; however, in reality, such services in rural areas are often characterized as being of poor quality, with fewer home visits and provision of information on fewer methods than in urban areas.[16] Differences in educational enrollment, religious and cultural practices, awareness of the risks of pregnancy and of the number of births, and communication systems (including roads and transportation) might also restrict women's and couples' access to contraceptive products and services in rural areas and selected regions.[15]

TABLE 4 (continued)

Characteristic	Unintended pregnancy	Modern contraceptive use
Community-level literacy	*	***
Low	2.3	6.7
Moderate	12.4	33.5
High	11.2	21.0
Community-level poverty	***	***
Middle-to-richest	3.4	11.4
Low	2.0	27.9
Moderate	6.2	14.2
High	14.5	7.8
Community-level fertility	***	***
Low	4.2	14.4
High	21.8	46.8

*p<.05. ***p<.001. *Notes:* p values refer to differences within subcategories calculated from Pearson chi-square test. All data are weighted. For description of community-level variables, see Table 1.

Similarly, we found that women who resided in communities that were disadvantaged in terms of education and wealth had lower odds of modern contraceptive use. This is likely because lower autonomy, motivation, awareness and financial difficulties often restrict women from visiting family planning providers and obtaining contraceptives from private sources.[17,49] Moreover, community norms and traditions, and such family and community-level factors as husband's and family members' opposition to family planning providers, might also influence contraceptive nonuse—particularly for women with a young child.[50] Specialized family planning programs that focus on disadvantaged, hard-to-reach areas and areas with higher levels of unmet need, along with commitment to placing highly trained staff in the field, might increase access to contraception.[42]

Integration of family planning with mainstream antenatal and delivery health care services in general, and with postnatal health care services in particular, could help to increase contraceptive use following pregnancy;[28] currently, in Bangladesh, family planning services and maternal health care services are provided through two separate directorates. Our recommendation for integration is in line with findings from a previous study in Bangladesh that suggest that the integration of services provided through these directorates could increase the use of contraceptive use among women following an abortion.[51]

Particular attention is needed to promoting and encouraging the use of highly effective contraceptive methods (i.e., the IUD, the implant and sterilization, which were used by only 6% of women in our sample, and only 8% of those whose last live birth had resulted from a mistimed pregnancy). Efforts should aim to create an enabling environment through workshops (e.g., showing videos on the importance of using contraceptives) with the local community and with religious leaders, as well as by making in-depth contraceptive counseling available to postpartum women who have had an unintended pregnancy and do not want to become pregnant again.[46] Moreover, increased collaboration between the government and nongovernmental organizations, and the strengthening of comprehensive health programs (e.g., the Health, Population, and Nutrition Sector

TABLE 5. Odds ratios (and 95% confidence intervals) from multilevel logistic regression analysis assessing women's likelihood of modern contraceptive use, by selected characteristics, according to model

Characteristic	Individual/household	Community	Full
Intendedness of last pregnancy resulting in a live birth (ref=wanted)			
Mistimed	1.70 (1.35–2.16)***	na	1.62 (1.28–2.05)***
Unwanted	1.03 (0.76–1.39)	na	0.97 (0.72–1.31)
Age at last live birth	0.48 (0.44–0.53)***	na	0.48 (0.43–0.52)***
Education (ref=none)			
Primary	0.89 (0.66–1.14)	na	0.84 (0.64–1.10)
Secondary	0.96 (0.72–1.28)	na	0.91 (0.68–1.22)
>secondary	0.91 (0.61–1.36)	na	0.82 (0.55–1.24)
Employed (ref=no)	1.16 (0.95–1.41)	na	1.06 (0.87–1.28)
Autonomy	0.75 (0.70–0.80)***	na	0.76 (0.71–0.82)***
Parity at the time of survey	1.02 (0.92–1.13)	na	1.06 (0.96–1.17)
Desire for more children (ref=within two years)			
After two years	1.70 (1.35–2.16)***	na	6.78 (4.46–10.32)***
No more	1.03 (0.76–1.35)	na	6.69 (4.37–10.26)***
Preceding birth interval (ref=≤2 years)			
3–4	0.78 (0.55–1.10)	na	0.76 (0.54–1.07)
>4	0.98 (0.71–1.36)	na	0.86 (0.62–1.19)
Time since last birth	1.98 (1.82–2.17)***	na	2.03 (1.86–2.22)***
Partner's education (ref=none)			
Primary	1.17 (0.94–1.47)	na	1.13 (0.91–1.42)
Secondary	1.07 (0.84–1.38)	na	1.02 (0.80–1.31)
>secondary	1.08 (0.76–1.53)	na	1.00 (0.71–1.42)
Partner's occupation (ref=agricultural worker)			
Nonagricultural worker	0.77 (0.62–0.94)*	na	0.78 (0.63–0.95)**
Services	0.99 (0.66–1.49)	na	1.07 (0.71–1.61)
Business	1.12 (0.88–1.43)	na	1.15 (0.90–1.47)
Other	0.41 (0.25–0.66)***	na	0.46 (0.29–0.75)***
>4 household members (ref=≤4 members)	0.99 (0.83–1.18)	na	1.09 (0.91–1.30)
Wealth quintile (ref=richest)			
Poorest	0.65 (0.48–0.89)***	na	0.81 (0.57–1.17)
Poorer	0.86 (0.64–1.15)	na	1.09 (0.78–1.52)
Middle	0.85 (0.65–1.13)	na	1.03 (0.76–1.40)
Richer	0.77 (0.60–0.99)*	na	0.84 (0.64–1.10)
Rural residence (ref=urban)	na	0.77 (0.61–0.96)*	0.76 (0.59–0.96)**
Region of residence (ref=Barisal)			
Chittagong	na	0.57 (0.43–0.79)***	0.50 (0.36–0.70)***
Dhaka	na	0.86 (0.64–1.17)	0.81 (0.58–1.13)
Khulna	na	1.25 (0.90–1.74)	1.27 (0.88–1.82)
Rajshahi	na	1.48 (1.07–2.05)*	1.37 (0.96–1.97)
Rangpur	na	1.67 (1.21–2.32)*	1.57 (1.10–2.24)**
Sylhet	na	0.41 (0.30–0.56)***	0.32 (0.23–0.46)***
Community-level literacy (ref=low)			
Moderate	na	1.42 (1.07–1.86)***	1.42 (1.05–1.92)**
High	na	1.29 (0.94–1.76)	1.42 (1.00–2.02)**
Community-level poverty (ref=high)			
Middle-to-richest	na	1.79 (1.26–2.56)***	2.14 (1.39–3.29)***
Low	na	1.17 (0.88–1.57)	1.48 (1.05–2.09)***
Moderate	na	1.23 (1.00–1.53)***	1.28 (1.00–1.64)***
High community-level fertility (ref=low)	na	1.13 (0.90–1.42)	1.16 (0.90–1.49)
AIC	*4,610.1*	*5,199.3*	*4,494.0*
BIC	*4,786.0*	*5,307.1*	*4,751.6*
ICC	*0.052****	*0.062****	*0.068****
Intercept	*0.18 (0.09)****	*0.22 (0.06)****	*0.24 (0.06)****

*p<.05. **p<.01. ***p<.001. *Notes: For null model, AIC=5436.0; BIC=5461.4; ICC=0.134*; and random intercept variance=0.27 (0.15)**. AIC=Akaike information criterion; BIC=Bayesian information criterion; ICC=intraclass correlation. ref=reference group. na=not applicable. For description of community-level variables, see Table 1.

Development Program), might also contribute to increased use of modern contraceptive methods.[42,50]

Limitations

This study has several limitations. The use of cross-sectional data precludes us from making causal inferences about the relationship between women's pregnancy intentions and their subsequent contraceptive use. Also, the data are based on participants' self-reports, with no scope for validation by interviewers, so they may be subject to reporting errors. Pregnancy intention data were collected retrospectively, so they may be subject to recall bias, as some women may have changed their feelings about their pregnancy over the three-year period following the birth. Any such bias, however, is likely to be random. Moreover, the analysis used data on pregnancies that resulted in a live birth and, therefore, did not include pregnancies that were terminated; this may have led to the underreporting of the actual occurrence of unintended pregnancy. Finally, the results presented in this study were adjusted with available individual-, household- and community-level factors, which explained only about half of the total cluster-level variance in modern contraceptive use found in the null model; unmeasured factors,

including cultural and behavioral variables (e.g., ever or past contraceptive use, and respondent's or partner's attitudes toward contraceptives), may explain some of the remaining variation.

To our knowledge, however, this is the first study to use nationally representative data from Bangladesh to examine the relationship between women's prior pregnancy intentions and subsequent modern contraceptive use. In addition, the study's large sample size, appropriate statistical adjustments for the survey design and modeling for confounding variables enhance the reliability of this study's findings.

Conclusion

Our results provide quantitative evidence that Bangladeshi women who report having had a mistimed pregnancy—but not those who report an unwanted pregnancy—may have elevated odds of using modern contraceptive methods subsequent to the resulting birth. Thus, programs aimed at women who have experienced a birth resulting from an unwanted pregnancy may be necessary to increase postpartum use of modern contraceptives and help women protect themselves against additional unintended pregnancies. Efforts that increase coverage of family planning services, address barriers (e.g., husband's opposition and social prohibitions) to contraception, integrate family planning services with maternal health care services, and increase individual- and community-level awareness about the importance of modern contraceptive methods may be effective.

REFERENCES

1. Bearak J et al., Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model, *Lancet Global Health*, 2018, 6(4):e380–e389, http://dx.doi.org/10.1016/S2214-109X(18)30029-9.

2. Singh S, Darroch JE and Ashford LS, *Adding It Up: The Costs and Benefits of Investing in Sexual and Reproductive Health*, New York: Guttmacher Institute, 2014.

3. World Health Organization (WHO), *Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2008*, sixth ed., Geneva: WHO, 2011.

4. WHO, Preventing unsafe abortion, Geneva, https://www.who.int/news-room/fact-sheets/detail/preventing-unsafe-abortion.

5. Hossain A et al., *Access to and Quality of Menstrual Regulation and Postabortion Care in Bangladesh: Evidence from a Survey of Health Facilities, 2014*, New York: Guttmacher Institute, 2017, https://www.guttmacher.org/report/menstrual-regulation-postabortion-care-bangladesh.

6. Singh S et al., The incidence of menstrual regulation procedures and abortion in Bangladesh, 2014, *International Perspectives on Sexual and Reproductive Health*, 2017, 43(1):1–11.

7. Hailu D and Gulte T, Determinants of short interbirth interval among reproductive age mothers in Arba Minch District, Ethiopia, *International Journal of Reproductive Medicine*, 2016, doi: 10.1155/2016/6072437.

8. Wendt A et al., Impact of increasing inter-pregnancy interval on maternal and infant health, *Paediatric and Perinatal Epidemiology*, 2012, 26(Suppl. 1):239–258, http://dx.doi.org/10.1111/j.1365-3016.2012.01285.x.

9. Rush D, Nutrition and maternal mortality in the developing world, *American Journal of Clinical Nutrition*, 2000, 72(Suppl. 1):212S–240S, http://dx.doi.org/10.1093/ajcn/72.1.212S.

10. Rottenstreich M et al., Recurrent unintended pregnancies among young unmarried women serving in the Israeli military, *Israel Journal of Health Policy Research*, 2018, 7(1):42, http://dx.doi.org/10.1186/s13584-018-0239-7.

11. Wado YD, Afework MF and Hindin MJ, Unintended pregnancies and the use of maternal health services in Southwestern Ethiopia, *BMC International Health and Human Rights*, 2013, 13:36, http://dx.doi.org/10.1186/1472-698X-13-36.

12. Tarekegn SM, Lieberman LS and Giedraitis V, Determinants of maternal health service utilization in Ethiopia: analysis of the 2011 Ethiopian Demographic and Health Survey, *BMC Pregnancy and Childbirth*, 2014, 14:161, http://dx.doi.org/10.1186/1471-2393-14-161.

13. Gipson JD, Koenig MA and Hindin MJ, The effects of unintended pregnancy on infant, child, and parental health: a review of the literature, *Studies in Family Planning*, 2008, 39(1):18–38.

14. Sedgh G, Ashford LS and Hussain R, *Unmet Need for Contraception in Developing Countries: Examining Women's Reasons for Not Using a Method*, New York: Guttmacher Institute, 2016, http://www.guttmacher.org/report/unmet-need-for-contraception-in-developing-countries.

15. National Institute of Population Research and Training (NIPORT), Mitra and Associates and ICF International, *Bangladesh Demographic and Health Survey 2014*, Dhaka, Bangladesh, and Rockville, MD, USA: NIPORT, Mitra and Associates and ICF International, 2016.

16. WHO, Global Health Observatory (GHO) data: need for family planning satisfaction, 2017, http://www.who.int/gho/maternal_health/reproductive_health/family_planning/en/.

17. Islam AZ et al., Prevalence and determinants of contraceptive use among employed and unemployed women in Bangladesh, *International Journal of MCH and AIDS*, 2016, 5(2):92–102, http://dx.doi.org/10.21106/ijma.83.

18. Egede JO et al., Contraceptive prevalence and preference in a cohort of south-east Nigerian women, *Patient Preference and Adherence*, 2015, 9:707–714.

19. Achana FS et al., Spatial and socio-demographic determinants of contraceptive use in the Upper East region of Ghana, *Reproductive Health*, 2015, 12(1):29, http://dx.doi.org/10.1186/s12978-015-0017-8.

20. Wuni C, Turpin CA and Dassah ET, Determinants of contraceptive use and future contraceptive intentions of women attending child welfare clinics in urban Ghana, *BMC Public Health*, 2017, 18(1):79, http://dx.doi.org/10.1186/s12889-017-4641-9.

21. Adebowale SA and Palamuleni ME, Determinants of unmet need for modern contraception and reasons for non-use among married women in rural areas of Burkina Faso, *African Population Studies*, 2014, 28(1):499–514, http://dx.doi.org/10.11564/28-1-503.

22. Islam R, Islam AZ and Rahman M, Unmet need for family planning: experience from urban and rural areas in Bangladesh, *Public Health Research*, 2013, 3(3):37–42.

23. Guzzo KB and Hayford S, Fertility following an unintended first birth, *Demography*, 2011, 48(4):1493–1516.

24. Gatny HH, Kusunoki Y and Barber JS, Pregnancy scares and subsequent unintended pregnancy, *Demographic Research*, 2014, 31:1229–1242, http://dx.doi.org/10.4054/DemRes.2014.31.40.

25. Matteson KA et al., Unplanned pregnancy: does past experience influence the use of a contraceptive method? *Obstetrics & Gynecology*, 2006, 107(1):121–127, http://dx.doi.org/10.1097/01.AOG.0000192170.16746.ea.

26. Orcutt HK and Cooper ML, The effects of pregnancy experience on contraceptive practice, *Journal of Youth and Adolescence*, 1997, 26(6):763–778, http://dx.doi.org/10.1023/A:1022352810441.

27. Guzzo KB, Eickmeyer K. and Hayford SR, Does postpartum contraceptive use vary by birth intendedness?, *Perspectives on Sexual and Reproductive Health*, 2018, 50(3):129–138.

28. Fotso JC et al., Unintended pregnancy and subsequent use of modern contraceptive among slum and non-slum women in Nairobi, Kenya, *BMC Pregnancy and Childbirth*, 2014, 14(1):224, http://dx.doi.org/10.1186/1471-2393-14-224.

29. Bakibinga P et al., Pregnancy history and current use of contraception among women of reproductive age in Burundi, Kenya, Rwanda, Tanzania and Uganda: analysis of demographic and health survey data, *BMJ Open*, 2016, 6(3):e009991, http://dx.doi.org/10.1136/bmjopen-2015-009991.

30. Vekemans M, Postpartum contraception: the lactational amenorrhea method, *European Journal of Contraception & Reproductive Health Care*, 1997, 2(2):105–111, http://dx.doi.org/10.3109/13625189709167463.

31. Pirincci E, Taşdemir R and Oguzoncul AF, Knowledge of lactational amenorrhea as a contraceptive method among mothers of infants aged 0–6 months in a district, Eastern Turkey, *International Journal of Community Medicine and Public Health*, 2017, 3(6):1363–1370, doi: 10.18203/2394-6040.ijcmph20161601.

32. O'Campo P and Dunn JR, *Rethinking Social Epidemiology: Towards a Science of Change*, London: Springer Science & Business Media, 2011.

33. Kawachi I and Berkman LF, eds., *Neighborhoods and Health*, New York: Oxford University Press, 2003.

34. Islam AZ, Factors affecting modern contraceptive use among fecund young women in Bangladesh: Does couples' joint participation in household decision making matter?, *Reproductive Health*, 2018, 15(1):112.

35. Huda FA et al., Understanding unintended pregnancy in Bangladesh: country profile report, *STEP UP Research Report*, Dhaka, Bangladesh: International Centre for Diarrhoeal Disease Research, Bangladesh, 2013.

36. Vyas S and Kumaranayake L, Constructing socio-economic status indices: how to use principal components analysis, *Health Policy and Planning*, 2006, 21(6):459–468, http://dx.doi.org/10.1093/heapol/czl029.

37. Muchie KF, Quality of antenatal care services and completion of four or more antenatal care visits in Ethiopia: a finding based on a Demographic and Health Survey, *BMC Pregnancy and Childbirth*, 2017, 17(1):300, http://dx.doi.org/10.1186/s12884-017-1488-0.

38. Mezmur M et al., Individual, household and contextual factors associated with skilled delivery care in Ethiopia: evidence from Ethiopian demographic and health surveys, *PLoS One*, 2017, 12(9):e0184688, http://dx.doi.org/10.1371/journal.pone.0184688.

39. Bowen L, *Applied Multilevel Analysis: A Practical Guide*, New York: Oxford University Press, 2007.

40. Merlo J et al., A brief conceptual tutorial on multilevel analysis in social epidemiology: investigating contextual phenomena in different groups of people, *Journal of Epidemiology and Community Health*, 2005, 59(9):729–736, http://dx.doi.org/10.1136/jech.2004.023929.

41. Rashid M and Shifa N, Mistimed and unwanted pregnancies in Bangladesh: trends and determinants, paper presented at the annual meeting of Population Association of America, New York, Mar. 29–31, 2007.

42. Achyut P et al., Integration of family planning with maternal health services: an opportunity to increase postpartum modern contraceptive use in urban Uttar Pradesh, India, *Journal of Family Planning and Reproductive Health Care*, 2016, 42(2):107–115, http://dx.doi.org/10.1136/jfprhc-2015-101271.

43. Akinlo A, Bisiriyu A and Esimai O, Influence of use of maternal health care on postpartum contraception in Nigeria, *Demographic and Health Survey Working Paper*, Calverton, MD, USA: ICF International, 2013, https://dhsprogram.com/pubs/pdf/WP92/WP92.pdf.

44. Ali A et al., Determinants of unintended pregnancy among women of reproductive age in developing countries: a narrative review, *Journal of Midwifery and Reproductive Health*, 2016, 4(1):513–521.

45. Khan MN et al., Effects of unintended pregnancy on maternal healthcare services utilization in low- and lower-middle-income countries: systematic review and meta-analysis, *International Journal of Public Health*, 2019, 64(5):743–754, http://dx.doi.org/10.1007/s00038-019-01238-9.

46. Rahman M et al., The Mayer Hashi large-scale program to increase use of long-acting reversible contraceptives and permanent methods in Bangladesh: explaining the disappointing results. An outcome and process evaluation, *Global Health: Science and Practice*, 2016, 4(Suppl. 2):S122–S139, http://dx.doi.org/10.9745/GHSP-D-15-00313.

47. Mercier RJ et al., Pregnancy intention and postpartum depression: secondary data analysis from a prospective cohort, *BJOG*, 2013, 120(9):1116–1122, http://dx.doi.org/10.1111/1471-0528.12255.

48. Abajobir AA et al., A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression, *Journal of Affective Disorders*, 2016, 192:56–63, http://dx.doi.org/10.1016/j.jad.2015.12.008.

49. Alam MA et al., Regional variations of fertility control behavior among rural reproductive women in Bangladesh: a hierarchical analysis, *Behavioral Science*, 2018, 8(8):68, http://dx.doi.org/10.3390/bs8080068.

50. WHO, *Bangladesh and Family Planning: An Overview*, 2012, http://origin.searo.who.int/entity/child_adolescent/topics/child_health/fp-ban.pdf.

51. Biswas KK et al., Integrating postabortion care, menstrual regulation and family planning services in Bangladesh: a pre-post evaluation, *Reproductive Health*, 2017, 14(1):37, http://dx.doi.org/10.1186/s12978-017-0298-1.

RESUMEN

Contexto: *El uso ineficaz o el no uso de anticonceptivos después de un nacimiento no planeado puede contribuir al riesgo de un embarazo no planeado posterior; sin embargo, la bibliografía sobre la relación entre el embarazo no planeado y el uso de anticonceptivos posterior al nacimiento es escasa, especialmente en países de bajos y medianos ingresos.*

Métodos: *Se analizaron datos de 4,493 mujeres de la Encuesta Demográfica y de Salud de Bangladesh de 2014; las mujeres incluidas en el análisis habían tenido un nacimiento vivo en los tres años anteriores a la encuesta y en el momento de la encuesta estaban en riesgo de embarazo. Se usó análisis de regresión logística multinivel para examinar las asociaciones entre la intención del último embarazo de una mujer que resultó en un nacimiento vivo y su uso actual de anticonceptivos modernos, ajustando las variables a nivel individual, familiar y comunitario.*

Resultados: *El 26% de las mujeres reportó que su último embarazo, que resultó en un nacimiento vivo, no fue planeado (15% imprevistos y 11% no deseados); el 61% reportó el uso actual de un método anticonceptivo moderno. En comparación con las mujeres que reportaron que el embarazo era deseado, las que reportaron que el embarazo fue imprevisto tuvieron mayores probabilidades de estar usando anticonceptivos modernos (razón de probabilidades, 1.6); no se encontró asociación entre haber tenido un embarazo no deseado y el posterior uso de anticonceptivos modernos. Otros correlatos importantes del uso de anticonceptivos modernos incluyeron la autonomía de las mujeres y el deseo de tener hijos, el tiempo transcurrido desde el último nacimiento y la pobreza a nivel comunitario.*

Conclusiones: *Las mujeres de Bangladesh que experimentan un embarazo no deseado podrían tener un riesgo elevado de un posterior embarazo no planeado. Una cobertura más amplia de los servicios de planificación familiar y la integración de la planificación familiar con la atención de la salud materna podrían aumentar el uso de anticonceptivos modernos después de un nacimiento no planeado.*

RÉSUMÉ

Contexte: *La pratique inefficace ou l'absence de contraception après une naissance non planifiée peut contribuer au risque d'une grossesse ultérieure non planifiée elle aussi. Le rapport entre la grossesse non planifiée et la pratique contraceptive post-partum n'est cependant guère documenté, en particulier dans les pays à revenu faible ou intermédiaire.*

Méthodes: *Les données relatives à 4 493 femmes ayant répondu à l'Enquête démographique et de santé bangladaise 2014 ont été analysées; les sujets de l'analyse avaient eu une naissance vivante au cours des trois années précédant l'enquête et couraient au moment de l'enquête le risque d'une nouvelle grossesse. Les associations entre l'intentionnalité de la dernière grossesse d'une femme ayant abouti sur une naissance vivante et sa pratique actuelle de la contraception moderne, sous correction de variables individuelles, de ménage et de niveau communautaire, ont été examinées par analyse de régression logistique multiniveaux.*

Résultats: *Vingt-six pour des femmes ont déclaré que leur dernière grossesse ayant abouti sur une naissance vivante n'était pas planifiée (inopportune pour 15% et non désirée pour 11%); 61% ont déclaré la pratique actuelle d'une méthode contraceptive moderne. Par rapport aux femmes qui avaient déclaré une grossesse désirée, celles dont la grossesse était inopportune étaient plus susceptibles de pratiquer une méthode de contraception moderne au moment de l'enquête (RC, 1,6); aucune association n'a été observée entre le fait d'avoir eu une grossesse non désirée et la pratique ultérieure de la contraception moderne. Les autres corrélats importants de la pratique contraceptive moderne étaient l'autonomie de la femme et son désir d'avoir des enfants, le temps écoulé depuis la dernière naissance et la pauvreté de la communauté.*

Conclusions: *Les Bangladaises qui connaissent une grossesse non désirée courent peut-être un risque élevé d'en connaître une autre. Une plus large couverture des services de planification familiale, ainsi que l'intégration de la planification familiale dans les soins de santé maternelle, peuvent accroître la pratique contraceptive moderne après une naissance non planifiée.*

Acknowledgments

The authors acknowledge the support of the Priority Research Centre for Generational Health and Aging, a member of the Hunter Medical Research Institute, Australia, where this research was conducted. The first author received funding from the University of Newcastle, Australia.

Author contact: *mdnuruzzaman.khan@uon.edu.au*