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RESEARCH ARTICLE

FACTORS AFFECTING LONG ACTING AND PERMANENT CONTRACEPTIVE METHODS (LAPM) USE AMONG WOMEN OF REPRODUCTIVE AGE IN BANGLADESH: EVIDENCE FROM BANGLADESH DEMOGRAPHIC HEALTH SURVEY

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ABSTRACT

Population growth constitutes a primary threat to continue economic growth and development in our country. Despite increasing pattern of use of contraceptives and fertility decline, the vital population strategy is not achieving the target. As the future reduction of fertility is largely dependent on increased use of effective birth control measures, identification of specific determinants of each method is essential for planning. The current study attempted to examine the determinants of use of modern methods of contraception, with special emphasis on the LAPMs, by using data from 2011 BDHS. The study found that among 17,842 currently married women, half (51.1%) did not practice any method of contraception; permanent and long term contraceptive methods use were 5.7% and 12.3%, respectively. Use of long term methods were significantly decreased with increased husband's education level. Being a member of an NGO was revealed as a dominant predictor; especially permanent method use was twice more likely among these women than those not belonged to an NGO. Unexpectedly, women who could take their decision were stunningly less likely to use all forms of modern contraception. Visit by FP workers was the strongest predictor of using long term method. The study concluded that improvement of couple's education level, increase societal value of girl child and increase women's autonomy could improve CPR to achieve decline in fertility level. Visit by FP workers should be increased in divisions where practices of family planning methods were poor. NGOs might involve sensitizing religious leaders to remove religious misconception about contraception.

INTRODUCTION

Fertility decline is a well acknowledged measure of achieving a demographic dividend, which also has consequent potential of reducing poverty, boosting economic growth and contributing to the overall well-being of families and societies[1]. Ashraf *et al*., (2013), while estimating the effect of fertility reduction on economic growth, found that in developing countries a reduction in fertility by one child per woman would lead to a 13% increase in GDP per capita within 20 years[2].

In Bangladesh, as a response to the explosive population growth, the national Family Planning Program was instigated. In the decade of 1980-90, a steep decline in total fertility rate (TFR) from 6.5 to 3.3 was observed. Unfortunately, this was then followed by a decade-long plateau[3]. The perplexing feature of this fertility plateau was the accompaniment of simultaneous rise of contraceptive prevalence rates (CPRs) throughout this period. Therefore, attainment of replacement level of fertility still is an unfinished agenda for Bangladesh.

Policy-makers are looking for different strategies and interventions aimed at achieving a replacement level of fertility, while researchers are searching for factors and explanations affecting fertility[4]. In Bangladesh, if the replacement level fertility target is to be achieved soon, the country will need a CPR somewhere around 74% for all methods, and 69% for modern methods[5]. Therefore, even if the family planning programme in Bangladesh seemed to have succeeded enormously, the national CPR did not raise enough to attain the national goal of replacement level fertility[6]. It is thus essential to understand the determinants of contraceptive use behaviour of the residents, in order to plan a successful programme targeted at raising the CPR.

Recently, method of choice is focused in Government policy as the utilization of Long-acting and permanent contraceptive methods (LAPMs) in South Asian and African countries has not kept pace like that of short-acting methods. In Bangladesh, women's intention for using LAPM has been historically low (≤5%) and it has remained almost unchanged over three decades[7]. The Directorate General of Family Planning (DGFP)

places high priority on LAPM service delivery; nearly one tenth of the entire Health, Population and Nutrition Sector Development Program (HPNSDP) annual budget has been allocated for LAPM [7]. Most research to date in Bangladesh has concentrated on examining factors that influence all modern contraception methods. The objective of the present study is to identify the factors related to contraceptive use with special emphasis on the LAPM methods utilization in Bangladesh with the aim of providing policy makers and program managers findings that contribute to the improvement of service provision.

MATERIALS AND METHODS

The study used data from the 2011 Bangladesh Demographic and Health Survey (BDHS) [8].

The survey used as a sampling frame the list of enumeration areas (EAs) prepared for the 2011 Population and Housing Census, provided by the Bangladesh Bureau of Statistics (BBS). The primary sampling unit (PSU) for the survey was an EA that was created to have an average of about 120 households. The survey was based on a two-stage stratified sample of households. In the first stage, 600 EAs were selected with probability proportional to the EA size, with 207 clusters in urban areas and 393 in rural areas. A complete household listing operation was then carried out in all the selected EAs to provide a sampling frame for the second-stage selection of households. In the second stage of sampling, a systematic sample of 30 households on average was selected per EA to provide statistically reliable estimates of key demographic and health variables for the country as a whole, for urban and rural

Table 1 Distribution of the variables and their association with current method of contraception used by women (The dependent variable in this model is: 'current use of contraceptive')

	Non user	Pill	Permanent method*	Long term**	Condom	χ^2	p
	%	%	%	%	%		
Variable	51.1	25.3	5.7	12.3	5.7		
Woman's education							
None	14.6	4.8	2.6	3.5	0.5		
Primary	15.1	7.5	1.9	4.5	0.9	1470.01	<0.001
Secondary	17.6	10.9	0.9	3.9	2.6		
Higher	3.9	2.0	0.2	0.3	1.8		
No of living son							
0	18.4	6.6	0.4	2.4	1.9		
1	17.2	11.3	1.9	5.4	2.3	902.52	<0.001
2	9.3	5.5	2.3	3.1	1.1		
3	4.1	1.4	0.8	1.0	0.3		
4 and more	2.1	0.6	0.3	0.3	0.1		
Age of woman							
Below 30	23.4	14.7	1.1	6.9	3.0	585.18	<0.001
Above 30	27.8	10.6	4.6	5.4	2.7		
Religion							
Islam	45.8	21.5	4.8	11.4	5.2	130.77	<0.001
Other	5.3	3.7	0.8	0.8	0.4		
Member of NGO							
No	39.9	17.9	3.4	7.8	4.7	378.44	<0.001
Yes	11.2	7.3	2.3	4.5	1.0		
Missing (2)							
Visited by FP worker							
No	47.2	19.4	5.3	9.8	4.8	753.44	<0.001
Yes	3.9	5.9	0.4	2.5	0.9		
Decision index							
No	43.2	22.7	4.9	10.8	4.9	84.96	<0.001
Yes	7.9	2.5	0.8	1.5	0.8		
Husband's education							
None	15.0	6.3	2.6	4.8	0.4		
Primary	13.7	6.9	1.6	4.0	0.9	1320.77	<0.001
Secondary	15.2	8.3	1.0	2.7	1.8		
Higher	7.3	3.7	0.5	0.7	2.5		
Missing (9)							
Residence							
Urban	17.1	8.9	1.7	3.6	3.4	326.28	<0.001
Rural	34.1	16.3	4.0	8.6	2.3		
Region							
Barisal	5.5	3.0	0.5	2.1	0.5		
Chittagong	9.1	3.5	0.8	2.0	0.7		
Dhaka	9.1	4.4	0.9	1.7	1.2	525.93	<0.001
Khulna	7.2	3.9	0.9	1.8	1.1		
Rajshahi	6.6	4.2	0.9	1.8	1.1		
Rangpur	6.0	4.0	1.1	2.2	0.5		
Sylhet	7.7	2.1	0.6	0.7	0.6		
Socio economic condition							
Poorest	9.0						
Poor	9.4	3.8	1.4	2.9	0.2	900.38	<0.001
Middle class	9.7	4.8	1.2	2.9	0.4		
Rich	10.9	5.2	1.1	2.5	0.7		
Richest	12.1	5.6	1.0	2.4	1.3		
		5.8	0.9	1.5	3.1		

a. *Permanent – tubectomy and vasectomy
b. ** Long term – IUD/ Implant/ Injection

areas separately, and for each of the seven divisions. With this design, the survey selected 18,000 residential households, a total of 18,222 ever-married women age 13-49 were identified in these households, and 17,842 were interviewed, who were included in this study.

Statistical analysis

The dependent variable in this study was "current method of contraception adopted by the woman". BDHS 2011 collected information on pill, Intrauterine device (IUD)**,** injection, condom, female and male sterilization, periodic abstinence, withdrawal, implant and other methods[8]. Depending on the means of access to the contraceptive method, Kamal (2000) classified the contraceptive users into three categories: pills (oral contraception), IUD (intra-uterine device) and injections, and sterilization[9]. In this study, four groups were considered: Non-user, folk and traditional method users were considered as one group and coded as 0. Pill users, having highest frequency were coded as 1. Permanent method acceptors (tubectomy and vasectomy) were coded as 2. Long-term temporary method users (injection, implant and IUD) were coded as 3. Condom users, as the use additionally gives protection against Sexually Transmitted diseases (STDs) and AIDS were coded as 4. The frequencies of use of these four methods were presented in Figure1.

In the BDHS, there were many variables available related to decision-making (ability of women to take decision on her health care, large household purchase, visit to relative, decision about taking contraception and child health care) of the women. Principal Component Analysis (PCA) technique was employed to create the variables into a decision-making score for each woman[10]. The index was scored as 0-0.25 as who had no decision- making power and 0.26-1 who had decision- making power. On the basis of prior knowledge of determinants of contraceptive use educational level of the women, her religion, no of living children, her membership with an NGO, husband's education level, wealth index, age of women, her type of residence (urban/ rural), division to which she belongs and household visit by family planning (FP) workers were entered as independent ones in the model. These independent variables were tested for statistical significance using bivariate techniques such as chi square tests [**Table 1**]. Finally, multinomial logistic regression (MLR) model was employed to estimate the relationship between contraceptive uses and socio-economic and demographic factors using SPSS software.

Table 2 Multinomial logistic regression of modern contraceptive methods used by females on selected variables, Bangladesh DHS 2011

		PILL		Permanent*		Long term**		Condom	
Variable	**Category**	**OR**	**Sig**	**OR**	**Sig**	**OR**	**Sig**	**OR**	**Sig**
Women's education	None^	1		1		1		1	
	Primary	1.33	<0.001	1.02	ns	1.16	<0.05	1.30	ns
	Secondary	1.65	<0.001	0.74	0.05	1.18	<0.05	2.08	<0.001
	Higher	1.66	<0.001	0.85	ns	0.90	ns	3.99	<0.001
No of living son	0^	1		1		1		1	
	1	2.14	<0.001	3.92	<0.001	2.59	<0.001	1.72	<0.001
	2	2.45	<0.001	7.64	<0.001	3.23	<0.001	2.13	<0.001
	3	1.69	<0.001	5.65	<0.001	2.74	<0.001	1.69	<0.01
	4 or more	1.60	<0.001	3.70	<0.001	1.81	<0.001	1.40	ns
Age of woman	Above 30^	1		1		1		1	
	Below 30	1.82	<0.001	0.56	<0.001	2.08	<0.001	1.50	<0.001
Religion	Other^	1		1		1		1	
	Islam	0.66	<0.001	0.69	<0.001	1.51	<0.001	1.44	<0.01
Member of an NGO	No^	1		1		1		1	
	Yes	1.32	<0.001	1.89	<0.001	1.61	<0.001	1.06	ns
Visit by FP worker	No^	1		1		1		1	
	Yes	3.34	<0.001	0.84	ns	2.70	<0.001	2.45	<0.001
Decision index	No^	1		1		1		1	
	Yes	0.59	<0.001	0.81	<0.05	0.76	<0.001	0.71	< 0.01
Husband's education	None^	1		1		1		1	
	Primary	0.98	ns	0.85	ns	0.81	<0.01	1.51	0.05
	Secondary	0.99	ns	0.58	<0.001	0.54	<0.001	1.85	<0.001
	Higher	0.92	ns	0.72	ns	0.36	<0.001	3.02	<0.001
Residence	Rural^	1		1		1		1	
	Urban	1.17	0.001	1.06	ns	1.14	<0.05	1.65	<0.001
Region	Sylhet^	1		1		1		1	
	Barisal	1.91	<0.001	1.13	ns	4.46	<0.001	0.90	ns
	Chittagong	1.40	<0.001	1.11	ns	2.73	<0.001	0.79	ns
	Dhaka	1.82	<0.001	1.35	<0.05	2.25	<0.001	1.21	ns
	Khulna	1.95	<0.001	1.70	<0.001	3.16	<0.001	1.63	<0.001
	Rajshahi	2.35	<0.001	1.93	<0.001	3.05	<0.001	1.93	<0.001
	Rangpur	2.15	<0.001	2.11	<0.001	3.96	<0.001	1.07	ns
Socio economic condition	Poorest^	1		1		1		1	
	Poor	1.17	<0.05	0.88	ns	1.03	ns	1.89	<0.01
	Middle class	1.14	0.05	0.81	ns	0.95	ns	2.09	<0.001
	Rich	1.10	ns	0.84	ns	0.94	ns	2.64	<0.001
	Richest	1.11	ns	0.85	ns	0.82	ns	3.34	<0.001

a. ^ Reference Category
b. *Permanent – tubectomy and vasectomy
c. ** Long term – IUD/ Implant/ Injection

RESULTS

Among the 17,842 currently married women surveyed in BDHS 2011, more than half of the respondents (51%) reported not to use any modern method of contraception during the survey period. Among the users (49%), nearly half took oral pill (25.3%); one quarter of them relied on long term methods (Implant, IUD and injections) (12.3%); whereas, one-tenth of them either accepted permanent methods or their husbands were users of condoms (5.7%) **(Table1**). The overall rate of LAPM use was 18%.

This survey was done on women aged 13-49 years; the mean age of women was 30.8 years. Among them, three-fifth was above 30 years of age, one-third was from urban areas and majority of them (nearly 90%) were Muslims. The percentage distribution over seven divisions was not same; nearly one-fifth of them were from Dhaka division. More than one-quarter of the respondents and their husbands had no formal education. In this study, women's autonomy was measured by their decision to give opinion and membership with NGOs. Nearly one-quarter of these women were members of different NGO's and majority (86.6%) was not allowed to take their own decision. When asked, only 13.6% of them reported to be visited by family planning workers in the last six months.

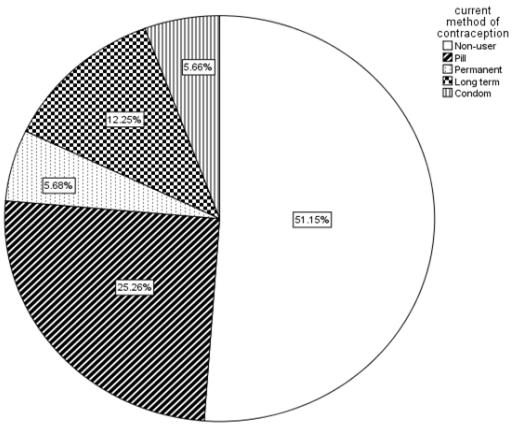

Figure 1 Contraceptive method preferences among married couples, BDHS 2011

Results of the MLR analysis are presented in **Table 2**. Both education level of the women herself and her husband were the strongest predictors of use of condom by the couple, odd of using condom was nearly 4 times among the couple where the women had higher education compared to those having no formal education. Increasing trend of pill use was observed with increasing the level of education of women. Whereas, opposite trend was observed with both the education level of the women and her husband with permanent method use. Husbands with primary, secondary and higher education also showed 19%, 46%, and 64% lower odds of using long term temporary methods by their wives compared to women having uneducated husbands.

The probability of contraceptive use increased as number of living son increases. The multilevel results showed that in terms of number of children the greatest difference was in moving from no son to 2 living son, and increase in odds ratio was most prominent for permanent methods. Women having two living sons used pill and long term methods nearly 3 times more compared to women having no living son. Condom and permanent method use was, respectively, twice and 7 times more likely among women having two living sons compared to those having no living son.

This model showed that the probability of using temporary methods of contraception was higher among younger group compared to the older group; whereas the use of permanent method, as expected, was other way round. Religion of women was found to be an important predictor variable; individual method analysis showed that Muslim women were one and a half times more likely to be the acceptors of both long term temporary methods and condom (by their husband) compared to non-Muslim women. But the odds of pill or permanent method use among Muslim women were 31-34% less than the odds among non- Muslim women.

Membership with an NGO came out as a strong predictor of all types of contraceptive use except condom, the use of which did not differ between these two groups. Permanent method use was nearly two times (1.89) higher in women who belonged to an NGO compared to those who did not. Visit by Family Planning (FP) workers emerged as another significant predictor of all temporary methods; the odds were 2.5 to 3.5 times higher in women visited by FP workers in the last three months compared to those with no visit. FP workers visit was turned to be an insignificant factor for using permanent method.

It was observed that women living in urban areas had higher odds of being users of all forms of contraception except permanent method, which did not differ between urban or rural women. Husbands of urban women used condoms more than 1.5 times than those of rural women. Division also had got importance in the pattern of use. Using Sylhet as the reference category, it was found that women from Rajshahi division showed highest odds of using pill (2.35) and condom (1.93), whereas Barisal showed highest odds in using long term contraceptives (4.46). Permanent methods were more likely to be used by the women of Rangpur division compared to those of Sylhet and other divisions. Poorer performance of contraceptive use was observed in Sylhet and Chittagong.

Table 2 reveals that wealth index (WI) or women's economic status was another significant determinant of pill and condom use but not for LAPM use. Upward trends of odds of condom use were observed with increase in women's socio-economic condition. Use of pill was higher in poor and middle class (1.17 and 1.14) in comparison with poorest group.

The model also showed a wondering result that the women who could give their opinion in their family decisions were 41%, 19%, 24% and 29% less likely to use pill, permanent method, long term and condom, respectively, compared to those women who could not give their opinion in family matters.

DISCUSSION

This study assessed the prevalence and determinants of modern contraceptive utilization among married women of reproductive age in Bangladesh. Nearly half (49%) of participants were currently using modern contraceptive methods. Oral contraceptive pill was the most popular method among the study participants. In fact, since 1991, 76% of the increase in contraception in Bangladesh has been due to the increase in use of contraceptive pills[9]. It was hypothesized in previous studies that women in rural Bangladesh were at liberty to use pills in spite of their husband's disapproval[9]. The

choice could be due to the fact that women do not need logistic or monetary support from their husband for this method as government FP workers supply free pills at doorsteps.

Streatfield and Kamal (2013) rightly pointed out previously that programmatically it would have been better for Bangladesh if LAPM use rate could be increased. Their finding showed that as the average age at marriage for women in Bangladesh was well below the legal minimum age of 18 years, many women would have completed their childbearing by their mid- to late 20s and this left them with 20 years or so of reproductive life to protect themselves from unwanted pregnancies. Women in Bangladesh had traditionally dependent on short-acting methods in this long period. The problem with the short acting method is that it has either risks of failure or early discontinuation or both resulting in unintended pregnancies and subsequently high incidence of menstrual regulation (MR) or abortion[5]. Several other papers also recognized that to achieve replacement fertility, a much greater proportion of eligible couples will need to be using long-term and permanent methods[7]. However, the current study revealed that in Bangladesh only 18% of the participants relied on LAPMs of contraception.

It is evident from the analysis that visits by family planning workers still had a very strong and positive influence on short term methods mainly and to some extent long term methods, but this visits did not increase the rate of permanent method use. Household delivery of family planning services was introduced in Bangladesh in 1978; whereas the FP workers still are authorized to deliver only condom and pills[5]. There definitely are issues related to the authority and training of giving LAPMs. The study recommends that the visits of FP workers should emphasize on behavioural change communication (BCC) related to removal of socio-cultural barriers of long term and permanent method use. Previous study identified a number of factors like myths and misconceptions, fear of side effect, opposition of partner, lack of knowledge and others as the barriers of using LAPMs [11].

The noteworthy finding of this study was that improving socio-demographic factors like education and wealth index would not influence the use of long acting or permanent methods use; whereas, the strong predictors of these methods were number of living son and membership of women with NGOs. The finding was in agreement with findings from African countries [11, 12]. In a Nigerian study, the authors commented that some myths and misbelieves towards LAPM, such as these methods causing infertility, could be one of the reasons for non-use[13]. As the number of sons increased fear of infertility related to those methods would decrease and people tend to use LAPMs. Unfortunately, preferences for sons were key demographic features in South Asia14; Bangladesh was not an exception. After the birth of one-son, the odds of using not only permanent method but also all types of contraceptives increased, ranging from 1.7 to 3.9. This existence of son preference in a region, where the official target was to decline fertility, had implications for future population policy. Therefore, in Bangladesh, NGOs should advocate more on the issues like limiting family size effectively, convenience and benefits of LAPMs, increasing societal value of girl child etc. Such discussions among NGO members might play important role in correcting myths and misconceptions related to LAPMs use.

Regional disparity in contraceptive use indicators was a decade old problem for Bangladesh, the 2011 BDHS confirmed that fertility levels were quite uneven - remarkably low in the west of the country (below replacement, on average) and worryingly high in the east (up to 1.5 children above replacement). This study also found Sylhet and Chittagong as low performing area. The issue had been extensively examined in different literatures to derive health policy recommendations [15, 16]. More qualitative research is needed to address the cultural and religious barriers existing over those regions. The model in this study revealed that the women who could give their opinion in their family decisions were significantly less likely to use all form of contraceptives compared to those who could not give their opinion in family matters. Previous studies had remarked that women in Bangladesh have a tendency to use contraception only when they perceive that their husbands do not object[10]. Women's empowerment is a complex process, having multiple dimensions: economic, social, cultural and political. In Bangladesh the promotion of gender equality and women empowerment had been addressed by different governmental and non-governmental organisations for quite a few years. If the achievements were judged, it was clear that although many positive results have already been achieved; developments have not been reached to the desirable degree yet. Health service programs and strategies of the country at each level of health care delivery system needed to consider the involvement of males for modern contraceptives utilization; husbands' perception and acceptance toward contraceptive use were major areas that need to be addressed rigorously. Hence, governmental and nongovernmental organizations, health facilities and other stakeholders need to ensure sustained advocacy targeting male members, as well as, availability and accessibility of contraceptives for married couples. This study had its strength in the fact that it utilized large data sets representing the whole country, and thus the findings were based on adequate statistical power. This study had some limitations. Here, selection of variable was constrained by preexisting BDHS data; it was unable to include additional, potentially important variables concerning current contraceptive use. Secondly, the study failed to include husband's view regarding contraceptive use as explanatory variables. Lastly a detailed examination of contraceptive use also requires an understanding of the cultural changes in a society, whereas BDHS lacks inclusion of cultural variables[8].

Conclusion

Women's intension for using LAPM has been historically low and it has remained almost unchanged over three decades in Bangladesh17. The fundamental reasons behind the low demand for and use of LAPM should be properly addressed. Policies, now-a-days, should have focus on factors related to increase males' contraceptive knowledge and thus increase male participation in family planning and reproductive health in Bangladesh. Furthermore, it is crucial to continue improving girls' and young women's access to education, as this is important for increasing the women's use of modern contraceptives and hence empowering women. Mass communication, as well as interpersonal communication, could be used to increase knowledge of available options and access. All systems such as educational institutions, youth associations, religious organisations, traditional leaders, communities and families should be concurrently sensitized and educated about contraception.

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