TITLE

TWENTY YEARS OF FIELD WORKER VISITATION IN BANGLADESH: ARE THEY STILL NEEDED?

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Abstract
In Bangladesh, in 1978 the National Family Planning Programme had introduced female workers to provide doorstep services. A total of 24,000 female workers continued this service until 1998, when new policies were enacted, static clinics were set up and home visits were drastically curtailed. This analysis uses the national level data from the BDHS 2004 to investigate the effect of the new policies and evaluate the importance of female field workers after the visits have been reduced. Results show that for various methods of modern contraception, the home visits still remain a strong predictor of use of the method, even when other related covariates are controlled. It also finds that in the newly defined administrative regions, Barisal and Sylhet the performance in contraceptive use is significantly poor. This indicates that Bangladeshi women of reproductive age groups still benefit immensely from doorstep services and complete withdrawal of these services should be delayed. The utilization of static clinics is still low in Bangladesh where woman's mobility is also low. In this transition phase, `depo holders' can be a major addition. However, home visits need to be continued specially for low performing divisions and those from worst wealth quintile.

INTRODUCTION

In Bangladesh, during the late seventees, the National level Family Planning introduced the services of female field workers to provide doorstep services to women in reproductive ages and provide contraceptive pills and condoms free of charge. Additionally, they provided motivation and counseling and in some places injectables were also provided. This involved the introduction of almost 24,000 female field workers who visited each eligible woman (married and in reproductive age group) once in three months (Kamal 1994). Prior to introduction of these field workers the contraceptive prevalence rate (CPR) in Bangladesh was 7.7 percent documented in 1975 Bangladesh Fertility Survey. It gradually rose to 19.1 percent in 1983. An additional 12,000 workers were also introduced by the NGOs (Mercer et al. 2005). During mid ninetees the CPR rose to almost 50 percent in 1996-97 (BDHS). A lion share of the success had been attributed to the female family planning workers, aided by satellite clinics and Behaviour Communication and Change (BCC) (Cleland et al.1994).

As the number of women in reproductive ages rose in Bangladesh, donors expressed concern over home visits and accompanying costs involved. Mercer et al.(2005) writes that `Several considerations led the government to introduce different system of service delivery under its Health and Population Sector Programme (HPSP) for 1998-2003 (GOB 1998)'. Under HPSP, static clinics with Essential Services Package (ESP) were introduced in the community. This involved one community clinic serving a catchment population of around 6000, and selective household visits by female workers to be made once a week. (MOHFW 1997).Additionally, instead of offering family planning services alone, these clinics were devised to improve national rates of neonatal mortality, maternal mortality and infant mortality.

Demographers were concerned that this shift would necessitate a major change in behaviour pattern of the women in Bangladesh. Specially because mobility of women is restricted in this society where practice of purdah is very common (Cleland et al 1996). The 1999-2000 BDHS found that although the total CPR had risen to 53.8 percent , there was a marked increase in Total Fertility Rate (TFR) amongst the poorest quintile,rising from 3.8 births per woman in 1993-94 to 4.1 in the 1999-2000 DHS (UNFPA 2004). Several studies have emphasized the need to serve the poorest quintile (Islam 2004; Mercer et al. 2005). Additionally, the total TFR remained stagnant at 3.3 births per woman. Demographers felt that the holistic approach taken in the HPSP had digressed from the focused approach of the Family Planning Programme functioning earlier (Mabud and Akhter 2003).

In accordance with the Millennium Development Goals (MDGs), the Government of Bangladesh (GOB) has articulated its plan to reduce maternal mortality by 75 % by 2015. Services for improving survival and health of mothers and their newborns include family planning services, prenatal, postnatal and newborn care, safe home delivery by community based skilled birth attendants and institutional delivery, emergency obstetric care (EmOC) and programmes that encourage breastfeeding. The Ministry of Health and

Family Welfare formulated the Health Nutrition and Population Sector Programme (HNPSP) in 2003,where among a few other primary objectives, reduction of the TFR is a major one. It is based on a Sector Investment Plan (SIP) for the period of July 2003 to June 2010. The plan emphasizes public information campaigns for all public health and Reproductive Health Services (RH),improvements in public facilities for EmOC, safe delivery at home through skilled birth attendants (SBA),the use of life saving practices for new born care, shifting of family planning use patterns towards longer lasting method and health voucher programmes.

Although all the components of the above mentioned SIP have not been operational in 2004, the national level data from BDHS 2004 does offer an opportunity for evaluating whether the role of the female family planning worker has been abated by increased access to information and health services . With multiple efforts on the way to sensitize the eligible woman to use a modern method, and with reduced home visitation, it is expected that the home visit by field worker will have reduced effect on her use of contraception. This study therefore, looks at the effects of home visits by the field worker in the last six months, net of her socioeconomic and demographic correlates to determine whether strengthened efforts by the GOB has led to reduced dependence on them for use of contraception.

METHODS AND MATERIALS

This study uses data from the Bangladesh Demographic and Health Survey (BDHS) 2004 (NIPORT 2005).This is a two staged nationally representative survey. The BDHS 2004 sample is a stratified, multistaged cluster sample consisting of 361 primary sampling units (PSU),122 in urban area and 239 in the rural area. The PSUs were borrowed from sampling frame created for the 2001 census of Bangladesh and which was termed Enumeration Area (EA).A systematic sample of 10,811 households was selected from a complete list of households, all women aged 10-49,from the selected households, all women aged 10-49 were eligible as respondents for this survey. A total of 11,440 women were interviewed, this study comprise of 10554 currently married women.

The dependent variable here is the couples' use of contraceptive method. Users of traditional methods and non – users have been considered into one group as non users and forms the reference category. The users of modern methods of contraception have been considered in four groups. The contraceptive methods are grouped according as pill users (most popular method and pills are supplied by field workers as well as available in pharmacies), IUD and injection users (requiring visit to health centre), acceptors of sterilization (permanent method and requiring visit to health centre) and condom users (also supplied free by field workers and available in all pharmacies). The dependant variable having four outcomes, multinomial logistic regression is used for analysis using the software STATA. Table 3 presents the results of the final multinomial logistic regression. Instead of underlying coefficients, the odds ratios are presented, along with their levels of significance. For example in Table 3, the odds of being a condom user versus being a non- user increase 2.19 times if the woman is visited by a field worker in

last three months, as opposed to not being visited. However, the table cannot be read across.

The principal independent variable of interest in this analysis is the `Visit to the woman by the field worker in the last three months' coded 1 if yes and 0 otherwise. As discussed earlier, all eligible women are not visited by the field workers under the new policies of the HNPSP. Selective visitation as introduced under the new policies of the HNPSP in 1998. In this analysis 23.7 percent women reported being visited by a field worker in the last six months.
(Table 1 about here)

Variables used
Other additional demographic and socioeconomic variables were chosen on the basis of prior knowledge of determinants of contraceptive use and exploratory data analysis. These variables were the age of the woman, her number of living sons, her level of education, her husband's level of education, her mobility and decision making index (created from existing data and explained in Appendix A), socioeconomic score (SES), her religious affiliation, membership with any NGO, number of household members, type of residence and division of residence. Table 2 presents the variables, their frequencies and their chi-square association with the dependant category.
(Table 2 about here)

Regression analysis

Table 3 finds that in spite of socioeconomic and demographic controls, `Visits to woman by the family planning worker in last six months' is the most significant predictor of current use of all methods of modern contraception in Bangladesh. When the woman is visited by the worker, for pill users increase in use is by 2.86, for IUD and injection by 1.73, for condom use it is increased by 2.19. For sterilization acceptors, a visit by the field worker reduces the chance of accepting sterilization by 64 %. Each method is discussed in the sections below.

(Table 3 about here)

Use of contraceptive pills
Oral contraception is the most popular method in Bangladesh. In fact, almost one fourth of all users in Bangladesh currently use this method (NIPORT 2005). Since 1993, 65 % increase in contraception has been due to the increase in use of contraceptive pills. In all successive BDHS it has remained the most popular method, even though at various five year planning programmes, many different methods have been introduced in Bangladesh. Additionally, in these surveys almost 99 % women have claimed to know about modern contraception and innumerous media advertisements on pills have been aired since the late 70's. Various brands of pills are also available in all counters of pharmacies, without prescription. With such a setting, it should be expected that the visit by a field worker would have no significant effect on her use of pills. The model finds to the contrary. It finds that women who have been visited by a field worker in last six months have almost

3 times higher probability of being a user .This is true even when socioeconomic status and her own education and husband's education is entered as independent variables. Poor women do not differ from the poorest in their use of pills. However, as their socioeconomic status increases so does the log odds of being a pill user. Husband's education is insignificant as a determinant of pill use in this model, the woman's education is only significant at the secondary level. Women who have secondary education have 1.24 times higher odds of being a pill user.

The model finds that the number of living sons and age of the woman are significant predictors of pill use in Bangladesh. As the woman has one living son, her odds of using soars to be more than double, compared to when she has none.
Women who are more mobile, have no decision making power and are also from non Islamic faith are found to have higher probability of using pills. The influence of mobility matches previous studies and has been discussed extensively in the literature (Cleland et al.1996). Same holds for decision making variable, those who have more decision making power have higher log odds of using pills and has been also reported elsewhere (ibid).
In earlier models, religious affiliation has been known to be a strong predictor of sterilization (Amin et al.1995 and Kamal and Sloggett 1996; Kamal et al. 1996). The significance of religious affiliation with use of oral pills has not been reported in the literature and these results do raise issues whether the current version of Islam practiced in Bangladesh is the same as that practiced, say one decade ago. The recent spur of fundamentalism coupled with increased labour migration to the Middle East may have led to an imported version of Middle Eastern Islamic practice (believed to be much more rigid and fundamental) compared to the syncretic Islam practiced in Bangladesh (Abecassis 1990).

Women with secondary education had higher probability of using pills, this result supports Basu's (1996) argument that secondary education is a threshold after which the ability to store knowledge and use the education for controlling fertility turns more effective.

Being member of an NGO and being from urban areas increase the odds of being a pill user in this model. These directions and their implications have been discussed extensively in the literature (Kamal and Sloggett 1996). The positive effect of larger households can be explained in different directions. This analysis finds that compared to women in nuclear households, those in households with 5-8 members have higher log odds of pill use. In larger households there is a possibility of having more than one eligible woman who is in her reproductive age group. The dynamics may be explained by drawing on a research in Bangladesh which showed that when an older member in the household practices contraception, the younger member has higher likelihood of doing the same (Kamal 1996). This may explain the reason why women from larger households have higher log odds of using pills. Those with even greater number of household members do not show any significant difference in use. It is possible that these households include greater number of children or those who have older family members living with them and not contributing to the fertility dynamics.

The results from the variable `region of residence' have important policy implications. In earlier surveys, Chittagong division consistently exhibited low use (Kamal 2000). In this paper, the information from two newly introduced divisions, Sylhet and Barisal have been made available. These divisions were added after the 1999-00 BDHS and comparable studies using this information are not available in the literature. Sylhet division has been segregated from Chittagong division to form a division on its own. Similarly, Barisal division has been segregated from Khulna division to become a division on its own. Both these new divisions are showing low use of pills compared to Dhaka (the capital) division. In Barisal, the respondents are 21% less likely to use pills. In Chittagong division couples are 39% less likely to be users. In Sylhet, it is more alarming, the couples are 72 percent less likely to use pills. Rajshahi division was found to have higher probability of use compared to Dhaka division. This finding has important policy implications.

Use of IUD and injection

Injection use is growing more and more popular in Bangladesh. Currently, 9.7 % women are using this method, compared to 4.5 % in 1993. However, the use of IUD has not been equally encouraging, although policy makers aspire to increase use of this long acting method to increase efficacy of FP. In this model we find that, as a woman is visited by a field worker in last six months, her odds of use (either injection or IUD) increases by 73 %. However, it is noteworthy to mention that only 4 % of the IUD/injectable users reported receiving a home visit from the FP worker in last six months (Table 2). The final model finds that even when a small percentage of couples receive home visits, their probability of use increases significantly in spite of other socio-economic and demographic correlates (Table 3).

Number of living sons and age of the woman remain the most significant predictors of use of IUD and injections. Women with at least one son is most likely to use these methods, while women over thirty years of age are less likely to use them. While the directions of variables such as type of residence, number of household members in the family, religious affiliation, mobility index, membership with NGO are all positive determinants of use, decision making index, SES are not. Additionally, husband's level of education is significant here, more educated the husband, more likely the couple to use IUD or injections.

Woman's education has a more pronounced role in this model. More educated women are less likely to be users. One explanation is that more educated women, opt for either pills or they opt for traditional methods (Kamal et al.forthcoming).

In this model, region of residence, as a predictor variable, offers a different setting from oral pill use. Women from Chittagong, Barisal, Khulna and Rajshahi are more likely to use these methods, compared to those in Dhaka division. However, once again women from Sylhet division have 53 % lower odds of being a user. The exact figures for Sylhet division, available from this survey supports previous findings that Sylhet division is lagging behind in use of IUD/injections.

Sterilization

In this model, women who have been visited by a field worker have 64% lower odds of accepting sterilization. This result is concurrent with previous models and one explanation has been that these visits allow the couple to know about many more choices of modern methods and the option increases and acceptance of sterilization falls. Mercer et al (2005) finds that contact with field worker helps them know about other methods. As it is in Bangladesh, sterilization has been subjected to more religious opposition than other methods, the rates show a declining trend since the 90's and sterilization regret has been reported by many couples (Amin et al.1995; Kamal and Slogget 1996). This model finds that the woman's age is the most powerful predictor of sterilization. Women aged above 30 have more than 7 times higher odds of being an acceptor (either male or female sterilization), compared to women aged below thirty. Alike other models, women with at least one son had more than 3 times higher odds of accepting sterilization. These results match earlier ones found in studies using previous 1993-94 BDHS (Kamal 2000). Those who are more mobile, are from non Islamic faith, members of NGO, live in urban areas have higher likelihood of accepting sterilization. Those whose husbands have secondary education have lower likelihood of use, indicating that more educated couples may use other contraceptive methods (Kamal et al. 2006). SES is an insignificant predictor of sterilization acceptance in this model. In previous models in the literature, it was found to be a significant predictor, women from low socioeconomic groups were more likely to accept sterilization (Kamal and Sloggett 1996). It seems that in the current model, age of the woman and her desire to have a male child has eliminated this effect. Moreover, divisional differences show that, compared to Dhaka division, couples in Chittagong and Sylhet have almost 50 % lower odds of accepting sterilization, while those in Rajshahi have almost 60 % higher odds of accepting the same. It is very interesting to note that, women from Rajshahi division have the highest rates (almost 19 percent) of sterilization regret as reported by the BDHS (NIPORT 2005).

Use of Condoms

In previous models in the literature, condom users have never been segregated as a separate category, due to the fact that the number of users is very low. In the current data only 4.2 % couples were reported to be condom users. Although condom is widely available and publicized in Bangladesh, this analysis finds that as a woman has been visited by a field worker in the last six months, her odds of using a condom increases by 2.19. This is quite an important finding, indicating that in spite of wide BCC and availability, field worker's visit enhances the probability of condom use in Bangladesh. This is inspite of the woman's education, her husband's education and her socioeconomic controls.

As the woman's educational level increases, so does her probability of being a condom user. There is an increasing gradient as women go from `no education' category to `higher than secondary education'. The wealthiest socioeconomic group has three times higher log odds of being a condom user. Husband's who have education beyond secondary level have more than twice the odds of being users.

Religious affiliation, membership with NGO and age of the woman are not significant predictors in this model. This finding has important policy implications. Women with more mobility and decision making, living in urban areas have higher use of condoms.

In Barisal division, use of condoms has been found to be significantly higher than in the Dhaka division but in Sylhet division use is pitifully poor (47% lower log odds).

Discussion and Conclusion

This analysis uses data from the 2004 BDHS to determine the importance of the home visits of female family planning workers on the use of various methods of contraception in Bangladesh. The women are categorized in four distinct groups of users viz. pills, IUD/injections, Sterilization acceptors and Condom users. The study finds that apart from basic predictors such as age and numbe rof living sons of the couple, the visits by the workers makes a significant difference in the couples' probability of being a user for all the methods. For pill, IUD/injection or condom users, probability of use in increased to more than double when she is visited by a female field worker in the last six months. For sterilization acceptors, the visit significantly reduces the couples' probability to accept the method, probably convincing the couple to accept other choices.

In spite of GOB's commitment to improve maternal health care and services the health system is still weak in Bangladesh, despite a relatively strong infrastructure of public health facilities throughout the country and a growing number of private health facilities. Not only is there a dearth of trained personnel in every cadre of public health, trained staff also resist posting to rural areas due to absence of infrastructure and amenities which support family living. Transfers occur frequently from these rural areas and the sanctioned positions at facilities are rarely fully staffed. The latest BDHS finds that only 5 % women have had deliveries by SBA. Facilities often lack necessary equipment, supplies, drugs and contraceptives or may stock out of these necessities. The TFR is lowest among the poor and studies have found marked difference in access of health services between the poorest and the poor (CIET 2003). The extra underhand cash, which is being paid for such services is unaffordable for the poorest and this group is lagging behind in all indicators including fertility. The BDHS also finds that among pill users, which is the most popular method, 42 % mention local pharmacies as their sources of supply as opposed to 47 % citing GOB sources. Among them, 35 % cite female fieldworker as their source. It seems that women rely on the home viists for their supply of contraceptive methods, their visits to the static clinics are more often for child immunization and child related morbidity (Khanum et al. 2000). The home visits by field workers are still the main source of supply of pills, and condoms (NIPORT 2005).

Age of the woman and the preference for a male child is obvious in all the models. Much of this has been discussed extensively in the literature. Older women (abover 30) are more likely to accept sterilization and younger women are more likely to use pills and IUD/injections. As couples have one living son their tendency of using one of these methods increases. the demand for a male child has been found to be highest in Bangladesh (Arnold 1997).However, the data finds that the couples are willing to practice

contraception after one son has been born. As the number of living sons increases, the probability of being a user decreases. This is probably because the woman's age also increases and studies have found that older women in Bangladesh usually opt for traditional methods (Kamal et al. forthcoming).

In previous analysis of similar nature using earlier surveys have found religious affiliation to be an insignificant predictor of use of modern methods of contraception, except for sterilization. This analysis finds religious affiliation to be significant for every category of method, except condom use. This analysis finds that when a couple is from non-Islamic faith, they have higher log odds of being a user, in the case of sterilization, the log odds is double. There is no obvious explanation for this change which obviously incorporates many more dynamics than the use of contraceptive versus religious belief alone. In Bangladesh, the labour migration to Middle Eastern countries have increased in the last decade. Demographers have reasons to believe that as the migrants return from the Middle East they may bring back a much more fundamentalist version of Islam, than what has been traditionally practiced in Bangladesh. Results from Indonesia, which is a populous Muslim majority country, finds no association of religion with use of contraceptive method. However, among those who do not intend to use contraception, religious opposition is cited as a reason by more couples from the lower socioeconomic group (Schoemaker 2005). Religious reason was also cited as a reason for non- use among married men surveyed in rural Pakistan. Out of a qualitative sample of 180 married men, 29 % perceived that religious leaders were opposed to family planning. They also thought that religious leaders, specially in rural areas should be made part of the family planning campaigns to achieve higher influence on the people who are their followers (Ali and Ushijima 2005).This study recommends using religious leaders as change agents to practice contraceptive methods and follow other successful examples from countries like Iran where the religious sermons have included addressing the practice of contraception in various forums and resulted in very positive gains in reducing the population.

It is however encouraging to note that religious affiliation has no significant effect on the couples' use of condom. The current level of use of condoms in Bangladesh (4%) is very low by all standards. The fact that there is no religious opposition attached to condom use, could be utilized in further promoting the use of the same. In the same breath, we find that although the use of any modern method increases with the membership of the woman in any NGO, the same is not the case for condom users. Being a member of an NGO has no significant effect on her use of condoms. With the eminent danger of Asia being the next population with highest number of AIDS cases, it is of utmost importance to increase the use of condoms in Bangladesh. NGOs usually use their good office to advocate on FP methods and other hygiene related information during their awareness sessions. It is recommended that NGOs also include condom promotion through their BCC strategies like `uthan boithok' (having common awareness camps in someone's front yard) .It has to be emphasized here that condom not only prevents pregnancy, it also prevents the spread of STD, RTIs and AIDS. Currently, among the poorest section of the community (where the use of condoms is also lowest, as is exhibited by this analysis), the knowledge of contracting and avoiding HIV/AIDS has been observed to be zero among

the adolescent population, a pitifully low level compared to the rest of the world (Rani and Lule 2004).

Additionally, rural women were found to be less likely to be users of this barrier method. Contraceptive security is another issue which needs to be investigated in details. Although the GOB dispatches enough condoms for rural areas, evidence suggests that a major portion of the condoms are smuggled to the neighbouring countries rendering the rural users in a vacuum. This matter needs further attention in monitoring and accountability. Additionally, vending machines in remote areas, provisions of `depo holders' for condoms and pills may be alternative ways of ensuring a steady flow.

In this study, differences in contraceptive use was found to be markedly high amongst administrative divisions. This aspect of areal variation in contraceptive use has been discussed extensively in the literature (Kamal et al.1996). However, the introduction of two new divisions Sylhet and Barisal have created further avenues of comparison. Earlier studies have noted low use in Chittagong division which was inclusive of Sylhet division (Rashid 1993).In the current study, there seems to be no significant variation in contraceptive use in Chittagong division , Sylhet division has the worst performance. The UNFPA has already taken this matter into consideration and has opened a branch of UNFPA in Sylhet division so that concerted efforts can be made to serve the population with adequate FP and safe motherhood services. From the GOB side, more attention and continued home visits by FP workers is recommended.

In a longitudinal study using data from a deltaic area in Bangladesh, Hossain et al. (2005) have found that when there has been a contact with the female field worker, the odds of discontinuation to non use, diminishes. Additionally, the odds of switching from one modern method to another increases when the woman has had a recent contact with the female worker. In another study using data from two project sites of the ICDDR,B Mercer et. al (2005) find that although the static clinics are being utilized to some extent, Bangladesh is still not ready for complete withdrawal of FP workers from the field. For couples in remote areas, young married women and those in poorest socioeconomic groups there is still a need for field workers who will motivate them and provide overall support to be use the correct contraceptive method. This study reverberates the findings from Mercer et al. (ibid) and stresses the need for continuing the home visits of the field workers.

This paper recommends continuing field worker visitation in Sylhet and Barisal, and also among the poorest class with no education and those living in rural areas. Although twenty years have passed since home visits by female FP workers has been introduced in Bangladesh, the country still needs them to fulfill the goal of bringing the TFR to the replacement level by year 2010.

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Table 1: Distribution of contraceptive users, by various methods in Bangladesh DHS 1993-2004.				
Contraceptive method	**1993-94BDHS**	**1996-97BDHS**	**1999-2000 BDHS**	**2004 BDHS**
Pill	17.4	20.8	23.0	26.2
IUD+ Injection	6.7	8.0	8.4	10.3
Sterilization	3.0	3.9	4.3	4.2
Condoms	9.2	8.7	7.2	5.8
Other	8.3	7.8	10.9	11.6
Non use	55.4	50.8	46.2	41.9

Table 2 Distribution of variables according to use of various methods of contraception, Bangladesh 2004.									
Variable	**Non user**	**Pill**		**Sterilization**		**IUD/Nor**		**Condom**	
	Frequency	Frequency	Sig	Frequency	Sig	Frequency	Sig	Frequency	Sig
	53.14	25.4		5.6		11.0		4.8	
Woman's education									
None	36.8	32.4		60.9		46.4		12.0	
Primary	30.5	30.4		26.5		31.8		18.5	
Secondary	26.9	31.5		10.3		18.8		40.6	
Higher	5.8	5.7	<.001	2.4	<.001	3.0	<.001	28.9	<.001
Mobility index									
None	61.2	54.0		43.3		45.3		46.2	
Low	21.4	25.6		25.5		31.3		28.1	
High	17.4	20.3	<.001	31.2	<.001	23.3	<.001	25.7	<.001
Decision index									
None	80.17	83.58		76.73		78.88		80.68	
Some	19.83	16.42	<.001	23.27	<.05	21.12	ns	19.32	ns
Living son									
None	36.7	23.2		7.3		17.3		32.5	
One	29.3	41.6		33.7		39.7		38.8	
Two	19.7	23.8		37.3		26.1		21.3	
Three or more	14.3	11.4	<.001	21.8	<.001	17.0	<.001	7.4	<.001
Age of woman									
Below 30	55.3	60.0		9.3		53.2		58.0	
Above 30	44.7	40.0	<.001	90.7	<.001	46.8	ns	42.0	ns
Religion									
Islam	89.8	86.4		82.0		93.5		91.4	
Other	10.2	13.6	<.001	18.0	<.001	6.5	<.001	8.6	ns
Member of NGO									
No	78.4	71.4		64.6		65.8		81.7	
Yes	21.6	28.6	<.001	35.4	<.001	34.2	<.001	18.3	ns
Visited by FP worker									
No	90.7	76.1		96.0		83.2		84.9	
Yes	9.3	23.9	<.001	4.0	<.001	16.8	<.001	15.1	<.001
No of HH members									
1-4	31.9	32.9		34.6		28.2		30.1	
5-7	30.5	36.0		39.0		40.6		32.7	
8+	37.7	31.1	<.001	26.5	<.001	31.2	<.001	37.3	ns
Husband's education									
None	34.6	33.6		47.9		42.3		12.0	
Primary	26.4	25.4		25.6		31.0		15.5	
Secondary	26.4	28.4		19.2		20.6		27.3	
Higher	12.6	12.6	ns	7.3	<.001	6.1	<.001	45.2	<.001
Residence									
Urban	30.4	35.9		36.3		34.3		59.2	
Rural	69.6	64.1	<.001	63.7	<.005	65.7	<.01	40.8	<.001
Region									

Barisal	12.6	10.9		9.4		15.3		7.0	
Chittagong	20.6	14.4		12.1		15.5		21.1	
Dhaka	21.7	24.5		25.8		20.2		26.9	
Khulna	13.8	16.5		12.5		17.4		18.3	
Rajshahi	17.6	29.5		32.0		26.2		20.1	
Sylhet	13.6	4.3	<.001	8.1	<.001	5.5	<.001	6.6	<.001
SES									
Poorest	18.3	14.9		21.9		21.2		4.8	
Poor	17.9	17.7		18.9		22.3		6.6	
Middle	19.4	19.5		21.2		17.6		9.8	
Rich	20.4	22.0		16.0		19.6		15.5	
Richest	24.0	26.0	<.005	21.9	<.05	19.3	<.001	63.3	<.001

Table 3 Multinomial logistic regression of modern contraceptive use on selected variables,Bangladesh DHS 2004.

Variables	Method of modern contraception							
	Pills		**IUD and injection**		**Sterilization**		**Condoms**	
	O R	Sig	OR	Sig	OR	Sig	OR	Sig
Woman's education								
None	1.00				1.00		1.00	
Primary	1.05	Ns	.83	<.05	.81	Ns	1.46	<.05
Secondary	1.24	<.05	.72	<.05	.51	<.001	2.32	<.001
Higher	1.10	Ns	.74	Ns	.44	<.05	4.15	<.001
Mobility Index								
None	1.00				1.00		1.00	
Low	1.19	<.05	1.74	<.001	1.29	<.05	1.48	<.001
High	1.19	Ns	1.62	<.001	1.60	<.001	1.38	<.001
Decision index								
None	1		1.00		1.00		1.00	
Some	.73	<.001	.96	Ns	.90	Ns	.70	<.05
No of living sons								
None	1.00		1.00		1.00		1.00	
One	2.44	<.001	2.74	<.001	3.73	<.001	1.80	<.001
Two	.40	<.001	.36	<.001	.32	<.001	.62	<.05
Three or more	.14	<.001	.13	<.001	.06	<.001	.24	<.05
Age of woman								
<30	1.00		1.00		1.00		1.00	
>30	.64	<.001	.69	<.001	7.37	<.001	.82	Ns
Religion								
Islam	1.00		1.00		1.00		1.00	
Other	1.49	<.001	.64	<.001	1.98	<.001	.73	Ns
Member of NGO								
No	1.00		1.00		1.00		1.00	
Yes	1.20	<.05	1.54	<.001	1.36	<.001	1.05	Ns
Visited by FP worker								
No	1.00		1.00		1.00		1.00	
FP	2.86	<.001	1.73	<.001	.36	<.001	2.19	<.001
No of HH Members								
<4	1.00		1.00		1.00		1.00	
5-7	1.15	<.05	1.44	<.001	.87	Ns	1.18	Ns
8+	.96	Ns	1.18	Ns	.65	<.001	1.03	Ns
Husband's education								
None	1.00		1.00		1.00		1.00	
Primary	.97	Ns	1.14	Ns	.94	Ns	1.30	Ns
Secondary	.96	Ns	.81	<.05	.75	<.05	1.37	Ns
Higher	.83	Ns	.53	<.001	.66	Ns	2.38	<.001
Type of residence								
Rural	1.00		1.00		1.00			

Urban	1.30	<.001	1.38	<.001	1.41	<.001	1.57	<.001
Region								
Dhaka	1.00		1.00		1.00		1.00	
Barisal	.79	<.05	1.55	<.001	.77	Ns	1.49	<.001
Chittagong	.63	<.001	.86	Ns	.54	<.001	.93	Ns
Khulna	.97	Ns	1.40	<.05	.77	Ns	1.03	Ns
Rajshahi	1.51	<.001	1.61	<.001	1.59	<.001	1.20	Ns
Sylhet	.28	<.001	.47	<.001	.50	<.001	.53	<.05
SES								
Poorest	1.00		1.00		1.00		1.00	
Poor	1.15	Ns	1.09	Ns	.88	Ns	1.12	Ns
Middle	1.22	<.05	.86	Ns	.99	Ns	1.27	Ns
Rich	1.42	<.001	1.05	Ns	.79	Ns	1.62	Ns
Richest	1.49	<.001	1.05	Ns	1.09	ns	3.05	<.001

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Fig. 1 Divisional differences in current TFR in Bangladesh,BDHS 2004.

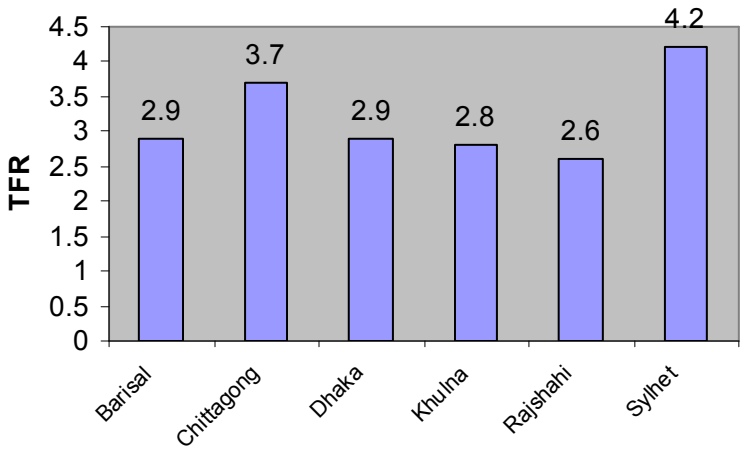
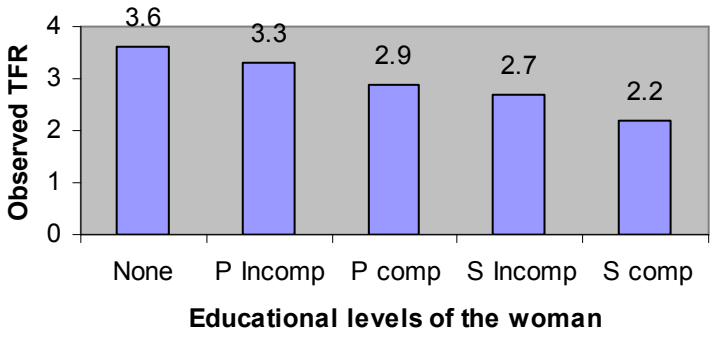


Fig.2 Current TFR according to educational levels of the woman,BDHS 2004.



Appendix A

Principal Component Analysis (PCA) is a statistical technique which can be applied to a set of highly correlated variables in order to construct a smaller set of uncorrelated components. These components can be used in place of the original variables in the interests of efficiency and parsimony. The technique identifies groups of variables which are highly correlated with each other, and constructs components based on these groups. The method can extract as many components as there are variables. That does not serve the purpose of variable reduction, and only components which explain a good proportion of overall variance and have an intuitive interpretation, are usually extracted for subsequent use in regression analysis (Kamal and Sloggett 1993).

Variables that could be possible indicators of decision making and mobility status were subjected to two separate PCAs and the results are presented in Table A.1 and A. 2

Table A. 1 Component scores following PCA with varimax rotation for decision making variables*

Variables	Communality
Decisions on woman's health care	.588
Decisions on large hh purchases	.657
Decisions on purchases for daily need	.543
Decisions on visits to relatives	.604
Decision on menu everyday	.281
Decision on FP matters	.806
Decision on child health care	.631

A weighted average was constructed for each woman, using the communalities as weights. The variable was then regrouped into four quartiles. In the final regression model , this was regrouped into two categories, low decision making (<irst quartile), and high decision making

Table A.2 Component scores following PCA with varimax rotation for mobility variables*

Variables	Communality
Goes shopping alone	.576
Goes outside village alone	.587
Goes to health centre alone	.568

The communalities being very close, the three variables from Table A.2 were used to construct the mobility index with weights one. This was regrouped into three categories 0 for none, 1 for low and 2 and more coded as 2 for high. These were entered as independent variables in the final regression model.