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Knowledge, Costs and Decision-Making Processes Regarding Pregnancy Termination in Matlab, Bangladesh

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ABSTRACT

Context: Although pregnancy termination occurs in every society, little research has tried to identify knowledge and attitudinal factors that affect decisions to end pregnancies.

Objective: To examine the roles of information, monetary, and psychic costs and likelihood of health consequences and the costs of treating them as well as the decision-making process of pregnancy termination.

Methods: Using data from the Matlab Health and Demographic Surveillance System (HDSS) to identify them, in 2010 we surveyed women who were in reported in the HDSS to have terminated a pregnancy during 2007-2009 (n=451) and a random sample of women in the HDSS who in the same time period had pregnancies that they did not terminate (n=1,201). We collected information about their fertility desires and contraceptive use before their index pregnancies as well as their knowledge about methods of pregnancy termination and their costs and about perceived health and social risks of these methods and costs to treat complications.

Results: Compared to those who did not terminate their unintended pregnancies, women who terminated their pregnancies were more knowledgeable about modern methods of termination and they reported lower health risks, lower costs to treat complications, fewer social/familial consequences for termination and were more likely to say that both the husband and wife were involved in the decision-making process. Both groups of women with unintended pregnancies had very high rates of contraceptive failure.

Conclusion: Women who terminated pregnancies associated lower 'costs' than other women who had unintended pregnancies but chose not to terminate them. Most unintended pregnancies were due to non-use of contraception, discontinuation due to side effects or contraceptive failure. Improvements in contraceptive practice can reduce rate of unintended pregnancy and thus incidence of pregnancy termination.

Keywords: Induced abortion, Pregnancy termination, Menstrual regulation, Contraception, Family planning

BACKGROUND

Bangladesh has achieved a remarkable success in reducing its fertility rate, considering its socioeconomic disadvantages. The pace of fertility decline was exceptionally rapid during the late 1980s and early 1990s - a decline of 54% in the total fertility rate (TFR*) in 20 years. The TFR was 2.3 children per woman in 2014 [1] – the same as the average desired family size in 2007 [2].

Most Bangladeshi women reach their desired family size by their mid-20s [2] and must prevent unwanted pregnancy for upwards of 20 years of their reproductive lives. Recent fertility surveys suggest that a quarter of pregnancies in Bangladesh are either unwanted (15%) or mistimed (11%) [1].

*The total fertility rate is a measure of the the average number of children per woman. Specifically, it is the average number of children that would be born to a woman over her lifetime if at each age she was to experience the current age-specific fertility rates.

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Efficient, high-quality health and family planning programs in developing countries aim to reach replacement-level fertility[1] but with minimal incidence of induced abortion. However, the overall pregnancy termination rate in Bangladesh (37 per 1,000 women of childbearing age) is higher than the average rate for South-central Asia (26 per 1,000) [3]; and the incidence of unintended pregnancy is also higher in Bangladesh (74 per 1,000 women of childbearing age) than the average for South-central Asia (56 per 1,000) [4]. The 2014 Bangladesh Demographic and Health Survey reported an unmet need[2] for contraception of 12%, which is a decrease from 17% in 2007 [1,2]. One reason for the relatively high levels of unwanted pregnancy and pregnancy termination in Bangladesh is that Bangladeshi couples predominantly rely on short-acting methods such as pills and traditional methods [1], which have high levels of use-failure [5]. The contraceptive prevalence rate was 62% in 2014 [1][3]. Pill use was 27%, injectable 12%, condoms 6%, and traditional methods 8%; all these methods are relatively ineffective and have high discontinuation and thus expose women to the risk of unintended pregnancy and thus pregnancy termination [1]. In 2014, the use rate of long-acting reversible contraceptives and permanent methods, which are highly effective methods and least likely to expose women to the risk of unintended pregnancy, was only 8%.

Abortion is illegal in Bangladesh, except to save the life of a pregnant woman. However, the government of Bangladesh declared in 1978 that menstrual regulation (MR) is an 'interim method of establishing non-pregnancy' for a woman at risk of being pregnant. MR, a fairly safe pregnancy-termination procedure done by manual vacuum aspiration, is legal if it is done by a trained provider within 10 weeks of conception without clinical confirmation of pregnancy [6,7]. However, there are familial and social concerns against MR or other forms of pregnancy termination, and costs for services of MR and treating related complications are not affordable by many women [8]. This leads to a relatively high incidence of use of other methods of pregnancy termination, which have a much higher risk of maternal mortality than MR [9-11].

A recent study of Matlab, Bangladesh, provides a conceptual framework for thinking about influences on pregnancy termination [12]. That study hypothesizes that pregnancy termination is unlikely if the pregnancy is intended, but is possible if the woman does not want to have more children or does not want a child at that time, and is more likely when the 'costs' of an unintended pregnancy are higher. The 'costs' of an unintended pregnancy are weighed against the information costs and perceived monetary and psychic costs of pregnancy termination, as well as the possibility of serious health consequences for women [13].

Multiple factors may intervene during the decision-making process from unintended pregnancy to pregnancy termination, making the process dynamic and situation specific. In India [14] and Vietnam [15] it was found that husbands play a significant role in making the decision, while for younger women in India [16] both husbands and mothers-in-law were more likely to decide about pregnancy termination. Studies in Bangladesh documented that the husband and wife are usually the final decision-makers [17,18]; however, neighbors, sisters-in-law, friends and, in some cases, health workers provided informal support for those seeking abortion.

Though there have been a number of studies of the influences of demographic and socioeconomic variables on the likelihood of pregnancy termination [12], little attention has been given to the roles of information, monetary, and psychic costs and of the likelihood of health consequences and the costs of treating them as well as the decision-making process of pregnancy termination. In this paper we report results from a survey designed to address these issues.

DATA AND METHODS

Data for this study came from Matlab Upazila (sub-district), where the International Centre for Diarrheal Disease Research (icddr,b) has been maintaining the Health and Demographic Surveillance System (HDSS) since 1966. Matlab is a rural area located about 55 km southeast of Dhaka. Farming is the dominant occupation, except in a few villages where fishing is the main means of livelihood [19]. Most of the farmers are in marginal situations with less than two acres of land and 40% of them are landless. Some people also work in mills and factories in different towns and cities, but their family members live in the study area.

The Matlab HDSS area is divided into (a) the government-served area, where only standard government-provided family planning and health services are available; and (b) the icddr,b-served area, where better reproductive health services are provided by the icddr,b. The HDSS has collected data in both areas on the type and timing of pregnancy outcomes since 1966. These data are likely to be of high quality because they have been collected during regular household visits (every two weeks until 1997, every month between 1998 and 2006 and every two months since

[1]'Replacement-level fertility' is the total fertility rate at which a population exactly replaces itself from one generation to the next, without migration. This rate is roughly 2.1 children per woman for most countries.

[2]Women with unmet needs are those who want to stop or delay childbearing but are not using any method of contraception.

[3]The contraceptive prevalence rate is the percentage of women of reproductive age who are currently using, or whose sexual partner is currently using, a contraceptive method.

then) by carefully trained community health workers who are well respected in the community. Since 1977, the outcome of each pregnancy has been recorded into four categories – live birth, still birth, spontaneous miscarriage and induced miscarriage[4]. Since 1989 the method of induced miscarriage has also been recorded, and MR is one of the methods reported. In this paper, we treat 'induced miscarriage' as 'pregnancy termination'. Information on socioeconomic characteristics (e.g. women's education and household space), demographic characteristics (e.g. age and gravidity) and desire for and timing of next child is also available in the HDSS database.

We collected new data in September-December 2010 in both the icddr,b-served and government-served areas of Matlab from women who had pregnancies during the period November 2007 to December 2009 recorded in the HDSS. We randomly selected a sample of 1,300 women who had non-terminated pregnancies (out of 12,044 non-terminated pregnancies during the study period) and successfully interviewed 1,201 of them. Of the total of 584 women who had terminated pregnancies during the same period, we interviewed 451. For both groups, non-responses occurred because selected respondents were not found at home (after at least two visits). For the nine women who had more than one pregnancy termination during the study period, we selected the most recent one to be the index pregnancy. Of the 50 women who had more than one non-terminated pregnancy, we chose the most recent one.

The survey was conducted by a team of six college-graduate women with data-collection experience, overseen by an experienced supervisor. Interviewers received a week-long extensive training on the questionnaire, particularly on asking questions about sensitive topics. The questionnaire was pre-tested, and the data were collected through paper questionnaires. Through monitoring and quality control, the supervisor tried to ensure the completeness of information in the survey (e.g. by re-interviewing on some key variables for some of the sample). Before start of the interview, respondents' consent was taken and they were assured that responses would be kept confidential and used only for research purposes.

From the HDSS record, some basic information, including the names of the respondent, Bari (household cluster) and head of household, and the date and outcome of the selected pregnancy, was given to the interviewers for locating/identifying the respondents. To ascertain whether the index pregnancy was intended or not, survey respondents were asked "Prior to the pregnancy outcome just mentioned, did you want to have any (more) children?" For those who wanted more, information on whether the child was wanted immediately or after some time was taken from HDSS database[5]. The question on timing of next pregnancy in HDSS was asked in two steps: (a) Do you want to have any more children? (b) For those who said yes, they were asked "After how long you want to have your next pregnancy?"

All survey respondents were asked about:

- Contraceptive use prior to the conception of the index pregnancy
- Knowledge of methods of pregnancy termination.

Women who terminated the index pregnancy were told "Our record shows that you had a pregnancy termination on (date of pregnancy termination). Now I would like to know some information about the pregnancy termination." The pregnancy termination-related questions were asked about index pregnancies that were reported in HDSS as having been terminated, while these questions were about perceptions for those who did not terminate the index pregnancy. Respondents were asked about:

- Complications following termination
- Costs to treat complications and
- Health risks associated with pregnancy termination methods.

For pregnancies that were unintended, whether terminated or not, respondents were asked questions about their decision-making processes regarding terminating the pregnancy vs. carrying it to term and the social and familial factors that influenced this decision.

For some of the analyses we compare women who terminated unintended pregnancies (n=451) and those who did not terminate unintended pregnancies (n=357). Some of the analyses of unintended pregnancies look separately at women who desired to stop childbearing and those who wished to postpone it. We also present data on intended pregnancies (n=844) for comparison purposes if the relevant survey questions were asked about them.

RESULTS

Table 1 shows the distribution of women according to socio-demographic characteristics separately for those who terminated unintended pregnancies and those who did not terminate their unintended pregnancies, each separately by whether they wanted to stop or to postpone childbearing; it also shows data for women who had intended pregnancies. Of those who terminated unintended pregnancies, 91% wanted to stop childbearing. It is not surprising that the vast

[4]Prior to 1977 the HDSS data did not distinguish between induced and spontaneous miscarriages.

[5]HDSS collects information on desire for spacing and time of pregnancies every 18 months and we used such information from HDSS because in our survey we did not ask this question of women who intended having a pregnancy.

majority of those who terminated unintended pregnancies wanted to stop, but it is noteworthy that a non-negligible percentage (9%) wanted to have more children (but later). Of those who did not terminate pregnancies, 19% wanted to stop childbearing, 10% wanted to postpone it, and 71% had intended pregnancies. Hence, 29% of the pregnancies that were not terminated were unintended. Of those who did not terminate unintended pregnancies, 64% wanted to stop childbearing and 36% wanted to postpone it.

Table 1. Socio-demographic characteristics of women who terminated and those who did not terminate index pregnancy, by whether desired to stop or postpone childbearing or pregnancy intended.

Variables	Terminated pregnancies		Non-terminated pregnancies			Sig. of (1) vs. (2) [6]	Sig. of (3) vs. (4) [7]	Sig. of (1) vs. (3) [8]	Sig. of (2) vs. (4) [9]	Sig. of (4) vs. (5) [10]
	Desired to stop (n=410) [1]	Desired to postpone (n=41) [2]	Desired to stop (n=229) [3]	Desired to postpone (n=128) [4]	Intended (n=844) [5]					
Age of women										
Under 20	3.4	12.2	5.7	12.5	12.7	p<0.01	p<0.01	p<0.01	ns	ns
20-24	9.5	26.8	14.0	35.2	32.6					
25-29	16.6	22.0	24.5	28.9	36.9					
30-34	19.0	26.8	26.2	13.3	19.9					
35+	51.0	12.2	29.7	10.2	7.9					
Mean	33.7	27.3	30.5	25.6	26.1					
Pregnancy order										
1	3.9	34.1	14.8	30.5	36.6	p<0.01	p<0.01	p<0.01	ns	ns
2	7.6	22.0	11.4	31.3	28.9					
3-4	37.6	29.3	46.3	33.6	30.0					
5+	51.0	14.6	27.3	4.7	4.9					
Mean	4.7	2.6	3.6	2.3	2.2					
Women's education										
None	35.1	12.2	28.4	10.9	12.8	p<0.01	p<0.01	ns	ns	ns
1-5 years	26.6	3.7	24.9	28.1	25.5					
6+ years	36.8	53.7	45.9	60.2	61.3					
Unknown	1.5	2.4	0.9	0.8	0.4					
Household space (sq. ft)										
Under 170	47.3	70.7	52.8	82.0	74.3	p<0.01	p<0.01	ns	ns	ns
170-249	17.3	9.8	17.0	7.8	9.0					
250+	35.4	19.5	31.1	10.0	16.7					
Religion										
Muslim	91.7	100.0	93.9	93.8	88.0	ns	ns	ns	ns	p<0.05
Non-Muslim	8.3	0.0	6.1	6.2	12.0					
Study area										
icddr,b-service	50.7	46.3	48.9	57.8	58.5	ns	ns	ns	p<0.05	ns
Government-service	49.3	53.7	51.1	42.2	41.5					

Both for those who terminated their unintended pregnancies and those who did not terminate their unintended pregnancies, the characteristics of women who desired to stop childbearing and those who desired to postpone (Col. 1 vs. Col. 2 and Col. 3 vs. Col. 4) differ significantly ($p<0.01$) for all variables considered except for religion and area. Women who desired to stop and terminated (Col. 1) or desired to stop and did not terminate (Col. 3) were considerably older, had more previous pregnancies, had less education, and had more household space (a measure of socioeconomic status) compared to the women who desired to postpone and terminated (Col. 2) or who desired to postpone and did not terminate (Col. 4). Women who desired to stop and terminated (Col. 1) are significantly ($p<0.01$) older and had more pregnancies than women who desired to stop but did not terminate (Col. 3), but these two subgroups do not differ significantly on socioeconomic characteristics. Women who desired to postpone and terminated (Col. 2) and women who desired to postpone and did not terminate (Col. 4) do not differ significantly from each other for any variable except for area; those who desired to postpone childbearing but did not terminate were more likely to be from the icddr,b-service area where contraceptive use was higher than government-service area. The characteristics of women who had intended index pregnancies (Col. 5) are similar to those of women who wanted to postpone but did not terminate (Col. 4); the only significant difference is for religion: women who desired to postpone and had unintended pregnancies that they did not terminate were more likely to be Muslim than those who had intended pregnancies.

All respondents were asked in our survey “Were you using any contraceptive method prior to the conception of the index pregnancy?” If they did not use, they were asked the reason. **Table 2** shows data on contraceptive use and the reason for non-use prior to conception of the index pregnancy separately for those who terminated unintended pregnancies and those who did not terminate unintended pregnancies; we also distinguish whether the women wanted to stop or postpone childbearing. (We do not report data for intended pregnancies because less than 1% of those reported use of contraception before the conception of the index pregnancy). *None* of the 41 terminators who wanted to postpone childbearing used contraception prior to the conception of the index pregnancy. Among those with unintended pregnancies (Col. 3 and Col. 6), the levels of contraceptive use prior to the conception were similar (and did not differ significantly) for those who terminated the index pregnancy (34.6%) and those who did not terminate the pregnancy (32.5%). In fact, none of the differences in Table 2 between terminators and non-terminators and for each of these between those who wanted to stop vs. postpone, are statistically significant. Nonetheless, the magnitudes of the percentages are interesting. For example, it is noteworthy that the contraceptive use rate was quite low in all groups shown in Table 2; i.e., most of the conceptions that occurred were to women not using contraception. Users of contraception were asked what method they were using. In both groups, the vast majority of users were using temporary methods of contraception; for example, 74.4% of users who terminated their unintended pregnancies and 72.4% of those who did not terminate their unintended pregnancies had used pills or condoms.

In **Table 2**, for each variable we compare Cols. 1 and 2, Cols. 4 and 5, and Cols. 3 and 6. None of the differences are statistically significant at 5% or better. Women who used contraception prior to the conception of the index pregnancy were asked “Did the conception occur while you were still using the method, or had you stopped using the method before the conception?” The vast majority of unintended pregnancies to those who had used contraception prior to the conception of the index pregnancy were to women who reported that they were still using contraception when they became pregnancy – i.e., the pregnancies were due to contraceptive method failure; conception occurred while the method was in use for 94% of those who terminated their pregnancies and 89% who did not terminate their pregnancies.

Table 2. Women's contraceptive use before conception of unintended pregnancies, by whether index pregnancy terminated or not and by whether desired to stop or postpone childbearing.

Variables	Terminated pregnancy			Did not terminate		
	Desired to stop [1]	Desired to postpone [2]	All terminated pregnancies [3]	Desired to stop [4]	Desired to postpone [5]	All unintended pregnancies not terminated [6]
Contraceptive use prior to conception (n)	38.0 (410)	0.0 (41)	34.6 (451)	30.1 (229)	36.7 (128)	32.5 (357)
Method used (among users)						
Pill	74.4		74.4	75.4	68.1	72.4
Condom	16.0		16.0	14.5	14.9	14.7
Injectable	3.2		3.2	2.9	6.4	4.3
Other (n)	6.3 (156)	(0)	6.3 (156)	7.2 (69)	10.6 (47)	8.7 (116)
Contraceptive failure (among users) (n)	93.6 (156)	(0)	93.6 (156)	87.0 (69)	91.5 (47)	88.8 (116)
Reason for non-use (among non-users)						
Side effects	33.9	4.9	29.8	33.1	37.0	34.4
Could not get suitable method	23.3	95.1	20.0	15.0	14.8	14.9
Postpartum amenorrhoea/don't need method	19.3		16.6	25.6	13.6	21.6
Others (husband/family did not like method) (n)	23.6 (254)	(41)	33.6 (295)	26.3 (160)	34.6 (81)	29.0 (241)

Women who were not using contraception prior to conception of the index pregnancy were asked "Why were you not using contraception?" The most frequent response was a fear of side effects (reported by 27.8% of terminators who did not use contraception before the conception of the index pregnancy and 29.9% of non-terminators), followed by the response that they could not get a suitable method (20.0% and 14.9%); 17% of terminators and 22% of non-terminators reported that they were in postpartum amenorrhea or felt no need for contraception. None of these differences between terminators and non-terminators are statistically significant.

Table 3 compares data on knowledge of methods of pregnancy termination and costs and safety of those methods for (1) women who terminated unintended pregnancies, (2) those who had unintended pregnancies that were not terminated, and (3) those who had intended pregnancies. Survey respondents were asked (un-prompted) "Do you know about any methods of pregnancy termination?" We have grouped the responses into four categories: Manual vacuum aspiration/menstrual regulation (MVA/MR), dilation and curettage (D&C)/wash[6], oral medication[7] and other. Women who terminated pregnancies were significantly more likely to know about MVA/MR than women who did not terminate unintended pregnancies (74% vs. 34%; $p<0.01$), but they were significantly less likely to report knowing about oral medicine (41% vs. 53%; $p<0.01$);

[6]'Wash' is a lay-person term that women in Bangladesh use to describe an MR, MVA or D&C done by trained providers at service facilities.

[7]'Oral medication' includes herbal potions and tablets. It may include 'abortion pills' (mifepristone and misoprostol), but these did not become legal in Bangladesh until 2012, two years after our survey.

the two groups were similar to each other in knowing about D&C/wash (19% vs. 20%; not significant) and about other methods of termination (11% vs. 10%; not significant). We see that MVA/MR is the best-known method for those who terminated pregnancies, whereas oral medicine is the best known method among women who did not terminate unintended pregnancies. Women who had intended pregnancies were significantly less likely to report knowledge of MVA/MR and other methods compared to those who did not terminate unintended pregnancies, but knowledge is similar for these two groups for D&C/wash and oral medicine.

Table 3. Knowledge of termination methods, cost to perform and safety for women, by whether index pregnancy terminated, unintended and not terminated or intended.

Variables	MVA/MR (n)	D&C/wash (n)	Oral medicine (n)	Others (n)
Knowledge of termination procedure - % Yes				
(1) Unintended pregnancies – terminated	73.8 (451)	19.3 (451)	40.8 (451)	10.6(451)
(2) Unintended pregnancies – not terminated	34.2 (357)	19.9 (357)	52.7 (357)	10.1 (357)
(3) Intended pregnancies	29.0 (844)	19.7 (844)	52.1 (844)	6.6 (844)
Sig. of (1) vs. (2)	p<0.01	ns	p<0.01	ns
Sig. of (2) vs. (3)	p<0.01	ns	ns	p<0.05
Cost of pregnancy termination (taka#)				
(1) Unintended pregnancies – terminated	488 (333)	1,174 (87)	128 (184)	438 (48)
(2) Unintended pregnancies – not terminated	493 (96)	965 (52)	161 (141)	699 (29)
(3) Intended pregnancies	577 (193)	1,245 (121)	154 (290)	805 (42)
Sig. of (1) vs. (2)	ns	ns	ns	ns
Sig. of (2) vs. (3)	ns	ns	ns	ns
Is procedure safe for women's health - % Yes				
(1) Unintended pregnancies – terminated	27.3 (333)	29.9 (87)	24.5 (184)	6.3 (48)
(2) Unintended pregnancies – not terminated	12.7 (245)	19.9 (166)	14.0 (440)	7.1 (56)
(3) Intended pregnancies	9.8 (122)	12.7 (71)	14.3 (188)	11.1 (36)
Sig. of (1) vs. (2)	p<0.01	p<0.01	p<0.01	ns
Sig. of (2) vs. (3)	ns	ns	ns	ns

#1 taka=US$ 0.013

For each method that the respondents reported, they were asked "What is the cost of this method of pregnancy termination?" For each of the four categories of methods, there are no significant differences in method-specific costs among women who terminated pregnancies, those who did not terminate unintended pregnancies, and those who had intended pregnancies, though it is interesting that, except for D&C/wash, those who did not terminate associated higher costs for each method than those who terminated. For all three groups, the highest cost of termination was reported for D&C/wash (about Taka 1,000[8] about twice the cost of MVA/MR (about Taka 500)); while the reported average costs of oral medicine were the lowest (Taka 130-160)[9].

Regarding the safety of pregnancy termination methods, women were asked for each method they reported knowing: "How safe is this method of pregnancy termination for a woman's health?" The answers were recorded into four categories. For this analysis we have categorized the answers into two – 'safe' (very safe, mostly safe) and 'not safe' (somewhat unsafe and very unsafe). Both among those who

[8]In 2010, US$ 1=75 taka; 1 taka=US$ 0.013.

[9]The low average cost reported for 'oral medicine' suggests that most respondents did not have in mind mifepristone and misoprostol.

terminated their pregnancies and those who did not terminate, few women think any of the methods of pregnancy termination are safe. For example, 13.0% - 30.0% reported that MVA/MR, D&C/wash, or oral medical termination is safe; respondents were even less likely to think that 'other' methods are safe (less than 8%). For MVA/MR, D&C/wash, and oral medicine (but not 'other'), a significantly higher ($p<0.01$) proportion of those who terminated unintended pregnancies reported that the method of pregnancy terminations is safe compared with those who did not terminate unintended pregnancies. Of those who did not terminate pregnancies, the responses about perceived safety are similar for those who had unintended pregnancies and those who had intended pregnancies.

Table 4 shows data from survey responses regarding complications due to pregnancy termination, costs of treating complications, familial/social consequences, and decision-making processes for the same three subgroups shown in **Table 3**. Women who terminated their pregnancies were asked "Did you have any complications following the pregnancy termination?" structured response categories were (1) no complication, (2) minor complication, (3) serious complication and (4) life-threatening complication. The responses have been categorized into three: 'Major' (serious or life-threatening), 'Minor' and 'No complication'. Those who did not terminate their unintended pregnancies and those who had intended pregnancies were asked "Do you think there would be some complications following the termination of pregnancy?"; again responses are categorized into major, minor and no complications.

Table 4. Likelihood of complications of pregnancy termination, costs to treat complications, and social consequences and decision-making processes about termination, by whether index pregnancy terminated, unintended but not terminated, or intended.

Variables	Unintended pregnancy, terminated [1]	Unintended pregnancy, not terminated [2]	Intended pregnancy [3]	Sig. of (1) vs. (2) [4]	Sig. of (2) vs. (3) [5]
Complication following procedure (%)					
Major	18.8	89.6	88.6	p<0.01	ns
Minor	10.6	9.8	9.4	ns	ns
No. (n)	70.5 (451)	0.6 (357)	2.0 (844)	p<0.01	p<0.05
Average cost to treat complications, in taka* (n)	2,280 (121)	3,706 (274)	3,491 (673)	p<0.01	ns
Social/familial consequences if terminated (% yes) (n)	7.5 (133)	71.1 (357)	-	p<0.01	
Decision to terminate (for terminators) or continue (for non-terminator) pregnancy (%)					
Self	23.5	15.1	-	p<0.01	
Husband	10.6	21.5	-	p<0.01	
Both	59.9	47.2	-	p<0.01	
Family member	1.3	13.7	-	p<0.01	
Health provider (n)	4.7 (451)	2.5 (284)	-	p<0.01	
Why decided to carry unintended pregnancy to term					
Against religion to terminate	-	22.2	-	-	
Husband opposed	-	23.6	-	-	
Family member opposed	-	11.3	-	-	
Concern about health risks	-	13.0	-	-	
Okay to have another child (n)	-	28.9 (284)	-	-	

1 taka=US$ 0.013

Table 4 shows that a substantially and statistically significantly ($p<0.01$) lower percentage of women who terminated unintended pregnancies reported that they had a major complication following the procedure (19%) compared to the opinions about the likelihood of a major complication among those who did not terminate pregnancies (90% for unintended pregnancies and 89% for intended pregnancies). Of those who terminated their unintended pregnancies, 11% reported that they experienced minor complications; this is similar to the perceived likelihoods of minor complications for women who did not terminate their pregnancies. Hence, 30% of women who terminated their unintended pregnancies reported experiencing a complication, whereas 99% of women with unintended pregnancies that were not terminated and 98% of those with intended pregnancies thought that they would experience a complication if they were to terminate a pregnancy.

All respondents were asked "Approximately how much money would it cost for services to treat abortion-related complications?" Women who terminated their pregnancies (the majority of whom did not experience complications) reported significantly lower ($p<0.01$) costs to treat the complications (an average of 2,280 taka) compared to the (perceived) costs reported by those who did not terminate their pregnancies (3,706 taka for those with unintended pregnancies and 3,491 taka for those with intended pregnancies).

Regarding familial/social consequences, women who terminated pregnancies were asked "Did you face any familial/social consequences after you had the termination?" Women who did not terminate an unintended pregnancy were asked "Do you feel that you would have faced any familial/social consequences if you had terminated the pregnancy?" Only seven percent of women who terminated their unintended pregnancies reported that they faced familial/social consequences as a result, while a dramatically higher ($p<0.01$) percentage (71%) of women who did not terminate unintended pregnancies reported that they thought they would have faced such consequences if they terminated the pregnancy.

Women who terminated their pregnancies were asked: "Who made the decision to terminate the pregnancy?" Women who had unintended pregnancies but did not terminate their unintended pregnancies were asked "Who made the decision not to terminate but to continue the pregnancy?" A significantly higher proportion of women who terminated their pregnancies reported that both they and their husbands together made the decision compared to those who had unintended pregnancies that they did not terminate (59.9% vs. 47.2%; $p<0.01$). The former group also had a significantly higher ($p<0.01$) percentage of cases where the women themselves made the decision (23.5% compared to 15.1% for the latter). Among those with unintended pregnancies, husbands and other family members were significantly more likely to have made the decision not to terminate than the decision to terminate. Very few women with unintended pregnancies reported that health providers made the decision about termination or non-termination, but it is significantly higher for the terminators than the non-terminators (4.7% vs. 2.5%; $p<0.01$).

Women who had unintended pregnancies but did not terminate them were asked "Why did you decide to carry the pregnancy to term even though the pregnancy was unintended?" The most frequent response was that women thought it was okay to have another child (29%), followed by opposition from husband (24%), against religion (22%), concern about health risks (13%), and opposition from a family member (11%).

MAIN FINDINGS AND CONCLUSION

In the Matlab study area, 4.4% of pregnancies were terminated in 2012 [20]; almost all of these pregnancies (91%) were to women who wanted no more children. Of those who did not terminate their pregnancies, 30% of the pregnancies were unintended (19% of the women wanted no more and 11% wanted to space). Data from our survey shows that those who terminated unwanted pregnancies were considerably older, and the pregnancies they terminated were of considerably higher order than those who did not terminate unwanted pregnancies; this is consistent with the notion that the women who terminated associated higher 'costs' of having an unintended child. Of women who wanted to postpone childbearing, there were no significant differences by age, pregnancy, order and socioeconomic status between those who terminated and those who did not terminate the pregnancy. However, those who desired to postpone childbearing but did not terminate were more likely to be living in the icddr,b-service area, where contraceptive use was higher and contraception more readily available than in government-service area. This may be because women in the icddr,b-service area had more confidence that they could stop childbearing when they wanted to. We found that none of the 41 terminators who wanted to postpone childbearing used contraception prior to the conception of the index pregnancy, suggesting that these women did not feel strongly about preventing pregnancy before they became pregnant, but changed their minds after they became pregnant.

Of women who terminated their pregnancies, both husband and wife or the wife herself were more involved in making the decision and the women reported facing fewer familial/social consequences for termination compared with women who had unintended pregnancies that they did not terminate. A similar finding - that the husband and wife are usually the final decision-makers for pregnancy termination - was reported in earlier studies [17,18]. These findings also support recommendations others [21] have made that counseling women with an unintended pregnancy needs to

focus on the decision-making networks of the women, since such networks influence the ultimate fate of the pregnancy.

Compared to women who did not terminate pregnancies, women who terminated their pregnancies were more knowledgeable about modern methods of termination. In addition, terminators generally reported lower costs of obtaining specific methods of termination than non-terminators, though (perhaps because of small sample sizes) the differences are not statistically significant. Women who terminated reported lower levels of complications following the procedure, and lower costs to treat complications compared to (the perceptions of) those who did not terminate their pregnancies. The differences are particularly dramatic regarding complications: 30% of women those who terminated their pregnancies reported experiencing a complication, whereas almost all (99%) of those who did not terminate unintended pregnancies thought that they would experience a complication if they were to terminate a pregnancy.

LIMITATIONS

We recognize that in some cases we are comparing perceptions with actual experience, and the two may not be directly comparable. Nonetheless, we feel that such comparisons can be illuminating. We do not know what the terminators' perceptions were, or what the non-terminators would have experienced had they chosen to terminate. It is possible that women who terminated associated lower costs of terminating a pregnancy, a lower likelihood of complications, a lower cost of treating complications, and a lower probability of family repercussions than women who do not terminate, and those are reasons why the former chose to terminate and the latter did not. Alternatively it is possible that terminators originally had perceptions similar to non-terminators but through their abortion experience, they learnt that abortion is less costly and safer than generally thought. If those who terminated pregnancies had the same perceptions as those who did not, then we could conclude that those perceptions greatly over-estimated the likelihood of complications. It seems unlikely that women who did not terminate unintended pregnancies would experience such a much higher likelihood of complications than those who did terminate, and hence seems reasonable to conclude that they considerably overestimate the likelihood – a misperception that could be addressed programmatically. Future research, including longitudinal data collection, would be needed to distinguish between these possibilities. One could then look at how perceptions affected future termination decisions (though this would require a large sample, since pregnancy termination is a relatively rare event).

Another limitation of this research is that the data were collected in 2010. Since then, in 2012, the Drug Administration for Bangladesh legalized the combination of mifepristone and misoprostol for medical abortion. Knowledge, opinions, and behavior may have changed as a result or in response to continued socioeconomic development in Bangladesh. For all these reasons it would be very valuable to conduct another survey like ours. Nonetheless, we believe that our basic conclusion – that women who choose to terminate pregnancies associate lower 'costs' with doing so than women with unintended pregnancies who do not terminate – is a general one that would continue to hold in other locations and in current times.

IMPLICATIONS FOR FAMILY PLANNING PROGRAMS

Only around one third of women who had unintended pregnancies (whether terminated or not) were using contraception before conception of the index pregnancy, mostly pills and condoms. Most of these women (about 90%) reported that they were using the method when they became pregnant, which implies a very high failure rate. This is consistent with an earlier study [5] that found that temporary contraceptive methods have a relatively high failure rate (15% within 12 months) and estimated that about 25% of births in Bangladesh were due to contraceptive failure. The 2014 Bangladesh Demographic and Health Survey reported relatively high levels of method failure of short-acting methods [1]. Similar to other studies [19], we find that of those not using contraception prior to the unintended pregnancy, about half said were not using it either due to side effects (experienced or feared) or because they could not find a suitable contraceptive method. Unmet need for contraception is still high in Bangladesh, 12% in 2014, indicating a lack of accessibility to family planning services [1]. Singh et al. [10] showed that there were 1.3 million abortions and menstrual regulations performed in Bangladesh in 2010 - a very high level of pregnancy termination. Most of them are likely to be associated with non-use of contraception, early method discontinuation due to side effects, and contraceptive use failure. Under these circumstances, improvements in contraceptive knowledge and method compliance, increased access to and quality of contraceptive services in addressing unmet need, method side effects and discontinuation along with promotion of long-acting reversible contraceptives and permanent methods are important for reducing the rate of unintended pregnancy and, with it, the incidence of pregnancy termination.

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