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Contraceptive discontinuation and switching patterns in Bangladesh

1. INTRODUCTION

During the past three decades, the contraceptive prevalence rates in Bangladesh have increased sevenfold, from 8 to 58 percent, making Bangladesh a country with a history of one of the most successful family planning programs. However, the corresponding decline in the total fertility rate has not been encouraging. Although the initial years of high contraceptive use brought down the total fertility rate from 6.3 births per woman in 1975 to 3.3 births per woman in 1993-94, between 1994 and 2000, the total fertility rate stagnated at around 3.3 births per woman (Mitra *et al.*, 2001). After almost a decade long stagnation, the total fertility rate in Bangladesh has slightly declined to 3.0 births per woman (BDHS, 2004). Recently, the Bangladesh Demographic and Health Survey 2007 estimates show that the fertility decline has continued in recent years, with the total fertility rates dropping to 2.7 births per woman but the contraceptive discontinuation rates have increased by 14 percent from 2004 BDHS surveys (NIPORT, Mitra and Associates & Macro International, 2009). Given this, demographers are concerned about the stagnation and declining of the total fertility rates which is not in tune with the rising contraceptive prevalence rates. The reverse relationship of these two rates is well established in the literature and the lack of further decline and stagnation of the total fertility rates since 1993 has further implications which may even negate earlier theories of sweeping success of the family planning programme in Bangladesh (Cleland *et al.*, 1994). After thorough investigating, Kamal and Chowdhury (2001) have identified that the major reasons for the stagnation of total fertility rates are the high rates of discontinuation of modern contraceptive methods and the low use of clinical contraceptives methods in Bangladesh. Jejeebhoy (1991) also found that a consistent relationship between the level of contraceptive use and fertility does not always exist. In some countries, high contraceptive prevalence rate is offset by high rates of discontinuation, inconsistent and incorrect use, and consequently contraceptive failure among method acceptors.

Contraceptive discontinuation of different methods i.e. from more effective to less effective contraceptive methods or vice versa becomes a progres-

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sively more important determinant of fertility with respect to the pace of increasing/decreasing trends in fertility target of couples. Couples can achieve their reproductive goals only when they consistently, correctly and effectively use contraceptive methods (Al-Sabir *et al.*, 2004; Vaughan *et al.*, 2008). Contraceptive use is the consequence of contraceptive acceptance, method choice, continuation, switching and failure. Careful analysis of the reasons for contraceptive discontinuation can help improve service delivery in various ways. For example, the rate at which women discontinue use of a method due to experiencing side effects may indicate that counselling needs improvement and that information about the method needs to be communicated more effectively (Hossain and Phillips, 1996). In this context, Khan (2001) has examined a study on the role of side effects and other important predictors in oral contraceptive discontinuation in rural Bangladesh. He has observed that more than half of oral contraceptive users discontinued due to side effects. Other significant of discontinuation included being Muslim, first time oral contraceptive use, lacking husband's support, and the duration of use. However, Moreau *et al.* (2007) have reported that women discontinued using contraceptive methods due to general dissatisfaction. Discontinuation was highest among the diaphragm users, followed by long-acting hormonal methods, oral contraceptives and the condom.

Unwanted pregnancies not only occur as a result of the failure to use contraceptives, they can also occur during periods when women engage in contraceptive switching. A key concern for the family planning programme in Bangladesh is the rate at which contraceptive users switch to less efficacious methods. This may diminish the overall benefits of contraceptive switching. There is evidence that a large proportion of women who discontinue one method of contraception, switch to another less effective method and some women abandon contraceptive use (Grady *et al.*, 1989; Hossain, 2005; Vaughan *et al.*, 2008). In Bangladesh, pill users who discontinue are more likely to abandon use completely (Steele and Diamond, 1999; Kamal *et al.*, 2007) than to switch to another modern method. Method switching is influenced by the method used, method related difficulties with the previous method and education of women (Steele and Diamond, 1999). The rate of switching to no method is of particular importance because it represents the state of highest risk of unwanted pregnancy. Many of these pregnancies may end in abortion if services are available and the procedure accepted. Abortion is widely available in developed countries and consequently fertility levels remain relatively unaffected by variations in contraceptive discontinuation. In France, Moreau *et al.* (2009) have found that among women who experienced an unwanted pregnancy leading to an abortion, half had discontinued their contraceptive methods due to a method-related reason in the six months preceding the abortion. But in the developing countries like Bangladesh, where abortion is not freely available or restricted, fertility rates are quite sensitive to the level of contraceptive discontinuation and switching. The proportion of unwanted births due to contraceptive discontinuation and switching to less effective method may

therefore likely to rise the fertility targets, to a degree that depends upon the aggregate contraceptive efficacy of the method-mix used in the population.

The risk of contraceptive discontinuation resulting from contraceptive failure is related to characteristics of the method itself, the quality of the family planning services, and supply factors, but is more likely to depend on user characteristics (Hossain, 2005; Kamal N. *et al.*, 2007). The family planning programme's influence, women's education and reason for use are strongly related to the probability of discontinuing and switching to a modern method in Bangladesh (Ali and Cleland, 2010). As a result, family planning managers need to know not only the levels and trends of discontinuation and switching of different methods, but also the socioeconomic and other determinants, so that they can plan programs accordingly and help prospective users make informed choices. The purpose of this study is to: (i) examine the differentials of contraceptive use, (ii) estimate contraceptive discontinuation and contraceptive switching rates, (iii) investigate the determinants of contraceptive discontinuation and switching behaviour by the selected socioeconomic and demographic characteristics of women. The study helps to understand the success and quality of the family planning program and how services relate to further reducing the total fertility rate in Bangladesh. It also helps to understand women's contraceptive use over the life course and the challenges they face to continuing use.

2. DATA AND METHODS

The data for this study were drawn from the nationally representative 2004 Bangladesh Demographic and Health Survey (BDHS). The survey was conducted between January and May 2004 and employed a two-stage sample design to collect information on fertility, family planning, maternal and child health. In this survey, all ever married women of age 10-49 who were members of the households or visitors present at the time of interview and had slept in the sample households the night prior to the interview were selected and interviewed. For this purpose, 11,601 women were identified as eligible for the individual interview and interviews were completed for 11440 of them.

BDHS questionnaire includes a calendar which is located in the flip-out section at the end of the individual questionnaire. It records information about the timing of recent events in the respondent's life according to each month. Events which occurred between June 1998 and the time of interview are included. On the vertical axis of the calendar, there are 72 boxes (each box representing 1 month of the year) dividing into 6 sections (each representing 1 year of time or 12 months of the year). On the horizontal axis are 8 columns covering different but related experiences in the woman's life. For this study, only the first two columns were utilized. Column 1 covered events on live births, pregnancies and contraceptive use, while column 2 contained reasons for discontinuing contraceptive use.

Contraceptive use histories collected in the contraceptive calendar of the Demographic and Health Survey (DHS) questionnaire are viewed as a better source of data to study contraceptive use dynamics (Moreno, 1993; Moreno and Goldman, 1991). Several researchers such as Goldman *et al.* (1989) and Curtis (1997) have determined that contraceptive calendar data can be of fairly good quality and are easier to obtain than with a prospective design.

In this study, the unit of analysis is the segment of contraceptive use among women aged 10-49 years. A segment of contraceptive use refers to uninterrupted use of a contraceptive method. The study is based on segments of use in a five-year period before the survey. Segments that began before this five year period (left truncated and left censored segments) were excluded from the analysis. Inclusion of such segments complicates the analysis; moreover, their omission has little effect on discontinuation rates at durations of less than two years (Curtis and Hammerslough, 1995). However, caution is necessary when interpreting continuation rates for long durations, as those estimates are likely to be affected by the exclusions. The last three months of the calendar prior to the time of survey were excluded from the analysis to eliminate the possibility of underestimating contraceptive failure due to unidentified failures (Moreno, 1993; Curtis and Hammerslough, 1995). For example, a woman who may be using a contraceptive method at the time of the interview may not know that she is already pregnant. Therefore, the period covered by the data on segments of use is 3-62 months before the interview date for each woman. Segments which had started before the beginning of the period (3-62 months prior to the survey) were excluded from the analysis because duration of use cannot be determined for such cases. However, segments of contraceptive use which were still in effect at the end of the period (censored segments) are included in the analysis to represent segments of long duration. Segments of non-use in which the woman is not pregnant and not using contraception are also included in the system file, but they are dropped from the analysis.

For each segment of contraceptive use, the following variables were created: method of contraception, reason for discontinuation, status in the month after the segment of use, duration of use and starting date (as a century month code) of the segment of use. To create the final system file for the analysis, selected background variables were extracted from the BDHS data file and merged with the calendar system file. A total of 10124 segments of use were included in the sample (Table 2). The oral contraceptive pill yielded the highest number of segments of use (5149) followed by injectables (1751), condom (1321), periodic abstinence (946), withdrawal (689) and the IUD (106). Table 1 shows the distribution of the number of segments of use in the five years prior to the survey contributed to the analysis. In this study, sterilization were excluded from the analysis, since sterilization is a permanent method and has more left truncated and left censored segments than other methods. For analysis purposes, sampling weights were used in order to take into account the sampling design and the social and demographic composition.

Table 1 – *Distribution of number of use intervals/ segments contributing to the analysis by each woman*

Number of segments/ episodes	Woman by number of segments	
	Number of woman	Percentage of woman
1	5865	57.9
2	2428	23.9
3	993	9.8
4	487	4.8
5	236	2.5
6+	115	1.1
Total	10124	100.0

In this study, the dependent variable is the reason specific discontinuation of contraceptive use. The background variables were based on previous studies and were selected on the basis of their association with contraceptive use.. For this study, the following covariates are considered: residence, region of residence, education, religion, socioeconomic status, family planning workers' visit, contraceptive intention status, age and parity. One problem with the choice of background variables collected in the survey is that they are usually measured at the time of the survey. As a result, many of the variables may not be relevant to an earlier segment of use, particularly age and parity that change over time. The age and parity variables were created to refer to the start of the segment of use. Contraceptive intent was constructed from information collected on the planning status of births. Each woman is asked a question "whether the birth was wanted at that time, wanted later or not wanted at all". The information on the date that segment of use began was used to identify the birth following a segment of use. If a woman reported that the birth was "wanted then or wanted later" the contraceptive intent for that segment was classified as "spacer". If it is reported as "not wanted at all" the intent for that segment was classified as "limiter". For contraceptive intent, births that occurred in the last three years before the survey were considered. The other variables were not expected to have changed in the five year period prior to the survey.

To estimate the discontinuation and switching rates, life table techniques have become a standard approach (Curtis and Hammerslough, 1995; Jejeebhoy, 1991) which allows for the inclusion of censored segments of contraceptive use in the estimation procedures. Life table rates provide an excellent basis for assessing continuation of different contraceptive methods, since they control for duration of use (Laing, 1985). The basic idea of the life table when applied to contraceptive discontinuation is that duration of use is broken down into monthly intervals. The number of discontinuations and the number of women-months of exposure are tabulated for each interval, and then the probabilities of discontinuing use at each duration are calculated. A single decrement life table is used to calculate method-specific discontinuation rates. An extension of this life table,

known as the multiple-decrement life table, was used for discontinuation by reason and by status after discontinuation. The multiple-decrement life table generates net discontinuation rates which represent the rate of discontinuing for each reason in the presence of other competing reasons for discontinuation (Nambodiri and Suchindran, 1987; Preston, Heuvelline and Guillot, 2001).

3. DIFFERENTIALS OF CONTRACEPTIVE USE

Table 2 provides the differentials of contraceptive use by selected socioeconomic and demographic characteristics. The contraceptive use prevalence rate is higher in urban areas (56.1 percent) than rural areas (47.9 percent). More condom use is observed in urban areas than rural areas but there are little urban-rural differentials in using other modern methods such as the pill, injectable and IUD. There is relatively large variation in contraceptive prevalence across the six administrative divisions. The prevalence is highest in Rajshahi division (61.1 percent), closely followed by Khulna (58.4 percent), Dhaka (52.5 percent), Barisal (50.5 percent) and Chittagong (42.8 percent), while it is lowest in Sylhet (27.7 percent) division.

A positive relationship is observed between education and contraceptive prevalence, i.e., as education increases contraceptive prevalence also increases. Women with secondary and higher education have a contraceptive prevalence of 55.9 percent. The corresponding figures for those with primary education or no education is 50.8 percent and 45.9 percent respectively. It is interesting, however, that the proportion of users using injectables is highest among women having no education and lowest among those with secondary and higher education. Contraceptive use is higher in non-Muslims than Muslims. This pattern is consistent with all contraceptive methods, except for the injectable and condom, where use among Muslims is higher than among their non-Muslim counterparts.

Contraceptive prevalence is positively related to socioeconomic class. The prevalence rate is generally higher among women of higher socio-economic class. About 57 percent of women in the highest socioeconomic class reported using contraceptive methods, compared with only 43 percent of those in the lowest SES category. The pill is the most widely used method among women across all socioeconomic classes. Women from the highest SES are more likely to use the condom, while those from the lowest SES are more like to use the injectable.

The motivation to use contraception is distinctly oriented towards limiting rather than spacing the number of births. The contraceptive prevalence among women who are spacing births is 56.1 percent, while the proportion for women who are limiting births is 67.2 percent. It is worthwhile to note that increasing use for spacing can reduce the need for limiting births because well-spaced births will reduce the number of births a woman can have during her reproductive life. Use of less effective methods, such as periodic abstinence, withdrawal and other traditional methods, is higher for limiting births than for spacing births. This un-

derscores the importance of educating women on what methods are more appropriate for stated intentions of use. As expected, modern methods such as the injectable and the IUD are substantially higher among limiters than among spacers. Family planning outreach workers visiting home had a positive effect on contraceptive use. Several factors were associated with the underlying causes. When a woman faces side-effects or other method-related problems with the pill, injectable or other modern method, the outreach workers' contact reduces the chances of discontinuing the method and increases the chance of switching to another suitable modern method. Contact with an outreach worker also motivates a woman to continue using a contraceptive method. The result reveals that 73.5 percent of women who were contacted by a family planning outreach worker were using contraceptive methods compared with 47.2 percent of women who did not have any contact with a family planning outreach worker during the previous six months.

Table 2 – Percentage of women age 10-49 using contraceptive method by selected background characteristics and the number of segments of use in the five years prior to the survey, BDHS 2004

Characteristics	Contraceptive method							Total	No. of woman
	Pill	Injection	IUD	Condom	Periodic Abst	Withdrawal	Others		
<i>Residence</i>									
Urban	26.5	9.7	0.5	8.2	6.6	4.2	0.5	56.1	3639
Rural	24.3	9.5	0.6	2.9	6.6	3.4	0.7	47.9	7081
<i>Division</i>									
Barisal	22.7	12.8	0.6	2.7	7.2	3.9	0.7	50.5	1292
Chittagong	19.5	8.0	0.6	5.4	5.4	3.1	0.9	42.8	1980
Dhaka	27.4	8.1	0.5	5.6	7.0	3.2	0.6	52.5	2396
Khulna	27.3	11.5	0.6	5.7	7.0	5.8	0.6	58.4	1622
Rajshahi	33.8	11.8	0.5	4.3	6.4	3.8	0.5	61.1	2342
Sylhet	10.6	4.0	0.7	3.0	6.9	2.1	0.4	27.7	1088
<i>Education</i>									
None	21.8	11.8	0.6	1.5	6.9	2.2	1.1	45.9	3978
Primary	25.6	10.4	0.5	2.9	7.1	3.7	0.5	50.8	3190
Secondary	28.1	6.2	0.6	9.8	5.7	5.3	0.2	55.9	3552
<i>Religion</i>									
Muslim	24.2	10.0	0.6	4.8	6.3	3.6	0.6	50.1	9583
Non-Muslim	32.1	5.7	0.4	3.8	9.1	4.6	0.4	56.1	1131
<i>Socioeconomic status</i>									
Poorest	21.2	11.9	0.4	1.3	5.4	2.3	1.1	43.4	1886
Poorer	24.7	11.8	0.7	1.7	6.2	2.8	0.7	48.6	1921
Middle	26.1	9.2	0.4	2.4	6.9	3.4	0.7	49.3	2001
Richer	27.4	9.3	0.6	3.6	7.1	3.7	0.5	52.2	2155
Richest	25.4	6.9	0.7	11.5	7.0	5.4	0.3	57.1	2757

...Cont'd...

Table 2 – *Cont'd*

Characteristics	Contraceptive method							Total	No. of woman
	Pill	Injection	IUD	Condom	Periodic Abst	Withdrawal	Others		
<i>Contraceptive intent</i>									
Spacer	30.4	11.4	0.7	5.2	4.8	3.1	0.5	56.1	4476
Limiter	30.7	16.0	1.3	4.6	9.3	3.3	2.0	67.2	787
<i>FP Visit</i>									
No	22.0	9.2	0.5	4.6	6.5	3.7	0.7	47.2	9284
Yes	44.8	11.8	1.1	5.3	6.8	3.6	0.2	73.5	1436
<i>Age</i>									
<25 years	25.6	7.8	0.3	5.0	3.2	3.3	0.2	45.4	3868
25-34 years	31.2	12.8	0.7	5.1	6.0	3.1	0.7	59.5	3620
35+ years	17.5	8.1	0.8	3.8	11.3	4.8	1.0	47.2	3232
<i>Parity</i>									
0-1	21.2	4.8	0.2	5.5	3.4	3.3	0.1	38.5	3299
2-3	30.8	11.7	0.6	5.7	6.3	3.6	0.4	59.0	3940
4+	22.3	11.6	0.9	2.7	9.9	4.1	1.4	52.9	3479
Total	25.0	9.6	0.6	4.7	6.6	3.7	0.6	50.8	10720
Current users	2685	1025	62	502	704	393	66	5437	-
No. of censored segments	2021	776	46	307	420	238	112	3920	-
Total no. of segments	5149	1751	106	1321	946	689	162	10124	-

Note: Sterilization and Norplant were excluded

Contraceptive use increases up to aged 25-34 years and then decreased. Contraceptive prevalence is lowest (45.0 percent) among the youngest age group (less than 25 years), then sharply increases to 60.0 percent for women aged 25-34 and 47.0 percent among women of age 35 and above. Parity has a curvilinear influence on contraceptive use. The proportion of women using no family planning method is similar among those with no or only one child and is lower than those with 2-3 children. Contraceptive use peaks (59.0 percent) at parity two or three and then decreases to 53.0 percent among women with at least four children.

4. LIFE TABLE ANALYSIS FOR DISCONTINUATION

4.1 *Contraceptive discontinuation rates*

The contraceptive discontinuation rate is an important indicator of the success and quality of contraceptive use. It helps to understand the whole process of contraceptive use in the population. Family planning programs can have on-

⁶The claim is somewhat paradoxical considering that Poincaré laid the foundations of modern chaos theory.

ly limited impact on fertility reduction if contraceptive discontinuation rates are high. Table 3 uses life-table techniques to show the 12-month and 24-month contraceptive discontinuation rates at different durations of use together with the median duration of use for each method. The 12-month discontinuation rate represents the percentage of users who discontinue use of a method within a year. Similarly, the 24-month discontinuation rate represents the percentage of users who discontinue use within two years.

The result shows that discontinuation rates are found to be very high in Bangladesh. For all reversible methods combined, half of Bangladeshi women (51.0 percent) who initiate the use of a contraceptive method discontinue the method during the first year of use and two-thirds (66.0 percent) of them stop using by the end of the second year of use. There is large variation in discontinuation rates for different contraceptive methods. The condom has the highest 12-month discontinuation rate (72.0 percent), followed by withdrawal (60.0 percent), while IUD has the lowest discontinuation rate (33.0 percent). Pill users and those practicing injectables have almost the same discontinuation rates (63.0 percent) within the first year of use and at the end of the second year of use. The discontinuation patterns are the same at the end of the second year of use for different contraceptive methods, though the rate of increase in discontinuation is highest for the IUD, followed by the pill and injectables. The median duration of use for each method is the duration by which half of the users discontinued using the methods. The median duration of use for all reversible methods is 11.9 months i.e. fifty percent of women who initiated contraceptive methods stop the method after 12 months. The median duration also varies widely for each contraceptive method. The result indicates that IUD has the longest median duration (24.3 months), followed by periodic abstinence (17.7 months), while condom users on average discontinue after the shortest period (3.7 months). Pill and injectable users stop after about 13 months and women using withdrawal on average discontinue after 7.6 months.

Table 3 – *Life table discontinuation rates and median duration of use by different contraceptive methods according to BDHS 2004*

Contraceptive Method	12-month discontinuation rates (%)	24-month discontinuation rates (%)	Median duration of use (Months)	Number of segments of use
Pill	48.0	63.0	13.4	5149
Injection	49.0	63.0	13.7	1751
IUD	33.0	50.0	24.3	106
Condom	72.0	83.0	3.7	1321
Periodic Abstinence	42.0	62.0	17.7	946
Withdrawal	60.0	73.0	7.6	689
Total (Reversible method)	51.0	66.0	11.9	10124

4.2 *Determinants of contraceptive discontinuation rates*

The differentials in the total discontinuation rates by characteristics of users at least reflects the choice of methods of those users. The contraceptive method varies according to convenience for the user, and effectiveness, availability and side-effects of the method. Consequently, the contraceptive discontinuation rates vary by methods (as shown above). The propensity to discontinue use of a contraceptive method is expected to depend on user characteristics. The differentials in discontinuation rates by method partly reflect user characteristics and partly reflect method characteristics. Table 4 represents the 12-month discontinuation rates for the pill, injectables, condom, periodic abstinence, withdrawal and for all reversible methods (combined) by socio-economic and demographic characteristics. The results show that there is very little urban-rural differential in discontinuation rates for all reversible (combined) contraceptive methods. Discontinuation rates were observed to be higher in urban areas for the pill and injectable, and lower for the condom and traditional methods (periodic abstinence and withdrawal). There are no marked variations in the discontinuation rates among the administrative divisions of the country. Women in Chittagong and Barisal division are more likely than women in other divisions to discontinue using the pill, while women in the Sylhet and Dhaka divisions are most likely to discontinue the injectable. However, for the condom, the discontinuation rate is lowest in Chittagong. For traditional methods, discontinuation rates of periodic abstinence is lowest in Sylhet, whereas, discontinuation of withdrawal is highest in Sylhet. Discontinuation rates for all reversible methods increases with education. A similar pattern was observed among women who used the pill. However, women with a primary level of education have higher levels of discontinuation for all three methods (injectable, condom and periodic abstinence) compared to women with no education and women with secondary and higher education. Illiterate women are more likely to discontinue using withdrawal than women of higher education.

The data shows that Muslim women are slightly more likely to discontinue contraceptive methods (all reversible methods combined) than their non-Muslim counterparts. The same findings are observed for the pill and injection. However, for the condom and traditional methods (periodic abstinence and withdrawal), the discontinuation rate among non-Muslim women is higher. Discontinuation rates for all reversible methods, the pill, injectable and withdrawal are higher among women of higher socio-economic status than that of women of lower socioeconomic status. However, for the condom, the discontinuation rate is highest for the poorest group of women. However, the discontinuation of periodic abstinence is highest among women of middle income economic groups.

For all reversible contraceptive methods, spacers have higher discontinuation rates than limiters. This finding suggests that the motivation for contraceptive use is an important factor in contraceptive discontinuation. Spacing births is likely to be more common among younger users as well as among users with low parity. Except for the pill, the discontinuation rates for all modern and traditional contra-

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ceptive methods appears higher among women of under age 25 than those age 25 or older. Discontinuation rates are higher among low parity women compared to higher parity women. This may be due to the fact that younger women, who

Table 4 – *Life table discontinuation rates for the pill, injection, condom, periodic abstinence, withdrawal and all reversible contraceptive methods (combined) by selected socioeconomic and demographic characteristic, BDHS 2004*

Characteristics	12-month Contraceptive discontinuation rates (%)					
	Pill	Injection	Condom	Periodic abstinence	Withdrawal	All reversible methods (combined)
<i>Residence</i>						
Urban	48.0 (1233)	52.0 (428)	63.0 (492)	40.0 (188)	54.0 (154)	50.0 (2561)
Rural	46.0 (3915)	48.0 (1323)	76.0 (830)	42.0 (758)	62.0 (535)	49.0 (7564)
<i>Division</i>						
Barisal	54.0 (348)	42.0 (148)	76.0 (61)	48.0 (75)	55.0 (37)	52.0 (693)
Chittagong	56.0 (799)	49.0 (273)	64.0 (197)	36.0 (132)	56.0 (94)	52.0 (1545)
Dhaka	44.0 (1658)	53.0 (558)	68.0 (476)	47.0 (310)	56.0 (210)	48.0 (3300)
Khulna	46.0 (669)	46.0 (220)	76.0 (231)	44.0 (129)	63.0 (131)	51.0 (1409)
Rajshahi	43.0 (1527)	47.0 (490)	78.0 (322)	37.0 (229)	64.0 (192)	47.0 (2819)
Sylhet	48.0 (147)	54.0 (62)	73.0 (35)	34.0 (71)	70.0 (24)	47.0 (359)
<i>Education</i>						
None	39.0 (1449)	40.0 (730)	58.0 (125)	27.0 (312)	63.0 (168)	38.0 (2928)
Primary	48.0 (3359)	56.0 (977)	75.0 (891)	50.0 (563)	59.0 (446)	47.0 (6351)
Secondary	62.0 (340)	42.0 (44)	66.0 (306)	42.0 (72)	56.0 (74)	58.0 (846)
<i>Religion</i>						
Muslim	47.0 (4718)	49.0 (1654)	70.0 (1185)	40.0 (805)	59.0 (608)	49.0 (9213)
Non-Muslim	37.0 (426)	45.0 (94)	80.0 (136)	53.0 (140)	64.0 (80)	48.0 (903)
<i>Socioeconomic status</i>						
<i>Poorest</i>						
1	41.0 (828)	43.0 (355)	86.0 (95)	38.0 (193)	45.0 (63)	43.0 (1590)
2	39.0 (957)	49.0 (375)	71.0 (125)	38.0 (164)	58.0 (107)	43.0 (1789)
3	49.0 (1068)	47.0 (316)	80.0 (182)	49.0 (229)	62.0 (151)	52.0 (2003)
4	46.0 (1041)	50.0 (375)	71.0 (294)	40.0 (188)	53.0 (136)	50.0 (2074)
Richest	55.0 (1254)	55.0 (330)	67.0 (625)	41.0 (173)	68.0 (232)	57.0 (2668)
<i>Contraceptive intent</i>						
Spacer	53.0 (2294)	57.0 (527)	78.0 (722)	51.0 (360)	72.0 (343)	58.0 (4305)
Limiters	38.0 (1838)	42.0 (916)	55.0 (344)	30.0 (402)	43.0 (241)	39.0 (3887)
<i>Age</i>						
10-24	47.0 (3705)	53.0 (1021)	77.0 (990)	50.0 (510)	70.0 (460)	53.0 (6842)
25-34	40.0 (1123)	42.0 (593)	57.0 (257)	35.0 (311)	45.0 (154)	41.0 (2525)
35+	59.0 (267)	50.0 (138)	48.0 (57)	24.0 (120)	34.0 (69)	46.0 (673)
<i>Parity</i>						
0-1	54.0 (1687)	52.0 (253)	80.0 (724)	52.0 (248)	72.0 (291)	60.0 (3235)
2-3	43.0 (2288)	50.0 (874)	60.0 (729)	42.0 (337)	60.0 (244)	47.0 (4290)
4+	44.0 (1173)	41.0 (625)	64.0 (169)	35.0 (361)	39.0 (154)	42.0 (2599)

Note: The numbers of segments of use are indicated within braces

Table 5 – Median duration of use for different contraceptive methods by selected socioeconomic and demographic characteristics, BDHS 2004

Characteristics	Median duration of use (months)					
	Pill	Injection	Condom	Periodic abstinence	Withd-rawal	All reversible method
<i>Residence</i>						
Urban	12.9	11.7	5.8	17.0	11.4	12.1
Rural	13.9	14.2	2.7	17.8	6.4	12.5
<i>Division</i>						
Barisal	11.1	18.3	3.9	12.8	10.9	11.5
Chittagong	9.9	13.1	6.4	19.1	11.2	11.6
Dhaka	16.2	11.5	4.4	13.6	10.8	12.7
Khulna	14.6	14.9	2.6	17.2	5.9	11.7
Rajshahi	17.1	17.1	2.2	20.2	4.8	13.6
Sylhet	12.5	11.4	2.9	16.4	6.0	13.1
<i>Education</i>						
None	20.0	23.1	9.0	23.4	3.7	21.6
Primary	12.6	11.3	2.8	12.2	6.9	13.5
Secondary	6.1	24.3	4.9	19.0	11.6	8.6
<i>Religion</i>						
Muslim	13.1	12.9	3.8	18.1	7.7	12.3
Non-muslim	23.3	14.9	1.5	10.6	4.4	13.6
<i>Socioeconomic status</i>						
Poorest	17.5	23.1	1.3	19.6	15.6	17.2
2	20.1	14.9	2.8	19.0	5.7	18.0
3	12.4	12.8	2.5	12.2	6.4	11.6
4	14.8	11.9	2.9	18.5	11.6	12.2
Richest	8.8	11.4	5.2	16.7	5.4	8.5
<i>Contraceptive intent</i>						
Spacer	11.8	11.1	2.7	11.8	5.6	8.7
Limiter	23.9	23.1	9.5	35.8	16.9	23.3
<i>Age</i>						
10-24	13.0	11.7	3.0	11.9	5.8	11.3
25-34	22.8	23.1	5.9	24.4	15.9	21.7
35 +	5.7	11.9	12.7	36.0	36.0	16.6
<i>Parity</i>						
0-1	11.1	12.1	2.3	11.6	5.8	7.2
2-3	17.1	11.5	6.3	16.5	5.7	13.6
4 +	17.8	23.0	5.3	23.1	26.8	19.8

are at low parity and presumably would want to have another child, are more likely than older women to discontinue using contraception, whether it is the pill, injectable, condom or periodic abstinence.

Table 5 shows the median duration of use for modern, traditional and all reversible methods by background characteristics. The results indicate that the median duration of use is higher where the discontinuation rate is lower and the median duration is lower where the discontinuation rate is higher. The duration varies widely for women of different subgroups reflecting the differences observed in the discontinuation rates. For example, spacers, (i.e. women who want to have another child in the future), stated a median duration of one year. Half of the limiters, (i.e. women who do not want any more children), continue using the pill for at least two years.

The results show that the preferred reversible methods of contraception (the pill, injectable and periodic abstinence) among Bangladeshi women have relatively high 12-month and 24-month discontinuation rates and relatively short median duration of use. It is important that program managers seriously consider the implications of the finding that periodic abstinence, whose prevalence is not much different from that of the injectable, has a longer median duration of use than the pill. Furthermore, this finding raises the question about what reasons might contribute to the higher discontinuation rate of the injectable compared to periodic abstinence. An important issue is that the discontinuation rates for the preferred reversible methods (pill and injection) are found to be higher among women of higher socio-economic status. The findings indicate that family planning field workers' visits and supply through them would improve the quality of family planning services in general, and thereby also reduce discontinuation rates.

5. MULTIPLE-DECREMENT LIFE TABLE ANALYSIS

5.1 *Contraceptive discontinuation rates by reason*

An analysis of the reasons for discontinuation is important to understand why users discontinue use of a particular method of contraception. Reasons for discontinuing may well be different for different methods as well as for different types of users. In this analysis, the reasons for discontinuation are divided into five mutually exclusive and exhaustive categories: (i) contraceptive method failure, (ii) to get pregnant, (iii) side effects, (iv) method related reasons (partner disapproved, health concerns, availability, want a more effective method, inconvenient to use and cost) and (v) other reasons (infrequent sex, separated/widowed, fatalistic, sub-fecund, don't know and other reasons). The method-specific discontinuation rates for each reason are obtained from a multiple decrement life table constructed with five modes of decrement correspon-

ding to the five reasons for discontinuation. Table 6 presents the 12-month discontinuation rates by reason for each method. For all reversible methods, method-related reason is the most reported reason for discontinuation, closely followed by side effects. The results shows that 15.8 percent of users discontinue use of their method in the first year due to method related reason and 14.6 percent discontinue due to side effects. Furthermore, 8.3 percent of women intentionally stop using their method within a year to get pregnant, followed by 7.5 percent for other reasons, while 4.5 percent discontinue use due to method failure. In the first year of use, side effects are the main reason for discontinuing pill, injectable and IUD, while method-related reasons are the main reason reported by women who are using condoms, withdrawal and/or periodic abstinence. Although condom users mainly cite method-related reasons for discontinuation, the net discontinuation rate for the condom is as high as the net failure rate for periodic abstinence. This may be due to the fact that condom discontinuation is more related to the husband's disapproval and feelings about inconvenience of use.

Table 6 – *Life table 12-month contraceptive discontinuation rates by reason for discontinuation, Bangladesh, 2004*

Contraceptive Method	Types of transition					Total
	Contraceptive failure	To get pregnant	Side effects	Method related reasons	Other reasons	
Pill	3.9	8.5	17.3	7.8	9.3	46.9
Injection	0.4	5.1	28.1	10.4	4.7	48.9
IUD	1.0	5.1	18.5	8.3	0.1	33.0
Condom	6.3	11.6	3.7	42.6	7.7	71.8
Periodic Abstinence	10.0	6.3	0.1	21.1	4.2	41.7
Withdrawal	8.5	13.1	0.1	30.0	8.3	60.0
Total	4.5	8.3	14.6	15.8	7.5	50.7

5.1 *Determinants of discontinuation rates by reason for discontinuation*

The 12-month discontinuation rate for all methods by reasons for discontinuation and select socioeconomic and demographic characteristics is presented in the Table 7. The result shows that there is little variation in discontinuation rates by residence and administrative division. However, discontinuation due to method related reasons is highest in urban areas and in Khulna division (a administrative division of Bangladesh). Women who have no or primary level education primarily discontinue contraceptives due to side effects and method related reasons, while women with secondary and higher levels of education discontinue due to method-related and other reasons. Discontinuation due to method failure and to get pregnant is higher among high-

er educated women. The net failure rates are lowest among women who have no education. Muslim and non-Muslims have about the same 12-month discontinuation rate, but Muslims are more likely to discontinue due to failure and other reasons, while non-Muslims have a higher discontinuation rate due to method related reasons. The method specific discontinuation rates also increase as socio-economic status improves. Women of higher socio-economic status are more likely to discontinue contraceptive methods than the women of lower socio-economic status. The largest differences in discontinuation rates were associated with contraceptive intent and parity. The net discontinuation rates are higher among spacers than limiters. However, limiters exhibited a higher discontinuation rate due to side effects. Women with no or one child are more likely than women of higher parity to discontinue contraceptive methods due to failure, desire to get pregnant, method related reasons and other reasons. The net discontinuation rates due to failure, desire to get pregnant and method related reasons are higher among the younger women. On the other hand, older women are more likely to discontinue for side effects and other reasons. Moreover, the discontinuation rates due to method failure decrease with age.

Table 8 shows the 12-month discontinuation rates for the pill by reason for discontinuation and background user characteristics. The net discontinuation rates are found to vary by education, contraceptive intent, age, parity, religion, region and economic status. The data show that a large proportion of women discontinue using the pill due to side effects, with a modest proportion discontinuing due to method failure, desire to get pregnant and method-related reasons. Large differences are observed in the discontinuation rates by age, parity, contraceptive intent and religion. Those using the pill that are young and/or have no children are more likely to discontinue out of desire to get pregnant. Among women without children or with one child, 13.4 percent discontinue due to a desire to get pregnant, compared with 4.4 percent of women with four or more children. Similarly, 10.5 percent of women in the youngest age group (<25 years) discontinue due to a desire to have more children, compared to 2.2 percent among women age 35 and above. The largest differential is observed for contraceptive intent: spacers are 14 times more likely than limiters to discontinue using the pill because of a desire to get pregnant. The failure rate is twice as high among spacers compared to limiters.

Pill discontinuation due to method related reasons is higher among urban than rural women. The failure rate for the pill is highest in Sylhet and lowest in Chittagong. The discontinuation rate due to side effects among pill users is highest in Khulna and Sylhet and lowest in Rajshahi. Pill discontinuation rates due to other reasons is higher among women from Barisal and Chittagong. Higher educated women primarily stop using pill to get pregnant whereas illiterate women discontinue using the pill primarily due to side effects. The higher pill discontinuation rates among women from higher socio-economic status are mainly due to side effects, method related reasons and others reasons.

Table 7 – 12-month discontinuation of all contraceptive methods by reason for discontinuation Bangladesh, 2004

Characteristics	Types of transition (Reason for discontinuation)					Total
	Contraceptive failure	To get pregnant	Side effects	Method related reasons	Other reasons	
<i>Residence</i>						
Urban	5.3	7.2	14.3	18.0	5.7	50.8
Rural	4.3	8.6	14.5	14.5	8.0	49.3
<i>Division</i>						
Barisal	4.4	8.4	14.2	12.7	12.6	52.2
Chittagong	3.7	9.9	14.2	13.2	12.0	52.9
Dhaka	5.1	8.4	15.1	16.5	4.0	48.7
Khulna	4.1	6.8	15.1	22.2	4.2	51.8
Rajshahi	4.5	7.7	13.7	13.0	9.3	48.4
Sylhet	4.7	9.7	14.6	12.7	6.0	47.7
<i>Education</i>						
None	3.2	4.9	15.6	10.4	4.9	39.0
Primary	4.9	9.5	14.6	16.9	7.9	53.6
Secondary	5.8	10.5	9.8	21.2	12.5	60.0
<i>Religion</i>						
Muslim	4.7	8.2	14.4	14.9	7.9	50.2
Non-Muslim	2.8	8.5	14.8	20.6	2.3	49.4
<i>Socioeconomic status</i>						
Poorest	4.8	8.3	14.2	11.3	4.8	43.3
2	2.7	7.9	14.6	12.4	5.2	42.8
3	5.3	9.4	14.7	15.3	7.0	51.8
4	4.3	8.4	16.1	14.1	6.6	49.5
Richest	5.1	7.3	13.2	20.9	11.3	57.9
<i>Contraceptive intent</i>						
Spacer	5.7	14.7	13.4	17.9	6.9	58.3
Limiter	3.0	0.1	15.2	13.5	7.7	39.3
<i>Age</i>						
10-24	5.2	11.1	14.3	16.4	6.5	53.5
25-34	3.8	2.3	13.7	12.8	8.3	40.8
35+	1.1	0.9	17.8	13.8	12.8	46.4
<i>Parity</i>						
0-1	5.1	15.7	11.4	20.4	7.8	60.2
2-3	4.4	5.4	16.6	13.8	7.1	47.4
4+	4.0	3.9	14.6	12.0	7.5	42.3

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Table 8 – 12-month discontinuation rates for the oral contraceptive pill by reason for discontinuation and selected background characteristics, BDHS, 2004

Characteristics	Types of transition (Reason for discontinuation)					Total
	Contraceptive failure	To get pregnant	Side effects	Method related reasons	Other reasons	
<i>Residence</i>						
Urban	4.6	7.5	18.0	10.5	7.1	47.7
Rural	3.7	8.8	17.1	7.0	9.7	46.2
<i>Division</i>						
Barisal	3.8	8.8	17.6	6.8	17.9	54.3
Chittagong	2.8	9.0	17.1	9.3	17.4	55.6
Dhaka	4.5	8.1	18.8	8.7	3.9	44.5
Khulna	3.2	7.6	20.2	9.1	5.9	46.4
Rajshahi	4.2	8.7	14.2	5.7	10.2	43.2
Sylhet	5.2	9.7	19.7	8.6	4.5	47.7
<i>Education</i>						
None	3.3	5.3	19.1	5.8	5.2	38.7
Primary	4.5	7.9	15.6	7.3	9.8	45.0
Secondary	4.0	11.1	17.4	9.6	11.2	53.1
<i>Religion</i>						
Muslim	4.2	8.5	17.0	8.1	9.6	47.4
Non-Muslim	1.3	8.2	20.5	4.1	3.4	37.4
<i>Socioeconomic status</i>						
Poorest	3.8	9.1	16.1	5.5	6.4	40.7
2	2.9	7.8	14.6	7.9	5.4	38.0
3	4.4	9.8	18.8	7.3	8.4	48.5
4	4.1	9.2	16.8	7.5	8.2	45.8
Richest	4.3	6.9	19.3	10.0	15.2	55.5
<i>Contraceptive intent</i>						
Spacer	4.0	14.4	17.6	9.6	7.7	52.9
Limiter	2.1	0.7	16.5	7.5	11.3	38.5
<i>Age</i>						
10-24	4.2	10.5	17.0	8.1	7.4	47.0
25-34	3.8	2.8	15.6	6.5	11.1	40.3
35+	1.6	2.2	24.5	7.1	23.6	58.9
<i>Parity</i>						
0-1	4.8	13.4	16.1	10.6	8.5	53.5
2-3	3.6	5.6	17.0	6.3	8.4	42.8
4+	3.2	4.4	17.3	6.7	9.8	43.3

6. CONTRACEPTIVE SWITCHING

6.1 *Switching rates for different methods*

Contraceptive switching behaviour is analyzed by examining the user's new contraceptive use status in the month immediately following discontinuation in conjunction with information on the reason for discontinuation. The new contraceptive status is classified into four categories (modes) and the multiple – decrement life table is applied to obtain the rates of switching to a defined status within 12 months of initiating use. The reasons for discontinuation for each method is useful in and of itself; information about contraceptive switching behaviour is of particular interest. This information identifies those women who abandon use of contraception despite wanting to contracept, thereby placing themselves at risk of an unwanted pregnancy. Therefore, the new contraceptive status of a woman in the month following discontinuation is classified into one of four categories: no longer needs contraception, using another modern method of contraception (switching to modern method), using another traditional method of contraception (switching to traditional method) and not using any contraception. The definition of no longer in need of contraception is based on the given reason for discontinuing use. Users reporting that they discontinued for one of the following reasons are classified as not having a need for contraception: failure to get pregnant, infrequent sex, separated/widowed and infecund/menopause. Users who discontinued due to method failure are also classified as no longer in need of contraception.

Those who are using another method in the month after discontinuation are classified as having switched to another method (modern or traditional), whereas those who are not using any method or who are pregnant are classified as having abandoned use (Curtis and Hammerslough, 1995).

Table 9 presents the 12-month cumulative switching rates by status after discontinuation (transition of different methods) for each method. The results show that among users who discontinue use and are still in need of contraception, 7.5 percent of them abandon use of contraception for all methods combined. This suggests that family planning services are not meeting the needs of many women who discontinue. In addition, the abandonment of use by so many users has serious implications for fertility levels. These women expose themselves to the risk of unwanted pregnancy, at least temporarily, by not starting another method immediately following discontinuation of their original method. For all combined methods, the rate of switching to another method is much higher (23.8 percent) than the rate of abandoning use (7.5 percent). Nevertheless, switching to abandonment of use is highest for injectables (11.0 percent), followed by the oral contraceptive pill (7.4 percent) and lowest among women practicing periodic abstinence and withdrawal although they still need contraceptive protection.

Table 9 – *Discontinuation rates by status after discontinuation and contraceptive method, BDHS, 2004*

Contraceptive Method	Transition to different stage				Total
	No need for contraception	Switch to modern method	Switch to traditional method	Abandon use	
Pill	21.0	14.0	2.9	7.4	45.3
IUD	6.3	20.3	1.1	6.2	33.9
Injection	9.1	25.4	2.6	11.0	48.2
Condom	23.0	36.6	6.7	4.3	70.6
Periodic abstinence	21.1	18.0	0.3	0.9	40.3
Withdrawal	30.0	24.0	5.0	1.1	59.5
Total (All reversible)	18.3	18.7	5.1	7.5	50.2

The high rate of transition to “no need for contraception” for traditional methods such as withdrawal, periodic abstinence and the condom is largely due to the fact that many of the women using these methods either become accidentally pregnant or discontinue because they want to get pregnant. A significant number of pill users also move to the “no need” category mainly because they want to get pregnant.

Users of a modern method who switch to another method usually adopt another modern method. Furthermore, 24.0 percent of withdrawal users and 18.0 percent of periodic abstinence users switch to a modern method within a year of initiating their original method. However, these findings do not necessarily indicate that family planning users will have reduced dependence on traditional methods in the future. Although the proportion (5.1 percent) of users switching to a traditional method appears low compared to the proportion switching to a modern method, in absolute numbers, more users switch from modern to traditional methods than from traditional to modern methods because there are more users of modern methods. The switching rate from condom to a traditional method is relatively high (6.7 percent) whereas, from the condom to the pill is only 2.9 percent.

6.2 Determinants of switching behaviour

Differences in the switching behaviour of all methods combined across subgroups of women who discontinued use of any method is presented in Table 10. The results show that there is little variation in switching of any contraceptive methods (modern or traditional) between urban and rural regions. Rural users are more likely to abandon use after discontinuation than urban users, while urban users are more likely to switch to modern methods after discontinuation. The abandonment of use is highest in Sylhet and lowest in Rajshahi. Switching to a

modern method after discontinuation is highest in Khulna and lowest in Sylhet. As expected, education has a positive effect on switching behaviour. The rate of abandonment is higher among illiterate women than among women with primary and secondary or higher education. Highly educated women are more likely to switch to both modern and traditional methods than less educated women. Muslims are more likely than non-Muslims to abandon use. However, the switching rate for modern and traditional methods is higher among non-Muslim women. The rate of abandoning use is highest among low SES women, whereas, the switching rate for modern methods is highest among the highest SES women. A striking difference in switching behaviour is exhibited by spacers and limiters. The spacers are more likely than limiters to abandon use after discontinuation even when they apparently still need contraception.

Demographic Differences according to certain demographic characteristics are more pronounced but are in the expected direction: young and low parity users are more likely than their counterparts to abandon contraceptive use within a year. After discontinuation, young users are more likely to switch to not needing contraception or a modern methods than older women. Among women who have no children or one child and who have discontinued using any method, are more likely to switch to no need of contraception category as well as modern methods.

It is noted that the low rates of abandoning use are associated with the very high rates of moving to no need for contraception, which in turn reflects the very high failure rates of the method. The differentials in the rate of switching to no need for contraception are particularly pronounced by age and parity, reflecting the differentials in failure and discontinuation in order to get pregnant discussed earlier. This study underscores the policy implications of method discontinuation and switching, particularly the higher abandonment rates of modern methods like the injectable and pill, in contrast to rates of abandonment among users of periodic abstinence or withdrawal (Table 9).

7. DISCUSSION AND CONCLUSION

In this study, contraceptive discontinuation and switching patterns in Bangladesh have been analyzed by using life table techniques and utilizing the calendar data on contraceptive use, pregnancy, termination and reasons for discontinuation of contraceptive method. This study provides a useful overview of how well met the family planning needs of couples in Bangladesh. The contraceptive prevalence in Bangladesh has increased considerably in recent years. Also the contraceptive discontinuation rates are high and it has continued to increase (NIPORT, Mitra and Associates & Macro International, 2009). Unwanted births are common in Bangladesh and results suggest that one-third of births are unwanted (Al-Sabir *et al.* 2004) for the two successive BDHS surveys (BDHS, 2007). The results indicate that more than 50 percent of users of all re-

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Table 10 – Life table discontinuation rates by status after discontinuation and selected socioeconomic and demographic characteristics, BDHS 2004

Characteristics	Transition to different stage				Total
	No need for contraception	Switch to modern method	Switch to traditional method	Abandon use	
<i>Residence</i>					
Urban	18.2	23.5	2.4	5.8	49.8
Rural	19.1	18.6	3.4	7.3	48.5
<i>Division</i>					
Barisal	25.5	14.7	3.7	7.6	51.6
Chittagong	25.2	15.0	2.1	9.6	51.8
Dhaka	17.2	20.6	3.9	5.8	47.5
Khulna	14.9	24.5	4.1	6.9	50.5
Rajshahi	19.0	21.3	2.2	4.4	46.6
Sylhet	20.7	11.0	3.5	11.4	46.6
<i>Education</i>					
None	12.8	14.6	3.0	7.0	37.0
Primary	22.0	20.9	3.2	6.6	52.7
Secondary	22.6	27.9	4.6	3.4	58.8
<i>Religion</i>					
Muslim	19.9	19.6	2.7	6.8	48.9
Non-Muslim	14.2	21.7	8.2	3.6	47.5
<i>Socioeconomic status</i>					
Poorest	17.0	13.2	4.0	8.8	43.3
2	15.4	15.9	3.1	7.3	41.7
3	21.9	18.2	4.5	6.6	51.1
4	19.4	19.3	2.9	7.1	48.9
Richest	21.6	27.8	1.9	4.1	55.4
<i>Contraceptive intent</i>					
Spacer	25.4	20.1	2.9	8.6	56.5
Limiter	10.1	19.8	3.1	5.2	38.0
<i>Age</i>					
10-24	19.8	20.8	3.9	7.7	51.9
25-34	14.3	17.3	4.0	5.4	40.7
35+	14.8	19.0	3.6	6.8	44.3
<i>Parity</i>					
0-1	25.9	23.3	3.9	7.9	59.4
2-3	16.6	20.4	2.7	6.0	45.6
4+	14.9	15.2	4.2	6.8	40.9

versible methods discontinue use within a year and 66 percent discontinue within two years. Users of the condom and withdrawal are more likely to discontinue than users of other methods (pill, injectable, IUD). The discontinuation of reversible contraceptive methods soon after their initiation is due to a complex set of physiological and psychological reasons that are poorly understood (Ali and Cleland, 2010). The condom, injectable and oral contraceptive pill are all methods that require no provider involvement to stop using and are therefore particularly prone to early discontinuation. The willingness and ability of women to switch promptly to an alternative method is a crucial but neglected element of effective fertility regulation. Furthermore, condom use is often discontinued due to the refusal of the male partner to use the method because it restricts their sexual pleasure. Similarly, using the withdrawal method effectively requires that the man to exercise self-control. This may be problematic particularly at the beginning of a relationship (Bajos *et al.* 2003). Those methods that rely on the cooperation of the partner are not necessarily suitable in every social context or relationship. Methods that are better suited to women's sexual and social lifestyle may reduce some of this contraceptive discontinuation due to misuse and relational issues.

Side effects are the main reason for discontinuation for modern methods such as the injectable, pill and IUD. The occurrence of side effects is associated with an increased risk of unwanted pregnancy and it is well documented in Bangladesh that some side effects are expected in the early months of taking pills due to women's bodies adjusting to the hormones (Khan, 2001). Kamal *et al.* (2007) have observed that Bangladeshi women used pills, injectables, and IUDs for several years at a stretch, but as they reached their forties they started reporting various symptoms of discomfort and dissatisfaction with these same methods. The symptoms reported (such as weight gain, nausea, irregular bleeding, and jaundice) could be attributed to other illnesses such as high blood pressure, diabetes or the existence of an ovarian cyst etc. In their study, some women even said that doctors recommended eating nutritious food while using hormonal methods (pills, injectables) and felt that the users' inability to do so was related to experiencing side-effects. It is worthwhile to mention that in Bangladesh women are not tested for high blood pressure or other existing conditions before a contraceptive method is prescribed. From a qualitative study, Cheung and Free (2005) have advised that taking medicine and hormones before initiating use of hormonal contraceptives could enable information, counselling and family planning services to be more tailored to individuals who stop using contraceptives, take contraceptive breaks or returned to inconsistent use of less effective contraceptive methods. Counselling should include potential side effects and preferably involve not only the women, but also men (and particularly husbands) whose support and involvement is of utmost importance to the effective use of certain contraceptive methods. In Bangladesh, the majority of women are dependent on men to be able to correctly and continually use

contraception. Intensive counselling enhances continuation of contraceptive use through improvements in service quality (Halpern *et al.* 2006).

The study reveals that method related reasons for discontinuation are highest for the condom, followed by withdrawal and periodic abstinence. The method related reasons may include that the original method was unsatisfactory or unsuited for a user's given life situation. Condoms and withdrawal are used somewhat sporadically so it is possible that some periods of sexual inactivity are not reported; in which case discontinuation related to sexual inactivity would be incorrectly interpreted as method related discontinuation. Some studies suggest that barrier or natural methods like the condom and withdrawal are primarily used as temporary contraceptive options and are related to an individual's life circumstances (Moreau *et al.* 2007; Vaughan *et al.* 2008). Indeed, Frost and Darroch (2008) have found that women who reported a lower frequency of sexual intercourse are more likely to be condom users than women who had higher frequency of intercourse. Kamal *et al.* (2007) have found from focus group discussions that the majority of women at Matlab, Bangladesh are using periodic abstinence incorrectly. Those who were using the method correctly had been briefed by their respective community health worker.

It is noteworthy that a substantial proportion of women who discontinue using a contraceptive method within a year but who still need to use a method do not immediately switch to another method, switch to less effective traditional methods, or abandon contraceptive use. This group of women are exposed to the risk of pregnancy. Injectable users are more likely to abandon contraceptive use than users of any other methods. This may be due to the fact that injectable users lack information about alternative modern methods of contraception and experience a disproportionate number of side effects compared to other methods (Al-Sabir *et al.* 2004). In this context, Steele and Diamond (1999) have observed in Bangladesh that the increased duration of modern methods such as the pill, injectable, and IUD is positively correlated with switching to traditional methods. Users of traditional methods and the pill who discontinue use are more likely to abandon use completely than to switch to another modern method. On the other hand, using data from the International Centre for Diarrhoeal Disease Research (ICDDR'B), in rural Bangladesh, Hossain *et al.* (2005) have found that family planning outreach worker's contact with women significantly decreases the risk of an unwanted pregnancy and increases the likelihood that a woman will switch from one modern method to another modern method. Follow-up visits by outreach workers are extremely important not only to address any problems women may be experiencing with their current modern method but to counsel and inform patients of other alternative methods that may be more suitable.

Demographic factors such as contraceptive intent, parity and age are also related to contraceptive discontinuation, reasons for discontinuation, switching behaviour, and abandonment of contraceptive use. Demographic factors have more influence than socioeconomic factors (residence, division, education, re-

ligion, SES). Educated women are more likely than less educated women to discontinue use and switch to more effective modern methods. This indicates that educated women are more willing or more able to experiment with different contraceptive methods if their original method does not suit them. In terms of motivation, discontinuation and switching is higher among limiters compared to spacers. Similar findings were observed by Ali and Cleland (2010) in Bangladesh. They noted that contraceptive episodes are more commonly initiated by women whose desired family size (two-child) equalled or exceeded the number of living children than by women who had not yet reached their desired size (i.e. spacers). Muslims are the disadvantaged group for pill and injectable use and for abandonment of contraceptive use. One possible reason could be that Muslim women in Bangladesh enjoy less mobility because of their observance of purdah and the seclusion of women in the household and the area immediately surrounding it, which limits their contact with the health care providers and their access to health care services (Khan 2001; Kamal *et al.*, 2007). These findings on discontinuation and switching suggest that the family planning program of Bangladesh should be more realistic and should tailor their services more to individual clients.

This study focuses on the importance of examining the quality of contraceptive use in Bangladesh in order to gain greater appreciation of the factors that affect contraceptive discontinuation and switching patterns. Program managers and policy makers need to take more responsibility and initiative for implementing effective family planning services to understand why some couples stop using contraception. Program managers should pay more attention to reducing discontinuation rates and improving the quality of contraceptive use in order to make family planning programs more successful.

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