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RESEARCH ARTICLE

RATIONALE AND DISPARITY OF CONTRACEPTIVE DISCONTINUATION IN BANGLADESH

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ABSTRACT

Contraceptive discontinuation of a couple has become a more progressive important determinant of fertility in Bangladesh. Contraceptive prevalence rate has steadily grown from 8 percent of currently married women in 1975 to 56 percent in 2007 whereas TFR has declined from 6.3 births per woman in 1975 to 2.7 births per woman in 2007. Thus, the study of contraceptive discontinuation of a couple has significant influence on fertility in Bangladesh. This study is based on calendar data extracted from the 2004 Bangladesh Demographic and Health Survey. Life table techniques have been employed to find out the contraceptive discontinuation rates at different durations of use and median duration of use for different methods. The result exhibits that almost half of women who initiate the use of a method discontinue it within a year and nearly two-thirds discontinue within two years. The IUD has the lowest discontinuation rates, while condom has the highest followed by injections, pills, withdrawal and periodic abstinence. Differentials in discontinuation rates have also been examined for different contraceptive methods. Multiple-decrement life table have been applied to generate net discontinuation rates for each reason in the presence of other competing reasons for discontinuation. This net discontinuation rates for each reason indicates that side effects is the major cause of discontinuation for the pill, IUD and injections among modern methods. The method related reason is the important cause for the discontinuation of traditional methods. Reason specific discontinuation varied according to different socio-demographic covariates. The study will help policy makers to understand the success and quality of the family planning program and services.

INTRODUCTION

During the past three decades, the contraceptive prevalence rates in Bangladesh have increased sevenfold, from 8 to 58 percent, making Bangladesh a successful history of family planning program. However, the corresponding decline in 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, since then total fertility rate remained almost stagnant around 3.3 births per woman until 2000 (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 (Al-Sabir *et al.,* 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 and Macro International, 2009). 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. Contraceptive discontinuations to different methods become a progressively more important determinant of fertility in Bangladesh. 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). Khan (2001) observed that more than half of oral contraceptive users in rural Bangladesh discontinued due to side effects and the important predictors of discontinuation are Muslim women, first oral contraceptive users, duration of use and lack of husband's support. However, Moreau *et al.* (2007) have reported that women discontinued using contraceptive methods due to dissatisfaction. The risk of contraceptive discontinuation resulting from contraceptive failure is related to characteristics of the method itself and the quality of the family planning services and supply factors, but is more likely to depend on the characteristics of users (Hossain, 2005; Kamal *et al.,* 2007). Family planning programme's influence, women's education and reason for use are strongly related to the probability of discontinuing a modern method in Bangladesh (Ali and Cleland, 2010).

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As a result, family planning managers need to know not only the levels and trends of discontinuation but also the socioeconomic and other determinants, so that they can develop their plan properly and can give advice to the prospective users, who can make an informed choice. The purpose of this study is to: (i) estimate contraceptive discontinuation of different methods; (ii) identify the important differentials of contraceptive discontinuation; (iii) find out the reason of specific discontinuation and its important differentials by the selected socioeconomic and demographic characteristics of Bangladeshi women. The study helps to understand the success and quality of the family planning program and services to further reduce the total fertility rate in Bangladesh. It also helps to realize the whole process of contraceptive use, women experience regarding their difficulties of maintaining of use of any method.

MATERIALS AND METHODS

The study used contraceptive calendar data extracted from the nationally representative 2004 Bangladesh Demographic and Health Survey (BDHS). Calendar data was used which recorded 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 were included. For analysis purposes, only the first two columns from contraceptive calendar were utilized. Column 1 covers events on live births, pregnancies and contraceptive use, while column 2 contains reasons for discontinuing contraceptive use. In this study, the unit of analysis is the segment of contraceptive use among women aged 10-49 years which was based on segments of use in a five-year period before the survey. 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. The last three months of the calendar prior to the time of survey were also excluded from the analysis to eliminate the possibility of underestimating contraceptive failure due to unidentified failures (Moreno, 1993; Curtis and Hammerslough, 1995).

However, segments of contraceptive use which were still in effect at the end of the period (censored segments) were included in the analysis to represent segments of long duration. Segment of non-use in which the woman is not pregnant and not using contraception were dropped from the analysis. A total of 10124 segments of use were included in the sample (Table 1). Pill yielded the highest number of segments of use (5149) followed by injections (1751), condom (1321), periodic abstinence (946), withdrawal (689) and IUD (106). Table 2 exhibits 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 the sampling design into account as well as social and demographic composition. In this study, the dependent variable is the reason specific discontinuation of contraceptive use. The background variables were selected on the basis of their association with the use of contraception based on previous studies. For this study, the following covariates are considered: residence, region of residence, education, religion, socioeconomic status, contraceptive intention status, age and parity. To estimate the discontinuation, 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 as 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 is known as the multiple-decrement life table

Table 1. Distribution of different segments of use by different contraceptive methods

Contraceptive methods	Current users	No. of Censored segments	Total no. of segments
Pill	2685	2021	5149
Injection	1025	776	1751
IUD	62	46	106
Condom	502	307	1321
Periodic abstinence	704	420	946
Withdrawal	393	238	689
Others	66	112	162
Total	5437	3920	10124

Table 2. Distribution of number of use intervals/ segments contributed to the analysis sample 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

was used for different types of discontinuation by reason for 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 reason for discontinuation (Namboodiri and Suchindran, 1987; Preston *et al.,* 2001).

RESULTS AND DISCUSSION

Contraceptive discontinuation rate is an important indicator of the success and quality of the contraceptive use. Family planning programs can have only limited impact on fertility reduction if contraceptive discontinuation rate is high. Table 3 shows the 12-month and 24-month contraceptive discontinuation rates at different duration of use together with the median duration of use for each method by using life-table techniques. 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, two-third (66.0 percent) of them stop using by the end of the second year of use. There is a large variation in discontinuation rates for different contraceptive methods. Condom has the highest 12-month discontinuation rate of 72.0 percent, followed by withdrawal (60.0 percent), while IUD has the lowest discontinuation rate with 33.0 percent.

Pill users and those practicing injection 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 second year of use for different contraceptive methods, though the rate of increase in discontinuation is highest for IUD followed by pill and injection. The median duration of use for all reversible methods is 11.9 months i.e. fifty percent of women who used to start contraceptive methods on average 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 a shortest period of 3.7 months. Pill and Injection users on average stop after about 13 months and women using withdrawal method on average discontinue after 7.6 months. The propensity to discontinue use of a contraceptive method is expected to depend on the characteristics of the users. Table 4 represents the 12-month discontinuation rates for pill, injection, condom, periodic abstinence, withdrawal and for all reversible methods (combined) by socio-economic and demographic characteristics. The result exhibits that there is a very little urban-rural differential in discontinuation rates for all reversible (combined) contraceptive methods. However, it is observed that the discontinuation rate is higher in urban area

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

Table 4. Life table discontinuation rates for pill, injection, condom, periodic abstinence, withdrawal methods 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)
Residence						
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)
Education						
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)
Religion						
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)
Wealth Index						
Poorest	41.0 (828)	43.0 (355)	86.0 (95)	38.0 (193)	45.0 (63)	43.0 (1590)
Poorer	39.0 (957)	49.0 (375)	71.0 (125)	38.0 (164)	58.0 (107)	43.0 (1789)
Middle	49.0 (1068)	47.0 (316)	80.0 (182)	49.0 (229)	62.0 (151)	52.0 (2003)
Richer	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)
CP intention						
Status	53.0 (2294)	57.0 (527)	78.0 (722)	51.0 (360)	72.0 (343)	58.0 (4305)
Spacer	38.0 (1838)	42.0 (916)	55.0 (344)	30.0 (402)	43.0 (241)	39.0 (3887)
Limiter						
Age						
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)
Parity						
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)

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

Characteristics	Median duration of use (months)					
	Pill	Injection	Condom	Periodic abstinence	Withdrawal	All Reversible method
Residence						
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
Education						
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
Religion						
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
Wealth Index						
Poorest	17.5	23.1	1.3	19.6	15.6	17.2
Poorer	20.1	14.9	2.8	19.0	5.7	18.0
Middle	12.4	12.8	2.5	12.2	6.4	11.6
Richer	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
CP intention status						
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
Age						
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
Parity						
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

Table 6. Multiple Decrement Life table 12-month discontinuation rates by reason for discontinuation and contraceptive method, Bangladesh, 2004.

Contraceptive Method	Types of transition					
	Contraceptive failure	To get pregnant	Side effects	Method related reasons	Other reasons	Total
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

for pill and injection, while it is lower for condom and the traditional methods (periodic abstinence and withdrawal). Discontinuation rates for all reversible methods increases with education.

The similar pattern was observed among women who used pill. But, women with primary level of education have higher level of discontinuation for all the three methods (injection, condom and periodic abstinence) compared to women with no education and women with secondary and higher education. However, 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 the contraceptive methods (all reversible methods combined) than their non-Muslim counterparts. The same findings are observed for the pill and injection. However, for condom and traditional methods (periodic abstinence and withdrawal), non-Muslim women discontinue rate is higher. Discontinuation rates for all reversible methods, pill, injection and withdrawal are higher among women from higher economic status than that of women from poor socioeconomic status. But, for condom, 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 the reversible contraceptive methods, spacers have higher discontinuation rates than limiter. This finding suggests that the motivation for contraceptive use is an important factor of contraceptive discontinuation. Discontinuation rate is higher among low parity women than the higher parity women. This may due to the fact that younger women, who 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, injection, condom or periodic abstinence.

Table 5 shows the median duration of use for modern and traditional and all reversible methods by background characteristics. The result indicates 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 according to the differentials. The length varies widely for women of different subgroups reflecting the differences observed in the discontinuation rates. The result exhibits that the preferred reversible methods of contraception (the pill,

Table 7. Multiple Decrement Life table 12-month discontinuation rates by reason for discontinuation and contraceptive method, Bangladesh, 2004

Contraceptive Method	Types of transition (Reason for discontinuation)					
	Contraceptive failure	To get pregnant	Side effects	Method related reasons	Other reasons	Total
Residence						
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
Education						
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
Religion						
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
Wealth Index						
Poorest	4.8	8.3	14.2	11.3	4.8	43.3
Poorer	2.7	7.9	14.6	12.4	5.2	42.8
Middle	5.3	9.4	14.7	15.3	7.0	51.8
Richer	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
CP intention status						
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
Age						
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
Parity						
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

injection 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, with prevalence not too different from that of the injection, has a longer median duration of use than the pill. Furthermore, this finding raises the question of what reasons contribute to the higher discontinue rate of the injection compared with periodic abstinence. The analysis of the reasons for discontinuation is important to understand why users discontinue use of a particular method of contraception. The discontinuation for one reason is likely to differ from that discontinuation for other reasons and the reason also differ among women of different groups 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 corresponding 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 result 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 for side effects. Furthermore, 8.3 percent of women intentionally drop their method within a year to get pregnant, followed by 7.5 percent for other reasons, while 4.5 percent due to failure. In the first year of use, side effect is the main reason for discontinuing pill, injection and IUD while method related reasons are the main reason reported by women who are using condom, withdrawal and 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 due to the fact that condom discontinuation is husband disapproved and inconvenient to use. The 12-month discontinuation rate for all method by reasons for discontinuation by selected socioeconomic and demographic characteristics is presented in the table 7. The result shows that there is little variation in reason specific discontinuation rates by residence. The reason specific discontinuation rates increase with education. Women who have no education and who have completed primary level, they mainly discontinue contraceptive due to side effect and method related reasons, while women with secondary and higher level of education discontinue due to method related reasons and other reasons. Discontinuation due to failure and tendency to stop method for getting pregnant is higher among higher educated women. The net failure rates are lowest among women who have no education. Muslim and non-Muslim have about the same 12-month discontinuation rate, but Muslim are more likely to discontinue due to failure and other reasons, while non-Muslim have a higher discontinuation rate due to method related reasons. The method specific discontinuation rates are also increases with economic status. Women from higher economic status are more likely to discontinue contraceptive methods than the women from lower economic status. The larger differences in the reason specific discontinuation rates were observed by contraceptive intent and parity. The net discontinuation rates are higher among spacer than limiter, however, the higher discontinuation rate due to side effects is

observed among limiter. Women without children or with one child are more likely than women of high parity to discontinue contraceptive methods due to failure, desire to get pregnant, method related reason and other reasons. The net discontinuation rates due to failure, to get pregnant and method related reason 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 failure decreases with age.

CONCLUSION

This study focuses the importance of examining the quality of contraceptive use in Bangladesh to achieve greater appreciation of the factors that affect contraceptive discontinuation patterns and reasons for discontinuation. Program managers and policy makers need responsible and take initiative for implementing effective family planning services to understand why some couple stop using contraceptive. Program managers should give due attention for reducing discontinuation and to improve the quality of contraceptive use in order to make family planning program more successful.

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