

Antenatal Care, an Expediter for Postpartum Modern Contraceptive Use

Shabareen Tisha^{1,*}, S. M. Raysul Haque¹, Mubina Tabassum²

¹School of Public Health, Independent University Bangladesh, Dhaka, Bangladesh

²Education and Development Foundation-EDUCO, Dhaka, Bangladesh

Abstract The foundation for preferment of family planning (FP) to delay conception after a recent birth is a best practice that can lead to optimal maternal and child health outcomes. However, in case of Bangladesh little is known about how pregnant women arrive at their decisions to adopt post-partum modern family planning (PPMFP). Postpartum months are a challenging time for women and they are quite neglected in our social context. This period is very much vulnerable for next conception. As ante natal care is a popular program in country in contrary to post natal care. So during ANC the advice of PPMFP would be a productive effort. The objective of this study to examine the association between antenatal care seeking behavior and the use of modern contraceptive methods among postpartum women. We used 17,842 women of reproductive ages 15–49 from the 2011 BDHS data set, who had a birth in the 5 years preceding the survey. We then applied both descriptive analyses covering Pearson's chi-square test and later a binary logistic regression model to analyze the comparative contribution of the various maternity and socio-demographic conjecturers of uptake of modern contraceptives during the postpartum period. About 62.4% of total ANC seekers used modern postpartum family planning methods in Bangladesh. PPMFP was significantly associated with primary or secondary education (OR=1.22; OR=1.21 respectively); exposure to media (OR=1.21); religion (OR=.708) and age of woman at first birth (OR=0.97). In addition, PPMFP was associated with number of surviving children, regional variation and place of residence. This study shows the significant association between antenatal care and postpartum contraceptive use in Bangladesh. Integrating family planning counseling into antenatal care may increase the use of effective contraceptive methods among postpartum women in Bangladesh.

Keywords Antenatal care, Postpartum modern family planning method, BDHS, Bangladesh

1. Introduction

According to World Health Organization antenatal care coverage is an indicator of access and utilization of health care during pregnancy. It's a kind of health service that is provided during pregnancy time to all pregnant mothers'. Local coverage of at least one antenatal care visit with a skilled health personnel ranges from 71 per cent in South Asia to over 90 per cent in East Asia and the Pacific and Latin America and the Caribbean, although disparities are common within and among countries [1]. In viewing the data, it is imperative to remember that these percentages bear no reflection on either the skill level of the health-care provider or the quality of care, both of which can inspire whether such care actually succeeds in bringing about improved maternal and newborn health. Antenatal care is the service that comprises the delivery of health-related information,

screening of maternal and fetal risk factors, the anticipation and management of any complication and preparation for delivery in a safe place by a skilled birth attendant [2-4]. Many studies have assessed the effectiveness of ANC on maternal and infant mortality and on their morbidity as well [5]. But a very limited number of studies examined the role of ANC as a facilitator of Family Planning (FP) use [6-8] specially post partum family planning use. According to WHO "Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility. A woman's ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy." The motivation for the campaign of family planning (FP) is to delay conception after a recent birth which is a best practice to get the best maternal and child health outcome. On the contrary, short inter-pregnancy intervals can result in negative health outcomes such as maternal anaemia, low birth weight, and neonatal or infant mortality [9, 10].

Postpartum months are a challenging time for women

* Corresponding author:

shabareen.tisha@gmail.com (Shabareen Tisha)

Published online at <http://journal.sapub.org/rog>

Copyright © 2015 Scientific & Academic Publishing. All Rights Reserved

because of breastfeeding, childcare and recommencement of sexual relations. In a study of women residents of two Nairobi settlements of Korogocho and Viwandani, results showed that sexual resumption occurred earlier than that of menstruation and postpartum contraceptive use [10]. This puts women at the risk of conception and therefore, creates the need for postpartum contraception. Family planning is an important missed opportunity in the postnatal period. Practically all women assume that family planning information can be given during postnatal visits or before a woman leaves the hospital after childbirth. Family planning technologies for the early postnatal period, such as insertion of an intrauterine contraceptive device within the first 48 hours after childbirth, can be mentioned here. In the United States, the National Surveys of Family Growth data showed that as of 1982, most lactating women who were sexually active used a contraceptive method; barrier methods were most frequently used. However, black women and those of higher parity and lower educational level, were more likely to be sexually active and not using a method [11]. In a study, Weston, Neustad and Gilliam suggest that the facilitators to IUD uptake included strong recommendations from providers or family members, planning for IUD during pregnancy, and perceived reproductive autonomy [12]. Incidences of repeat pregnancy were reported among participants who did not obtain IUDs and instead used condoms, used no method or intermittently used hormonal methods in the same study. Planning for postpartum contraception is particularly important for pregnant women at risk of rapid repeat unintended pregnancy. Yee and Simon in 2012 in their study at a medical center in Chicago, used a qualitative approach to examine women's perspectives toward the optimal provision of comprehensive contraceptive counseling [13]. The findings suggest that focused antenatal contraceptive counseling about postpartum contraception increased the possibility of use. Postpartum family planning (PPFP) is the term used to describe the commencement of contraceptives use during the first year after delivery [14]. The period after delivery is a complex and challenging, during which a woman has to care for her newborn child as well as cope with psychological and physical changes [15]. Numerous studies have demonstrated that both men and women, but especially women, suffer from postpartum stress and depression [16, 17]. This postpartum period presents a rising risk of unwanted conception and often frustrated desire for contraceptive protection [18, 19]. The new mothers are often sufferers of myths, fallacies and misconceptions regarding the use of contraceptives from the "informal consultants" (friends and relatives); mainly because of their inadequate knowledge and limited experience paralleled to the women of higher parity [14]. During the first days after delivery, actually contraception is probably the last thing on a new mothers' list of priorities [20]. Moreover, the postpartum period is considered favorable for counseling women on FP methods because this period is often associated with a woman's frequent come across with the health system [16]. Some

researchers by using data from 27 countries established that within 7-9 months after delivery, most postpartum women are exposed to pregnancy, however have not took any contraceptive [18]. A number of studies have revealed that most of the postpartum mothers are not cognizant of the factors associated with fertility reappearance and do not think they are at risk of pregnancy during the first year after giving birth.

In this study, we will assume that individual socioeconomic and demographic factors have role to increase the demand for postpartum family planning (PPFP) use. This conceptualization mirrors the basic beliefs of other Health-Belief Models - HBM [21-23]. The HBM has been previously applied to studies on family planning use [24, 25]. The basic argument in the HBM framework is that, there are certain factors that influence a person's decision to use a PPFP. Bangladesh is the most densely populated country in the world. According to BBS, the population on July 20, 2014 was 156.6 million. The Health Population Nutrition Sector Development Program (HPNSDP) has a plan to increase the use of contraception to 72 percent by 2016. Currently married women in Bangladesh have 0.7 children more than their desired number and fourteen percent of them have an unmet need for FP (family planning) services [26]. This suggests that it is immensely needed to extend the access to FP services to women. In our country antenatal care (ANC) is already a well-known program rather than postnatal care. Sometimes ANC is the first interaction between a woman and healthcare provider. Many women give birth at their home. They don't get the opportunity to receive care from any institution in their post partal life. So this ANC could act as a successful medium for promoting woman to use PPFP methods.

2. Research Hypothesis

Antenatal care seeking behavior can increase postpartum modern family planning (PPMFP) method use. A woman when come for ANC advice during that time if she is given advice for PPMFP methods then it will be much more effective. As postpartum period is the most neglected time for a mother, so if she was previously briefed about PPMFP methods than it would act more sturdily.

3. Data and Method

The present study uses the data from Bangladesh Demographic and Health Survey (BDHS) 2011, conducted under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. BDHS-2011 covered a nationally representative sample of 18,222 ever married women of age 12- 49 years. It is the sixth national demographic and health survey. As a sampling frame BDHS used the list of enumeration areas (EAs) prepared for the 2011 Population and Housing Census, provided by the Bangladesh Bureau of

Statistics (BBS). So the primary sampling unit (PSU) for the survey is an EA. The survey is 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. In the second stage of sampling, a systematic sample of 30 households on average was selected per EA. Using this design; the survey selected 17,964 residential households of seven divisions of Bangladesh and 17,511 were found to be occupied. Within those households out of 18222 ever-married women, 17842 were interviewed, yielding a response rate of 98 percent. The Woman's Questionnaire was used to collect information from ever-married women aged 12-49 years and were asked questions on background characteristics (e.g., age, education, religion, and media exposure), reproductive history, use and source of family planning methods, antenatal care, place of delivery, marriage, fertility preferences and so on. Women who had a live birth within five years before the survey were included in this study, resulting in study samples of 17,842 women. In order to make it more precise and for reduction of further recall bias the antenatal care seeking data for last pregnancy were taken.

The 2011 BDHS used five types of questionnaires: a Household Questionnaire, a Woman's Questionnaire, a Man's Questionnaire, a Community Questionnaire, and two Verbal Autopsy Questionnaires to collect data on causes of death among children under age 5. The contents of the household and individual questionnaires were based on the MEASURE DHS model questionnaires. These model questionnaires were adapted for use in Bangladesh during a series of meetings with a Technical Working Group (TWG) that consisted of representatives from NIPORT, Mitra and Associates, International Centre for Diarrheal Diseases and Control, Bangladesh (ICDDR,B), USAID/Bangladesh, and MEASURE DHS. Draft questionnaires were then circulated to other interested groups and were reviewed by the 2011 BDHS Technical Review Committee. In our study we have used Women's questionnaire.

The dependent variable for this analysis, contraceptive use, was obtained from a question in the individual woman's questionnaire. Women were asked two questions: "Are you currently doing something or using any method of contraception to delay or avoid getting pregnant?" If yes then "Which method are you using?" The choices are female sterilization, male sterilization, IUD, injectables, implants, pill, condom, withdrawal and others. The modern methods included pill, IUD, injection, diaphragm, condom, sterilization (male or female) and implant. Therefore, the dependent variable in this study postpartum modern family planning method was expressed as the binary variable, whether a woman utilized modern postpartum family planning or any other method rather than modern that could be traditional or lack of use of any method. Modern family planning methods are condoms, pills, implants, injectable and sterilization applicable for both males and females.

The independent variables were selected for inclusion in

the analysis based on their significance in previous studies of contraceptive behavior or on their hypothesized association with contraceptive use [27-30]. All the independent variables were obtained from the various sections on the women questionnaire. These are antenatal care seeking behavior, respondent's age, respondent's age during their first birth, parity, desire for more children, their highest educational level, wealth quintile, residence, history of facility delivery, religion, region and exposure to media. The main independent variable of interest is the service use of antenatal care during pregnancy within five years before the survey. To get the information regarding this women were asked.

"Did you see anyone for antenatal care for the pregnancy?" To make analysis and interpretation simpler and more meaningful, some variables were regrouped from their original categories in the dataset. Age of respondent was categorized on the basis of <20 years, 20-34 years and 35+ years. Similar categorization was done for respondent's age during their first birth. Parity is the representation of number of children which was further subdivided into 1 child, 2-4 children and children 5 or more. Desire for more children is considered into yes and no. Educational status of respondent was categorized on the basis of no education, primary, secondary and higher education. Wealth quintile was sectioned into poor, middle and rich group. Residence considered where the participant actually reside whether in urban or rural area. Religion again grouped into Muslim, Hindu, Christian and Buddhist community. Region is the divisional distribution of respondents' like Dhaka, Barisal, Chittagong, Sylhet, Rangpur, Khulna and Rajshahi. Media exposure defined whether the participant is exposed to any kind of media like newspaper, radio or television.

Statistical tests assumed significance at $P < 0.05$. Bivariate statistics using Chi-square test were used to describe the association between postpartum modern contraceptive use and other independent variables. Logistic regression models were created to determine the strength of association between postpartum modern contraceptive use and antenatal checkup while controlling for other variables.

4. Results

According to descriptive analysis, given in table 1, 48.9% of our sample had adopted any type of modern contraceptive method and 51.1% respondent either did not use any family planning method or used traditional methods. On the other hand 66.6% of women sought antenatal care for their most recent birth and 33.4% did not do so. Most of the respondents, about 53.4% were of aged 20-34 years. About 35.3% were in 35+ age group and rest (11.2%) were below 20 years of age. But 67.5% of women had their first birth when they were below 20 years of age, only 18% had their first birth at or after 35 years of age. Considering respondents' education level only 8.2% had attained for higher education and 26% had no education. On the other hand 29.9% and 35.9% had

completed their primary and secondary education respectively. Only 11.8% had history of facility delivery and 68.8% had no desire for more children though 23% had only one child and 61.4% had less than 4 children. 65.3% of our study populations were from rural area and most of them were from Dhaka district. The least women were from Sylhet (11.7%) and Barisal (11.6%). Though Secularism is one of the four fundamental principles in our country but 88.8% of our study populations were Muslim by religion. Regarding the economic status 44.7% were rich, 19.2% were from middle economic status and rests (36.1%) were from poor economic group. In case of media exposure there were 65.6% respondents who were exposed to any kind of media and 34.4% had no history of media exposure.

The data show that women who received ANC (62.4%) are more likely than women who didn't receive ANC (54.6%) to adopt subsequent contraceptive method and it is highly statistically significant ($p < 0.01$). Use of modern contraceptives shows a significant variation among respondent's age ($p < 0.01$). It is highest in mother aged 20-34 years (55.8%) but it comes down again in mother age 35 and over (40.2%). Again age at first birth also shows a significant variation for modern contraceptive use. Those who had a history of child birth before 20 years of age used more contraceptive than other groups who gave birth after 20 years. Only 11.1% of women used contraceptive that gave birth after 35 years. Desire for more children had also significant influence on the likelihood of woman to use modern contraceptive ($p < 0.01$). The data show that the percentage of using modern contraceptive is 11.2% lower for women who desire more children than their counterpart (44.5% and 55.7%, respectively). Considering the variable parity 56.8% of women having 2 to 4 children are more likely to use contraceptive. The astonishing part of this analysis is women having only a child were more user of contraceptives rather than those having 5 or more children (48.9% and 39.1% respectively). Women with facility delivery were more in number to use contraceptives and it shows a significant relationship with use of PPMFP methods.

Education level is also found to be a significant indicator of modern contraceptive use. There is a significant difference in the use of modern contraceptives among the women with different education level ($p < 0.01$). The data show that the proportion of modern contraceptive use increases steadily as their education level increases. The proportion of modern contraceptive use is lowest in women

with no education (44.0%) and highest in women with higher education (52.8%). Wealth index didn't show any association with women's modern contraceptive use. There is an observed divisional and residential incongruity with respect to modern contraceptive use. The proportion of modern contraceptive use in urban women is 3 percent higher than rural women (50.8% and 47.8% respectively) and it is statistically significant ($p < 0.01$). Women from Rangpur district used highest contraceptive (56.9%) and on the other hand Sylhet dwellers used least one (34.4%). Our last variable media exposure also shows a statistically significant ($p < 0.01$) relationship with contraceptives use. 50.2% women used modern contraceptives who are exposed to any sorts of media.

Table 3, displays the findings from binomial logistic regression analyses testing the associations between independent variables and the uptake of family planning services. Women received ANC are more likely to adopt modern contraceptive method than their corresponding group. The probability of using modern contraceptive is 1.14 times higher for women received ANC than opposite group. Considering age at first birth, women of '20 to 34 years' and '35 or more than 35 years' are respectively 21.5% and 83.7% less likely to use contraceptives in comparison to below 20 years age group. Women having 1 child are 1.39 times higher user of modern contraceptives rather than those having more than 5 children.

Marked regional disparity is observed in the use of modern contraceptive method in Bangladesh. Women who are living in Rangpur were, on the average, about 1.55 times more likely to use modern contraceptives than women who are living in Dhaka. Contrariwise, the odds of adopting modern contraceptive method for a woman in Sylhet are reduced by 46% as compared to a woman in Dhaka. A significant difference was observed in the likelihood of using modern contraceptive by women's residence. The net effect of using modern contraceptive for rural women relative to urban women is reduced by 36.5%. The probability of using modern contraceptive for women with primary education is 1.22 times higher than women with no education. Similarly a woman with secondary education is 1.21 times more likely to use modern contraceptive as compared with a woman with no education. Muslim women are 29.2% less likely to use contraceptives than non-Muslim group. Women having exposure to media are 1.21% more likely to use contraceptives in comparison to those who are not exposed to media.

Table 1. Frequency distribution of selected independent and dependent variables

| Variable | Frequency | Percentage (%) |
|--|-----------|----------------|
| Current method of contraceptive use | | |
| Any modern method | 8716 | 48.9 |
| No use or Any traditional method | 9126 | 51.1 |
| Antenatal care visits | | |
| No | 2445 | 33.4 |
| Yes | 4874 | 66.6 |
| Respondent's age | | |
| < 20 years | 2004 | 11.2 |
| 20-34 years | 9533 | 53.4 |
| 35+ years | 6305 | 35.3 |
| Age of mother at birth | | |
| < 20 years | 12044 | 67.5 |
| 20-34 years | 3963 | 22.2 |
| 35+ years | 18 | 18 |
| Facility delivery | | |
| No | 5225 | 29.3 |
| Yes | 2099 | 11.8 |
| Desire for more children | | |
| No | 11466 | 68.8 |
| Yes | 5211 | 31.2 |
| Parity | | |
| 1 child | 3690 | 23 |
| 2-4 children | 9840 | 61.4 |
| 5 or more | 2495 | 15.6 |
| Place of residence | | |
| Urban | 6196 | 34.7 |
| Rural | 11646 | 65.3 |
| Exposure to media | | |
| No | 2517 | 34.4 |
| Yes | 4796 | 65.6 |
| Wealth index (n=7324) | | |
| Poor | 6441 | 36.1 |
| Middle | 3428 | 19.2 |
| Rich | 7973 | 44.7 |
| Mother's level of education | | |
| No education | 4639 | 26.0 |
| Primary | 5332 | 29.9 |
| Secondary | 6406 | 35.9 |
| Higher | 1465 | 8.2 |
| Region (n=7324) | | |
| Barisal | 2066 | 11.6 |
| Chittagong | 2871 | 16.1 |
| Dhaka | 3084 | 17.3 |
| Khulna | 2656 | 14.9 |
| Rajshahi | 2608 | 14.6 |
| Rangpur | 2469 | 13.8 |
| Sylhet | 2088 | 11.7 |
| Religion | | |
| Islam | 15845 | 88.8 |
| Hinduism | 1913 | 10.7 |
| Buddhism | 36 | .2 |
| Christianity | 48 | .3 |

Table 2. Examining the association between postpartum modern contraceptive use and selected independent variable: A bivariate analysis

| Variables | Postpartum modern contraceptive use | | p value |
|----------------------------------|-------------------------------------|------------|---------|
| | No | Yes | |
| Antenatal Care | | | |
| No | 1109(45.4) | 1336(54.6) | .000 |
| Yes | 1835(37.6) | 3039(62.4) | |
| Respondent's age | | | |
| < 20 years | 1136(56.7) | 868(43.3) | .000 |
| 20-34 years | 4217(44.2) | 5316(55.8) | |
| 35+ years | 3773(59.8) | 2532(40.2) | |
| Age at first birth | | | |
| < 20 years | 5543(46.0) | 6501(54.0) | .000 |
| 20-34 years | 2099(53.0) | 1864(47.0) | |
| 35+ years | 16(88.9) | 2(11.1) | |
| Highest Educational Level | | | |
| No education | 2599(56.0) | 2040(44.0) | .000 |
| Primary | 2701(50.7) | 2631(49.3) | |
| Secondary | 3134(48.9) | 3272(51.1) | |
| Higher | 692(47.2) | 773(52.8) | |
| Wealth Quintile | | | |
| Poor | 3272(50.8) | 3169(49.2) | .519 |
| Middle | 1738(50.7) | 1690(49.3) | |
| Rich | 4116(51.6) | 3857(48.4) | |
| Residence | | | |
| Urban | 3050(49.2) | 3146(50.8) | .000 |
| Rural | 6076(52.2) | 5570(47.8) | |
| Facility delivery | | | |
| No | 2146(41.1) | 3079(58.9) | .000 |
| Yes | 797(38.0) | 1302(62.0) | |
| Religion | | | |
| Muslim | 8175(51.6) | 7670(48.4) | .010 |
| Hindu | 911(47.6) | 1002(52.4) | |
| Buddhist | 18(50.0) | 18(50.0) | |
| Christian | 22(45.8) | 26(54.2) | |
| Division (n=17842) | | | |
| Barisal | 989(47.9) | 1077(52.1) | .000 |
| Chittagong | 1629(56.7) | 1242(43.3) | |
| Dhaka | 1624(52.7) | 1460(47.3) | |
| Khulna | 1277(48.1) | 1379(51.9) | |
| Rajshahi | 1174(45.0) | 1434(55.0) | |
| Rangpur | 1064(43.1) | 1405(56.9) | |
| Sylhet | 1369(65.6) | 719(34.4) | |
| Parity | | | |
| 1 child | 1885(51.1) | 1805(48.9) | .000 |
| 2-4 children | 4254(43.2) | 5586(56.8) | |
| 5 or more | 1519(60.9) | 976(39.1) | |
| Desire for more children | | | |
| Yes | 2893(55.5) | 2318(44.5) | .000 |
| No | 5075(44.3) | 6391(55.7) | |
| Media Exposure | | | |
| Exposed | 5850(49.8) | 5908(50.2) | .000 |
| Not exposed | 3265(53.9) | 2794(46.1) | |

Table 3. Logistic regression estimates the effect of antenatal care and other socio-demographic characteristics on use of postpartum modern contraceptives among respondents

| Variable | Regression Coefficient | p-value | Odds Ratio |
|----------------------------------|------------------------|---------|------------|
| Antenatal care (ANC) | | | |
| No (ref.) | | | |
| Yes | 0.128 | 0.031 | 1.137 |
| Age of respondent | | | |
| <20 years (ref.) | | | |
| 20-34 years | .100 | .240 | 1.105 |
| 35 years+ | .193 | .127 | 1.213 |
| Age at first birth | | | |
| <20 years (ref.) | | | |
| 20-34 years | -.242 | .000 | .785 |
| 35 years+ | -1.815 | .032 | .163 |
| Facility delivery | | | |
| No(ref) | | | |
| Yes | -.087 | .175 | .917 |
| Parity | | | |
| 5 or more children | | | |
| 2-4 children | .006 | .955 | 1.006 |
| 1 child | .327 | .000 | .708 |
| Desire for more child | | | |
| No (ref) | | | |
| Yes | .117 | .088 | 1.124 |
| Highest educational level | | | |
| No education (ref) | | | |
| Primary | .196 | .011 | 1.216 |
| Secondary | .192 | .019 | 1.212 |
| Higher | .218 | .081 | 1.243 |
| Wealth Quintile | | | |
| Middle (ref) | | | |
| Poor | .067 | .355 | 1.070 |
| Rich | .033 | .664 | 1.033 |
| Residence | | | |
| Urban(ref) | | | |
| Rural | -.453 | .000 | .635 |
| Division | | | |
| Dhaka(ref) | | | |
| Barisal | .302 | .002 | 1.352 |
| Chittagong | -.346 | .000 | .707 |
| Khulna | .289 | .003 | 1.335 |
| Rajshahi | .276 | .003 | 1.317 |
| Rangpur | .435 | .000 | 1.545 |
| Sylhet | -.616 | .000 | .540 |
| Religion | | | |
| Non-Muslim(ref) | | | |
| Muslim | -.345 | .000 | .708 |
| Media Exposure | | | |
| Not exposed(ref) | | | |
| Exposed | .194 | .002 | 1.214 |

5. Discussion

Two third of Bangladesh women (66.6%) received ANC for their last child within five years before the survey. Among them 62.4% used modern contraceptive methods. Utilization of modern PPF was significantly associated women's: antenatal care seeking behavior, age of the woman during first birth, parity, education level, religion, exposure to the media, place of residence and divisional distribution.

Our findings show that women's antenatal care seeking behavior predicted utilization of modern PPF. Women should be offered the opportunity during the antenatal period to discuss postpartum contraception [20]. Increment in women's age at their first birth significantly reduced their contraceptive use. This implies that PPF use was higher among those who had history of early child birth. This might be due to extreme aged group were previously aware about contraceptives rather than younger groups. That's why their usage is minimal. Another significant factor analyzed was parity. Those who had one child only, they were more likely to use PPF in comparison to those who had more than 5 children which is similar to a study conducted in Uganda [31].

Women's primary or secondary education is also an important predictor for utilization of modern PPF. This relationship is constant with findings reported by other studies [10]. Higher educated women have a better understanding about their contraceptive usage that's why antenatal care couldn't play any role in their decision making. Our result couldn't establish any relationship between wealth quintile and PPF use. According to this study it is revealed that there is a direct association between residence and PPF use. Rural dwellers were fewer users because they had less exposure in comparison to urban dwellers. Considering regional context women from Rangpur were quite ahead than other divisions. Sylhet shows the least result. The main reason behind this regional discrepancy is cultural barriers. People from Sylhet are so conservative that they were the least user of PPF user in whole Bangladesh. Hence more research is needed here. Women's exposure to family planning messages on the media increased use of PPF. Media exposure is known to increase the use of contraceptives causing behavior change through information, education and communication (IEC) campaigns [32]. Specific family planning studies in Kenya and Bangladesh have equally reported increase in utilization of family planning methods as a result of exposure to media [33-35]. The role of antenatal care, as an entry point for gaining health knowledge and accessing other health services, has been emphasized so far (36, 37). Integration of comprehensive contraceptive counseling into routine ANC services and establishing a "one stop service", especially in developing countries, could improve postpartum uptake of modern contraception. In Bangladesh ANC seeking rate is far better than PNC. Post natal care is not at all popular in our country. After child birth females get so involved in their activities that they do not get enough time to seek PNC. On the other

hand our societal context supports pregnant women to seek ANC but not PNC. Their believe is, it's a kind of wastage of time. So to give the message about post partum modern contraceptives ANC is the best way. So it will be obviously easier to spread the information of PPF method through ANC. Therefore policy makers should emphasize the extensiveness ANC services to promote modern contraceptive use.

6. Conclusions

Increasing reproductive health education among disadvantaged women during antenatal care would significantly improve the uptake of PPF in Bangladesh. We propose that the Bangladesh government and development partners can promote an intensified program for expansion of usage of PPF methods that would be delivered to women who will come for antenatal care only. This is because antenatal care acts as a facilitator to provide access to family planning messages and to offer women various contraceptive methods. Similarly family planning messages on radio, in newspapers and television can also strengthen these efforts. We also recommend that PPF be fully integrated into maternal health care services. It is likely that such integration would help increase the uptake of modern family planning. Finally, there is need for further research on how male involvement and timing of postnatal care influences PPF in Bangladesh.

ACKNOWLEDGEMENTS

We would like to thank National Institute of Population Research and Training (NIPORT), Bangladesh for allowing us to use BDHS 2011 data for our analysis and also Dr. M. Omar Rahman, Vice Chancellor and Dean School of Public Health, for his endless encouragement and kind support regarding this study.

REFERENCES

- [1] <http://data.unicef.org/maternal-health/antenatal-care>. Accessed on 10th October, 2015.
- [2] Petrou S, Kupek E, Vause S, Maresh M, 2003, Antenatal visits and adverse perinatal outcomes: results from a British population-based study. *Eur J ObstetGynecolReprod Biol.*; 106(1): 40-9.
- [3] Villar J, Bergsjø P, 1997, Scientific basis for the content of routine antenatal care. I. Philosophy, recent studies, and power to eliminate or alleviate adverse maternal outcomes. *ActaObstetGynecol Scand*,76(1):1-14.
- [4] Vanneste AM, Ronsmans C, Chakraborty J, De Francisco A, 2000, Prenatal screening in rural Bangladesh: from prediction to care. *Health Policy Plan.*;15(1):1-10.

- [5] Carroli G, Rooney C, Villar J, 2001, How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. *PaediatrPerinat Epidemiol.*;15Suppl 1:1-42.
- [6] Leticia E. Hernandez, William M. Sappenfield, David Goodman, Jennifer Pooler, 2012, Is Effective Contraceptive Use Conceived Prenatally in Florida? The Association Between Prenatal Contraceptive Counseling and Postpartum Contraceptive Use. *Matern Child Health J* 16:423–429. DOI 10.1007/s10995-010-0738-9.
- [7] Do M, Hotchkiss D, 2013, Relationships between antenatal and postnatal care and post-partum modern contraceptive use: evidence from population surveys in Kenya and Zambia, *BMC Health Serv Res.*;13:6.
- [8] Hotchkiss DR, Magnani RJ, Rous JJ, Azelmat M, Mroz TA, Heikel J. 1999, The effects of maternal-child health service utilization on subsequent contraceptive use in Morocco, *J Biosoc Sci.*; 31(2): 145-65.
- [9] Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui AO, 2012, Family Planning, Contraception and Health. *Lancet.*; 380: 149–56.
- [10] Ndugwa RP, Cleland J, Madise NJ, Fotso J-C, Zulu EM, 2011, Menstrual pattern, sexual behaviors, and contraceptive use among postpartum women in Nairobi urban slums, *J Urban Health.*; 88 Suppl 2:S341–55.
- [11] Ford K, Labbok M, 1987, Contraceptive usage during lactation in the United States: an update., *Am J Public Health*,77:79–81.
- [12] Weston MRS SLM, Neustad AB, Gilliam ML, 2012, Factors influencing uptake of intrauterine devices among postpartum adolescents: A qualitative study, *Am J Obstet Gynecol.*;206:1–12.
- [13] Yee L, Simon M, 2011, Urban minority women’s perceptions and of preferences for postpartum contraceptive counseling, *J Midwifery Womens Heal.*;56:54–60.
- [14] McKaig, C and Deller, B., After the fact: family planning for the postnatal period, 2006, ACCESS-FP/JHPIEGO. <http://www.maqweb.org/miniu/present/2006/After%20the%20Fact-PPFP.ppt>
- [15] Salway, S and Nurani, S. 1998, Uptake of contraception during postpartum amenorrhea: understandings and preferences of poor, urban women in Bangladesh, *Social Science and Medicine*, 47(7): 899-909.
- [16] Eliason S, Baiden F, Quansah-Asare G, Graham-Hayfron Y, Bonsu D, Phillips J and Awusabo-Asare K, 2013, Factors influencing the intention of women in rural Ghana to adopt postpartum family planning and reproductive health.
- [17] Mehata, S., Paudel, YR, Mehta, R., Dariang, M., Poudel, P. and Barnett, S. 2014, Unmet Need for Family Planning in Nepal during the First Two Years Postpartum” *BioMed Research International*, Volume 2014. Article ID 649567, 9 pages, <http://dx.doi.org/10.1155/2014/649567>.
- [18] Ross, A.J., and Winfrey, W.L., 2001, Contraceptive use, intention to use and unmet need during the extended postpartum period. *International Family Planning Perspective*, 27(1):20-27.
- [19] Depineres, T., Blumenthal, P.D and Diener-West, M. 2005, Postpartum contraception: the New Mexico pregnancy risk assessment monitoring system. *Contraception*, 72(6): 422-425.
- [20] Glasier, A.F., Logan, J., and McGlew, T.J., 1996, Who gives advice about postpartum contraception? *Contraception*, 53(4): 217-220.
- [21] Yesudian C., 1988, Health Services Utilisation in Urban India. Delhi, India: Mittal Publications.
- [22] Rajamohanam KP, Sankey VW, Glick HA, Polsky D, Berlin JA, Lowe RA, 2003, Factors affecting Decisions to Seek Treatment for Sick Children in Kerala, India. *SocSci Med*; 57: 783–90.
- [23] Anderson R., 1995, Revisiting the behavioural Model and Access to Medical Care: Does it Matter? *J Heal Soc Behav.*;36:1–10.
- [24] Condelli L, 1986, Social and attitudinal determinants of contraceptive choice: using the health belief model. *J Sex Res.*; 22: 478–91.
- [25] Speizer IS, Fotso JC, Okigbo C, Faye CM, Seck C, 2013, Influence of integrated services on postpartum family planning use: a cross-sectional survey from urban Senegal, *BMC Public Health*,13:752.
- [26] Bangladesh Demographic and Health Survey 2011, Dhaka, Bangladesh and Calverton, Maryland: NIPORT, Mitra and Associates and ICF International; 2013.
- [27] Hani, A., Moss, M., Cooper, D., Morroni, C & Hoffman, M, 2003, Informed choice-the timing of postpartum contraceptive initiation. *South Africa Medical Journal*, 93(11): 862-864.
- [28] Barber, L.S, 2007, Family planning advice and postpartum contraceptive use among low-income women in Mexico, *International Family Planning Perspectives*, 33(1): 6-12.
- [29] Newmann, S.J., Goldberg, A.B., Aviles, R., De Perez, O.M and Foster-Rosales, A.F., 2005, Predictors of contraceptive knowledge and use among postpartum adolescents in El Salvador. *American Journal of Obstetrics and Gynaecology*, 92(5): 1391-1394.
- [30] Mwangi, A., Warren, C., Koskei, N, Blanchard, H., 2008, Strengthening postnatal care and postpartum family planning in Kenya, FRONTIERS final report. Washington, DC: population council and ACCESS-FP.
- [31] Gideon Rutaremwa, Allen Kabagenyi, Stephen Ojiambo Wandera, Tapiwa Jhamba, Edith Akiror and Hellen Laetitia Nviiri, 2015, Predictors of modern contraceptive use during the postpartum period among women in Uganda: a population-based cross sectional study, *BMC Public Health* 15:262 DOI 10.1186/s12889-015-1611-y.
- [32] Udry JR, Clark LT, Chase CL, Levy M, 1972, Can mass media advertising increase contraceptive use? *FamPlann Perspect*, 4: 37–44.
- [33] Islam MR, Islam MA, Banowary B, 2009, Determinants of exposure to mass media family planning messages among indigenous people in Bangladesh: A study on the Garo. *J Biosoc Sci.*;41:221.

- [34] Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J, 2006, Family planning: the unfinished agenda. *Lancet.*; 368: 1810–27.
- [35] Westoff CF, Rodriguez G, 1995, The mass media and family planning in Kenya. *IntFam Plan Perspect*, 21:26–36.
- [36] Pervin J, Moran A, Rahman M, Razzaque A, Sibley L, Streatfield PK, 2012, Association of antenatal care with facility delivery and perinatal survival - a population-based study in Bangladesh, *BMC Pregnancy Childbirth.*;12:111.
- [37] Ngy MH, Nakamura K, Ohnishi M, Kizuki M, Suyama S, Seino K, 2007, Improved perinatal health through qualified antenatal care in urban Phnom Penh, Cambodia. *Environ Health Prev Med.*, 12(5): 193-201.