

University of Rajshahi

Rajshahi-6205

Bangladesh.

RUCL Institutional Repository

<http://rulrepository.ru.ac.bd>

Department of Population Science and Human Resource Development MPhil Thesis

2015

Factors Affecting Contraceptive Use among Young Fecund Women in Bangladesh

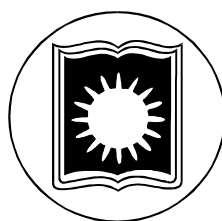
Islam, Ahmed Zohirul

University of Rajshahi

<http://rulrepository.ru.ac.bd/handle/123456789/380>

Copyright to the University of Rajshahi. All rights reserved. Downloaded from RUCL Institutional Repository.

Factors Affecting Contraceptive Use among Young Fecund Women in Bangladesh



*A Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Philosophy in Population Science and Human Resource
Development of the University of Rajshahi*

Submitted by

Department of Population Science
and Human Resource Development
University of Rajshahi
Rajshahi, Bangladesh
December, 2015

Examination Roll No. 08311
Registration No. 0141
Session: 2008-2009

ACKNOWLEDGEMENT

At the outset all praises and utmost gratitude to Almighty Allah, source of all power and knowledge, for giving me strength, patience and ability to accomplish my research work.

I must keep in record my sincere and deep gratitude to my respected supervisor for suggesting me to take up this work. His constant guidance, keen interest, encouragement and valuable suggestions in various aspects of my thesis inspired me to complete the work in time. I owe to him the most consideration it a rare fortune to work under him.

I wish to express my gratitude to all the teachers and colleagues of the Department of Population Science and Human Resource Development, university of Rajshahi, for their timely advices and continual encouragement that help me to go forward.

Finally, I gratefully remember the love, affection, encouragement and inspiration, which are received from my family members especially from my mother and wife throughout the whole period of my research work.

December 2015

Ahmed Zohirul Islam

ABSTRACT

Background: World population stood at 7.238 billion in 2014. South Asia accounts 1.806 billion of world population of which, Bangladesh, the third populous country in South Asia contributes 158.5 million people. More than half of the population of Bangladesh is young (32.3% are below age 15 and 18.8% are age 15-24). As this large cohort of young people enters the reproductive life span, their reproductive behavior will determine the growth and size of population of Bangladesh for decades to come. So, this study focused on the contraceptive use status of young women as contraceptive prevalence is the main determinant of fertility. Extensive research has been made to identify the factors influencing the uptake of contraceptives. However, existing studies neglected the importance of specifying the fecundity of women though fecund (those who are physically capable to bear children) women are at real risk of encountering unintended pregnancy. Therefore, this study aims to explore the determinants of contraceptive use among young fecund women.

Methods: This study utilized a representative set of cross-sectional data extracted from the Bangladesh Demographic and Health Survey (BDHS) 2011. Out of 17,842 ever married women this study considered 4,982 who were young currently married fecund to analyse fertility, fertility preference and contraceptive use and to analyse demand for contraception. Moreover, 3,744 young currently married fecund non-pregnant non-amenorrhic women, who were in actual need of current contraceptive use, were selected to analyse current contraceptive use. Besides, 237 women who used traditional and folkloric contraceptive method were excluded from 3,744 women to analyse modern contraceptive use. Descriptive statistics, binary logistic regression and multinomial logistic regression were used for analyses.

Results: It was observed that contraceptive prevalence (CP) was 54.4% among currently married fecund women but CP became 70.6% when we refined our sample by considering only currently married fecund non-pregnant non-amenorrhic women who were at actual risk of encountering pregnancy. We propose the later one as net contraceptive prevalence (NCP) among young fecund women.

Women who wanted to have another child after two years of the survey out of them more than one-third did not use any contraceptive and were at risk of having mistimed

pregnancy. Women who did not want child any more out of them 45% did not use any contraceptive which put them at risk of encountering unwanted pregnancy. In spite of having three or more children 11.6% and 2.3% among them respectively desired to have another child after two years and within two years of the survey. These proportions became 20% and 4% respectively among women with two children. One third of women having two children did not use contraceptive and almost half of the women who had three or more children did not use any method of contraception.

The highest prevalence of contraceptive use was recorded in young women aged 23-24 years, those who were educated, those who were non-Muslim, those who got married before age of 18 years, those who gave birth in early adolescent period, those who had two or more living children, those whose husbands were professional worker, those lived in Barisal division or resided in the urban area. Moreover, husband-wife joint decisions regarding respondents' own health care, child health care, large household purchases and visiting to family members or relatives were found to be highest for using any contraceptive. In multivariate analysis, it was observed that age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's education and occupation, region, place of residence (urban-rural), religion, visited by FP workers and decision making power on own health care and child health care were identified as the influential predictors of current contraceptive use.

Use of modern contraceptive was found highest among young women aged 23-24 years, those who were educated, those who were non-Muslim, those who experienced child marriage, those who had two or more living children, those whose husbands were professional workers, those who lived in Barisal division or resided in the urban area, those who were visited by FP workers, those who desired no more children and those who jointly took decision with their husbands regarding their own health care, child health care, large household purchases and visiting to family members or relatives. Findings of binary logistic regression analysis indicated that age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's occupation, region, place of residence (urban-rural), religion, visited by FP workers and person who decides on respondent's own health care, child

health care and visiting family or relatives had significant effects on using modern contraceptives.

It was observed from this study that total unmet need for contraception was 16.6% out of which 13.4% for spacing birth and 3.2% for limiting birth. Total demand for contraception was 71% and proportion of demand satisfied was 77%. Unmet need for contraception was highest in young fecund women who were adolescent (aged 13-19 years), those who were illiterate, those who were Muslim, those who gave 2 births during 3 years preceding the survey, those who gave birth in adolescent period, those who had more than two living children, those whose husbands were manual worker, those who did not know about their husbands' desire for children, those lived in Chittagong division or resided in the rural area, those who belong to the poorest quintile of wealth, those who watched television less than once a week. Moreover, husband-wife joint decisions regarding respondents' own health care, child health care, large household purchases and visiting to family members or relatives were found to be lowest for having unmet need and highest for having met need for contraception. Findings of multinomial logistic regression analysis elucidated that age, number of births during three years preceding the survey, region, place of residence (urban-rural), religion, husband's desire for children, visited by FP workers, decision making power on child health care and read about FP in newspaper/magazine were significant predictors of unmet need for contraception relative to current contraceptive use.

Conclusion: This study assessed net contraceptive prevalence and identified the factors affecting contraceptive use among young fecund women. Women who had two or more children and wanted another child after two years of the survey or wanted no more children but were not using contraceptive were at risk of having unplanned or unwanted pregnancy. Husband-wife joint decision making power was found to be a significant factor that influences contraceptive use. So, this study suggests that greater gender equality may encourage women's participation in decision making. Additionally, family planning policies should also be tailored to address the specific needs of these young fecund women with varied geographical locations.

DECLARATION

I do hereby declare that the whole work submitted as a thesis entitled **‘Factors Affecting Contraceptive Use among Young Fecund Women in Bangladesh’** in the Department of Population Science and Human Resource Development, University of Rajshahi, for the degree of Master of Philosophy is the result of my own investigation. I carried out this research work under the supervisions of Dr. Md. Golam Mostofa, Professor, Department of Population Science and Human Resource Development, University of Rajshahi. The thesis has not ever been submitted in the substance for any other degree.

(Ahmed Zohirul Islam)

M. Phil. fellow and Assistant Professor

Department of Population Science and Human Resource Development

University of Rajshahi

Rajshahi

CERTIFICATE

I am pleased to certify that **Ahmed Zohirul Islam** carried out his M. Phil. Research work under my supervisions entitled '**Factors Affecting Contraceptive Use among Young Fecund Women in Bangladesh**' in the Department of Population Science and Human Resource Development, University of Rajshahi. He has fulfilled all the requirements for submission of the thesis for the degree of Master of Philosophy in Population Science and Human Resource Development, University of Rajshahi.

I further certify that the research work has not previously been submitted elsewhere for any degree or diploma.

(Dr. Md. Golam Mostofa)

Supervisor and Professor

Department of Population Science and Human Resource Development

University of Rajshahi

CONTENTS

ACKNOWLEDGEMENT	I
ABSTRACT	II
CONTENTS	V
LIST OF TABLES	VII
Chapter One: Research Perspective	1-18
1.1 Introduction	1
1.2 Review of Literature	4
1.3 Rationale of the Study	17
1.4 Objectives of the Study	17
1.5 Strengths and limitations of the Study	18
Chapter Two: Data Source and Methodology	19-26
2.1 Sources of Data	19
2.2 Sample Design	20
2.3 Selection of Sample	21
2.4 Measurement of Variables	23
2.4.1 Outcome variables	23
2.4.2 Explanatory variables	24
2.5 Statistical Analyses	25
Chapter Three: Fertility, fertility preference and contraceptive use	27-34
3.1 Introduction	27
3.2 Number of living children, fertility preference and contraceptive use	27
3.3 Number of living children and contraceptive use	28
3.4 Fertility preferences and contraceptive use	29

3.5	Fertility preference and contraceptive use by socio-economic status	31
Chapter Four: Current use of contraception		35-52
4.1	Introduction	35
4.2	Socio-demographic profile of young women	36
4.3	Contraceptive use status	41
4.4	Demand for contraception	42
4.5	Contraceptive prevalence by socio-demographic profile of young women	43
4.6	Determinants of current contraceptive use of young women	49
Chapter Five: Modern contraceptive use		53-63
5.1	Introduction	53
5.2	Prevalence of modern contraceptive use by socio-demographic profile of young women	54
5.3	Factors affecting modern contraceptive use of young women	60
Chapter Six: Demand for contraception		64-80
6.1	Introduction	64
6.2	Demand for contraception: The basic concept	64
6.2.1	Unmet need for contraception	65
6.2.2	Met need for contraception	66
6.2.3	No demand for contraception	66
6.3	Demand for contraception by socio-demographic profile of young women	66
6.4	Determinants of demand for contraception	75
Chapter Seven:		81-92
7.1	Discussion	81
7.2	Recommendations	91
References		93-110

LIST OF TABLES

Table 3.1	Percentage distribution of young currently married fecund women by their number of living children, fertility preference and contraceptive use status	28
Table 3.2	Percentage of young currently married fecund women by contraceptive use status according to number of living children	29
Table 3.3	Percentage of young currently married fecund women by their contraceptive use status according to fertility preference	29
Table 3.4	Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to contraceptive use status	30
Table 3.5	Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to wealth index	31
Table 3.6	Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to educational status	32
Table 3.7	Percentage distribution of young currently married fecund women who had two or more children by their educational status according to contraceptive use status	33
Table 3.8	Percentage distribution of young currently married fecund women who had two or more children by their wealth index according to contraceptive use status	34
Table 4.1	Percentage distribution of young currently married fecund non-pregnant non-amenorrheic women according to some socio-demographic characteristics	37
Table 4.2	Current contraceptive use status of young currently married fecund non-pregnant non-amenorrheic women	42
Table 4.3	Distribution of young currently married fecund non-pregnant women by their demand for contraception	43
Table 4.4	Contraceptive prevalence by socio-demographic characteristics of young women	45
Table 4.5	Logistic regression model for current contraceptive use	50

Table 5.1	Prevalence of modern contraceptive use by socio-demographic characteristics of young women	55
Table 5.2	Logistic regression model for modern contraceptive use	61
Table 6.1	Percentage of currently married young fecund women with demand for contraception by some background characteristics	67
Table 6.2	Multinomial logistic regression model for demand for contraception	77
Table 6.3	Adjusted predicted probabilities (percentage) from multinomial logistic regression model for demand for contraception	79

Chapter One

Research Perspective

1.1 Introduction

World population stood at 7,238 million in 2014. South Asia accounts 1,806 million of world population of which, Bangladesh, the third populous country in South Asia contributes 158.5 million people (Population Reference Bureau, 2014). More than half of the population of Bangladesh is young (32.3% are below age 15 and 18.8% are age 15-24) (Bangladesh Demographics profile, 2014). As this large cohort of young people enters the reproductive life span, their reproductive behavior will determine the growth and size of population of Bangladesh for the coming decades. Therefore, this study focused on the contraceptive use status of young women as contraceptive prevalence is the main determinant of fertility. Besides, Bangladesh has one of the highest rates of child marriage in the world (UNFPA, 2012). Despite the fact that the minimum legal age of marriage for females in Bangladesh is 18 years and 21 years for males, 64% of women aged 20-24 were married before the age of 18 (Plan International Bangladesh, 2013). Early marriage exposes these women to frequent and unprotected sexual intercourse, which can lead to early and risky first birth (Mensch et al., 1998; Haberland et al., 2005). Evidently, when a majority of girls in the country get married and bear children while they are still children, they add to existing hurdles for empowering girls and achieving goals of gender equity.

High rates of early childbearing among women in developing countries continue to be a public health concern. It is estimated that about 16 million of women under 20 years give birth each year and this constitutes 11 percent of all births globally. The developing countries contribute 95% of all births by adolescents (WHO, 2011). Early childbearing affects negatively on adolescent women through impairment of their health and that of their offspring (Blanc et al., 2009). It is also associated with increased risk of adverse pregnancy outcomes and infant mortality (Patton et al., 2009; Conde-Agudelo et al., 2005; Cowden et al., 2001). In developing countries,

complications during pregnancy and childbirth have been identified as the leading cause of death among adolescent girls (WHO, 2007). In addition, several studies have shown that adolescent women have a high risk of experiencing an unintended pregnancy. Unplanned pregnancies have been associated with negative health risk factors for both the mother and the child (Blanc et al., 2009; Finer & Henshaw, 2006; D' Angelo et al., 2004). Contraceptive use could delay early motherhood and protect from adverse effects of early childbearing. In this regard, an intervention through family planning programs may be one of the most effective efforts to reduce the negative consequences of early childbearing.

The family planning (FP) program addressed under MDG 5 is targeted to achieve desired family size, reduce total fertility, and slow population growth (USAID, 2009). The use of modern contraceptive methods are increasing in the Eastern Europe and Central Asia but many less developed countries still face significant challenges in achieving desired family size, and reduce total fertility (UNFPA, 2009). According to UN report (2013), contraceptive prevalence rate varies widely between developed and developing countries. Globally, contraceptive prevalence is estimated at 63% in 2011. Among the 49 least developed countries, 36% of married or in-union women are using a contraceptive method while the level is 66% and 70% in other developing and developed regions respectively (United Nations, 2013). In Bangladesh, 61% currently married women aged 15-49 use contraceptive methods (NIPORT et al., 2013; United Nations, 2013) and unmet need for family planning among currently married women is 12% (Islam et al., 2013). Satisfying the unmet need for family planning alone could cut the number of maternal deaths by almost a third (WHO, 2012). However, an estimated 215 million women who would prefer to delay or avoid pregnancy continue to lack access to safe and effective contraception (WHO, 2012).

Adolescent maternal mortality and morbidity represent a substantial public health problem at the global level. An estimated 16 million adolescents aged 15–19 give birth each year (Oringanje et al., 2009) and these women were twice as likely to die during pregnancy or childbirth compared to women over 20 years of age; adolescents under 15 years of age were five times more likely to die during pregnancy or

childbirth (Gupta et al., 2008). Additionally, adolescent mothers are more likely to have low birth weight babies who are at risk of malnourishment and poor development. Infant and child mortality is also highest among children born to adolescent mothers (Mathur et al., 2004). Complications from pregnancy and childbirth are the leading cause of death in girls aged 15-19 in low and middle income countries (LMIC) where almost all of the estimated 3 million unsafe abortions occur (Lopez et al., 2010). Perinatal deaths are significantly higher in babies born to adolescent mothers than in those born to mothers aged 20–29 years, as are other problems such as low birth weight (Lopez et al., 2010).

Preventing unplanned and unwanted pregnancy is a key strategy in improving maternal and infant outcomes. Increasing contraceptive use in developing countries has cut the number of maternal deaths by 40% over the past two decades, merely by reducing the number of unintended pregnancies (Cleland et al., 2012). Around 4.7 million European women aged 15 –49 are estimated to be at risk of an unintended pregnancy (Skouby, 2004) and almost half of the 6.3 million pregnancies in the US are unintended, despite the availability of a wide variety of highly effective contraceptive methods (Darney, 2011). Contraceptive use averts almost 230 million births every year (Singh, 2009) and prevents 272,040 maternal deaths worldwide (Ahmed et. al., 2012).

In spite of encountering resource scarcity and subsistence-level of economy, Bangladesh has achieved an outstanding position through exceptional health achievements. In 2010, the United Nations (UN) recognized the country for its exemplary progress towards Millennium Development Goal (MDG) 4 in child mortality (Ministry of Health & Family welfare, 2012; the daily star, 2010) and for being on-track to achieve the maternal mortality reduction goals of MDG 5 (NIPORT et al., 2012). Maternal mortality was reduced from 574 deaths per 100,000 live births in 1991, to 194 deaths per 100,000 live births in 2010 (NIPORT et al., 2012). Though total fertility rate reduced from about 7.0 children per woman in 1970, to 2.2 children per woman in 2013, the density of population is 1,101 per square kilometer in Bangladesh (Population Reference Bureau, 2014). This puts the nation among the most densely populated countries of the world. Thus, fertility decline must be the

prime concern of any family planning program besides preserving mother and child health which is of utmost importance for the country to keep health indicators in line with the targets of the Millennium Development Goals.

Identifying the level and patterns of contraceptive prevalence and the possible factors affecting contraceptive use is pertinent in the way of making improved policy and program in Bangladesh. Since extramarital cohabitation is illegal in Bangladesh and infecund women are physically unable to bear child, contraceptive prevalence should be investigated merely among currently married and fecund women. Besides, “Childbearing begins early in Bangladesh, with almost half of women giving birth by age 18 and nearly 70 percent giving birth by age 20” (NIPORT et al., 2013). Therefore, this study focused on contraceptive use status among currently married and fecund young women which will have greater input to policy makers for designing programs, proper implementation and evaluation of their contribution regarding family planning.

1.2 Review of literature

The high rates of child marriage and consequently early childbearing among women in Bangladesh continue to be a public health concern. Women who use contraceptives tend to have a better quality of life, higher social status, and greater autonomy. Contraceptive use has the power to reduce fertility considerably and ultimately to improve maternal and child health (Osemwenkha, 2004). Family planning has been cited as essential to the achievement of Millennium Development Goals (MDG) and is an important indicator for tracking progress on improving maternal health (Bernstein & Edouard, 2007). Family planning is one of four pillars with antenatal care, safe delivery, and postnatal care that introduced by the Safe Motherhood Initiative in 1987 to reduce maternal mortality in developing countries, where 99% of all maternal deaths occur (Ahmed et al., 2012). An increase of 15–17 percentage points in prevalence of contraceptive reduces fertility (and thus population growth) by one birth per woman (Cleland et al., 2012). Among the four primary determinants of fertility, contraceptive use is the most important to bring fertility down into a low range (Bongaarts, 1982) and fertility can decline also from increased abortion,

increased breastfeeding, or increased age at marriage. Bongaarts (2011) also showed that family planning programs can reduce desired family size.

Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. Family planning has a direct impact on women's health and well-being as well as on the consequence of each pregnancy (World Health Organization, 2011a). In developing countries about 818 million of sexually active women of reproductive age (15-49) want to avoid pregnancy and delay child bearing for at least two years or want to stop pregnancy and limit their family size. About 140 million of those women (17%) are not using any method of family planning, while 75 million (9%) are using less effective traditional methods. Non contraceptive users and traditional users together (215 million women) are said to have an unmet need for modern contraception (Darroch et al., 2011).

Use of contraceptive methods prevented over 250000 maternal deaths through reducing unintended pregnancies in 2008. This is equivalent to 40% of the 355000 maternal deaths for the year. The number of maternal deaths would decrease by a further 30% in developing countries, if all women who wish to avoid pregnancy use an effective contraceptive method (Cleland et al., 2012).

Unmet needs is often described as a problem of access and interpreted as that women do not use contraceptives because they cannot find or afford them. While access is an issue, many other reasons have been cited by women for not using contraceptives, including lack of knowledge, cultural, personal, religious oppositions, health concerns, and fear of side effects. Therefore, just making contraceptives accessible does not guarantee that women will use those (Mills et al., 2010).

In many Asian countries sexuality related topics have greatly remained as a taboo (Adhikari & Tamang, 2009; Agampodi & Agampodi, 2008). Cultural, socioeconomic, and physical norms are identified prominent obstacles of young people for utilizing sexual and reproductive health services (Regmi et al., 2010).

In South Central and Southeast Asia the use of modern contraception is less than global average, with only 47% of married women aged 15–49 years use modern contraceptives, although higher proportions want to prevent pregnancy. The 32% of women, who used a traditional method or no method at all, accounted for 85% of unintended pregnancies in 2008 (United Nations Population Fund, 2009). The rate of annual abortions in Asia slightly increased from 25.9 million to 27.3 million between 2003 and 2008. About 60–65% of abortions in South Central Asia, Southeastern Asia and Western Asia are performed unsafely (Guttmacher Institute, 2012).

In Asia in 2008, 17 000 maternal death which include 12% of all maternal mortality rate were reported due to unsafe abortion (World Health Organization, 2011b). The recent DHS analytical studies show the modern contraceptive prevalence among married women (15-49) in Asian country varied from 14% in Azerbaijan, 20% in Armenia, 22% in Pakistan, 34% in Philippines, 35% in Cambodia, 42% in Jordan, 48% in Bangladesh, 49% in India (Westoff, 2012). The lowest levels of satisfied demand for modern contraception in Asia belong to Armenia and Azerbaijan, at 21% and 27%, respectively. In Cambodia, Pakistan and the Philippines the levels of satisfied demand are below 50% (Westoff, 2012).

Unplanned pregnancies occur when effective contraception is largely inaccessible, or contraceptive method is not used correctly or consistently. It has been estimated that almost 40% unplanned pregnancies occur globally each year as a result of ineffective contraceptive use or failure of method or non-use of contraception (World Health Organization, 2007). Moreover, a study indicated that particular groups of Bangladeshi women are at a significantly higher risk of unintended pregnancy and thus would benefit from quality family planning services that are tailored to their needs (Islam & Rashid, 2004).

1.2.1 Socio economic and Demographic Factors

Socio economic and demographic factors such as residence (Audu et al., 2008), education (Oye-Adeniran et al., 2006; Saleem & Bobak, 2005; Ekani-Besala et al., 1998), age (Oye-Adeniran et al., 2006; Ruiz-Munoz et al., 2012), economic status (Gakidou & Vayena, 2007), parity (Gilliam et al., 2011), access to media (Ekani-

Besala et al., 1998; Cohen, 2000), autonomy (Hindin, 2000; Cleland et al., 2006; Nagase et al., 2003), desire for children (Nagase et al., 2003), marital status (Audu et al., 2008) have been associated with use modern contraceptives. Partner communication has also been identified as an important factor influencing contraceptive use (Gilliam et al., 2011; Odimegwu, 1999). Women whose partners disapprove of modern contraceptive practice are more likely not use modern contraceptives (Ekani-Besala et al., 1998; Nagase et al., 2003). Psychosocial factors such as intimate partner violence have also been associated with non-use of contraception among women (Alio et al., 2009).

As the development progress, socioeconomic development and rapid urbanization lead to a decline in the rate of fertility (Asian Development Bank, 2012). In countries such as Viet Nam, the fertility rate has declined dramatically from 5.4 in 1980 to 1.8 in 2010 (World Bank, 2012). In addition, rich cities such as Shanghai had experienced a drop in birth rate below the population replacement rate. This can be explained due to the occurrence of more opportunities in education and labor force for women in urban areas rather than women from rural areas. Consequently, urban women who are employed tend to have late marriage resulting fewer children. This is further justified by education that women who are working in cities were found to invest most of their time in education (Asian Development Bank, 2012).

Women's education is one of the important factors that influence contraceptive use (Al Riyami et al., 2004; Chavoshi et al., 2004; Saleem & Bobak, 2005). A study in Nepal showed that older women (35 and over), educated, living in urban, working in the business or service sectors were more likely to use modern contraceptive methods ($p < 0.05$) (Sharma et al., 2011).

Rahman et al. (1996) showed that duration of marriage, visits of family planning workers, region of residence, religion and education have significant influences on current use of modern contraception. Another study carried out in Oman suggested that age of women, region, number of living children, education, place of residence and living arrangement have the most significant effects on contraceptive use among ever married women aged 15-49 (Al-Balushi et al., 2015). Kabir & Islam (2000)

suggested that the likelihood of using contraception is higher if the women had access to any type of mass media on family planning messages. Radio family planning messages are more effective in the context of Bangladesh.

In contrast, a survey of South Asian women aged 16 to 50 years, attending inner-city general practices in London, showed that unmarried women (11/13, 85%) were more likely to be using contraception than married women (54/91, [60%]) (OR = 1.4, 99% CI = 1.1 to 1.9). Thirty percent of married women at all ages and 50% (16/32) of women aged more than 30 years who said they had completed their families were not using any contraception (Saxena et al., 2002).

Unmet needs for contraceptive methods are considerably higher among poorer women (Johnson et al., 2008). There is limited political support to provide family planning services for poor people in the Philippines. Since 2004 in Philippine the access of women to supply and family planning services have been reduced. Based on national surveys from 1998 to 2008, the number of women who procured contraceptive methods through pharmacies are increasing. This switch to private sector suppliers reduced access of low-income women and couples to family planning services (Guttmacher Institute, 2010).

The increasing trend of premarital sexual relationship and unintended pregnancies has created a greater need for contraceptives among young women. Sensitivities of sex-related issues in a Muslim-majority country like Malaysia imposed various types of obstacles for young women's access to sexual and reproductive health information, support and practices (Wong, 2012).

In poor countries, young people's economic constraints affect their ability to buy contraceptives or seek sexual and reproductive health services (Chapagain, 2006; Sundby, 2006).

A study among Afghan refugee women in Pakistan showed the use of contraceptive methods among women was higher in subsidized healthcare with increasing age as compared to the women in the non-health subsidy group. For example women aged 25 years in healthcare subsidy group were 0.3 times less likely to use family planning

whereas women aged 35 years in the same group were 1.06 times more likely to use it (Raheel et al., 2012).

Ethnic disparities also affect the use of family planning services. Newars ethnicity is the highest among all ethnic groups in Nepal to use contraceptives. Analysis of Nepal Demographic and Health Survey (NDHS), indicated that despite considerable progress in meeting the Millennium Development Goals (MDG), different ethnic groups face many barriers to accessing family planning services, because of their illiteracy, poverty, and low social status (Bennett et al., 2008; Mishra, 2011).

1.2.2 Religious Factors

The potential influence of different cultures and religions on the acceptance and use of family planning methods by couples have been well documented (Shah et al., 2008; Srikanthan & Reid, 2008).

Analysis of the National Family Health Surveys in India for Muslim and Non-Muslim Differentials in Family Planning showed that Muslim women have greater opposition to family planning. Muslims prefer to use temporary contraceptive methods while the National Family Planning Program promote sterilization. Further, Muslims tend to utilize private-sector services due to greater privacy needs but the program rely on public-sector sources of supply of family planning (Mishra, 2004).

Muslim wives in comparison with non-Muslim wives usually have more children, are more likely to desire additional children, and are less likely to be using contraception when they desire no more children (Morgan et al., 2002).

1.2.3 Limited Knowledge of Methods and Reproduction

Lack of knowledge of modern contraceptive methods and their mechanism of action have been cited one of major reasons for the women's non use of contraception (Khan et al., 2007; Sajid & Malik, 2010; Wu, 2010). Gender disparities in formal schooling have been identified a fundamental structural factor in limiting effective sex education in South Asian and Middle Eastern (UNESCO, 2011). Lacking knowledge of reproductive physiology and fertile period among women and especially adolescent

girls may not be effectively assessing their risk of getting pregnant when they have occasional or infrequent sex (Sedgh et al., 2007). A qualitative study among young Vietnamese women revealed they rarely received adequate sex education, which was believed too sensitive a topic to discuss, and out of twelve young women only two in the study had ever used a modern method (Nguyen et al., 2006).

Another qualitative study among Asian immigrant women in Canada explored inadequate knowledge of women's fertile period (Shoveller et al., 2007). Limited knowledge about sexual and reproductive health and poor access to health services forced young people to engage in unsafe sex relationship (Regmi et al., 2010).

In Nepal the women who were exposed to family planning messages through reproductive health staff, were more likely to use modern contraceptives (OR=1.6, $p<0.05$). The odds of using modern contraceptives methods was higher for women who were exposed to family planning information on radio than unexposed women (OR=1.22, $P< 0.01$) (Mishra, 2011).

1.2.4 Fear of Side Effects and Misconceptions

One of the most commonly cited reasons for non-use of contraception is fear of infertility (Williamson et al., 2009; Donati et al., 2000). Concerns about the side effects, health consequences and inconvenience of methods are particularly high in South and Southeast Asia. Fear of side effects and health concerns have been seen in urban areas of most countries, where barriers related to access seem to be relatively low. Method-related concerns were also common reasons for discontinuation of use among women with unmet need who had used family planning in the past (Sedgh et al., 2007).

Fear of side effects and the belief of being sterile were reported as the major reasons for not using any contraception in Pakistan (Sajid & Malik, 2010). In a qualitative study among ethnic Korean women living in Canada showed a deep distrust of hormonal contraceptive methods and beliefs that hormonal methods caused permanent harm (Wiebe et al., 2006).

Cambodian women believed modern family planning methods can cause infertility, especially when used before having had at least one child (Vathiny & Hourn, 2009). Most women mistakenly believed Emergency Contraception (EC) has long-term effects on fertility and causes abortion (Marafie et al., 2007; Shoveller et al., 2007).

1.2.5 Women's Autonomy and Decision Making Power

The link between a woman's level of empowerment and her ability to make decision on reproduction and child bearing has been well documented (Al Riyami et al., 2004; Chavoshi et al., 2004; Saleem & Bobak, 2005).

Due to the multidimensional concept of autonomy, the factors affecting this occurrence were also varied between authors. Most of the literatures in South Asia had reported on women's participation in household decision making, control over financial resources, and mobility (Cleland et al., 1996; Furuta & Salway, 2006). South Asian women are faced with a great disadvantage regarding to autonomy in decision making on their own health care (Senarath & Gunawardena, 2009).

A study among three Asian countries documented non participation of women in household decision making in the majority of Nepal (72.7%) and approximately half of Bangladesh (54.3%) and Indian (48.5%) families. In all the three countries, participation of women in decision making significantly increases with age. Educated women were more likely to participate in decision making than non educated women, OR=1.60; 95% CI = 1.27-2.01 in Nepal, OR=1.71; 95% CI=1.46-1.99 in Bangladesh, and OR=1.67; 95% CI = 1.60-1.74 in India. Urban women were always more likely to be involved in decision making than rural (Senarath & Gunawardena, 2009).

Shah in Pakistan reported that husbands in a majority (67.5 %) of households decide on the desired number of children and contraceptive practice (Shah & Ahman, 2009).

In Cambodia when husbands were the final decision makers about family planning, their wives were less likely than other women to use a contraceptive method (Samandari et al., 2010).

Limitations on women's mobility and prohibition of their accessibility to public places have been documented greatly for South Asian, Middle Eastern, and Central Asian and therefore women could not access to reproductive health services (Al-Riyami et al., 2004; Edmeades et al., 2010; Khan et al., 2007; Pierce & Shaver, 2003).

Researches indicate the limitation on women's mobility in Pakistan and India are connected to their limited access to contraception and abortion services (Edmeades et al., 2010; Khan et al., 2007). Further, a study in Oman revealed women's unmet need for contraception is associated with their decision making power and freedom of movement (Al-Riyami et al., 2004).

There is evidence from Tajikistan that the practice of seclusion or purdah, norms against women's presence in public spaces, or other restrictions on women's mobility can pose a direct barrier looking for family planning services (Pierce & Shaver, 2003).

In most traditional societies, men are the main decision makers in reproductive health matters, including family planning (Johansson et al., 1998). Men are significantly involved in decision making on contraceptive use, and the degree to which they share the decision making with their wives can have a definite impact on contraceptive behavior (Bankole & Singh, 1998; Biddlecom et al., 1996; Salway, 1994). Regardless of whether the method is one in which the male partner participates most actively in its use (e.g., the condom) or whether the female partner participates most actively in its use (e.g., the intrauterine device [IUD]), men can play an important role in the method's use and effectiveness. In the latter case, male partner's approval can be an important predictor of contraceptive use by women (Joesoef et al., 1988; Kamal, 2000; Lasee & Becker, 1997). Studies from several nations have shown that family planning programs are likely to be more effective for women when men are actively involved (Drennan, 1998).

1.2.6 Spouse Approval, Communication and Social Support

Family planning communication between husbands and wives is a prerequisite for better and responsible reproductive health behaviour (Becker, 1996; Chaudhury, 1978). Couples can make better reproductive decisions if they discuss family planning matters more openly and frequently (DeSilva, 1994). Whether to practice family planning or not, which methods to choose, when to start contraception, and the choices regarding the number and timing of children are all outcomes of inter-spousal communication (Feyisetan, 2000; Gage, 1995; Oyediran et al., 2002a, 2002b). The frequency of inter-spousal communication is sometimes regarded as an indicator of safe family planning practice, where couples practice contraception appropriately and consistently without experiencing any side effects (Islam, 2008).

Husband's opposition has been reported as the main factor for not using any contraceptive methods among Turkish married women (Sahin & Sahin, 2003). The roles of husbands as dominant member in rural areas are important in approving contraceptive practices and family size (Mustafa et al., 2008). Spousal communication about family planning has been proven to increase contraceptive use, even when other factors known to predict contraceptive practice to be controlled (Link, 2011; Wang & Chiou, 2008).

Involving males and obtaining their support and commitment to family planning is crucial for family planning service utilization. Investigation of the influence of spousal communication on the use of family planning methods in rural Nepal and Myanmar showed a strong positive impact of spousal communication on contraceptive use (Link, 2011; Mon & Liabsuetrakul, 2010).

In Cambodia, women who believed that their husbands had a positive attitude towards contraception showed more significantly successful family planning practice (OR=3.4, $p<0.001$), while women who were nervous about discussing the contraception with their husband were less likely to use the contraceptive method (OR=0.6, $p<0.05$) (Samandari et al., 2010).

In South Asia, apart from husbands, the role of peers, mothers-in-law, and elders in contraceptive decision making is well documented (Kadir et al., 2003; Kansal et al., 2006; Samandari et al., 2010). Urban women in Pakistan are more likely to use family planning if their mothers-in-law have discussed it with them as an option for their families (Kadir et al., 2003).

A study suggested that though inter-spousal family planning communication is an effective strategy to minimize differences of opinion between husbands and wives regarding family planning method choice and other reproductive preferences, many couples in Bangladesh do not share their ideas and opinion regarding their contraceptive choices and reproductive preferences. Inter-spousal communication was found to be high among couples who had more living children, where both the spouses were educated, both approved of family planning, they were currently using family planning and when the husband had access to newspapers (Islam et al., 2010).

Another study also showed that frequent family planning communication between husbands and wives has a positive influence on method choices, particularly male methods (Islam, 2008). On the contrary, another study showed that age, education, access to TV, inter-spousal communication, current use of family planning and the number of living children significantly determines family planning approval among both men as well as couples (Islam et al., 2006).

Evidence from India showed that involving husbands and mothers-in-law in the intervention increased their support for a longer birth interval and the use of modern contraceptive methods. Moreover, the acceptance of postpartum contraception was significantly increased when the spouse discussed on reproductive issues, such as family planning, the odds ratio was 6.7 to 7.8 times greater among the couple who talked about family planning than when they did not ($p < 0.01$) (Khan et al., 2008).

1.2.7 Preference for a Son

A considerable amount of literature in South Asia, documents that the purpose of using contraception among women is to plan spacing, and number of children. The sex composition of family and the preferences for the sex of future children greatly

influence women's decision making about type of contraception practice and when they use it (Jayaraman et al., 2009; Jha et al., 2006; Leone et al., 2003).

The preference for sons in many East and South Asian societies has deep social, economic, and cultural roots. Son preference in India originates from the idea that economic and social benefit of sons is higher compared to daughters (Edmeades et al., 2012; Westley et al., 2007).

In South Asia son preference is higher in urban than in rural areas, in families with more income, and more educated women. On the other hand the picture is more mixed in Central Asia. However, son preference is similarly higher in urban than in rural areas and higher among women with low educational status (Filmer et al., 2008). A study among married women age 15-49 years in Ahmedabad district, India showed the son preference was more in rural areas (94%) than urban areas (81 %; $p < 0.0001$). A majority (93%) of the illiterate women preferred male child whereas 69% of the women who completed graduation had the preference for son ($p < 0.01$) (Chavada & Bhagyalaxmi, 2009).

1.2.8 To Prove Fertility Soon after Marriage

Women and men face strong social pressure to prove their fertility as soon as possible after marriage (McCleary-Sills et al., 2012). Marriage structures in many countries especially in Asia have been set up to maximize fertility and also to ensure early childbearing. While this pattern has shifted significantly to later marriage and childbearing in East Asian countries, it is still common in South Asia. Countries such as India, Nepal, Yemen, have significant high rates of early marriage and early childbearing (Malhotra et al., 2011; Mathur et al., 2003; McIntyre, 2006).

Strong social norms against delaying a first birth after marriage in countries like India with a high rates of adolescent childbearing make it difficult to eliminate this misconception (Rahman et al., 2010). Reflecting similar norms among ever married women in Jordan, only 12% approved of contraceptive use before the first birth, while the family planning program strongly support contraceptive practice (Storey, 2008).

1.2.9 Social Stigma and Embarrassment

Embarrassment and poor negotiation skills impose barriers to access sexual health information and services (Roberts et al., 2005; Van Teijlingen et al., 2007). Rural young people are more likely to be embarrassed than urbanites because there is a concern of stigmatization from local people in the rural areas (Regmi et al., 2010).

Studies in Nepal and India have found that adolescents are reluctant to go to clinics and pharmacies to obtain contraceptives. They fear to be recognized by providers or people in their community and would negatively label them as sexually active (Mathur et al., 2004; Pande, 2006). Research among Asian immigrant women had documented that they were not comfortable requesting EC from a health provider of the same ethnicity. This group of women assume that this act may result in chastise or gossip about them. They also feel uncomfortable to request EC from male doctors or pharmacists (Shoveller et al., 2007).

1.2.10 Health Service Factors

Supply of methods and services is one of the most common cited reasons by married women for not using contraception (Sedgh et al., 2007). Non-availability of contraceptive, cost, long waiting hours at the center, shortage of the female staff and cost were reported as unsatisfactory variables in Pakistan (Shah et al., 2008).

More than 80% of doctors across six cities in India refused women's' access to sterilization if they were unmarried had low parity, young, or lacking consent of the spouse (Nanda et al., 2011). Studies on women's reproductive health have revealed that many health providers did not support the use of EC in Islamic countries because of concerns about promoting promiscuity (Mir & Malik, 2010; Sevil et al., 2006). In Indonesia medical practitioners prescribe EC pills infrequently. Most of obstetricians and gynecologist do not support EC be available Over the Counter without prescription (Dyna & Lisa, 2005). A cross sectional study among Turkish health providers indicated a few of them included EC in routine consultations. Half of the health providers thought disseminating information about EC would encourage young people to have unprotected sexual intercourse. Majority worried that increasing

awareness of this method would lead to raising sexually transmitted infections because people would stop using barrier methods (Sevil et al., 2006).

1.3 Rationale of the study

Understanding the factors influencing contraceptive use among young fecund women who are at risk of unwanted pregnancies is the key to the development of effective family planning programs. It is evident from the above review of literatures that extensive research has been made to identify the factors influencing the uptake of contraceptives. However, existing studies neglected to analyze contraceptive use status specially among fecund women though fecund (those who are physically capable to bear children) women are at actual risk of encountering unintended pregnancy. This study refined the sample and considered only currently married and fecund young women for analyses because of the fact that the community and the religion reject the sexual activities outside marriage in the country and infecund women are physically unable to bear child. Henceforth, this study focused to analyse the current contraceptive use and modern contraceptive use status among currently married, fecund, non-pregnant and non-amenorrhic young women and additionally, to analyse the demand for contraception among currently married and fecund young women.

1.4 Objectives of the study

The general objective of this study is to explore the determinants of contraceptive use among young fecund women. To meet this general objective, we have some specific objectives:

- to observe the net contraceptive prevalence (NCP) among young fecund women;
- to examine the effect of fertility and fertility preference on contraceptive use;
- to identify the factors associated with current contraceptive use;
- to explore predictors of the utilization of modern contraceptives;
- to determine the factors affecting demand for contraception;

1.5 Strengths and Limitations of the study

The main strength of this study is that, considering only fecund women, it could reflect the actual contraceptive practice and real demand for contraception of the currently married young women in Bangladesh. Although the strength of this study is apparent still there are some limitations too. We excluded sterilized women from our study though sterilization is a method of contraception. It may be justified by saying that; this study is about contraceptive use among fecund women whereas sterilization is a method by which women have permanently been infecund. Additionally, the men were not included as participants to understand their perception towards the contraceptive use and unmet need for family planning. Some potentially important variables like approval of family planning and couple communication about family planning relevant to contraceptive use could not be included because this study used BDHS 2011 data set and this data set does not contain the aforementioned variables. However, this study tried to see the strength of association between the outcome and explanatory variables beyond simply identifying those variables are statistically significant for the use of contraceptive.

Chapter Two

Data Source and Methodology

2.1 Sources of Data

This study utilized a representative set of cross-sectional data extracted from the Bangladesh Demographic and Health Survey (BDHS) 2011. The survey was conducted under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare, Bangladesh. The BDHS survey was implemented by Mitra and Associates, a private research firm located in Dhaka. Macro International Inc. of Calverton, Maryland provided technical assistance to the project as a part of its international Demographic and Health Survey (DHS) program, while financial assistance was provided by United States Agency for International Development (USAID) Bangladesh.

The BDHS 2011 was the sixth Demographic and Health Survey following those implemented in 1993-94, 1996-97, 1999-2000, 2004 and 2007. In general, the aims of the BDHS are to provide information to meet the monitoring and evaluation needs of health and family planning programs, and to provide program managers and policymakers involved in these programs with the information they need to plan and implement future interventions. More specifically, the main objectives of the BDHS 2011 survey were to provide up-to-date data on demographic rates, particularly fertility and infant mortality rates, at the national and subnational level, to analyze the direct and indirect factors that determine the level of and trends in fertility and mortality; to measure the level of contraceptive use of currently married women; to provide data on knowledge and attitudes of women and men about sexually transmitted infections and HIV/AIDS; to assess the nutritional status of children (under age 5), women, and men; to provide data on maternal and child health, including antenatal care, assistance at delivery, breastfeeding, immunizations, and prevalence and treatment of diarrhea and other diseases among children under age 5 and community-level data on accessibility and availability of health and family planning services. All ever-married women 15-49

who slept in the selected households the night before the survey were eligible for the survey. The survey was designed to produce representative estimates for most of the indicators for the country as a whole, for the urban and the rural areas separately, and for each of the six divisions.

2.2 Sample Design

The sample for the 2011 BDHS is nationally representative and covers the entire population residing in noninstitutional dwelling units in the country. 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 is an EA that was created to have an average of about 120 households. Bangladesh has seven administrative divisions: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet. Each division is subdivided into zilas, and each zila into upazilas. Each urban area in an upazila is divided into wards, and into mohallas within a ward. A rural area in the upazila is divided into union parishads (UP) and mouzas within a UP. These divisions allow the country as a whole to be easily separated into rural and urban areas.

The sample was stratified and selected in two stages. Each division was stratified into urban and rural areas. The urban areas of each division are further stratified into two strata: city corporations and other than city corporations. Because Rangpur Division has no city corporations, a total of 20 sampling strata were created. Samples of EAs were selected independently in each stratum in two stages. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within each sampling stratum before sample selection, according to administrative units in different levels, and by using a probability proportional to size selection at the first stage of sampling. In the first stage, 600 EAs were selected, with probability proportional to the EA size and with independent selection in each sampling stratum. In the second stage of selection, a fixed number—30 households per cluster—were selected with an equal probability systematic selection from the newly created household listing. The survey interviewers were instructed to interview only the pre-selected households; no

replacements or changes were allowed in order to prevent bias. Based on a fixed sample take of 30 households per cluster, the survey selected 600 EAs, 207 in urban areas and 393 in rural areas. The survey was conducted in 18,000 residential households, 6,210 in urban areas and 11,790 in rural areas. The sample was expected to result in about 18,072 completed interviews with ever-married women age 12-49, 6,426 in urban areas and 11,646 in rural areas.

2.3 Selection of Sample

The survey selected a total of 17,964 households, of which 17,141 were successfully interviewed, achieving a household response rate of 98%. All ever-married women aged 13-49 years who were usual members of the selected households and those who spent the night before the survey in the selected households were eligible to be interviewed in the survey. A total of 18,222 ever married women age 13-49 were identified in these households, and 17,842 were interviewed, yielding a response rate of 98 %. This study excluded 12,382 women aged 25-49 years and considered only 5,460 women who were young (aged 13-24 years).

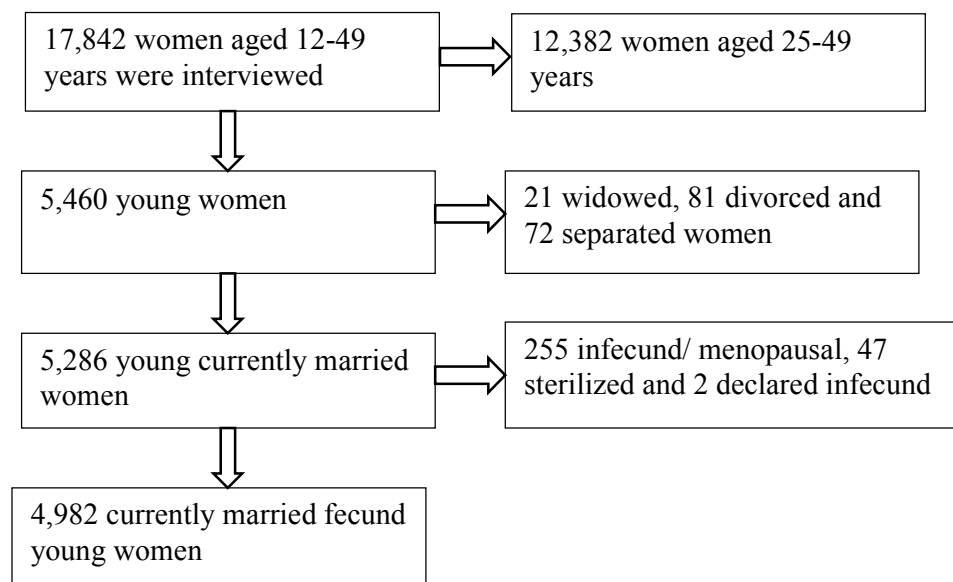


Figure 1: Selected sample for the study of fertility, fertility preference and contraceptive use and demand for contraception

In order to study fertility, fertility preference and contraceptive use (presented in Chapter Three) and demand for contraception (presented in Chapter Six), it was necessary to select those young women who were currently married and fecund. Because unmarried women are not legally permitted to bear child in Bangladesh and infecund women are physically unable to bear child. So, they did not have fertility preference and demand for contraception as well. Accordingly, 21 widowed, 81 divorced, 72 separated women were excluded from 5,460 young women. The number of sample became 5,286 who were young currently married, of which 255 infecund or menopausal, 47 sterilized (either husband or wife) and 2 declared infecund were dropped from this study. Therefore, the sample size of this study became 4,982 who were young, currently married and fecund (Figure 1).

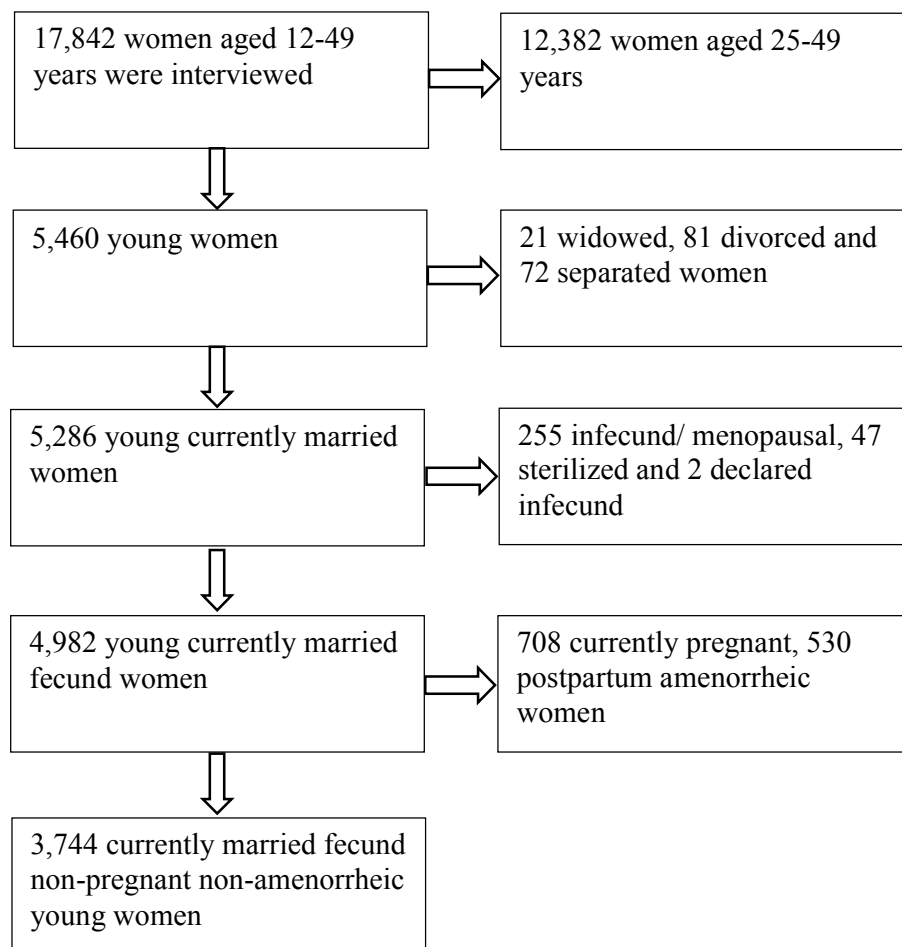


Figure 2: Selected sample for the study of current use of contraception and modern contraceptive use

Again, to study current contraceptive use status (presented in Chapter Four) we need to select only those young women who were in actual need of current contraceptive use. So, 708 pregnant and 530 postpartum amenorrheic women were dropped from above mentioned 4,982 young currently married fecund women since they did not have current need for contraception. Therefore, 3,744 young currently married fecund non-pregnant non-amenorrheic women, who were in actual need of current contraceptive use, were selected for analyses (Figure 2). Furthermore, 237 women who used traditional and folkloric contraceptive method were excluded from 3,744 young currently married fecund non-pregnant non-amenorrheic women to study their modern contraceptive use status (presented in Chapter Five).

2.4 Measurement of Variables

2.4.1 Outcome variables

The dependent variable for this study was whether currently married, fecund, non-pregnant and non-amenorrheic young women used any contraceptive. During the survey, sexually active women were asked if they were currently doing something or using any method to delay or avoid getting pregnant. Those that reported doing something or using any method to delay or avoid getting pregnant were further asked to indicate what they were doing or the method they were using. Women were then categorized as those using any contraceptive method (either using modern methods like pill, IUD, injection, implants/norplants or condom or traditional methods like withdrawal, periodic abstinence or folkloric method) and those that did not use any contraceptive method. Those using any contraceptive were coded as 1, otherwise they were coded as 0.

The another outcome variable of this study was whether currently married, fecund, non-pregnant and non-amenorrheic young women used modern contraceptive methods (using pill, IUD, injection, implants/norplants or condom) or did not use any contraceptive method at all. Those using modern contraceptives were coded as 1, otherwise they were coded as 0. The women who used traditional methods or folkloric method were excluded from the ultimate sample.

Besides, the other response variable of this study was demand for contraception. Currently married and fecund young women who reported of having an unmet need for contraception were coded as 1, those who were using any method of contraception were considered as having met need for contraception and coded as 2 and those reported of having no demand for contraception were coded as 3.

2.4.2 Explanatory variables

This study included several theoretically pertinent socio-demographic variables. We classified women's age into empirically important groups (Adolescent [13-19 years], young adult [20-22 years], and adult [23-24 years]). Women's and their husband's educational levels were defined in terms of the formal education system of Bangladesh: illiterate (0 year), primary (1-5 years), secondary (6-10 years) and higher (11 years or more). Tertiles were used in classifying age at marriage (early adolescent [<15 years], older adolescent [15-17], adult [18-24]; where marriage before 18 years is child marriage), age at first birth (early adolescent mothers [<16 years], older adolescent mothers [16-19], adult mothers [20-24]), children ever born and number of living children were categorized as 0, 1, 2 and 3 and above, place of residence was categorized as rural versus urban and religion was categorized as Muslims versus non-Muslims, mass media exposure like frequency of watching television, frequency of reading newspaper or magazine and frequency of listening to radio were categorized as at least once a week, less than once a week and not at all. We used the BDHS wealth index as a proxy indicator of socioeconomic position. The BDHS wealth index was constructed from data on household assets, including ownership of durable goods (such as televisions and bicycles) and dwelling characteristics (such as source of drinking water, sanitation facilities, and construction materials). Principal components analysis was used to assign individual household wealth scores. These weighted values were then summed and rescaled to range from 0 to 1, and each household was assigned to the five quintiles. Visited by FP worker in the past 6 months was classified in four categories (Talked, gave family planning method, talked and gave method and no) and heard about family planning (FP) during last few months was classified as yes versus no. Person who usually decides on respondents' own health care, child health care, large household purchases and visiting to family members or

relatives were categorized as respondent alone, respondent and husband jointly, husband alone, someone else and other.

2.5 Statistical Analyses

Prevalence of current contraceptive use was calculated for young fecund women. Differences in current contraceptive use by socio-demographic characteristics were assessed by χ^2 analyses, with significance for all analyses set at $P < 0.05$. Binary logistic regression models were fitted to assess the net effect of selected socio-demographic variables on the use of any contraception among young fecund women as whether they used contraceptives (yes or no) as well as on the use of any modern contraceptive method among young currently married fecund women as whether they used any modern contraceptive (yes or no). All the variables significant in chi-square tests were simultaneously included in a stepwise logistic regression model, and finally, the most influential predictors for contraceptive use were explored. Stepwise logistic regression analysis is a technique for selecting influential variables in multiple regression models (Chatterjee and Hadi, 2006). In stepwise logistic regression analysis both methods, forward LR and backward LR, compute the final step by subsequently adding (forward LR) or taking away (backward LR) variables. Both methods stop the iterative process once a process step is reached which no longer improves results significantly compared to the last step taken. Backward elimination may have the advantage that it will take into consideration suppressor effects that might be lost in forward inclusion (Menard, 2002). Therefore, this study used the backward LR method of stepwise logistic regression for analyses. The backward elimination procedure starts with the full equation and successively drops one variable at a time. The variables are dropped on the basis of their contribution to the reduction of error sum of squares. The contribution of individual variable for each step was checked by the Wald statistic. If all the Wald test values are significant, the full set of variables is retained in the final step. Moreover, a multinomial logistic regression model was fitted to identify the predictors of demand for contraception among currently married fecund young women.

There is an important assumption in multiple regression analyses, either linear or logistic, that there is no multicollinearity problem (dependent each to other) among

the independent variables. However, there is no exact method to detect the multicollinearity problem in multiple logistic regression analysis. multicollinearity in the logistic regression analyses in this study was checked by examining the standard errors for the regression coefficients. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity among the independent variables (Chan, 2004). We estimated the odds ratios (ORs) to assess the strength of the associations and used the 95 % CIs for significance testing. Data were analyzed using SPSS Release 21.0.

Fertility, fertility preference and contraceptive use

3.1 Introduction

Study on fertility preferences is of considerable importance to family planning programs because it helps planners to assess the desire for children and also to assess the extent of unwanted and mistimed pregnancies. Desire for small families and motivation for healthy spacing of births has steadily increased in developing countries [Westoff, 2010 and Darroch, 2013]. To achieve their childbearing preferences, women and their partners need effective contraception to prevent unintended pregnancies. Since Bangladeshi women have 0.7 children more than their desired number, the TFR would be 30 percent lower if unwanted births were avoided (NIPORT et al., 2013). Therefore, this study analysed fertility preference and contraceptive use status of young fecund women which is important for understanding future reproductive behavior.

3.2 Number of living children, fertility preference and contraceptive use

Use of contraceptives varies by the woman's number of living children and fertility preferences. In the 2011 BDHS, currently married women (whether pregnant or not) were asked about their intentions to have another child and, if they had such intentions, how soon they wanted the child. The same question was phrased differently in the case of pregnant women to ensure the wantedness of subsequent children after completion of the current pregnancy. Table 3.1 elucidated percentage distribution of young currently married fecund women by their number of living children, fertility preference and contraceptive use status. It was observed that the contraceptive prevalence (CP) was 54.4% and the rest of 45.6% women did not currently use any contraceptive. Since these large proportions of young fecund women did not use any method of contraception, it is important to know about their fertility and fertility preference along with social status. Almost half of the women had single child, one fourth had no child and the rest of one fourth had two or more

children. More than half of the women desired to have another child after two years of the interview, 17% women wanted children within two years and 28% women wanted no more children.

Table 3.1: Percentage distribution of young currently married fecund women by their number of living children, fertility preference and contraceptive use status

Characteristics	Number (4982)	Percentage
Number of living children		
0	1358	27.3
1	2367	47.5
2	1040	20.9
3-5	217	4.4
Desire for more children		
Wants within 2 years	839	16.9
Wants after 2+ years	2548	51.2
Wants, unsure timing	77	1.5
Undecided	119	2.4
Wants no more	1394	28.0
Missing	5	-
Current contraceptive use status		
No	2273	45.6
Yes	2709	54.4

3.3 Number of living children and contraceptive use

Table 3.2 presented percentage of young currently married fecund women by contraceptive use status according to number of living children. It was observed that 63% women having single child used contraceptive method. One third of women having two children did not use contraceptive and almost half of the women who had three or more children did not use any method of contraception. The result of chi square test showed that there was strong association ($p=0.000$) between number of living children and contraceptive use.

Table 3.2: Percentage of young currently married fecund women by contraceptive use status according to number of living children

Number of living children	Contraceptive use status (%)			P-value
	No	Yes	Total	
0	69.7	30.3	100.0	0.000
1	37.0	63.0	100.0	
2	33.6	66.4	100.0	
3-5	46.5	53.5	100.0	
Total	45.6	54.4	100.0	

3.4 Fertility preferences and contraceptive use

Information about fertility preferences indicates the direction of future fertility to the extent that individuals and couples will act to achieve their preferred family sizes. Table 3.3 described percentage of young currently married fecund women by their contraceptive use status according to fertility preference. It was observed that fertility preference was strongly associated ($p=0.000$) with contraceptive use. Women who wanted to have another child after two years of the interview out of them more than one-third did not use any contraceptive. Therefore, they were at risk of having mistimed (earlier than they desire) pregnancy. Women who did not want child any more out of them 44.6% did not use any contraceptive. So, they were at risk of encountering unwanted pregnancy.

Table 3.3: Percentage of young currently married fecund women by their contraceptive use status according to fertility preference

Desire for children	Contraceptive use status (%)			P-value
	No	Yes	Total	
Wants within 2 years	72.7	27.3	100.0	0.000
Wants after 2+ years	35.8	64.2	100.0	
Wants, unsure timing	63.6	36.4	100.0	
Undecided	64.7	35.3	100.0	
Wants no more	44.6	55.4	100.0	
Total	45.6	54.4	100.0	

Coming to this stage we should look into the situation of contraceptive use by fertility preference in relation to higher level of fertility. Table 3.4 explained that one-third of women having two children did not use contraceptive and almost half of the women having more than two children did not use any method of contraception. One-third of women who had two children and desired to have no more children did not use contraceptive. More than one-fourth of women, who had two children and wanted to have another child after two years of the survey, did not use any method of contraception.

Table 3.4: Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to contraceptive use status

Number of living children	Desire for more children	Contraceptive use (%)		
		No	Yes	Total
2	Wants within 2 years	63.4	36.6	100.0
	Wants after 2+ years	27.2	72.8	100.0
	Wants, unsure timing	66.7	33.3	100.0
	Undecided	38.9	61.1	100.0
	Wants no more	33.4	66.6	100.0
	Total		33.6	66.4	100.0
3-5	Wants within 2 years	60.0	40.0	100.0
	Wants after 2+ years	44.0	56.0	100.0
	Undecided	100.0		100.0
	Wants no more	45.3	54.7	100.0
	Total		46.8	53.2	100.0

Women with more than two children who did not desire to have any more children out of them 45% did not use any contraceptive. 44% of women, who wanted additional child after two years of the survey in spite of having more than two children, did not use any contraceptive. These women were at risk of having unwanted or unplanned pregnancy. This additional child will put them in serious vulnerable condition as they already had two or more children in this young age.

3.5 Fertility preference and contraceptive use by socio-economic status

In this section, this study focused on analyzing fertility preference and contraceptive use according to socio-economic status of young fecund women who had two or more children. It is observed from Table 3.5 that 21% young women had two children however, 20% among them desired to have another child after two years of the survey, of which 48.5% were from lower two quintiles of wealth index and 34% belonged to the upper two quintiles of wealth index.

Table 3.5: Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to wealth index

Number of living children	Desire for more children	Wealth index (%)					Total
		Poorest	Poorer	Middle	Richer	Richest	
2	Wants within 2 years	22.0	22.0	26.8	14.6	14.6	100.0
	Wants after 2+ years	25.7	22.8	17.5	20.9	13.1	100.0
	Wants, unsure timing	16.7		16.7	16.7	50.0	100.0
	Undecided	16.7	27.8	16.7	22.2	16.7	100.0
	Wants no more	22.6	22.3	19.2	19.9	16.0	100.0
	Total		23.0	22.4	19.1	19.9	15.6	100.0
3-5	Wants within 2 years	60.0		20.0	20.0		100.0
	Wants after 2+ years	36.0	8.0	32.0	16.0	8.0	100.0
	Undecided	40.0		40.0		20.0	100.0
	Wants no more	42.5	23.8	15.5	10.5	7.7	100.0
	Total		42.1	20.8	18.1	11.1	7.9	100.0

Table 3.5 also depicted that young women having two children who wanted to have another child within two years of the survey, out of them 44% were from lower two quintiles of wealth index and 29% belonged to the upper two quintiles of wealth index. In spite of having three or more children 11.6% of them desired to have another child after two years, of which 44% were from lower two quintiles of wealth index and 24% were from upper two quintiles of wealth index. Women with three or more children who desired to have another child within two years of the interview, out of them 60% were from poorest quintile of wealth.

Table 3.6: Percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to educational status

Number of living children	Desire for more children	Highest educational level (%)				Total
		Illiterate	Primary	Secondary	Higher	
2	Wants within 2 years	26.8	43.9	29.3		100.0
	Wants after 2+ years	13.6	38.8	46.6	1.0	100.0
	Wants, unsure timing	16.7		83.3		100.0
	Undecided	11.1	22.2	61.1	5.6	100.0
	Wants no more	8.6	35.5	54.0	2.0	100.0
	Total		10.4	36.0	51.8	1.7	100.0
3-5	Wants within 2 years	40.0	40.0	20.0		100.0
	Wants after 2+ years	24.0	56.0	20.0		100.0
	Undecided	40.0	40.0	20.0		100.0
	Wants no more	27.6	45.3	27.1		100.0
	Total		27.8	46.3	25.9		100.0

Table 3.6 described percentage distribution of young currently married fecund women who had two or more children by their fertility preference according to educational status. Women having two children and wanted to have another child within two years of the survey, out of them 44% had primary level of education and 29% had secondary education. Young women having two children who wanted to have another child after two years of the survey, out of them 47% had secondary level of education and 39% had primary education. Table 3.6 also explained that women having three or

above children those who wanted to have another child within two years of the survey, out of them 80% were either illiterate or had primary education. In spite of having three or more children 11.6% women desired to have another child after two years, of which 56% had primary level of education and 24% had no education.

.Table 3.7: Percentage distribution of young currently married fecund women who had two or more children by their educational status according to contraceptive use status

Number of living children	Educational level	Contraceptive use (%)		
		No	Yes	Total
2	No education	12.0	9.6	10.4
	Primary	35.8	36.3	36.2
	Secondary	50.7	52.2	51.7
	Higher	1.4	1.9	1.7
	Total	100.0	100.0	100.0
3-5	No education	31.7	24.1	27.6
	Primary	45.5	47.4	46.5
	Secondary	22.8	28.4	25.8
	Total	100.0	100.0	100.0

Table 3.7 described that women who had three or more children but did not use contraceptive, out of them 46% had primary education and 23% had secondary level of education. The women who had two children but did not use contraceptive, of which 51% had secondary level of education, 36% had primary education and 12% had no education. Therefore, it is evident from this study that knowledge of family planning should be included especially in the curriculum of secondary level of education.

Table 3.8: Percentage distribution of young currently married fecund women who had two or more children by their wealth index according to contraceptive use status

Number of living children	Wealth index	Contraceptive use (%)		
		No	Yes	Total
2	Poorest	24.4	22.4	23.1
	Poorer	20.6	23.2	22.3
	Middle	20.1	18.5	19.0
	Richer	20.9	19.5	20.0
	Richest	14.0	16.4	15.6
	Total	100.0	100.0	100.0
3-5	Poorest	41.6	42.2	41.9
	Poorer	23.8	18.1	20.7
	Middle	20.8	16.4	18.4
	Richer	8.9	12.9	11.1
	Richest	5.0	10.3	7.8
	Total	100.0	100.0	100.0

Table 3.8 depicted that the women who had two children but did not use contraceptive, out of them 45% belonged to the lower two quintiles of wealth and 35% were from the upper two quintiles of wealth. Additionally, 65% and 14% of women who had three or more children but did not use contraceptive belonged to the lower two quintiles of wealth and upper two quintiles of wealth, respectively.

Current use of contraception

4.1 Introduction

Meeting women's contraceptive needs has played an important role for countries that have achieved Millennium Development Goal 5 on improving maternal health. MDG 5a aims to reduce the maternal mortality ratio by three-quarters between 1990 and 2015, and MDG 5b aims to achieve universal access to reproductive health, including family planning (United Nations, 2012). Improving reproductive health is central to achieving the Millennium Development Goals on improving maternal health, reducing child mortality and eradicating extreme poverty (Cleland et al., 2006; UNFPA, 2004). This requires that women have access to safe and effective methods of fertility control. The promotion of family planning, so that women can avoid unwanted pregnancy, is central to the World Health Organisation (WHO) work on improving maternal health and is core to achieving the Millennium Development Goal on this (World Health Organisation, 2008).

Provision of access to voluntary family planning, especially effective contraceptive methods, for women and men is not only crucial to directly improve reproductive health outcomes, but is also positively associated with improvements in health, schooling, and economic outcomes (Ahmed et al., 2012; Cleland et al., 2012; Canning and Schultz, 2012). Thus, this study explores the prevalence and determinants of current contraceptive use among young fecund women in Bangladesh. In the previous chapter, we have studied fertility preference and contraceptive use status among currently married fecund young women. Since pregnant and post partum amenorrheic women are not in need of current contraceptive use, we excluded these two categories of women from the study. Hence, we are going to study the status of current contraceptive use among currently married, fecund, non-pregnant and non-amenorrheic young women in the following sections.

4.2 Socio-demographic profile of young women

Socio-demographic profile of young women is presented in Table 4.1. The currently married fecund women were aged 13-24 years (n=3744) had a median age of 21 years and mean age of 20.32 years (SD 2.667), of which 36.8% were adolescent and the rest of 63.2% were young adult. The median age of husbands was 28 years (mean age 28.83 years [SD 5.546]) and the median age difference between women and their husbands was 8 years (mean 8.506 years [SD 4.855]). The median age at marriage was 15 years (mean 15.65 years [SD 2.248]). Four-fifths of women aged 13-24 years were married before 18 years of age. More than two-fifths of these women were married before 15 years, of which 12% were married before 13 years of age.

Young mothers are difficult to study because they have been a poorly defined group. The youngest teenage mothers have been cataloged into a variety of age groups, ranging from younger than 18 years to 13 years or younger (Berenson et al., 1997; Brown et al., 1991; Fraser et al., 1995; Horon et al., 1983; McCormick et al., 1984; Reichman and Pagnini, 1997; Yoder and Young, 1997). However, early adolescent child bearing is defined as giving birth at 15 years or younger (Phipps and Sowers, 2002). This study observed that the median age at first birth was 17 years (mean 17.07 years [SD 2.17]) and 87 % women gave birth before 20 years of age, of which 28.63% became mother during early adolescent period.

One-fourth of the women were primary level educated, 66% women had secondary and higher education and 7.8% were illiterate. 18.5%, 17.3% and 8.7% women were from Dhaka, Chittagong and Sylhet division respectively and the rest of the women belonged to Khulna (14.7%), Rangpur (14.7%), Rajshahi (14%) and Barisal (12%) division and two-thirds resided in rural areas. Less than one in ten women reported that they worked for cash or were engaged in economic activities. Seven in ten husbands were manual workers and 26.7% husbands were non-manual or professional workers. More than nine in ten women were muslim, 35.4% were poor, 20.6% were middle and 44% were in the upper two quintiles of the wealth index.

Table 4.1: Percentage distribution of young currently married fecund non-pregnant non-amenorrhic women according to some socio-demographic characteristics

Characteristics	Number (3744)	Percentage
Age		
13-19	1377	36.8
20-22	1403	37.5
23-24	964	25.7
Median (mean)	21 (20.32)	
Husband's age		
15-25	1118	29.9
26-30	1591	42.6
31-77	1025	27.5
Median (mean)	28 (28.83)	
Age at marriage		
<15	1278	34.1
15-17	1712	45.7
18-24	754	20.1
Median (mean)	15 (15.65)	
Age at first birth		
<16	702	24.8
16-19	1750	61.8
20-24	381	13.4
Median (mean)	17 (17.07)	
Educational level		
Illiterate	293	7.8
Primary	986	26.3
Secondary	2125	56.8
Higher	340	9.1
Husband's education level		
Illiterate	649	17.3
Primary	1128	30.1
Secondary	1405	37.5
Higher	560	15.0
Current working status		
Employed	337	9.0
Unemployed	3407	91.0
Husband's occupation		
Manual	2651	70.8
Non-manual	998	26.7
Did not work	93	2.5

Table 4.1 (Continued)

Characteristics	Number (3744)	Percentage
Region		
Barisal	446	11.9
Chittagong	648	17.3
Dhaka	693	18.5
Khulna	549	14.7
Rajshahi	529	14.1
Rangpur	552	14.7
Sylhet	327	8.7
Place of residence		
Urban	1303	34.8
Rural	2441	65.2
Religion		
Islam	3394	90.7
Hinduism	342	9.1
Buddhism	5	.1
Christianity	3	.1
Wealth index		
Poorest	595	15.9
Poorer	729	19.5
Middle	773	20.6
Richer	865	23.1
Richest	782	20.9
Total children ever born		
0	911	24.3
1	1813	48.4
2	825	22.0
3-5	195	5.2
Number of living children		
0	947	25.3
1	1880	50.2
2	781	20.9
3-5	136	3.6
Birth in last 3 years		
0	1952	52.1
1	1701	45.4
2	88	2.4
3	3	.1

Table 4.1 (Continued)

Characteristics	Number (3744)	Percentage
Planning status of last birth		
Wanted then (planned)	1933	76.5
Wanted later (mistimed)	549	21.7
Wanted no more (unwanted)	46	1.8
Visited by FP worker in past 6 months		
Talked	311	8.3
Gave family planning method	166	4.4
Talked and gave method	64	1.7
No	3203	85.6
Person who usually decides on respondent's health care		
Respondent alone	327	8.7
Respondent and husband	1692	45.2
Husband alone	1242	33.2
Someone else	464	12.4
Other	17	.5
Person who usually decides on visits to family or relatives		
Respondent alone	213	5.7
Respondent and husband	1731	46.3
Husband alone	1060	28.3
Someone else	713	19.1
Other	23	.6
Person who usually decides on large household purchases		
Respondent alone	159	4.2
Respondent and husband	1644	43.9
Husband alone	1083	28.9
Someone else	833	22.3
Other	24	.6
Final say on: Child health care		
Respondent	321	8.6
Respondent & husband jointly	1619	43.3
Husband	666	17.8
Someone else	338	9.0
Other	797	21.3

Table 4.1 (Continued)

Characteristics	Number (3744)	Percentage
Go to health center alone or with younger children		
No	1854	49.5
Yes, alone	1278	34.1
Yes, with children	560	15.0
Husband	11	.3
Other	19	.5
No child	22	.6
Desire for more children		
Wants within 2 years	830	22.2
Wants after 2+ years	1927	51.5
Wants, unsure timing	52	1.4
Undecided	70	1.9
Wants no more	861	23.0
Husband's desire for children		
Both want same	3100	82.9
Husband wants more	262	7.0
Husband wants fewer	256	6.8
Don't know	121	3.2
Frequency of reading newspaper or magazine		
Not at all	2980	79.6
Less than once a week	519	13.9
At least once a week	243	6.5
Frequency of listening to radio		
Not at all	3309	88.4
Less than once a week	205	5.5
At least once a week	229	6.1
Frequency of watching television		
Not at all	1149	30.7
Less than once a week	499	13.3
At least once a week	2096	56.0

Half of the women had single child, 21% women had two children, one fourth of the women had no child and 3.6% women had three or more children. Half of the women had at least one child during last three years of the survey. While 76.5% of the women

reported that their most recent pregnancy was intended, 21.7% indicated their most recent pregnancy as mistimed and 1.8% as unwanted. 85.6% women reported that family planning workers did not visit them during six months before the survey, 4.4% gave FP method, 1.7% talked and gave FP method and 8% only talked about FP method.

It was also found from Table 4.1 that 8.7% women took decision on their own health care and 45% women jointly with their husband took decision on health care and 33% depended on their husband's decision about taking their own health care. 52% women participated in decision making on visiting their families or relatives where 46% women jointly took decision with their husband. Almost half of the women participated in household decision making regarding large household purchases where 44% women jointly took decision in this regard. More than half of the women participated in decision making on health care of their children where 43% women took decision jointly with their husband and 8.6% decided alone about their child health care. Half of the women went to health centre alone or with their children where 34% women went to the health centre alone.

Three-fourth of the women desired to have another child where 52% desired after two years and 22% desired to have children within two years of the survey. 23% women wanted no more children. 83% women and their husband desired to have same number of children. 7% women reported that their husband wanted more children than they desired to have and another 7% women desired more children than their husband desired.

4.3 Contraceptive use status

Contraceptive use status of young currently married fecund non-pregnant non-amenorrhic women is presented in Table 4.2. This study elucidated that the contraceptive prevalence (CP) was 70.6% where 64.3% women used modern contraceptive methods. The most commonly used contraceptive method was pill (42%), followed by injections (12.6%), condom (8.2%), traditional or folkloric method (6.3%). It is evident that 29.4% women did not use any contraceptive where

15.7% did not use contraceptive during the survey but used contraceptives since or before their last birth which put the prevalence of ever using contraceptives to 86.3% and the rest of 13.7% women never used contraceptive.

Table 4.2: Current contraceptive use status of young currently married fecund non-pregnant non-amenorrhic women

Using status	Number (3744)	Percentage
Current contraceptive use		
No method	1101	29.4
Folkloric method	9	.2
Traditional method	228	6.1
Modern method	2406	64.3
Current contraceptive method		
Not using	1101	29.4
Pill	1575	42.1
IUD	17	0.5
Injections	472	12.6
Condom	307	8.2
Periodic abstinence	158	4.2
Withdrawal	70	1.9
Other	9	0.2
Implants/Norplant	35	0.9
Pattern of use Contraceptive		
Currently using	2643	70.6
Used since last birth	464	12.4
Used before last birth	123	3.3
Never used	514	13.7

4.4 Demand for contraception

It is observed from Table 4.3 that 13.3% women had an unmet need for contraception (10.1% and 3.2% unmet need for spacing and limiting birth respectively). Total demand for family planning services is 83.9% and proportion of demand satisfied (total contraceptive use divided by the sum of total unmet need and total contraceptive use) is 84.15%. Detailed discussion on demand for contraception is given in chapter six.

Table 4.3: Distribution of young currently married fecund non-pregnant women by their demand for contraception

Demand for contraception	Number (3744)	Percentage
Unmet need for spacing	378	10.1
Unmet need for limiting	121	3.2
Using for spacing	1903	50.8
Using for limiting	740	19.8
No need	601	16.1

4.5 Contraceptive prevalence by socio-demographic profile of young women

Addressing the main socio demographic concerns is an important strategy to improve acceptance of family planning. Family planning programs should also be sensitive to culture and traditional perspectives to birth control. Table 4.4 explored factors that might be associated with contraceptive use at a bivariate level of analysis, using the chi-square test. It was observed that age, husband's occupation, religion, age at marriage, residence (urban-rural), region, number of living children, visited by FP workers in the last six months, desire for more children, husband's desire for children, person who usually decides on respondent's health care, person who usually decides on visits to family or relatives, person who usually decides on large household purchases, final say on: Child health care, go to health center alone or with younger children were significantly associated with the use of contraceptives with P-value <0.01 and husband's education, read about FP in newspaper / magazine last few months and wealth index were significantly associated with current contraceptive use with P-value <0.05 and <0.10, respectively. But there was no significant association of education level, mass media exposure, husband's age, age difference between spouse, age at first birth and working status with current use of contraception.

The highest prevalence of contraceptive use was recorded in young women aged 23-24 years, those who were educated, those who were non-muslim, those who got married before age of 18 years, those who gave birth in early adolescent period, those who had two or more living children, those whose husbands were professional worker, those lived in Barisal division or resided in the urban area. Moreover, Husband-wife joint decisions regarding respondents' own health care, child health

care, large household purchases and visiting to family members or relatives were found to be highest for using contraceptives.

Contraceptive use among young fecund women increased with age. Highest prevalence of contraceptive use was found among women aged 23-24 years (75%) whereas 65% of adolescent women (aged 13-19 years) used contraceptive. Seven out of ten and 77.4% of muslim and non-muslim women respectively used any method of contraception. Three-fourths of women and seven out of ten women who got married before 15 years and 15-17 years used contraceptives, respectively. 37% among women who got married at age 18-24 years did not use contraceptives.

It was also observed from Table 4.4 that use of contraception was higher among urban women (73.4%) than their rural counterpart (69.1%). The contraceptive prevalence was highest (80.5%) in Barisal division, followed by Rangpur (77.4%), Khulna (76.5%) and Rajshahi (76.2%) division. The women in Sylhet and Chittagong division were in vulnerable condition because only 55.7% and 60% respectively used any contraceptive method. The women whose husbands were manual workers among them 68.4% used contraceptive, this proportion became 77.1% for professional or non-manual worker.

The prevalence of using contraceptive increased with the increase of number of living children. More than eight out of ten women with two or more children used contraceptive whereas, only 43.4% of women having no living child used contraceptives. Almost same results were observed for the relation between children ever born and contraceptive use. More than eight out of ten women who gave single birth during three years preceding the survey used any method of contraception. This proportion became 100% and 78.4% among women having 3 and 2 children respectively. Three-fifths of women who did not give birth in the three years preceding the survey used any method of contraception. Women who were talked and given family planning method by the FP workers out of them 95% used contraceptive. Besides, 77% of women who only talked with the FP workers used contraceptive but 32% of women who were not visited by FP workers did not use any contraceptive.

Table 4.4: Contraceptive prevalence by socio-demographic characteristics of young women

Characteristics	Current contraceptive use (%)		P-value
	No	Yes	
Age			0.000
13-19	34.8	65.2	
20-22	27.1	72.9	
23-24	25.1	74.9	
Educational level			0.678
Illiterate	31.7	68.3	
Primary	28.2	71.8	
Secondary	29.6	70.4	
Higher	29.7	70.3	
Husband's education level			0.027
Illiterate	27.1	72.9	
Primary	28.3	71.7	
Secondary	32.2	67.8	
Higher	27.1	72.9	
Husband's age			0.115
15-25	31.5	68.5	
26-30	29.2	70.8	
31-77	27.4	72.6	
Age at marriage			0.000
<15	24.8	75.2	
15-17	29.5	70.5	
18-24	37.0	63.0	
Age difference between spouse			0.511
<=5	28.2	71.8	
6-10	29.4	70.6	
>=11	30.5	69.5	
Age at first birth			0.597
<16	19.4	80.6	
16-19	21.1	78.9	
20-24	21.3	78.7	
Religion			.003
Muslim	30.1	69.9	
Non-muslim	22.6	77.4	
Place of residence			.005
Urban	26.6	73.4	
Rural	30.9	69.1	

Table 4.4 (Continued)

Characteristics	Current contraceptive use (%)		P-value
	No	Yes	
Region			0.000
Barisal	19.5	80.5	
Chittagong	40.1	59.9	
Dhaka	33.0	67.0	
Khulna	23.5	76.5	
Rajshahi	23.8	76.2	
Rangpur	22.6	77.4	
Sylhet	44.3	55.7	
Wealth index			0.075
Poorest	26.9	73.1	
Poorer	26.2	73.8	
Middle	30.9	69.1	
Richer	31.4	68.6	
Richest	30.6	69.4	
Husband's occupation			0.000
Manual	31.6	68.4	
Non-manual	22.9	77.1	
Did not work	34.4	65.6	
Respondent currently working			0.254
No	29.7	70.3	
Yes	26.7	73.3	
Visited by FP worker in past 6 months			0.000
Talked	23.5	76.5	
Gave family planning method	4.8	95.2	
Talked and gave method	4.7	95.3	
No	31.8	68.2	
Frequency of reading newspaper or magazine			0.470
Not at all	29.0	71.0	
Less than once a week	31.2	68.8	
At least once a week	31.3	68.7	
Frequency of listening to radio			0.272
Not at all	29.2	70.8	
Less than once a week	28.3	71.7	
At least once a week	34.1	65.9	

Table 4.4 (Continued)

Characteristics	Current contraceptive use (%)		P-value
	No	Yes	
Frequency of watching television			0.730
Not at all	28.6	71.4	
Less than once a week	30.5	69.5	
At least once a week	29.6	70.4	
Heard about FP on radio last few months			0.250
No	29.2	70.8	
Yes	33.8	66.2	
Heard about FP on television last few months			0.780
No	29.5	70.5	
Yes	29.1	70.9	
Read about FP in newspaper / magazine last few months			0.047
No	29.7	70.3	
Yes	20.9	79.1	
Number of living children			0.000
0	56.6	43.4	
1	22.7	77.3	
2	14.7	85.3	
3-5	17.6	82.4	
Births in last three years			0.000
0	39.5	60.5	
1	18.3	81.7	
2	21.6	78.4	
3		100.0	
Desire for more children			0.000
Wants within 2 years	72.4	27.6	
Wants after 2+ years	16.7	83.3	
Wants, unsure timing	48.1	51.9	
Undecided	44.3	55.7	
Wants no more	14.1	85.9	
Husband's desire for children			0.000
Both wanted same	28.5	71.5	
Husband wanted more	29.0	71.0	
Husband wanted fewer	24.6	75.4	
Don't know	64.5	35.5	

Table 4.4 (Continued)

Characteristics	Current contraceptive use (%)		P-value
	No	Yes	
Person who usually decides on respondent's health care			0.000
Respondent alone	51.4	48.6	
Respondent and husband	21.2	78.8	
Husband alone	26.1	73.9	
Someone else	51.3	48.7	
Other	64.7	35.3	
Person who usually decides on visits to family or relatives			0.000
Respondent alone	46.0	54.0	
Respondent and husband	22.0	78.0	
Husband alone	25.9	74.1	
Someone else	46.8	53.2	
Other	52.2	47.8	
Person who usually decides on large household purchases			0.000
Respondent alone	49.1	50.9	
Respondent and husband	22.9	77.1	
Husband alone	25.0	75.0	
Someone else	43.3	56.7	
Other	54.2	45.8	
Final say on: Child health care			0.000
Respondent	44.2	55.8	
Respondent & husband jointly	14.5	85.5	
Husband	18.5	81.5	
Someone else	44.1	55.9	
Other	56.5	43.5	
Go to health center alone or with younger children			0.000
No	33.8	66.2	
Yes, alone	27.2	72.8	
Yes, with children	18.2	81.8	
Husband	27.3	72.7	
Other	57.9	42.1	
No child	45.5	54.5	
Total	29.4	70.6	

It is evident from this study that sound spousal communication plays a remarkable role regarding contraceptive use. Apparently, highest prevalence of contraceptive use was found when husband-wife jointly took decision regarding respondents' own health care (79%), child health care (85.5%), visited to family or relatives (78%), and large household purchases (77%). The women who did not know about their husbands' desire were also found to be incurious about contraceptive use because only 35.5% among them used any contraceptive. The prevalence of contraceptive use was highest (75.4%) among women whose husbands wanted fewer numbers of children than they desired. 44.3% and 14.1% of women who were undecided about having more children and who desired to have no more children respectively did not use contraceptives. These women were at risk of having unwanted pregnancy. 16.7% of women who wanted to have child after two years of the survey did not use contraceptive, were at risk of encountering mistimed pregnancies.

4.6 Determinants of current contraceptive use of young women

Stepwise logistic regression analyses (backward LR method) were performed to determine the most influential factors that might affect the probability of using contraceptives. The outcome variable was whether the women used any contraceptive method (either use modern methods like pill, IUD, injection, implants/norplants or condom or traditional methods like withdrawal, periodic abstinence or folkloric method) or did not use any contraceptive method. Those using any contraceptive were coded as 1, otherwise they were coded as 0. All the variables significant in chi-square tests were included in the stepwise logistic regression model. The least significant variables were excluded from the model based on the Wald statistic in the four consecutive steps. The final (fifth) step included the variables age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's education and occupation, region, place of residence (urban-rural), religion, final say on: Child health care, person who usually decides on respondent's own health care and visited by FP workers in the last six months, which were statistically significant.

Table 4.5: Logistic regression model for current contraceptive use

Predictors	β	P-value	Odds Ratio (95% C.I.)
Age	-0.087	0.001	0.917 (0.870-0.966)
Age at marriage	0.078	0.005	1.081 (1.024-1.142)
Number of living children	0.646	0.000	1.908 (1.494-2.437)
Region			
Barisal ®		0.000	
Chittagong	-1.288	0.000	0.276 (0.193-0.395)
Dhaka	-0.709	0.000	0.492 (0.346-0.701)
Khulna	-0.234	0.224	0.791 (0.542-1.155)
Rajshahi	-0.159	0.421	0.853 (0.580-1.256)
Rangpur	-0.509	0.010	0.601 (0.408-0.885)
Sylhet	-1.383	0.000	0.251 (0.165-0.381)
Place of residence			
Urban ®			
Rural	-0.470	0.000	0.625 (0.511-0.763)
Religion			
Muslim ®			
Non-muslim	0.662	0.000	1.939 (1.373-2.739)
Husband's education level			
Illiterate ®		0.030	
Primary	-0.073	0.611	0.929 (0.701-1.233)
Secondary	-0.320	0.022	0.726 (0.552-0.955)
Higher	-0.017	0.925	0.983 (0.686-1.409)
Husband's occupation			
Manual ®		0.000	
Non-manual	0.510	0.000	1.665 (1.325- 2.093)
Did not work	0.199	0.482	1.221 (0.700-2.128)
Desire for more children			
Wants within 2 years ®		0.000	
Wants after 2+ years	2.500	0.000	12.188 (9.57-15.52)
Wants, unsure timing	1.491	0.000	4.443 (2.290-8.618)
Undecided	1.084	0.000	2.956 (1.648-5.303)
Wants no more	2.257	0.000	9.553 (6.688-13.65)
Husband's desire for children			
Both want same ®		0.002	
Husband wants more	-0.193	0.294	0.824 (0.575-1.183)
Husband wants fewer	0.120	0.528	1.128 (0.776-1.639)
Did not know	-0.891	0.000	0.410 (0.253-0.664)

Table 4.5 (Continued)

Predictors	β	P-value	Odds Ratio (95% C.I.)
Visited by FP worker in past 6 months			
Talked ®		0.000	
Gave family planning method	1.586	0.000	4.885 (2.097-11.38)
Talked and gave method	1.479	0.025	4.390 (1.206- 15.98)
No	-0.169	0.339	0.844 (0.596-1.195)
Person who decides on respondent's health care			
Respondent alone ®		0.000	
Respondent and husband	1.134	0.000	3.108 (2.225-4.341)
Husband alone	1.034	0.000	2.813 (1.998-3.960)
Someone else	0.211	0.286	1.235 (0.838-1.820)
Other	0.608	0.358	1.837 (0.502-6.723)
Final say on: Child health care			
Respondent ®		0.000	
Respondent & husband jointly	1.115	0.000	3.049 (2.165-4.294)
Husband	0.900	0.000	2.459 (1.675-3.610)
Someone else	0.148	0.483	1.160 (0.767-1.753)
Other	0.555	0.008	1.742 (1.155-2.628)
Constant	-1.411	0.015	0.244

®: Reference category

Table 4.5 depicted that the likelihood of using contraceptive decreased with increasing age [OR (95% CI): 0.917 (0.870-0.966), $p=0.001$] and increased with increasing age at marriage age [OR (95% CI): 1.081 (1.024-1.142), $p=0.005$]. Number of living children was likely to play a significant role in contraceptive use since the likelihood of using contraceptive increased with increasing a single number of child [OR (95% CI): 1.908 (1.494-2.437), $p<0.0001$].

Women in Rangpur, Dhaka, Chittagong and Sylhet division were 0.601 (95% CI: 0.408-0.885), 0.492 (95% CI: 0.346-0.701), 0.276 (95% CI: 0.193-0.395), and 0.251 (95% CI: 0.165-0.381) times likely to use contraceptives compared with women in Barisal division, respectively. Residing in the rural areas decreased the likelihood [OR (95% CI): 0.625 (0.511-0.763)), $p<0.0001$] of using contraceptives compared with residing in urban areas. Non-Muslim women were more likely to use [OR (95% CI): 1.939 (1.373-2.739), $p<0.0001$] contraceptives than their Muslim counterparts.

The likelihood of using contraceptives increased among women who wanted another child after two years [OR (95% CI): 12.188 (9.571-15.521)], those who wanted no more children [OR (95% CI): 9.553 (6.688-13.647)], those who were undecided about having another child [OR (95% CI): 2.956 (1.648-5.303)] and those who wanted another child but unsure about timing [OR (95% CI): 4.443 (2.290-8.618)] compared to their counterparts who wanted another child within two years.

Women who did not know about husbands' desire for children were less likely to use contraceptive [OR: 0.41, $p < 0.0001$] compared to their counterparts who desired equal number of children with their husbands. Women whose husbands were professional (non-manual) workers were more likely to use contraceptives [OR (95% CI): 1.665 (1.325- 2.093), $p < 0.0001$] compared to their counterparts whose husbands were manual workers.

Women who were given family planning method by the FP workers were more likely to use contraceptive [OR (95% CI): 4.885 (2.097-11.38), $p < 0.0001$] and those who were talked and given family planning method by the FP workers were also more likely to use contraceptive [OR (95% CI): 4.390 (1.206- 15.98), $p = 0.025$] compared to their counterparts who only talked with the FP workers.

The likelihood of using contraceptives increased among women who together with their husbands took decision on respondents' own health care [OR (95% CI): 3.108 (2.225-4.341)] and it increased [OR (95% CI): 2.813 (1.998-3.960)] among them whose husbands decided alone compared to those women who took decision alone about their own health care. Almost same result was observed for taking decision on child health care, while husband-wife joint decision on child health care increased the likelihood of using contraceptives [OR (95% CI): 3.049 (2.165-4.294), $p < 0.0001$] and women whose husbands took decision alone on child health care were more likely to use contraceptives [OR (95% CI): 2.459 (1.675-3.610), $p < 0.0001$] compared to their counterparts who decided alone on their children's health care.

Modern contraceptive use

5.1 Introduction

Modern contraceptive methods which include intra uterine devices (IUDs), implants, injectables, pills, male and female sterilization, male and female condoms and spermicides are highly effective in preventing pregnancy, compared with traditional methods, such as withdrawal and periodic abstinence (Singh & Darroch, 2012). An estimated 2.0–4.4 million adolescents in developing countries undergo unsafe abortions each year (Jain et al., 2007). However, few sexually active adolescents in developing countries use modern contraceptive methods, and although there is considerable variation between countries, uptake is generally much lower than in developed countries (Bearinger et al., 2007). For example, 69% of adolescent women in a UK study reported use of a modern contraceptive method at most recent sex, compared with 12% in Mali, and in the US 54% of 15–19 year old females reported condom use at most recent sex, compared with 21% in Tanzania (Bearinger et al., 2007).

There are over 14 million births to adolescent women aged 15-19 each year, 91 percent of these in low and middle income countries (Population Division, 2009). Six million adolescent pregnancies are unintended and occur in the context of low contraceptive prevalence (Guttmacher Institute, 2010; Singh, 1998). Less than one third of currently married adolescent women in low and middle income countries who want to avoid pregnancy are using a modern method of contraception, and more than 60 percent would like to avoid or delay pregnancy but are not able to do so (Singh et al., 2009). The government of Bangladesh set a vision to be one of the middle income countries of the world by the year 2021. Fertility control is one of the important actions to achieve this goal for a densely populated country like Bangladesh. However, modern contraceptive prevalence is only 52% in this country (NIPORT et al., 2013). Therefore, this study aims to identify factors that determine the utilization of modern contraceptives.

5.2 Prevalence of modern contraceptive use by socio-demographic profile of young women

Table 5.1 described the assessment of the prevalence of modern contraceptive use by socio-demographic characteristics of young women. It was observed that age, age at marriage, residence (urban-rural), region, husband's occupation, religion, number of living children, visited by FP workers in the last six months, desire for more children, husband's desire for children, number of births in the three years preceding the survey, person who usually decides on respondent's health care, person who usually decides on visits to family or relatives, Person who usually decides on large household purchases, final say on: Child health care, Go to health center alone or with younger children were significantly associated with the use of modern contraceptives with P-value <0.01. Husband's age and husband's education level were significantly associated with modern contraceptive use with P-value <0.10. But there was no significant association of education level, mass media exposure, wealth index, age difference between spouse, age at first birth and working status with the use of modern contraceptives.

Use of modern contraceptive was found highest among young women aged 23-24 years, those who were educated, those who were non-muslim, those who experienced child marriage, those who had two or more living children, those whose husbands were professional workers, those who lived in Barisal division or resided in the urban area, those who were visited by FP workers, those who desired no more children and those who jointly took decision with their husbands regarding their own health care, child health care, large household purchases and visiting to family members or relatives.

Modern contraceptive utilization increased as the age increases. Highest prevalence of modern contraceptive use was found among women aged 23-24 years (73%) whereas 63% of adolescent women (aged 13-19 years) used modern contraceptive. As age of marriage increases use of modern contraceptive decreased. More than seven out of ten and more than three-fifths of women who got married before 15 years and 15-17 years used modern contraceptives, respectively.

Table 5.1: Prevalence of modern contraceptive use by socio-demographic characteristics of young women

Characteristics	Modern contraceptive use (%)		P-value
	No	Yes	
Age			0.000
13-19	37.3	62.7	
20-22	28.9	71.1	
23-24	26.6	73.4	
Husband's age			0.072
15-25	33.7	66.3	
26-30	31.3	68.7	
31-77	29.0	71.0	
Age difference between spouse			0.538
<=5	30.2	69.8	
6-10	31.4	68.6	
>=11	32.6	67.4	
Age at marriage			0.000
<15	26.2	73.8	
15-17	31.8	68.2	
18-24	39.6	60.4	
Age at first birth			0.475
<16	20.4	79.6	
16-19	22.4	77.6	
20-24	23.2	76.8	
Educational level			0.466
Illiterate	35.4	64.6	
Primary	30.5	69.5	
Secondary	31.1	68.9	
Higher	32.6	67.4	
Husband's education level			0.051
Illiterate	29.2	70.8	
Primary	30.0	70.0	
Secondary	34.2	65.8	
Higher	29.7	70.3	
Religion			0.011
Muslim	32.0	68.0	
Non-muslim	25.1	74.9	
Place of residence			0.003
Urban	28.2	71.8	
Rural	33.1	66.9	

Table 5.1 (Continued)

Characteristics	Modern contraceptive use (%)		P-value
	No	Yes	
Region			0.000
Barisal	20.9	79.1	
Chittagong	42.8	57.2	
Dhaka	35.2	64.8	
Khulna	25.0	75.0	
Rajshahi	25.2	74.8	
Rangpur	24.3	75.7	
Sylhet	47.7	52.3	
Wealth index			0.109
Poorest	29.1	70.9	
Poorer	28.1	71.9	
Middle	32.8	67.2	
Richer	33.7	66.3	
Richest	32.2	67.8	
Husband's occupation			0.000
Manual	33.8	66.2	
Non-manual	24.5	75.5	
Did not work	38.1	61.9	
Respondent currently working			0.597
No	31.6	68.4	
Yes	28.9	71.1	
Visited by FP worker in past 6 months			0.000
Talked	24.3	75.7	
Gave family planning method	4.9	95.1	
Talked and gave method	4.8	95.2	
No	34.1	65.9	
Frequency of reading newspaper or magazine			0.302
Not at all	30.8	69.2	
Less than once a week	33.5	66.5	
At least once a week	34.4	65.6	
Frequency of listening to radio			0.248
Not at all	31.2	68.8	
Less than once a week	29.4	70.6	
At least once a week	36.3	63.7	

Table 5.1 (Continued)

Characteristics	Modern contraceptive use (%)		P-value
	No	Yes	
Frequency of watching television			0.690
Not at all	30.5	69.5	
Less than once a week	32.7	67.3	
At least once a week	31.6	68.4	
Heard about FP on radio last few months			0.318
No	31.2	68.8	
Yes	35.4	64.6	
Heard about FP on television last few months			0.816
No	31.5	68.5	
Yes	31.1	68.9	
Read about FP in newspaper / magazine last few months			0.066
No	31.6	68.4	
Yes	23.0	77.0	
Number of living children			0.000
0	61.1	38.9	
1	24.1	75.9	
2	15.5	84.5	
3-5	19.2	80.8	
Births in last three years			0.000
0	41.9	58.1	
1	19.6	80.4	
2	24.1	75.9	
3	-	100.0	
Desire for more children			0.000
Wants within 2 years	76.6	23.4	
Wants after 2+ years	18.0	82.0	
Wants, unsure timing	48.1	51.9	
Undecided	47.0	53.0	
Wants no more	14.9	85.1	
Husband's desire for children			0.000
Both wanted same	30.4	69.6	
Husband wanted more	31.9	68.1	
Husband wanted fewer	26.6	73.4	
Did not know	66.1	33.9	

Table 5.1 (Continued)

Characteristics	Modern contraceptive use (%)		P-value
	No	Yes	
Person who usually decides on respondent's health care			0.000
Respondent alone	54.0	46.0	
Respondent and husband	22.7	77.3	
Husband alone	28.0	72.0	
Someone else	54.3	45.7	
Other	68.8	31.3	
Person who usually decides on visits to family or relatives			0.000
Respondent alone	50.3	49.7	
Respondent and husband	23.4	76.6	
Husband alone	27.9	72.1	
Someone else	49.6	50.4	
Other	57.1	42.9	
Person who usually decides on large household purchases			0.000
Respondent alone	52.3	47.7	
Respondent and husband	24.3	75.7	
Husband	27.2	72.8	
Someone else	45.9	54.1	
Other	65.0	35.0	
Final say on: Child health care			0.000
Respondent	45.7	54.3	
Respondent & husband jointly	15.5	84.5	
Husband	20.0	80.0	
Someone else	45.8	54.2	
Other	60.8	39.2	
Go to health center alone or with younger children			0.000
No	36.1	63.9	
Yes, alone	29.1	70.9	
Yes, with children	19.2	80.8	
Husband	30.0	70.0	
Other	61.1	38.9	
No child	58.8	41.2	
Total	31.4	68.6	

Two-fifths of women who got married at age 18-24 years did not use contraceptives. 68% and 75% of muslim and non-muslim women respectively used modern contraceptive. Use of modern contraceptive was higher among urban women (72%) than their rural counterparts (67%). Modern contraceptive use was highest (79%) in Barisal division, followed by Rangpur (76%), Khulna (75%), Rajshahi (74.8%) and Dhaka (65%) division.

Since 52% and 57% of women respectively used modern contraceptives in Sylhet and Chittagong division, rest of the women were in vulnerable condition there. The women whose husbands were manual workers among them 66% used contraceptive, this proportion became 76% for professional or non-manual workers. As the number of living children increases the prevalence of using modern contraceptive increased. 85% women having two children used modern contraceptives and this proportion became 81% among women having three or more children and 76% among women having single child.

More than four-fifths of women who desired to have no more children and of women who wanted child after two years used modern contraceptives. Therefore, 15% of women who wanted no more children but did not use modern contraceptive were at risk of having unwanted child and 18% of women who desired to have child after two years of the survey but did not use contraceptive were at risk of encountering mistimed pregnancies. The women who did not know about their husbands' desire were also found to be incurious about modern contraceptive use because only 34% among them used contraceptive. The prevalence of modern contraceptive use was highest (73%) among women whose husbands wanted fewer numbers of children than what they desired. Women who were given family planning method by the FP workers out of them 95% used contraceptive. Three-fourths of women who only talked with the FP workers used modern contraceptives. This proportion of using contraceptives went down to 66% when the women were not visited by FP workers. Highest prevalence of modern contraceptive use was found when husband-wife jointly took decision regarding respondents' own health care (77%), child health care (85%), visiting to family or relatives (77%), and large household purchases (76%).

5.3 Factors affecting modern contraceptive use of young women

Stepwise logistic regression analyses (backward LR method) were performed to determine the most influential factors that might affect the probability of using modern contraceptives. The response variable was whether the women used modern contraceptive methods (using pill, IUD, injection, implants/norplants or condom) or did not use any contraceptive method at all. Those using modern contraceptives were coded as 1, otherwise they were coded as 0. All the variables significant in chi-square tests were simultaneously included in stepwise logistic regression model. The least significant variables were excluded from the model based on the Wald statistic in the three successive steps. The final (fourth) step included age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's occupation, region, place of residence (urban-rural), religion, visited by FP workers and person who decides on respondent's own health care, child health care and visiting family or relatives which were statistically significant variables.

It was observed from Table 5.2 that the likelihood of using modern contraceptive decreased with increasing age [OR (95% CI): 0.932 (0.883-0.984), $p=0.011$] and increased with increasing age at marriage [OR (95% CI): 1.077 (1.018-1.140), $p=0.010$]. Number of living children played a significant role in contraceptive use since the likelihood of using modern contraceptive was increased [OR (95% CI): 1.951 (1.516-2.511), $p<0.0001$] with increasing a single number of child.

Women in Dhaka, Chittagong, Sylhet and Rangpur division were 0.479 (95% CI: 0.333-0.690), 0.259 (95% CI: 0.179-0.375), 0.231 (95% CI: 0.150-0.358), and 0.589 (95% CI: 0.396-0.877) times likely to use modern contraceptives compared with women in Barisal division, respectively. Residing in the rural areas decreased the likelihood [OR (95% CI): 0.617 (0.502-0.759), $p<0.0001$] of using modern contraceptives compared with living in the urban areas.

Table 5.2: Logistic regression model for modern contraceptive use

Predictors	β	P-value	Odds Ratio (95% C.I.)
Age	-0.070	0.011	0.932 (0.883-0.984)
Age at marriage	0.074	0.010	1.077 (1.018-1.140)
Number of living children	0.668	0.000	1.951 (1.516-2.511)
Region			
Barisal ®		0.000	
Chittagong	-1.351	0.000	0.259 (0.179-0.375)
Dhaka	-0.736	0.000	0.479 (0.333-0.690)
Khulna	-0.235	0.235	0.790 (0.536-1.166)
Rajshahi	-0.138	0.498	0.871 (0.585-1.298)
Rangpur	-0.529	0.009	0.589 (0.396-0.877)
Sylhet	-1.464	0.000	0.231 (0.150-0.358)
Place of residence			
Urban ®			
Rural	-0.482	0.000	0.617 (0.502-0.759)
Desire for more children			
Wants within 2 years ®		0.000	
Wants after 2+ years	2.639	0.000	14.004 (10.841-18.091)
Wants, unsure timing	1.783	0.000	5.949 (3.032-11.674)
Undecided	1.246	0.000	3.477 (1.902-6.358)
Wants no more	2.385	0.000	10.854 (7.517-15.674)
Husband's desire for children			
Both want same ®		0.010	
Husband wants more	-0.274	0.154	0.761 (0.522-1.108)
Husband wants fewer	0.077	0.697	1.080 (0.734-1.589)
Did not know	-0.771	0.002	0.462 (0.281-0.760)
Religion			
Muslim			
Non-Muslim	0.487	0.008	1.628 (1.134-2.336)
Visited by FP worker in past 6 months			
Talked ®		0.000	
Gave family planning method	1.619	0.000	5.047 (2.151-11.840)
Talked and gave method	1.499	0.023	4.479 (1.228-16.335)
No	-0.247	0.176	0.781 (0.546-1.117)
Husband's occupation			
Manual ®		0.000	
Non-manual	0.531	0.000	1.701 (1.354-2.138)
Did not work	0.234	0.425	1.264 (0.711-2.248)

Table 5.2 (Continued)

Predictors	β	P-value	Odds Ratio (95% C.I.)
Final say on: Child health care			
Respondent ®		0.000	
Respondent & husband jointly	0.962	0.000	2.616 (1.808-3.786)
Husband	0.772	0.000	2.164 (1.430-3.277)
Someone else	0.145	0.526	1.156 (0.739-1.808)
Other	0.421	0.060	1.524 (0.982-2.364)
Person who decides on respondent's health care			
Respondent alone ®		0.000	
Respondent and husband	1.016	0.000	2.761 (1.925-3.960)
Husband alone	0.993	0.000	2.698 (1.875-3.885)
Someone else	0.171	0.439	1.186 (0.770-1.827)
Other	0.894	0.225	2.445 (0.577-10.368)
Person who decides on visiting family or relatives			
Respondent alone ®		0.065	
Respondent and husband	0.604	0.007	1.830 (1.176-2.849)
Husband alone	0.444	0.054	1.559 (0.992-2.449)
Someone else	0.320	0.193	1.377 (0.851-2.229)
Other	-0.133	0.833	0.876 (0.255-3.012)
Constant	-2.253	0.000	0.105

®: Reference category

Table 5.2 also explained that Women who were talked and given family planning method by the FP workers were 4.479 [(95% CI): (1.228-16.335), p=0.023] times likely to use modern contraceptive and who were given family planning method by the FP workers were 5.047 [(95% CI): (2.151-11.840), p<0.0001] times likely to use modern contraceptive than their counterparts who only talked with the FP workers.

Women who desired to have children after two years were more likely [OR (95% CI): 14.004 (10.841-18.091), p<0.0001] to use modern contraceptive compared to those who desired child bearing within two years. Desire for no more children increased the likelihood [OR (95% CI): 10.854 (7.517-15.674), p<0.0001] of using modern contraceptive than the desire for child bearing within two years. Besides, women who were undecided about having another child were more likely [OR (95% CI): 3.477 (1.902-6.358), p<0.0001] to use modern contraceptive and those who wanted another

child but unsure about timing were also more likely [OR (95% CI): 5.949 (3.032-11.674), $p < 0.0001$] to use modern contraceptive compared to those women who wanted another child within two years of the survey. In addition, the likelihood of using modern contraceptive decreased [OR (95% CI): 0.462 (0.281-0.760), $p = 0.002$] among women who did not know about their husbands' desire for having children than those women who desired same number of children as their husbands desired.

The likelihood of using modern contraceptive increased [OR (95% CI): 1.701 (1.354-2.138), $p < 0.0001$] among women whose husbands were professional (non-manual) workers compared to their counterparts whose husbands were manual workers. Non-Muslim women were more likely to use [OR (95% CI): 1.628 (1.134-2.336), $p = 0.008$] modern contraceptives than their Muslim counterparts.

The likelihood of using modern contraceptives were likely to increase [OR (95% CI): 2.761 (1.925-3.960), $p < 0.0001$] among women who with their husbands took decision on respondents' own health care than those who took decision alone about their own health care and it would increase 2.698 times among women whose husbands decided alone about respondents' own health care compared to their counterparts who took decision alone about their own health care. Additionally, when husband-wife jointly took decision on child health care then the likelihood of modern contraceptive use was likely to increase [OR (95% CI): 2.616 (1.808-3.786), $p < 0.0001$] than those women who decided alone on child's health care and the likelihood of using modern contraceptive would increase among women whose husbands took decision alone about child's health care compared to those women who decided alone on their children's health care [OR (95% CI): 2.164 (1.430-3.277), $p = 0.0001$]. Moreover, women who took decision jointly with their husbands on visiting family members or relatives were more likely [OR (95% CI): 1.830 (1.176-2.849), $p = 0.007$] to use modern contraceptives compared to women who decided alone on visiting family members or relatives.

Demand for contraception

6.1 Introduction

Demand for contraception is a powerful concept for designing family planning programmes and has important implications for maternal health because unmet need for contraception can lead to unintended pregnancies, which pose risks to women, their families, and societies. The unmet need for contraception among currently married women in Bangladesh was 12 % (Islam et al., 2013). The highest estimates of unmet need in Asia are for Pakistan (33 %), Cambodia (30 %), and Nepal (28 %), while the lowest values are for Vietnam (5 %) and Moldova (7 %) (Westoff, 2006). The proportion of the demand satisfied (total contraceptive use divided by the sum of total unmet need and total contraceptive use) ranges from 11 % in Chad to 94 % in Vietnam. In sub-Saharan Africa, an average of 43 % of demand for all methods is satisfied, while in the other regions the average is 77 % (Westoff, 2006). In the developing countries millions of women in the reproductive age who do not use contraceptives prefer to postpone or limit their birth. This indicates their failure to take necessary decision to prevent and avoid unwanted pregnancy (Malwenna, 2012). One of the sequels of unmet need is unwanted pregnancy with its serious consequences (WHO, 2011). Globally 50 million women resort to induced abortion and ultimately result in high maternal morbidity and mortality (WHO, 2002; WHO/UNIFPA/UNICEF, 1995). Therefore, this study attempted to provide information on the extent of demand for contraception and identifies the factors that affect the demand for contraception among young fecund women in Bangladesh.

6.2 Demand for contraception: The basic concept

Demand for contraception is classified into three categories such as unmet need for contraception, met need for contraception and no demand for contraception.

6.2.1 Unmet need for contraception

Unmet need for contraception is one of several frequently used indicators for monitoring of family planning programs, and was recently added to the MDG goal of improving maternal health. Many women, who are sexually active would prefer to avoid becoming pregnant but nevertheless are not using any method of contraception, are considered to have an “unmet need” for family planning (Robey et al., 1996). According to the United Nations, unmet need for family planning is defined as percentage of all fecund women who are married or living in union and thus presumed to be sexually active but are not using any method of contraception, either do not want to have more children or want to postpone their next birth for at least two more years or do not know when or if they want another child (UN, 2009). This concept basically points to the gap between some women’s reproductive intention and their contraceptive behavior. The standard formula of unmet need group includes all fecund women who are married or living union and thus presumed to be sexually active but are not using any method of contraception and who either do not want to have any more children (unmet need for limiting births) or want to postpone their next birth for at least two more years (unmet need for spacing births); the unmet need group also includes all pregnant and post partum amenorrheic women whose last pregnancies were mistimed or unwanted.

Moreover, unmet need for spacing birth includes pregnant women, whose pregnancy was mistimed, amenorrheic women who are not using family planning and whose last birth was mistimed, and fecund women who are neither pregnant nor amenorrheic and who are not using any method of family planning and say they want to wait two or more years for their next birth. Additionally, unmet need for spacing birth includes fecund women who are not using any method of family planning and say they are unsure whether they want another child or who want another child but are unsure when to have the next birth.

On the other hand, unmet need for limiting birth refers to pregnant women whose pregnancy was unwanted, amenorrheic women whose last child was unwanted, and fecund women who are neither pregnant nor amenorrheic, who are not using any

method of family planning, and who want no more children. Women who became pregnant and amenorrheic while using a method were also included in the unmet need category in this study (these women are in need of a better method of contraception).

6.2.2 Met need for contraception

Women who were using contraceptives during the survey were considered to have met need for contraception. Women who were using contraception and said they wanted no (more) children were considered to have met need for limiting, and women who were using contraception and said they wanted to delay having a child, or were unsure if or when they want a/another child, were considered to have met need for spacing.

6.2.3 No demand for contraception

Women who neither used any contraceptive nor wanted to limit or postpone birth were considered to have no demand for contraception.

6.3 Demand for contraception by socio-demographic profile of young women

Table 6.1 showed a breakdown of young women with demand for contraception by important background characteristics. This study explored factors that might be associated with the demand for contraception at a bivariate level of analysis, using the chi-square test. It was found that age, religion, age at marriage, age at first birth, residence (urban-rural), region, husband's education, husband's occupation, number of living children, visited by FP workers in the last six months, desire for more children, husband's desire for children, frequency of watching television, read about FP in newspaper/magazine last few months, person who usually decides on respondent's health care, person who usually decides on visits to family or relatives, Person who usually decides on large household purchases, final say on: Child health care and Go to health center alone or with younger children were significantly associated with the demand for contraception with P-value <0.01.

Table 6.1: Percentage of currently married young fecund women with demand for contraception by some background characteristics

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Age									0.000
13-19	16.4	1.2	17.6	44.2	4.6	48.8	33.6	66.40	
20-22	12.8	2.9	15.7	39.8	16.5	56.3	28.0	72.00	
23-24	9.4	6.8	16.2	29.3	30.7	60.0	23.7	76.20	
Educational level									0.075
Illiterate	13.0	4.7	17.8	29.9	18.7	48.6	33.6	66.40	
Primary	13.1	3.7	16.8	33.7	19.5	53.2	30.0	70.00	
Secondary	13.5	2.9	16.3	40.8	14.4	55.1	28.5	71.40	
Higher	13.8	2.1	16.0	52.3	6.7	58.9	25.1	74.90	
Husband's education level									0.003
Illiterate	13.6	3.9	17.5	31.9	21.1	53.0	29.5	70.50	
Primary	12.3	3.2	15.5	38.2	15.6	53.8	30.7	69.30	
Secondary	14.5	3.0	17.5	38.9	14.1	53.0	29.5	70.50	
Higher	12.4	2.8	15.2	49.9	11.5	61.4	23.4	76.60	
Husband's age									0.006
15-25	15.5	1.2	16.6	44.3	6.7	51.0	32.4	67.60	
26-30	13.3	3.4	16.8	38.5	16.9	55.4	27.8	72.20	
31-77	11.0	5.0	16.1	33.2	23.7	56.9	27.1	73.00	
Religion									0.002
Muslim	13.8	3.4	17.2	38.8	15.1	53.9	28.9	71.10	
Non-Muslim	9.6	1.3	10.9	39.5	19.2	58.8	30.3	69.70	
Age at marriage									0.000
<15	13.0	4.1	17.1	35.4	23.5	58.9	24.0	76.00	
15-17	13.0	3.2	16.2	41.5	13.0	54.6	29.3	70.80	
18-24	14.9	1.6	16.6	38.8	7.9	46.7	36.7	63.30	

Table 6.1: (Continued)

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Age at first birth									0.000
<16	11.0	6.0	16.9	32.8	30.5	63.3	19.8	80.20	
16-19	13.5	4.2	17.7	43.9	19.3	63.3	19.1	81.00	
20-24	13.6	2.1	15.7	48.9	10.9	59.9	24.4	75.60	
Age difference between spouse									0.562
<=5	12.9	2.4	15.3	42.7	11.8	54.5	30.2	69.8	
6-10	13.9	3.1	17.0	38.6	16.2	54.8	28.2	71.8	
>=11	12.9	4.1	17.0	35.5	18.2	53.7	29.2	70.7	
Place of residence									0.000
Urban	10.9	2.7	13.6	44.6	15.5	60.2	26.2	73.80	
Rural	14.6	3.4	18.0	36.1	15.5	51.6	30.5	69.60	
Region									0.000
Barisal	12.6	1.4	14.0	47.8	15.4	63.2	22.8	77.20	
Chittagong	18.5	5.1	23.6	33.6	12.4	46.0	30.4	69.60	
Dhaka	13.1	4.0	17.1	38.0	14.1	52.0	30.9	69.10	
Khulna	10.0	2.7	12.7	45.2	16.8	62.1	25.2	74.80	
Rajshahi	12.6	1.6	14.2	41.4	18.5	59.9	25.9	74.10	
Rangpur	11.1	1.8	12.9	42.1	19.2	61.4	25.7	74.30	
Sylhet	14.9	5.3	20.2	23.1	12.4	35.5	44.3	55.70	
Husband's occupation									0.000
Manual	14.5	3.4	18.0	36.1	15.8	52.0	30.1	70.00	
Non-manual	10.4	2.2	12.7	45.3	15.4	60.7	26.6	73.40	
Did not word	10.2	6.5	16.7	53.7	5.6	59.3	24.1	76.00	

Table 6.1: (Continued)

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Visited by FP worker in past 6 months									0.000
Talked	11.7	3.0	14.7	33.7	19.7	53.3	32.0	68.00	
Gave family planning method	4.4	0.6	5.0	57.5	30.9	88.4	6.6	93.40	
Talked and gave method	4.2	1.4	5.6	50.0	37.5	87.5	6.9	93.10	
No	14.1	3.4	17.4	38.5	14.0	52.5	30.1	69.90	
Number of living children									0.000
0	14.2		14.2	30.2	0.1	30.3	55.5	44.50	
1	14.2	1.7	15.9	56.2	6.8	63.0	21.0	78.90	
2	10.6	8.1	18.7	17.3	49.1	66.4	14.9	85.10	
3-5	12.0	16.1	28.1	7.8	45.6	53.5	18.4	81.60	
Children ever born									0.000
0	14.7		14.7	30.5	0.1	30.6	54.7	45.30	
1	13.6	1.6	15.2	56.4	6.7	63.0	21.7	78.20	
2	11.0	7.7	18.8	20.3	44.7	65.0	16.2	83.80	
3-5	14.0	12.1	26.1	10.8	42.7	53.5	20.4	79.60	
Desire for more children									0.000
Wants within 2 years				27.3		27.3	72.7	27.30	
Wants after 2+ years	16.3	0.0	16.3	64.2		64.2	19.5	80.50	
Wants, unsure timing	39.0		39.0	36.4		36.4	24.7	75.40	
Undecided	33.6		33.6	35.3		35.3	31.1	68.90	
Wants no more	12.9	11.3	24.2		55.4	55.4	20.4	79.60	
Husband's desire for children									0.000
Both wanted same	12.7	2.7	15.4	40.2	15.1	55.3	29.3	70.70	
Husband wanted more	12.4	8.2	20.6	22.9	30.8	53.7	25.7	74.30	
Husband wanted fewer	14.0	4.0	18.0	50.0	9.5	59.5	22.6	77.50	
Don't know	28.8	4.0	32.8	19.8	4.5	24.3	42.9	57.10	

Table 6.1: (Continued)

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Births in last three years									0.000
0	11.9	1.7	13.5	36.6	10.6	47.2	39.2	60.70	
1	14.3	4.4	18.7	42.9	20.0	62.9	18.4	81.60	
2	24.0	8.8	32.7	18.7	25.7	44.4	22.8	77.10	
3				20.0	40.0	60.0	40.0	60.00	
Person who usually decides on respondent's health care									0.000
Respondent alone	25.5	7.4	32.9	28.2	11.7	39.9	27.2	72.80	
Respondent and husband/partner	9.2	2.5	11.8	43.3	18.4	61.7	26.5	73.50	
Husband/partner alone	11.8	2.5	14.3	38.9	16.5	55.4	30.3	69.70	
Someone else	23.7	4.3	27.9	31.4	5.2	36.6	35.5	64.50	
Other	25.0	10.0	35.0	15.0	15.0	30.0	35.0	65.00	
Person who usually decides on visits to family or relatives									0.000
Respondent alone	22.0	8.1	30.0	25.3	17.2	42.5	27.5	72.50	
Respondent and husband/partner	9.4	2.6	12.0	42.1	18.9	61.0	27.0	73.00	
Husband/partner alone	13.1	3.4	16.5	38.9	16.3	55.2	28.3	71.70	
Someone else	20.6	2.9	23.4	35.3	5.8	41.1	35.5	64.50	
Other	25.9	7.4	33.3	33.3	7.4	40.7	25.9	74.00	
Person who usually decides on large household purchases									0.000
Respondent alone	22.7	8.6	31.3	26.8	15.7	42.4	26.3	73.70	
Respondent and husband/partner	10.1	2.6	12.8	40.8	19.7	60.5	26.7	73.30	
Husband/partner alone	11.8	3.0	14.8	38.9	16.5	55.3	29.9	70.10	
Someone else	19.9	3.6	23.4	37.5	6.1	43.6	33.0	67.00	
Other	28.6	3.6	32.1	32.1	7.1	39.3	28.6	71.40	

Table 6.1: (Continued)

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Final say on: Child health care									0.000
Respondent	23.8	10.5	34.3	28.7	16.9	45.6	20.1	79.90	
Respondent & husband, partner jointly	9.4	2.6	12.1	45.5	22.0	67.5	20.5	79.60	
Husband, partner	12.5	3.4	15.9	40.0	21.3	61.2	22.8	77.10	
Someone else	21.6	6.2	27.8	33.8	9.7	43.5	28.7	71.30	
Other	14.5	0.1	14.6	31.4	0.2	31.6	53.8	46.20	
Go to health center alone or with younger children									0.000
No	14.3	2.1	16.4	37.8	11.5	49.3	34.3	65.70	
Yes, alone	12.9	4.6	17.6	39.4	18.6	58.0	24.5	75.60	
Yes, with children	11.2	3.7	14.9	42.6	23.8	66.4	18.7	81.30	
Husband	6.7		6.7	40.0	13.3	53.3	40.0	60.00	
Other	7.1	10.7	17.9	21.4	7.1	28.6	53.6	46.50	
No child	17.6		17.6	35.3		35.3	47.1	52.90	
Frequency of watching television									0.001
Not at all	13.4	3.2	16.6	34.9	16.2	51.1	32.3	67.70	
Less than once a week	15.2	3.8	19.0	37.9	15.2	53.1	27.9	72.10	
At least once a week	12.9	3.1	15.9	41.5	15.1	56.7	27.4	72.60	
Frequency of listening to radio									0.064
Not at all	13.1	3.1	16.3	38.3	15.9	54.2	29.5	70.5	
Less than once a week	12.5	3.8	16.3	43.7	13.3	57.0	26.6	73.3	
At least once a week	18.1	3.6	21.7	44.0	10.8	54.9	23.5	76.6	

Table 6.1: (Continued)

Characteristics	Unmet need (%)			Met need (Currently using) (%)			No demand (%)	Total demand for contraception (%)	P-value
	Spacing	Limiting	Total	Spacing	Limiting	Total			
Frequency of reading newspaper or magazine									0.230
Not at all	13.1	3.3	16.3	37.6	16.4	54.1	29.6	70.4	
Less than once a week	15.6	1.9	17.5	43.1	11.4	54.5	27.9	72	
At least once a week	12.8	5.2	18.0	46.7	11.8	58.5	23.5	76.5	
Read about FP in newspaper / magazine last few months									0.001
No	13.5	3.3	16.8	38.4	15.7	54.1	29.1	70.9	
Yes	8.1	0.7	8.9	55.6	8.9	64.4	26.7	73.3	
Wealth index									0.048
Poorest	14.4	4.2	18.6	31.4	20.7	52.1	29.3	70.70	
Poorer	13.0	2.5	15.6	37.4	16.3	53.7	30.8	69.30	
Middle	13.0	2.6	15.7	38.6	14.5	53.1	31.3	68.80	
Richer	14.5	3.6	18.1	41.7	13.3	55.0	26.9	73.10	
Richest	11.9	3.1	15.0	44.3	13.6	57.9	27.1	72.90	
Total	13.4	3.2	16.6	38.9	15.5	54.4	29	71	

Wealth index, education level and frequency of listening to radio were significantly associated with demand for contraception with P-value <0.10. But there was no significant association between frequency of reading newspaper or magazine and the demand for contraception.

It was also observed from Table 6.1 that total unmet need for contraception was 16.6% (13.4% for spacing birth and 3.2% for limiting birth), met need or current contraceptive use was 54.4% (39% for spacing birth and 15.5% for limiting birth) and no demand for contraception was 29%. Total demand for contraception (sum of total unmet need and total contraceptive use) was 71% and proportion of demand satisfied (total contraceptive use divided by the sum of total unmet need and total contraceptive use) was 76.62%. Unmet need for contraception was highest in young fecund women who were adolescent (aged 13-19 years), those who were illiterate, those who were muslim, those who gave 2 births during 3 years preceding the survey, those who gave birth in adolescent period, those who had more than two living children, those whose husbands were manual worker, those who did not know about their husbands' desire for children, those lived in Chittagong division or resided in the rural area, those who belong to the poorest quintile of wealth, those who watched television less than once a week. Moreover, Husband-wife joint decisions regarding respondents' own health care, child health care, large household purchases and visiting to family members or relatives were found to be lowest for having unmet need and highest for having met need for contraception.

Unmet need for contraception was highest among adolescent women (18%) and then decreased with increasing age. Unmet need for FP was found highest (18%) among illiterate women and decreased with increasing level of education. No demand for contraception also decreased with increasing level of education, whereas met need increased as the educational level increases. Met need of contraception was same among women whose husbands were illiterate and had primary or even secondary level education but it increased among women whose husbands had higher level education. 17% of muslim and 11% of non-muslim women had unmet need for contraception but met need was higher among non-muslim (59%) women than their muslim (54%) counterpart.

Unmet need was higher among rural women (18%) than their urban counterpart (14%). Unmet need was highest among women in Chittagong (24%) division followed by Sylhet (20%) and lowest in Khulna division. On the other hand, prevalence of current contraceptive was found highest (63%) in Barisal division, followed by Rangpur (61%) division and lowest in Sylhet (36%) then in Chittagong (46%) division. The women in Sylhet and Chittagong division were in vulnerable condition because met need was lowest and unmet need was highest among them. There was no noticeable difference for met needs among women belong to different wealth quintiles but unmet need was highest among poorest (19%) women followed by richer (18%) women.

Results revealed that unmet need was highest (28%) among women having three or more living children and then decreased as the number of children decreases. The prevalence of using contraceptive increased with the increase of number of living children except women having more than two children. Almost two thirds of women having one or two children had met need for contraception whereas; half of the women having three or more children had met need. Almost same results were observed for the relation between children ever born and demand for contraception. One third of the women having two children during three years preceding the survey had unmet need for contraception. Two thirds of women who gave single birth during three years preceding the survey had met need for contraception. This proportion became 60% and 44.4% among women having 3 and 2 children respectively.

Unmet need was found higher among women whose husbands were manual workers (18%) than their counterparts whose husbands were non-manual workers (13%). The women whose husbands were manual workers among them 52% used contraceptive, this proportion became 61% for professional or non-manual workers.

Women who were given family planning method by the FP workers out of them 88% had met need for contraception but half of the women who were not visited by FP workers did not use any contraceptive. Unmet need was reported highest (17%) among women who were not visited by FP workers during six months preceding the survey and lowest among them who were given FP methods by FP workers. One-fifth

of women who watched television less than once a week had unmet need and 57% of women who watched television at least once a week had met need for contraception. Unmet need was highest among women who wanted more children but unsure about timing (39%) followed by women who were undecided about child desire (34%) and prevalence of current contraceptive use was also found low among these women. The women who did not know about their husbands' desire for children were also found to have highest unmet need (33%) and lowest (24%) met need. The prevalence of current contraceptive use was highest (60%) among women whose husbands wanted fewer numbers of children than they desired.

Evidently, unmet need was found to be lowest when husband-wife jointly took decisions regarding respondents' own health care (12%), child health care (12%), large household purchases (13%) and visiting to family members or relatives (12%). On the other hand, met need was highest when husband-wife jointly decided on respondents' own health care (62%), child health care (68%), large household purchases (61%) and visiting to family members or relatives (61%).

6.4 Determinants of demand for contraception

Multinomial logistic regression model was used to identify the important predictors that have effects on demand for contraception (Table 6.2). It was observed that age, number of births during three years preceding the survey, region, place of residence (urban-rural), religion, husband's desire for children, visited by FP workers in the last six months, final say on: Child health care and read about FP in newspaper/magazine last few months of the survey were significant predictors of unmet need for contraception relative to current contraceptive use. On the other hand, age, number of living children, region, place of residence (urban-rural), husband's education, husband's desire for children, visited by FP workers in the last six months, final say on: Child health care and frequency of watching television had significant effect on no demand for contraception with reference to current contraceptive use. Results of multinomial model are presented in Table 6.2 and discussed in terms of the estimated probabilities corresponding to the estimated coefficients in Table 6.3. The estimated probabilities were calculated based on the reference respondent's characteristics. The

reference respondent for multinomial logistic regression model was a young fecund woman residing in Sylhet division, rural resident, non-muslim, she did not know about her husband's desire for children, she watched television at least once a week, she was not visited by FP workers during past six months of the survey, her husband had a higher level of education, other person decided on her child's health care and she read about FP in newspaper/magazine during last few months of the survey.

The estimated probabilities revealed that the reference respondent has an estimated 40.5% probability of having met need (using contraceptives) for contraception, 54.5% probability of having unmet need for contraception and 5.0% probability of having no demand for contraception.

The probability of using contraceptive was increased by 25% points if the woman resided in Khulna or Barisal division. Residing in the Rajshahi and Rangpur division respectively increased the probability of using contraceptive by 21% and 19% points. The probability of having unmet need was decreased by 23%, 22%, 18%, 17% and 11% when the respondent resided in Khulna, Barisal, Rajshahi, Rangpur and Dhaka divisions, respectively. Significant decrease in the probability of no demand for contraception was found if the woman came from Barisal (1.7%), Rajshahi (2.2%), Khulna (2.2%), Dhaka (2.9%) and Chittagong (3.0%) division.

Residing in the urban areas decreased the probability of having unmet need by 10%, that of having no demand for contraception by 1% and increased the probability of using contraceptive by 11% points. Probability of having unmet need was increased by 11% and that of using contraceptives was decreased by 10% if the woman was Muslim.

The probability of having unmet need was decreased by 28% if husband and wife desired same numbers of children, by 27% if husband wanted fewer children and by 24% if husband desired more numbers of children. Interestingly, the probability of using contraceptives was increased by 28% if husband and wife desired same numbers of children or if husband desired fewer children and by 24% if husband desired more numbers of children.

Table 6.2: Multinomial logistic regression model for demand for contraception

Predictors	Unmet need for contraception			No demand for contraception		
	β	P-value	RRR (95% C.I.)	β	P-value	RRR (95% C.I.)
Region						
Barisal	-0.981	0.000	0.375 (0.262- 0.538)	-1.544	0.000	0.214 (0.156-0.292)
Chittagong	-0.159	0.312	0.853 (0.626-1.161)	-0.638	0.000	0.528 (0.400-0.697)
Dhaka	-0.506	0.002	0.603 (0.439-0.829)	-0.833	0.000	0.435 (0.330-0.573)
Khulna	-1.006	0.000	0.366 (0.257-0.520)	-1.289	0.000	0.276 (0.205-0.370)
Rajshahi	-0.808	0.000	0.446 (0.315-0.630)	-1.225	0.000	0.294 (0.219-0.395)
Rangpur	-0.733	0.000	0.480 (0.339-0.681)	-1.113	0.000	0.329 (0.245-0.441)
Sylhet ®	.	.	.	.	.	.
Place of residence						
Urban	-0.429	0.000	0.651 (0.538-0.787)	-0.413	0.000	0.661 (0.562-0.778)
Rural ®	.	.	.	.	.	.
Religion						
Muslim	0.504	0.002	1.655 (1.196-2.292)	0.104	0.406	1.109 (0.868-1.418)
Non-muslim ®	.	.	.	.	.	.
Husband's desire for children						
Both want same	-1.206	0.000	0.300 (0.195-0.459)	-0.544	0.010	0.580 (0.383-0.880)
Husband wants more	-1.041	0.000	0.353 (0.212-0.587)	-0.486	0.055	0.615 (0.375-1.010)
Husband wants fewer	-1.172	0.000	0.310 (0.184-0.521)	-0.846	0.001	0.429 (0.260-0.709)
Did not know ®	.	.	.	.	.	.
Frequency of watching television						
Not at all	0.038	0.711	1.038 (0.851-1.267)	0.322	0.000	1.380 (1.163-1.637)
Less than once a week	0.183	0.149	1.201 (0.936-1.540)	0.044	0.701	1.045 (0.835-1.309)
At least once a week ®	.	.	.	.	.	.

Table 6.2: (Continued)

Predictors	Unmet need for contraception			No demand for contraception		
	β	P-value	RRR (95% C.I.)	β	P-value	RRR (95% C.I.)
Visited by FP worker in past 6 months						
Talked	-0.050	0.740	0.951 (0.708-1.279)	0.299	0.015	1.348 (1.061-1.713)
Gave family planning method	-1.556	0.000	0.211 (0.106-0.420)	-1.722	0.000	0.179 (0.097-0.328)
Talked and gave method	-1.572	0.003	0.208 (0.074-0.586)	-1.684	0.000	0.186 (0.073-0.473)
No ®						
Husband's education level						
Illiterate	0.130	0.422	1.139 (0.829-1.564)	0.845	0.000	2.329 (1.758-3.085)
Primary	0.066	0.651	1.068 (0.803-1.422)	0.810	0.000	2.248 (1.747-2.893)
Secondary	0.193	0.159	1.213 (0.927-1.586)	0.633	0.000	1.884 (1.483-2.392)
Higher ®						
Final say on: Child health care						
Respondent	0.304	0.094	1.355 (0.949-1.936)	-0.596	0.001	0.551 (0.387-0.784)
Respondent & husband jointly	-1.076	0.000	0.341 (0.250-0.464)	-0.924	0.000	0.397 (0.311-0.507)
Husband	-0.825	0.000	0.438 (0.312-0.616)	-0.751	0.000	0.472 (0.356-0.625)
Someone else	0.039	0.823	1.040 (0.737-1.467)	-0.373	0.017	0.689 (0.507- 0.935)
Other ®						
Read about FP in newspaper/magazine last few months						
No	0.760	0.019	2.138 (1.132-4.038)	0.342	0.130	1.408 (0.904-2.191)
Yes ®						
Age	-0.011	0.578	0.989 (0.950-1.029)	0.126	0.000	1.134 (1.096-1.173)
Number of living children	-0.011	0.882	0.989 (0.849- 1.151)	-0.970	0.000	0.379 (0.324-0.444)
Number of births in last three years	0.327	0.000	1.387 (1.164-1.653)	-0.086	0.295	0.918 (0.781-1.078)
Intercept	-0.007	0.991		-1.159	0.018	

®: Reference category, RRR: Relative risk ratio

Table 6.3: Adjusted predicted probabilities (percentage) from multinomial logistic regression model for demand for contraception

	Met need	Unmet need	No demand
Region			
Barisal	65.3	33.0	1.7
Chittagong	45.2	51.9	3.0
Dhaka	53.6	43.5	2.9
Khulna	65.5	32.3	2.2
Rajshahi	61.1	36.7	2.2
Rangpur	59.2	38.3	2.4
Sylhet ®	40.5	54.5	5.0
Place of residence			
Urban	51.0	44.8	4.2
Rural ®	40.5	54.5	5.0
Religion			
Muslim	29.7	66.2	4.1
Non-muslim ®	40.5	54.5	5.0
Husband's desire for children			
Both want same	67.8	27.3	4.9
Husband wants more	64.4	30.7	4.9
Husband wants fewer	68.0	28.4	3.6
Did not know ®	40.5	54.5	5.0
Frequency of watching television			
Not at all	38.9	54.4	6.6
Less than once a week	36.4	58.9	4.7
At least once a week ®	40.5	54.5	5.0
Visited by FP worker in past 6 months			
Talked	40.8	52.3	6.8
Gave family planning method	76.5	21.8	1.7
Talked and gave method	76.8	21.5	1.8
No ®	40.5	54.5	5.0
Husband's education level			
Illiterate	35.4	54.4	10.2
Primary	36.8	53.0	10.2
Secondary	34.9	57.0	8.1
Higher ®	40.5	54.5	5.0
Final say on: Child health care			
Respondent	34.6	63.1	2.4
Respondent & husband jointly	66.3	30.4	3.3
Husband	60.7	35.8	3.5
Someone else	40.2	56.3	3.4
Other ®	40.5	54.5	5.0
Read about FP in newspaper/magazine last few months			
No	24.7	71.0	4.3
Yes ®	40.5	54.5	5.0

The probability of having no demand for contraception was increased by 5% points if the husband was illiterate or had primary education and by 3% if he had secondary education. The practice of not watching television at all increased the probability of having no demand for contraception by 2% points.

Talking and giving family planning methods to the woman by the FP workers increased the probability of using contraceptives by 37% and decreased the probability of having unmet need by 34%. The same result was found if the woman were only given FP methods by the FP workers.

Husband-wife joint decision on their child's health care increased the probability of using contraceptives by 26% and decreased the probability of having unmet need by 25%. The probability of having unmet need was decreased by 19% and that of using contraceptive was increased by 21% if husband alone took decision on child's health care. The probability of having unmet need was increased by 16% and that of using contraception was decreased by 15% if the young woman did not read about FP in newspaper/magazine during last few months of the survey.

Chapter Seven

Conclusion

7.1 Discussion

This study assessed the prevalence and determinants of any current contraceptive use and modern contraceptive utilization among currently married, fecund, non-pregnant and non-amenorrhic young women in Bangladesh using Demographic and Health Survey data of 2011. It also explored the predictors of demand for contraception of currently married, fecund and young women. The results of this study showed that contraceptive prevalence was 54.4% among currently married fecund women. When we considered only currently married, fecund, non-pregnant and non-amenorrhic women who were at risk of encountering pregnancy and in actual need of using contraceptive currently then the contraceptive prevalence became 70.6%. We propose the later one as net contraceptive prevalence (NCP) among young fecund women. Thus, we estimated net modern contraceptive prevalence (NMCP), which was 68.6% among young fecund women. Many scholars showed that child spacing was the main reason of using modern contraceptives and need for more children was identified as the main reason for not using modern contraceptive methods (Mohammed et al., 2014; Mostafa and Aynul, 2010; Mekonnen and Worku, 2011; Ibnouf et al., 2007; Beekle and McCabe, 2006; Kebede, 2006). Additionally, young women face many barriers which hinder utilization of family planning services and these include; fear of side effects, cost, and lack of knowledge (Blanc et al., 2009). Modern contraceptive use (MCU) among young women involves a lot of experimentation and is inconsistent (Blanc et al., 2009).

Remarkably, this study showed that women who did not want child any more 45% of them did not use any contraceptive. Evidently, this act put them at risk of encountering unwanted pregnancy. One third of women having two children did not use contraceptive and almost half of the women who had three or more children did not use any method of contraception. Moreover, women who wanted to have another

child after two years out of them more than one-third did not use any contraceptive and were at risk of having mistimed pregnancy.

In spite of having three or more children 11.6% and 2.3% among them respectively desired to have another child after two years and within two years of the survey. These proportions became 20% and 4% respectively among women having two children. Policy makers should pay special attention to these women to lessen their fertility desire.

The highest prevalence of contraceptive use was recorded in young women aged 23-24 years, those who were educated, those who were non-muslim, those who got married before age of 18 years, those who gave birth in early adolescent period, those who had two or more living children, those whose husbands were professional worker, those lived in Barisal division or resided in the urban area. Moreover, Husband-wife joint decisions regarding respondents' own health care, child health care, large household purchases and visiting to family members or relatives were found to be highest for using any contraceptive.

The current study also revealed that there is a noticeable regional variation in using contraceptives in Bangladesh. The contraceptive prevalence was highest (80.5%) in Barisal division, followed by Rangpur (77.4%), Khulna (76.5%) and Rajshahi (76.2%) division. The lowest contraceptive prevalence was found in Sylhet (55.7%) and Chittagong (60%) division. Since the analysis of the proximate determinants by Bongaarts reveals that contraception is the main factor determining the level of fertility, our study is supported by some other studies in consequence such as Islam et al. (2010) identified Sylhet and Chittagong division as the higher fertility regions in Bangladesh because the probability that a woman from the recent cohort in Sylhet or Chittagong who had a third birth will have a fourth birth is nearly twice that of her counterpart in other regions and Khulna and Rajshahi is the lower fertility regions of Bangladesh (Islam et al., 2003). The fertility inhibiting effects of marriage and postpartum infecundability are higher in Barisal division, while the effect of contraception is the highest in Khulna division followed by Rajshahi division (Islam et al., 2004).

Use of modern contraceptive was higher among urban women (72%) than their rural counterpart (67%). Modern contraceptive use was highest (79%) in Barisal division, followed by Rangpur (76%), Khulna (75%), Rajshahi (74.8%) and Dhaka (65%) division. Since 48% and 42% of women respectively did not use modern contraceptives in Sylhet and Chittagong division, they were in vulnerable condition. Evidently, geographical variability was one of the factors associated with contraceptive use. This study found that women in Rangpur, Dhaka, Chittagong and Sylhet division had lower likelihood that is OR= 0.601, OR= 0.492, OR=0.276 and OR=0.251 respectively of using contraceptives compared with women in Barisal division. Geographical variations in contraceptive use have been found to be influenced by a number of factors and among them including community level cultural beliefs like value attached to child (Ntozi, 1995), the presence and quality of reproductive health services (Tsui and Ochoa, 1992), the physical characteristics of the area, and the presence of transport routes (Kragelund et al., 2012; Stephenson et al., 2007). This study support findings from several other studies that showed that women lived in the rural areas were less likely to use contraceptive compared with their urban counterparts (Rahman et al., 2010; Tawiah, 1997; Oni and Carthy, 1986).

The findings of this study showed that number of living children was likely to play a significant role in contraceptive use since the likelihood of using contraceptive increased almost two times with increasing a single number of child [OR: 1.908, $p < 0.0001$]. Non-Muslim women were more likely to use [OR: 1.939, $p < 0.0001$] contraceptives than their Muslim counterparts.. This finding is similar to a previous study which reported that muslim women were less likely to use contraceptive than their non-muslim counterparts (Rahman et al., 2010). Religious affiliation has also been recognized as influential to fertility behavior in other studies (Goldstein, 1995; Zhang, 2008).

Contraceptive use was likely to be increased among those women who wanted another child after two years [OR: 12.188, $p < 0.0001$], those who wanted no more children [OR: 9.553 $p < 0.0001$], those who were undecided about having another child [OR: 2.956, $p < 0.0001$] and those who wanted another child but unsure about timing [OR: 4.443, $p < 0.0001$] compared to those women who wanted another child within

two years. Women who did not know about husbands' desire for children were less likely to use contraceptive [OR: 0.41, $p < 0.0001$] compared to their counterparts who desired equal number of children with their husbands.

Present study suggests that visits of FP workers have a significant effect on current contraceptive use. Because the women who were given family planning method by the FP workers were more likely to use contraceptive [OR: 4.885, $p < 0.0001$] and those who were talked and given family planning method by the FP workers were also more likely to use contraceptive [OR: 4.390, $p = 0.025$] compared to their counterparts who only talked with the FP workers. The likelihood of using contraceptive increased among women whose husbands were professional (non-manual) workers compared to their counterparts whose husbands were manual workers. These findings are supported by another study of Bangladesh (Rahman et al., 2010).

This study elucidates that women who together with their husbands took decision on own health care were more likely to use contraceptive compared to their counterparts who took decision alone about their own health care. Husband-wife joint decision on child health care increased the likelihood of using contraceptives than their counterparts who decided alone on their children's health care. Studies suggested that women's autonomy in decision making on health care should be improved in Asia particularly in South Asian region, and this could be achieved by promoting higher education and gainful employment for women. Women with higher education are more likely able to resist subjugation and to attain greater power in decision-making (Mustafa et al., 2008; Senarath & Gunawardena, 2009).

Other socio-economic variables such as education and household wealth index did not have any significant influence on contraceptive use among young fecund women as would have been expected. This study demonstrates that young women's socio-economic circumstances, such as education and wealth index may not independently be accurate predictors of contraceptive use as also shown in other studies (Oye-Adeniran et al., 2006; Saleem and Bobak, 2005; McNay et al., 2003). The influence of education on contraceptive use may be compromised by considerable diffusion effects in progress which may operate at levels beyond the young women's circumstances. A

similar diffusion effect on contraceptive use by uneducated women was found in India where mass media exposure emerged as an important diffusion channel (McNay et al., 2003). A similar explanation can be said with regard to the lack of association between contraceptive use and household wealth contrary to existing literature (Gakidou and Vayena, 2007).

Use of modern contraceptive was found highest among young women aged 23-24 years, those who were educated, those who were non-muslim, those who experienced child marriage, those who gave birth in early adolescent period, those who had two or more living children, those whose husbands were professional worker, those lived in Barisal division or resided in the urban area and those who jointly took decision with their husbands regarding their own health care, child health care, large household purchases and visiting to family members or relatives.

This study revealed that the likelihood of using modern contraceptive decreased with increasing age [OR: 0.932] and increased with increasing age at marriage [OR: 1.077, $p=0.010$]. There is a need to introduce reproductive and sex education in schools to prepare the young for healthy and responsible living. Reproductive health programme designers should focus on developing negotiation skills in young people. Establishment of youth-friendly service centers in convenient places and providing essential materials would encourage young people to use sexual health services (Regmi et al., 2010). Number of living children played a significant role in contraceptive use since the likelihood of using modern contraceptive was increased [OR: 1.951 $p<0.0001$] with increasing a single number of child This finding is in line with the previous reports from Bangladesh, Tanzania and Pakistan (Mostafa and Aynul, 2010; Lwelamira et al., 2012; Stephenson and Hennink, 2004).

Women in Dhaka, Chittagong, Sylhet and Rangpur division were less likely to use modern contraceptives compared with women in Barisal division. Residing in the rural areas decreased the likelihood [OR: 0.617, $p<0.0001$] of using contraceptives compared with living in the urban areas.

In this study, Women who desired to have children after two years were more likely [OR: 14.004, $p < 0.0001$] to use modern contraceptive compared to those who desired child bearing within two years. This finding is similar to previous study conducted in Bangladesh, Uganda and Pakistan (Asiimwe, et al., 2014; Mostafa and Aynul, 2010; Stephenson and Hennink, 2004). Some of the reasons for this postponed childbearing as stated in other studies are: women's increased participation on the labour market, including their longer education (WHO et al., 2010; Osemwenkha, 2004; Mensch et al., 1998) and career planning (WHO et al., 2010). Furthermore, financial and practical circumstances during their studies may be difficult to combine with establishing a family, and a high educational level and a desire for career development and will increase the likelihood of delaying child birth in women (Mensch et al., 1998; Haberland et al., 2005; Chowdhury and Phillips, 1989). Young women often express a need to avoid pregnancy because they may be too young to care for a baby, they may have to end or postpone their education (United Nations, 2012).

The likelihood of using modern contraceptive decreased [OR: 0.462, $p = 0.002$] among women who did not know about their husbands' desire for having children than those women who desired same number of children as their husbands desired. Women whose husbands were professional (non-manual) workers were more likely to use [OR: 1.701, $p < 0.0001$] modern contraceptive compared to their counterparts whose husbands were manual workers. Non-Muslim women were also more likely to use [OR: 1.628, $p = 0.008$] modern contraceptives than their Muslim counterparts.

This study observed that women who were talked and given family planning method by the FP workers were more likely to use modern contraceptive and who were given family planning method by the FP workers were 5.047 times likely to use modern contraceptive than their counterparts who only talked with the FP workers. Consistently, other studies done in Bangladesh and Cambodia highlighted that outreach activities by FP workers and accessibility to FP related information to married women of reproductive age were significantly associated with use of modern contraceptives ((Rahman et al., 2010; Thou, 2008).

Women who were under collective decision-making with their husbands on their own health care issue were more likely [OR: 2.761, $p < 0.0001$] to use modern contraceptives than those who took decision alone about their own health care. Additionally, when husband-wife jointly took decision on child health care then the likelihood of modern contraceptive use was likely to increase [OR: 2.616, $p < 0.0001$] than those women who decided alone on child's health care. Husband-wife joint decision on visiting family members or relatives increased the likelihood of using modern contraceptives than only wife's decision on visiting family members or relatives. Studies have suggested that greater gender equality may encourage women's autonomy and may facilitate the uptake of contraception because of increased female participation in decision making (Hakim et al., 2003). Moreover, male participation in sharing the responsibility to practice and support family planning is identified as a vital strategy in increasing the contraceptive prevalence rate. In Asian countries reproductive health services are more focused on women and family planning services and information are not targeted towards men (Abdul Manaf & Manaf, 2010; Tey, 2010). Therefore, it is important to neutralize the stereotyping or, "feminization" of the service as a whole (Abdul Manaf & Manaf, 2010). Involving men in family planning program need comprehensive multilevel approach from policy to infrastructure and service delivery (Abdul Manaf & Manaf, 2010).

It was observed from this study that total unmet need for contraception was 16.6% out of which 13.4% for spacing birth and 3.2% for limiting birth among currently married and fecund young women. Total demand for contraception was 71% and proportion of demand satisfied was 77%. The total unmet need for contraception in this study was greater than the national (12%) level (Islam et al., 2013). Thus, policy makers and programme managers should carefully consider the unmet need for family planning of target populations when making decisions about service integration. Coordination or integration of services as complementary way to reach women and reduce missed opportunities to provide family planning services. For example in a study in Turkey providers interviewed clients about their need for family planning after offering routine services, such as children's vaccinations and checkups. They found that 43% of clients had an unmet need for a modern contraceptive method. Referrals to the

family planning unit led about two fifths of them to adopt a method that same day (Cali et al., 2004). Improving the quality of family planning services not only attract new clients but can also help prevent contraceptive discontinuation (Ramchandran, 2007). Therefore, this study suggests that modern family planning services should include counseling, provision of contraceptives and follow-up.

Unmet need for contraception was highest in young fecund women who were adolescent (aged 13-19 years), those who were illiterate, those who were muslim, those who gave 2 births during 3 years preceding the survey, those who gave birth in adolescent period, those who had more than two living children, those whose husbands were manual worker, those who did not know about their husbands' desire for children, those lived in Chittagong division or resided in the rural area, those who belong to the poorest quintile of wealth, those who watched television less than once a week. Moreover, Husband-wife joint decisions regarding respondents' own health care, child health care, large household purchases and visiting to family members or relatives were found to be lowest for having unmet need and highest for having met need for contraception.

This study revealed that the reference respondent has an estimated 40.5% probability of having met need for contraception, 54.5% probability of having unmet need for contraception and 5.0% probability of having no demand for contraception.

The probability of having unmet need was decreased by 23%, 22%, 18%, 17% and 11% when the respondent resided in Khulna, Barisal, Rajshahi, Rangpur and Dhaka divisions, respectively. Significant decrease in the probability of no demand for contraception was found if the woman came from Barisal, Rajshahi, Khulna, Dhaka and Chittagong division. Residing in the urban areas decreased the probability of having unmet need by 10%. Probability of having unmet need was increased by 11% if the woman was Muslim. Studies recommended that family planning programs should reach out to broader audiences, such as religious and community leaders (Roudi-Fahimi et al., 2012).

Talking and giving family planning methods to the woman by the FP workers increased the probability of using contraceptives by 37% and decreased the probability of having unmet need by 34%. Husband-wife joint decision on their child's health care increased the probability of using contraceptives by 26% and decreased the probability of having unmet need by 25%.

The practice of not watching television at all increased the probability of having no demand for contraception. The probability of having unmet need was increased by 16% and that of using contraception was decreased by 15% if the young woman did not read about FP in newspaper/magazine during last few months of the survey. Present study suggests in this regard that mass media communication campaigns can raise awareness of the benefits of family planning and of responsible parenthood. Furthermore, one effective strategy for improving family planning practice and reducing unmet need is reforming service delivery systems and well implemented interventions. Studies have shown that redesigning health system improve family planning behaviors even in areas with widespread poverty, low literacy, and largely rural populations (Nyonator et al., 2007; Phillips et al., 2007). Also sexual health education by trained peer educators can be an effective method of improving the knowledge of young people on the issues of sexual and reproductive health (Price & Knibbs, 2009).

Although spousal communication about FP has been proven as an important indicator of contraceptive use by different studies (Islam, 2008; Link, 2011; Mon & Liabsuetrakul, 2010; Wang & Chiou, 2008; Feyisetan, 2000; Gage, 1995; Oyediran et al., 2002a, 2002b; DeSilva, 1994; Khan et al., 2008 & Rahman et al., 2010) and approval of FP is identified as an influential factor of using contraceptives by several studies (Samandari et al., 2010; Kadir et al., 2003; Kansal et al., 2006), this study could not examine the effect of spousal communication about FP and approval of FP on contraceptive use as the information of these two variables were not collected in the BDHS 2011 survey.

This study observed that there was no significant association between mass media exposure and contraceptive use among young fecund women though several studies found significant relation between access to media and contraceptive use (Kabir & Islam, 2000; Ekani-Besala et al., 1998; Cohen, 2000; Rahman et al., 2010). On the other hand, this study found that mass media exposure especially reading about FP in newspaper/magazine had significant effect on unmet for contraception and frequency of watching television had significant effect on no demand for contraception.

This study concludes that we assessed the net contraceptive prevalence and identified the factors affecting contraceptive use among young fecund women. Hence, age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's education and occupation, region, place of residence (urban-rural), religion, visited by FP workers and decision making power on own health care and child health care are the most influential predictors of current contraceptive use. Additionally, age, age at marriage, number of living children, desire for more children, husband's desire for children, husband's occupation, region, place of residence (urban-rural), religion, visited by FP workers and person who decides on respondent's own health care, child health care and visiting family or relatives are the determinants of using modern contraceptives. Moreover, age, number of births during three years preceding the survey, region, place of residence (urban-rural), religion, husband's desire for children, visited by FP workers, decision making power on child health care and read about FP in newspaper/magazine are the predictors of unmet need for contraception relative to current contraceptive use. Hopefully, this study will contribute to a more balanced perspective on progress towards contraceptive use and will underline the need for greater attention to the issue of unmet need for contraception.

7.2 Recommendations

In the light of above discussions, some policies and programmatic recommendations that could be useful in devising ways to increase the utilization of contraceptives among young women are given below:

Family planning policies should be tailored to address the specific needs of young fecund women. Hence, governmental and non-governmental organizations, health facilities and other stakeholders need to ensure availability, accessibility and sustained advocacy for use of available modern contraceptive methods for currently married fecund couples.

Establishment of youth-friendly service centers in convenient places and providing essential materials would encourage young people to use reproductive health services.

The FP program of the government should attach high priority in addressing the contraceptive needs of these young women by appropriate information, education and communication measures and selective home visits.

Reforming service delivery systems and well implemented interventions can strengthen the ability of FP workers for improving FP practice and reducing unmet need for contraception of young women.

Women who had two or more children and wanted another child after two years or wanted no more children but were not using contraceptive were at risk of having unplanned or unwanted pregnancy. This additional child will put them in serious vulnerable condition as they already had two or more children at this young age. Government and non-government organization should bring these young women under the umbrella of using contraceptives.

Policy makers should give special attention to those women who wanted another child though they already had two or more children to reduce their desired number of children.

Since the total unmet need for contraception of currently married and fecund young women was greater than that of the national level, policy makers and programme managers should carefully consider the unmet need for family planning of target populations when making decisions about service integration.

Besides, reproductive health programmers need to pay special attention to those young women with unmet need for contraception to prevent unwanted and mistimed pregnancies.

Moreover, husband-wife joint decision making power was found to be a significant factor that influences contraceptive use. So, this study suggests that greater gender equality may encourage women's participation in decision making. Policies should be aimed at promoting effective education, at increasing women's productivity at home and at improving their earnings. This will directly empower them, especially within the family, and boost their ability to make decisions.

Additionally, the collaboration between private and public health sectors are needed to ensure that FP supplies and services are available and accessible especially to the rural women.

Last but not least, as a large proportion of young women in Sylhet and Chittagong division did not use contraceptives so the FP professionals and policy makers should pay a special attention to the women with varied geographical locations for improving their contraceptive use status through proper upholding and motivating programs.

References

- Adhikari, R., & Tamang, J. (2009). Premarital sexual behavior among male college students of Kathmandu, Nepal. *BMC Public Health*, 9(1), 241.
- Agampodi, S. B., & Agampodi, T. C. (2008). Adolescents perception of reproductive health care services in Sri Lanka. *BMC health services research*, 8(1), 98.
- Ahmed, S., Qingfeng, L., Liu, L., & Tsui, A. O. (2012). Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*, 380 (9837), 111–125.
- Al Riyami, A., Afifi, M., & Mabry, R. M. (2004). Women's autonomy, education and employment in Oman and their influence on contraceptive use. *Reproductive health matters*, 12(23), 144-154.
- Al-Balushi M. S., Ahmed M. S. Islam, M. M. & Khan, M. H. R. (2015). Determinants of contraceptive use in Oman. *Far East Journal of Theoretical Statistics*, 50 (1), 51-64.
- Alio, A.P., Daley, E.M., Nana, P.N., Duan, J., & Salihu, H.M. (2009). Intimate partner violence and contraceptive use among women in Sub-Saharan Africa. *International Journal of Gynecology & Obstetrics*, 107, 35–38.
- Asian Development Bank. (2012). Key Indicators for Asia and the Pacific 2012: Green Urbanization in Asia, special chapter.
- Asiimwe, J.B., Ndugga, P., Mushomi, J. and Ntozi, J.P.M. (2014). Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. *BMC Public Health*, 14, 926
- Audu, B., Yahya, S., Geidam, A., Abdussalam, H., Takai, I, Kyari O (2008). Polygamy and the use of contraceptive. *International Journal of Gynecology & Obstetrics*, 101, 88– 92.
- Bangladesh Demographics profile 2014, index mundi, www.indexmundi.com, date of browse: 27/12/2014.
- Bankole, A., & Singh, S. (1998). Couples' fertility and contraceptive decision-making in develop-ing countries: Hearing the man's voice. *International Family Planning Perspectives*, 24, 15-24.
- Bearinger, L.H., Sieving, R.E., Ferguson, J., & Sharma, V. (2007). Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention, and potential. *Lancet*, 369, 1220-1231.
- Becker, S. (1996). Couples and reproductive health: a review of couples studies. *Studies in Family Planning*, 27(6), 291-306.

References

- Beekle, A., & McCabe, C. (2006). Awareness and determinants of family planning practice in Jimma, Ethiopia. *International Nursing Review*, 53, 269–276.
- Bennett, L., Dahal, D. R., Govindasamy, P., & Measure, D. (2008). Caste, Ethnic, and Regional Identity in Nepal: Further Analysis of the 2006 Nepal Demographic and Health Survey: Population Division, Ministry of Health and Population, Government of Nepal.
- Berenson, A.B., Wiemann, C.M., & McCombs, S.L. (1997). Adverse perinatal outcomes in young adolescents. *The Journal of reproductive medicine*, 42(9), 559–564.
- Bernstein, S., & Edouard, L. (2007). Targeting access to reproductive health: giving contraception more prominence and using indicators to monitor progress. *Reproductive health matters*, 15(29), 186-191.
- Biddlecom, A. E., Casterline, J. B., & Perez, A. E. (1996). Men's and women's views of contraception. Manila, the Phillipines: Population Council
- Blanc, A., Tsui, A.O., Croft, T.N, & Trevitt, J.L. (2009). Patterns and trends in adolescent contraceptive use and discontinuation in developing countries and comparison with adult women. *International Perspectives on Sexual and Reproductive Health*, 35(2), 63–71.
- Bongaarts, J. (1982). The fertility inhibiting effects of the intermediate fertility variables. *Studies in Family Planning*, 13(6/7), 179–189.
- Bongaarts, J. (2011). Can Family Planning Programs Reduce High Desired Family Size in Sub-Saharan Africa? *International Perspectives on Sexual and Reproductive Health*, 37(4), 209-216.
- Brown, H.L., Fan, Y.D., & Gonsoulin, W.J. (1991). Obstetric complications in young teenagers. *Southern medical journal*, 84, 46–48.
- Cali, S., Kalaca, S., & Sarikaya, O. (2004). Minimizing missed opportunities: an approach to decrease the unmet need for family planning. *European J. of Contraception and Reproductive Healthcare*, 9(4), 285-289.
- Canning, D., & Schultz, T. P. (2012). The economic consequences of reproductive health and family planning. *Lancet*, 380(9837), 165–71.
- Chan, Y. H. (2004). Biostatistics 202: logistic regression analysis. *Singapore Medical Journal*, 45, 149–153.
- Chapagain, M. (2006). Conjugal Power Relations and Couples' Participation in Reproductive Health Decision-Making Exploring the Links in Nepal. *Gender, Technology and Development*, 10(2), 159-189.

References

- Chatterjee, S., & Hadi, A. S. (2006). *Regression analysis by example*, 4th edn. John Wiley, New York;
- Chaudhury, R.H. (1978). Married women in non-agricultural occupations in a metropolitan urban area of Bangladesh. *Population Studies*, 32(2): 261-273.
- Chavada, M., & Bhagyalaxmi, A. (2009). Effect of socio-cultural factors on the preference for the sex of children by women in Ahmedabad district. *Health and Population: Perspectives and Issues*, 32(4), 184-189.
- Chavoshi, M.H., Abbasi-Shavazi, M.J., & McDonald, P. (2004). Women's autonomy and reproductive behavior in Iran. Paper presented at the 12th Biennial Conference of the Australian Population Conference, Canberra.
- Chowdhury, A., & Phillips, J. (1989). Predicting contraceptive use in Bangladesh: a logistic regression analysis. *Journal of biosocial science*, 21(2):161–168.
- Cleland, J., Ali, M.M., & Shah, I. (2006). Trends in protective behaviour among single versus married young women in Sub-Saharan Africa: the big picture. *Reproductive Health Matters*, 14(28):17 – 22.
- Cleland, J., Bernstein, S., Ezeh, A., Faundes, A., Glasier, A., & Innis, J. (2006). Family planning: the unfinished agenda. *Lancet*; 368(9549):1810-1827.
- Cleland, J., Conde-Agudelo, A., Peterson, H., Ross, J., & Tsui, A. (2012). Contraception and health. *Lancet*, 380 (9837):149–156.
- Cleland, J., Kamal, N., & Sloggett A. (1996). Links between fertility regulation and the schooling and autonomy of women in Bangladesh. *Girls' Schooling, Women' Autonomy and Fertility Change in South Asia*, New Delhi: *Sage Publications*, 205-217.
- Cleland, J., Phillips, J.F., Amin, S., & Kamal, G.M. (1994). The determinants of reproductive change in Bangladesh: success in a challenging environment. *World Bank Regional and Sectoral Studies*. Washington, DC: The World Bank.
- Cohen, B. (2000). Family planning programs, socioeconomic characteristics, and contraceptive use in Malawi. *World Development*, 28(5):843– 860.
- Conde-Agudelo, A., Belizan, J.M., & Lammers, C. (2005). Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. *American journal of obstetrics and gynecology*, 192:342 – 349.
- Cowden, A.J., & Funkhouser, E. (2001). Adolescent pregnancy, infant mortality, and source of payment for birth: Alabama residential live births, 1991 –1994. *Journal of Adolescent Health*, 29: 37 –45.

References

- D' Angelo, D.V., Gilbert, B.C., Rochat, R.W., Santelli, J.S., & Herold, J.M. (2004). Differences between mistimed and unwanted pregnancies among women who have births. *Perspectives on sexual and reproductive health*, 36(5):192–197.
- Darney, P.D. (2011). A hormonal contraception update 2010: a decade of innovation & transformation. *American journal of obstetrics and gynecology*; 205: S1– S24.
- Darroch, J. E., Sedgh, G., & Ball, H. (2011). *Contraceptive Technologies: Responding to women's needs*. Guttmacher Institute, New York.
- Darroch, J.E. (2013). Trends in contraceptive use. *Contraception*, 87: 259–263.
- DeSilva, W.I. (1994). Husband-wife communication and contraceptive behavior in Sri Lanka. *Journal of Family Welfare*, 40(2), 1-13.
- Donati, S., Hamam, R., & Medda, E. (2000). Family planning KAP survey in Gaza. *Social science & medicine*, 50(6), 841-849.
- Drennan, M. (1998). New perspectives on men's participation. *Population reports. Series J, Family planning programs*(46), 1-35
- Edmeades, J., Lee Rife, S. M., & Malhotra, A. (2010). Women and Reproductive Control: The Nexus between Abortion and Contraceptive Use in Madhya Pradesh, India. *Studies in Family Planning*; 41(2), 75-88.
- Edmeades, J., Pande, R. P., Falle, T., & Krishnan, S. (2012). Son preference and sterilisation use among young married women in two slums in Bengaluru city, India. *Global public health*; 6(4), 407-420.
- Ekani-Besala, M., Carre, N., Calvez, T., & Thonneau P. (1998). Prevalence and determinants of current contraceptive method use in a Palm Oil company in Cameroon. *Contraception*, 58:29–34.
- Feyisetan, B.J. (2000). Spousal communication and contraceptive use among the Yoruba of Nigeria. *Population Research and Policy Review*, 19(1), 29-45.
- Filmer, D., Friedman, J., & Schady, N. (2008). Development, modernization, and son preference in fertility decisions. *World Bank Policy Research Working Paper* (4716).
- Finer, L.B., & Henshaw, S.K. (2006). Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on sexual and reproductive health*, 38 (2): 90–96.
- Fraser, A. M., Brockert, J. E., & Ward, R. H. (1995). Association of young maternal age with adverse reproductive outcomes. *New England journal of medicine*, 332(17), 1113-1118.

References

- Furuta, M., & Salway, S. (2006). Women's position within the household as a determinant of maternal health care use in Nepal. *International family planning perspectives*, 17-27. <http://dx.doi.org/10.1363/3201706>
- Gage, A.J. (1995). Women's socio-economic position, contraceptive use and fertility preference in Togo. *Studies in Family Planning*, 26(5), 264-277.
- Gakidou, E., & Vayena, E. (2007). Use of modern contraception by the poor is falling behind. *PLoS Med*, 4(2):e31. doi:10.1371/Journal.pmed.0040031.
- Gilliam, M. L., Nenstadt, A., Whitaker, A., & Kozloski, M. (2011). Familial, cultural and psychosocial influences of use of effective methods of contraception among Mexican-American adolescents and young adults. *Journal of pediatric and adolescent gynecology*, 24: 79 – 84.
- Glanz, K., Rimer, B. K., & Viswanath, K. (2008). Health behavior and health education: theory, research, and practice: Jossey-Bass, John Wiley & Sons.
- Goldstein, H. (1995). Multilevel statistical models. 2nd edition. London, England: Edward Arnold.
- Gupta, S. D., Mukherjee, S., & Singh, S. (2008). Knot ready: lessons from India on delaying marriage for girls. Washington DC: International Center for Research on Women.
- Guttmacher Institute (2010). Facts on Barriers to Contraceptive Use in the Philippines.; www.guttmacher.org
- Guttmacher Institute (2010). Facts on sexual and reproductive health of adolescent women in the developing world. In Brief. New York.
- Guttmacher Institute (2012). Facts on Abortion in Asia. www.guttmacher.org
- Haberland, N., Chong, E.L., Bracken, H.J., & Parker, C. (2005). Early marriage and adolescent girls, YouthLens on Reproductive Health and HIV/AIDS. *YouthNet* (15), 99-119.
- Hakim, A., Salway, S., & Mumtaz, Z. (2003). Women's autonomy and uptake of contraception in Pakistan. *Asia Pacific Population Journal*, 18(1), 63-82.
- Hindin, M. J. (2000). Women's autonomy, women's status and fertility-related behaviour in Zimbabwe. *Population Research and Policy Review*, 19(3): 255–282.
- Horon, I.L., Strobino, D.M., & MacDonald, H.M. (1983). Birth weights among infants born to adolescent and young adult women. *American journal of obstetrics and gynecology*, 146(4), 444-449.

References

- Ibnouf, A., Van Den Born, H., & Maarse, J. (2007). Utilization of family planning services by married Sudanese women of reproductive age. *East Mediterr Health J*, 13(6), 1372–1381.
- Islam, M.A., Padmadas, S.S. & Smith, P.W.F. (2006). Men's approval of family planning in bangladesh. *Journal of Biosocial Science*, 38 (2), 247–259
- Islam, M.A., Padmadas, S.S. & Smith, P.W.F. (2010). Understanding family planning communication between husbands and wives: a multilevel analysis of wives' responses from the Bangladesh DHS, *Genus*, 66 (1), 1-15
- Islam, M.A. (2008). Male involvement in reproductive health in Bangladesh: A multilevel analysis. VDM Publishing House Ltd, Germany.
- Islam, M.M, Islam, M.A., and Chakroborty, N. (2004). Fertility transition in bangladesh: understanding the role of the proximate determinants. *Journal of Biosocial Science*, 36(03), 351-369.
- Islam, M.M. & Rashid, M. (2004). Determinants of unintended pregnancy among ever-married women in Bangladesh. *The Journal of Family Welfare*, 50 (2), 40-47
- Islam, M.M., Rob, U., and Chakroborty, N.(2003). Regional variations in fertility in Bangladesh. *Genus*, 59(3/4), 103-145
- Islam, R., Islam, A.Z., & Rahman, M. (2013). Unmet need for family planning: experience from urban and rural areas in Bangladesh. *Public Health Research*, 3(3), 37-42.
- Islam, S., Islam, M.A., & Padmadas, S.S. (2010). High fertility regions in bangladesh: a marriage cohort analysis. *Journal of Biosocial Science*, 42(06), 705-719
- Jain, S., & Kurz, K. (2007). New insights on preventing child marriage: a global analysis of factors and programs. Washington DC, *International Center for Research on Women*.
- Jayaraman, A., Mishra, V., & Arnold, F. (2009). The relationship of family size and composition to fertility desires, contraceptive adoption and method choice in South Asia. *International Perspectives on Sexual and Reproductive Health*, 29-38.
- Jha, P., Kumar, R., Vasa, P., Dhingra, N., Thiruchelvam, D., & Moineddin, R. (2006). Low male-to-female sex ratio of children born in India: national survey of 1Â· 1 million households. *Lancet*, 367(9506), 211-218.
- Jha, S. M., Chaurasia, R., & Jha, B. (2010). Knowledge about condoms among adolescents in Kathmandu Valley. *Journal of Nepal Pediatric Society*, 30(1), 18-22.

References

- Joesoef, R. M., Baughman, A. L., & Utoma, B. (1988). Husband's approval of contraceptive use in metropolitan Indonesia: Program implications. *Studies in Family Planning*, 19, 162-168.
- Johansson, A., Nga, T. N., Huy, T. Q., Dat, D. D., & Holmgren, K. (1998). Husbands' involvement in abortion in Vietnam. *Studies in Family Planning*, 29, 1-13.
- Johnson, K., Bradley, S. E. K., & MEASURE, D. (2008). Trends in Economic Differentials in Population and Health Outcomes: Further Analysis of the 2006 Nepal Demographic and Health Survey: Population Division, Ministry of Health and Population, Government of Nepal.
- Kabir, M. & Islam, M. A. (2000). The impact of mass media family planning programmes on current use of contraception in urban Bangladesh. *Journal of Biosocial Science*, 32(03), 411-419
- Kadir, M. M., Fikree, F. F., Khan, A., & Sajan, F. (2003). Do mothers-in-law matter? Family dynamics and fertility decision-making in urban squatter settlements of Karachi, Pakistan. *Journal of biosocial science*, 35(4), 545-558.
- Kamal, N. (2000). The influence of husbands on contraceptive use by Bangladeshi women. *Health Policy and Planning*, 15(1), 43-51.
- Kansal, A., Kandpal, S., & Mishra, P. (2006). Reasons for not practicing contraception in a rural population of Dehradun District. *Journal of Communicable Diseases*, 38(1), 97.
- Kebede, Y. (2006). Contraceptive prevalence in dembia district, northwest Ethiopia. *Ethiopian Journal of health development*, 20(1), 32-38.
- Khan, M. E., Sebastian, M. P., Sharma, U., Idnani, R., Kumari, K., Maheshwari, B., & Ashraf, S. (2008). Promoting healthy timing and spacing of births in India through a community-based approach. Population Council. New Delhi, India.
- Khan, M. H., Humayun Shah, S., Saba, N., Anwar, S., Ahmad, I., Babar, K. S., & Gul, B. (2007). Study of contraceptive user women in Di Khan, Pakistan. *Biomedica*, 23, 24-26.
- Kragelund, K.N., Malue, S.N., Butler, R., & Lazarus, J.V. (2012). Key barriers to the use of modern contraceptives among women in Albania: a qualitative study. *Reproductive Health Matters*, 20(40), 158 –165.
- Lasee, A., & Becker, S. (1997). Husband-wife communication about family planning and contra-ceptive use in Kenya. *International Family Planning Perspectives*, 23, 15-20.
- Leone, T., Matthews, Z., & Zuanna, G. D. (2003). Impact and determinants of sex preference in Nepal. *International family planning perspectives*, 69-75.

References

- Link, C. F. (2011). Spousal Communication and Contraceptive Use in Rural Nepal: An Event History Analysis. *Studies in Family Planning*, 42(2), 83-92.
- Lopez, L.M., Hiller, J.E., & Grimes, D.A. (2010). Education for contraceptive use by women after childbirth. *Cochrane Database of Systematic Reviews*.
- Lwelamira, J., Mnyamagola, G., & Msaki, M. M. (2012) Knowledge, attitude and practice (KAP) towards modern contraceptives among married women of reproductive Age in mpwapwa district, central Tanzania. *Curr Res J Soc Sci*, 4(3), 235–245.
- Malhotra, A., Warner, A., McGonagle, A., & Lee-Rife, S. (2011). Solutions to End Child Marriage What the Evidence Shows. *International Center for Research on Women*. Retrieved from <http://www.icrw.org/files/publications/Solutions-to-End-Child-Marriage.pdf>
- Malwenna, L.I., Jayawardana, P.L., & Balasuriya, A. (2012). Effectiveness of a community based health educational intervention in reducing unmet for modern methods of family planning among ever married reproductive age women in the Kalutara district Siri Lanka. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 4(6), 1097– 1114.
- Manaf, A. R., & Manaf, M. (2010). Male participation and sharing of responsibility in strengthening family planning activities in Malaysia. *Malaysian Journal of Public Health Medicine*, 10(1), 23-27.
- Marafie, N., Ball, D. E., & Abahussain, E. (2007). Awareness of hormonal emergency contraception among married women in a Kuwaiti family social network. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 130(2), 216-222. <http://dx.doi.org/10.1016/j.ejogrb.2006.05.023>
- Mathur, S., Greene, M., & Malhotra, A. (2003). Too young to wed: the lives, rights and health of young married girls: *International Center for Research on Women*.
- Mathur, S., Mehta, M., & Malhotra, A. (2004). Youth Reproductive Health in Nepal: Is Participation the Answer? Washington DC, *International Center for Research on Women and Engender Health*.
- Mathur, S., Mehta, M., & Malhotra, A. (2004). Youth reproductive health in Nepal: Is participation the answer?: *International Center for Research on Women*.
- McCleary-Sills, J., McGonagle, A., & Malhotra, A. (2012). Women’s demand for reproductive control. Understanding and addressing gender barriers. *International Center for Research on Women*.
- McCormick, M.C., Shapiro, S., & Starfield, B. (1984). High-risk young mothers: infant mortality and morbidity in four areas in the United States, 1973–1978. *American journal of public health*, 74:18–23.

References

- McIntyre, P. (2006). Married adolescents: no place of safety. Geneva: World Health Organization.
- McNay, K., Arokiasamy, P., & Cassen, R.H. (2003). Why are uneducated women in India using contraception? A multilevel analysis. *Population Studies*, 57(1):21–40.
- Mekonnen, W., & Worku, A. (2011). Determinants of low family planning use and high unmet need in butajira district. South central Ethiopia. *Reprod Health*, 8:37.
- Menard S. (2002) Applied logistic regression analysis, 2nd edn. *Sage Publications*, Thousand Oaks, CA.
- Mensch, B., Bruce, J., & Greene, M. (1998). The Uncharted Passage: Girls' Adolescence in the Developing World. New York: Population Council.
- Mills, S., Bos, E., & Suzuki, E. (2010). Unmet need for contraception. Human Development Network, World Bank.
- Ministry of Health and Family welfare (2012). Health related millennium development goals. *Health bulletin* 2012. Dhaka: management information system, Directorate General of Health System, Ministry of Health and Family welfare Government of the People's Republic of Bangladesh.
- Mir, A. S., & Malik, R. (2010). Emergency contraceptive pills: Exploring the knowledge and attitudes of community health workers in a developing Muslim country. *North American Journal of Medical Sciences*, 2(8), 359-364.
- Mishra, M. (2011). Ethnic Disparities in Contraceptive Use and its Impact on Family Planning Program in Nepal. *Nepal Journal of Obstetrics and Gynaecology*, 6(2), 14-19.
- Mishra, V. K. (2004). Muslim/non-muslim differentials in fertility and family planning in India.
- Mohammed, A., Woldeyohannes, D., Feleke, A. and Megabiaw, B. (2014). Determinants of modern contraceptive utilization among married women of reproductive age group in North Shoa Zone, Amhara Region, Ethiopia. *Reproductive Health*, 11:13
- Mon, M. M., & Liabsuetrakul, T. (2010). Predictors of Contraceptive Use among Married Youths and Their Husbands in a Rural Area of Myanmar. *Asia-Pacific Journal of Public Health*.
- Morgan, S. P., Stash, S., Smith, H. L., & Mason, K. O. (2002). Muslim and non Muslim differences in female autonomy and fertility: evidence from four Asian countries. *Population and Development Review*, 28(3), 515-537.

References

- Mostafa, K., & Aynul, I. (2010). Contraceptive Use: socio economic correlates and method choices in rural Bangladesh. *Asia-Pacific Journal of Public Health*, 22(4): 436–450.
- Mustafa, R., Afreen, U., & Hashmi, H. A. (2008). Contraceptive knowledge, attitude and practice among rural women. *J Coll Physicians Surg Pak*, 18(9), 542-545.
- Nagase, T., Kunii, O., Wakai, S., & Khaleel, A. (2003). Obstacles to modern contraceptive use among married women in Southern Urban Maldives. *Contraception*, 68, 125 – 134.
- Nanda, P., Achyut, P., Mishra, A., & Calhoun, L. (2011). Measurement, Learning & Evaluation of the Urban Health Initiative: Uttar Pradesh, India, Baseline Survey 2010.
- National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International (2013). Bangladesh demographic and health survey 2011. Dhaka, Bangladesh and Calverton, Maryland, USA.
- National Institute of Population Research and Training (1994). Bangladesh demographic and health survey, 1993–1994. Dhaka, Bangladesh: National Institute of Population Research and Training Calverton: Macro International Inc.
- National Institute of Population Research and Training (1997). Bangladesh demographic and health survey 1996– 1997, Dhaka: national institute of population research and training. Dhaka and Calverton, Maryland: National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International Inc, 50–56.
- National Institute of Population Research and Training (2001). Bangladesh demographic and health survey 1999–2000, Dhaka: national institute of population research and training. Dhaka, Bangladesh and Calverton, Maryland [USA]: National Institute of Population Research and Training, Mitra and Associates, and ORC Macro.
- National Institute of Population Research and Training (2005). Bangladesh demographic and health survey 2004, Dhaka, Bangladesh and Calverton, Maryland (USA): NIPORT, mitra and associates, and ORC macro. Dhaka, Bangladesh and Calverton, Maryland [USA]: National Institute of Population Research and Training, Mitra and Associates, and ORC Macro.
- National Institute of Population Research and Training, MEASURE Evaluation, International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) (2012). Bangladesh maternal mortality and health care survey 2010. Dhaka.
- Nguyen, H. N., Liamputtong, P., & Murphy, G. (2006). Knowledge of contraceptives and sexually transmitted diseases and contraceptive practices amongst young people in Ho Chi Minh City, Vietnam. *Health care for women international*, 27(5), 399-417. <http://dx.doi.org/10.1080/07399330600629542>
- Ntozi, J.P.M. (1995). High Fertility in Rural Uganda. Kampala: Fountain Publishers.

References

- Nyonator, F. K., Akosa, A. B., Awoonor-Williams, J. K., Phillips, J. F., & Jones, T. C. (2007). Scaling up experimental project success with the Community-based Health Planning and Services initiative in Ghana. *Scaling up Health Service Delivery: From Pilot Innovations to Policies and Programmes*. Geneva: WHO, 89-112.
- Odimegwu, C. O. (1999). Family planning and use in Nigeria: a factor analysis. *Int Fam Plan Perspec*, 25 (2), 86–91.
- Oni, G.A., & Carthy, J.M. (1986). Use of contraceptive for birth spacing in Nigerian City. *Studies in Family Planning*, 17(4), 163-171.
- Oringanje, C., Meremikwu, M.M., Eko, H., et al. (2009). Interventions for preventing unintended pregnancies among adolescents. *Cochrane Database of Systematic Reviews*.
- Osemwenkha, S. (2004). Gender issues in contraceptive use among educated women in Edo state, Nigeria. *Afr Health Sci*, 4(1), 40–9.
- Oye-Adeniran, B.A., Adewole, I.F., Umoh, A.V., Oladokun, A., Ghadegesin, A., Ekanem, E.E., Yusuf, B., Odeyemi, K.A., Iwere, N., & Mahmoud, P. (2006). Community-based study of contraceptive behaviour in Nigeria . *Afr J Reprod Health*, 10(2), 90–104.
- Oyediran, K.A., Ishola, G.P. & Feyisetan, B.J. (2002a). Factors affecting ever married men's contraceptive knowledge and use in Nigeria. *Journal of Biosocial Science*, 34(4), 497-510.
- Oyediran, K.A., Isiugo-Abanihe, U.C. (2002b). Husband-wife communication and couple's fertility desires among the Yoruba of Nigeria. *African Population Studies*, 17(2), 61-80.
- Pande, R. (2006). Improving the Reproductive Health of Married and Unmarried Youth in India: Evidence of Effectiveness and Costs from Community-based Interventions, Final Report of the Adolescent Reproductive Health Program in India: ICRW.
- Patton, G.C., Coffey, C., Sawyer, S.M., Viner, R.M., Haller, D.M., Bose, K., Vos, T., Ferguson, J., & Mathers, C.D. (2009). Global patterns of mortality in young people: a systematic analysis of population health data. *Lancet*, 374, 881– 892.
- Phillips, J. F., Nyonator, F. K., Jones, T. C., & Ravikumar, S. (2007). Evidence-based scaling up of health and family planning service innovations in Bangladesh and Ghana. *Scaling up Health Service Delivery: From Pilot Innovations to Policies and Programmes*. Geneva: WHO, 113-134.
- Phipps, M. G., & Sowers, M. F. (2002) Defining early adolescent childbearing. *American Journal of Public Health* 92(1), 125-128

References

- Pierce, E., & Shaver, T. (2003). CARE International in Tajikistan: Final Evaluation Report-Varzob Reproductive Health Improvement Project. USAID & CARE.
- Plan International Bangladesh, The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), Associates for Community and Population Research (2013). Child marriage in Bangladesh. Findings from a national survey.
- Population Division, UN (2009). World Population Prospects, 2008 Revision. New York.
- Population Reference Bureau (2014). World population data sheet.
- Price, N., & Knibbs, S. (2009). How Effective is Peer Education in Addressing Young People's Sexual and Reproductive Health Needs in Developing Countries? *Children & Society*, 23(4), 291-302.
- Raheel, H., Karim, M. S., Saleem, S., & Bharwani, S. (2012). Knowledge, Attitudes and Practices of Contraception among Afghan Refugee Women in Pakistan: A Cross-Sectional Study. *Plos one*, 7(11), e48760. <http://dx.doi.org/10.1371/journal.pone.0048760>
- Rahman, M. M., Islam, M. N., & Islam, M. M (1996). Users of traditional methods of contraception in Bangladesh:1981-1991. *Journal of Biosocial Science*, 28, 257-264
- Rahman, M., & Daniel, E. (2010). A Reproductive Health Communication Model That Helps Improve Young Women's Reproductive Life and Reduce Population Growth: The Case of PRACHAR from Bihar, India. *Pathfinder*.
- Rahman, M.M., Islam, A.Z., Islam, M.R. (2010). Rural-urban differentials of knowledge and practice of contraception in Bangladesh. *Journal of Population and Social Studies*, 18(2), 87-110.
- Ramchandran, D. (2007). Developing a continuing-client strategy. *Population reports. Series J: Family planning programs*, (55), 1.
- Regmi, P. R., van Teijlingen, E., Simkhada, P., & Acharya, D. R. (2010). Barriers to sexual health services for young people in Nepal. *Journal of health, population, and nutrition*, 28(6), 619-627.
- Reichman, N.E., & Pagnini, D.L. (1997). Maternal age and birth outcomes: data from New Jersey. *Fam Plann Per-spec*, 29, 268-272.
- Roberts, A. B., Oyun, C., Batnasan, E., & Laing, L. (2005). Exploring the social and cultural context of sexual health for young people in Mongolia: implications for health promotion. *Social science & medicine*, 60(7), 1487-1498.
- Roberts, E. (2008). Breaking the Contraceptive Barrier: Techniques for Effective Contraceptive Consultations. Association of Reproductive Health Professionals.

References

- Robey, B., Ross, J. & Bhushan, I. (1996) Meeting unmet need: New strategies in Population Reports, Johns Hopkins school of Public Health, Population Information Programme, Baltimore, 43-48
- Roudi-Fahimi, F., Monem, A. A., Ashford, L., & El-Adawy, M. (2012). Women's need for family planning in Arab countries. United Nations Population Fund. Population Reference Bureau. July 2012
- Ruiz-Munoz, D., Perez, G., Gotsens, M., & Rodriguez-Sanz, M. (2012). Regional inequalities in the use of contraception in Spain: a multilevel approach. *Health Place*, 18, 408 – 414.
- Sahin, H. A., & Sahin, H. G. (2003). Reasons for not using family planning methods in Eastern Turkey. *European J. of Contraception and Reproductive Healthcare*, 8(1), 11-16.
- Sajid, A., & Malik, S. (2010). Knowledge, Attitude and Practice of Contraception Among Multiparous Women at Lady Aitchison Hospital, Lahore. *Annals of King Edward Medical University*, 16(4).
- Saleem, S., & Bobak, M. (2005). Women's autonomy, education and contraceptive use in Pakistan: a national study. *Reproductive Health*, 2(1), 8.
- Salway, S. (1994). How attitudes toward family planning and discussion between wives and hus-bands affect contraceptive use in Ghana. *International Family Planning Perspectives*, 20, 44-47.
- Samandari, G., Speizer, I. S., & O'Connell, K. (2010). The role of social support and parity on contraceptive use in Cambodia. *International Perspectives on Sexual and Reproductive Health*, 122-131. <http://dx.doi.org/10.1363/3612210>
- Saxena, S., Oakeshott, P., & Hilton, S. (2002). Contraceptive use among South Asian women attending general practices in southwest London. *The British Journal of General Practice*, 52(478), 392.
- Sedgh, G., Hussain, R., Bankole, A., & Singh, S. (2007). Women with an unmet need for contraception in developing countries and their reasons for not using a method: Alan Guttmacher Institute.
- Senarath, U., & Gunawardena, N. S. (2009). Women's autonomy in decision making for health care in south Asia. *Asia-Pacific Journal of Public Health*, 21(2), 137-143. <http://dx.doi.org/10.1177/1010539509331590>
- Sevil, U., Yanikkerem, E., & Hatipoglu, S. (2006). A survey of knowledge, attitudes and practices relating to EC among health workers in Manisa, Turkey. *Midwifery*, 22(1), 66-77. <http://dx.doi.org/10.1016/j.midw.2005.03.004>
- Shah, I., & Ahman, E. (2009). Unsafe abortion: global and regional incidence, trends, consequences, and challenges. *J Obstet Gynaecol Can*, 31(12), 1149-1158.

References

- Shah, N. A., Nisar, N., & Qadri, M. H. (2008). Awareness and pattern of utilizing family planning services among women attending Urban Health Care Center Azizabad Sukkur. *Pak J Med Sci* July-September, 24(4), 550-555.
- Sharma, S. K., Ghimire, D. R., & Pratap, N. (2011). Ethnic differentials of the impact of Family Planning Program on contraceptive use in Nepal. *Demographic Research*, 25(27), 837-868. <http://dx.doi.org/10.4054/DemRes.2011.25.27>
- Shoveller, J., Chabot, C., Soon, J. A., & Levine, M. (2007). Identifying barriers to ECuse among young women from various sociocultural groups in British Columbia, Canada. *Perspectives on Sexual and Reproductive Health*, 39(1), 13-20. <http://dx.doi.org/10.1363/3901307>
- Singh, S. (1998). Adolescent childbearing in developing countries: a global review. *Studies in Family Planning*. 29, 117 –136. doi:10.2307/172154
- Singh, S., & Darroch, J. E. (2012). Adding it up: costs and benefits of contraceptive services. Estimates for 2012. New York, Guttmacher Institute and UNFPA.
- Singh, S., Darroch, J.E., Ashford, L.S., & Vlassoff, M. (2009). Adding it up: The costs and benefits of investing in family planning and maternal and newborn health. Guttmacher Institute and United Nations Population Fund. New York.
- Skouby, S.O. (2004). Contraceptive use and behavior in the 21st century: a comprehensive study across five European countries. *Eur J Contracept Reprod Health Care*, 9, 57– 68
- Srikanthan, A., & Reid, R. L. (2008). Religious and cultural influences on contraception. *JOGC-TORONTO-*, 30(2), 129.
- Stephenson, R., & Hennink, M. (2004). Barriers to family planning service use among the urban poor in Pakistan, Opportunities and choices working paper number 2 February. [<http://www.socs.tats.soton.ac.uk/choices/Pakistan%20barriers%20WP2.PDF>]
- Stephenson, R., Baschieri, A., Clements, S., Hennink, M., & Madise, N. (2007). Contextual Influences on Modern Contraceptive Use in Sub-Saharan Africa. *American Journal of Public Health*, 97, 1233 –1240.
- Storey, D. (2008). Communication Partnership for Family Health Midterm Survey Main Report. Johns Hopkins University Bloomberg School of Public Health Center for Communications Programs, Baltimore, MD and the Jordan health Communication Partnership, Amman, Jordan.
- Sundby, J. (2006). Young people's sexual and reproductive health rights. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 20(3), 355-368. <http://dx.doi.org/10.1016/j.bpobgyn.2005.12.004>

References

- Swann, C., Bowe, K., Kosmin, M., & McCormick, G. (2003). Teenage pregnancy and parenthood: a review of reviews. Evidence briefing: Health Development Agency London.
- Syahlul, D. E., & Amir, L. H. (2005). Do Indonesian medical practitioners approve the availability of EC over-the-counter? A survey of general practitioners and obstetricians in Jakarta. *BMC women's health*, 5(1), 3.
- Tawiah, E.O. (1997). Factors affecting contraceptive use in Ghana. *Journal of Biosocial Science*, 29, 141–149.
- Tey, N. P., Hosseini, H., & Mie, N. Y. (2010). The role of men in contraceptive use in Indonesia. New Delhi, India.
- The daily star (2010). Child deaths halved. UN award for Bangladesh. *The daily star*, Sept 21, 2010. <http://www.thedailystar.net/>
- Thou, M.C. (2008). Factors influencing modern contraceptive use among currently married women in Cambodia, Degree of masters of arts. Mahidol University: Institute for Population & Social Research.
- Tsui, A.O., & Ochoa, L.H. (1992). The Role of Family Planning Programs as a Fertility Determinant. In Service Proximity as a Determinant of Contraceptive Behavior: Evidence from Cross-National Studies of Survey Data. Edited by J.P. J.Ross. London: Oxford University Press.
- UNESCO (2011). Global Education Digest: Comparing Education Statistics across the World. Montreal, Canada: The UNESCO Institute for Statistics.
- UNFPA (2009). Maternal health and universal access to reproductive health: High level meeting on 11 November, 2009. Istanbul, Turkey. http://www.unfpa.org/webdav/site/global/shared/documents/events/2009/agenda_mdg5.pdf
- UNFPA (2009). South Central and Southeast Asia, Facts on Investing in Family Planning and Maternal and Newborn Health. UNFPA, Guttmacher Institute.
- UNFPA (2012). Marrying Too Young: End Child Marriage. New York: UNFPA
- United Nations (2009). Department of economic and social affairs, population division world contraceptive Use 2009. POP/DB/CP/Rev 2009. http://www.un.org/esa/population/publications/contraceptive2009/contracept2009_wallchart_front.pdf.
- United Nations (2009). World Contraceptive Use 2009. New York: Population Division, Department of Economic and Social Affairs. United Nation. http://www.un.org/esa/population/publications/contraceptive2009/contracept2009_wallchart_front.pdf.

References

- United Nations (2012). Goal 5: Improving maternal health. 2012. [cited 2012 11 November]; Available from: <http://www.un.org/millenniumgoals/maternal.shtml>.
- United Nations (2013). World contraceptive patterns 2013, Population Division, Department of Economic and Social Affairs, United Nations.
- United Nations Population Fund (2004). State of the world population 2004. The Cairo consensus at ten: population, reproductive health and the global effort to end poverty New York: UNFPA.
- US Agency for International Development, (USAID) (2009). Health policy initiative, task order 1, futures group international, Family planning and the MDGs: saving lives, saving resources. Washington, DC: US Agency for International Development. http://www.healthpolicyinitiative.com/Publications/Documents/788_1_Family_Planning_and_the_MDGs_FINAL_June_09_acc.pdf.
- Van Teijlingen, E., Reid, J., Shucksmith, J., Harris, F., Philip, K., Imamura, M., & Penney, G. (2007). Embarrassment as a key emotion in young people talking about sexual health. *Sociological research online*, 12(2). <http://dx.doi.org/10.5153/sro.1535>
- Vathiny, O. V., & Hourn, K. K. (2009). Barriers to Contraceptive Use in Cambodia. Kuala Lumpur, Malaysia: The Asian-Pacific Resource & Research Centre for Women (ARROW).
- Wang, R. H., & Chiou, C. J. (2008). Relative contribution of intrapersonal and partner factors to contraceptive behavior among Taiwanese female adolescents. *Journal of Nursing Scholarship*, 40(2), 131-136.
- Westley, S. B., Choe, M. K., & Center, E. W. (2007). How does son preference affect populations in Asia?: East-West Center.
- Westoff, C. F. (2012). Unmet Need for Modern Contraceptive Methods. DHS Analytical Studies No. 28. Calverton, Maryland, USA: ICF International.
- Westoff, C.F. (2010). Desired number of children: 2000–2008. DHS comparative reports 25. <http://www.measuredhs.com/pubs/pdf/CR25/CR25.pdf> (accessed July 27, 2012).
- Westoff, Charles F. (2006). New Estimates of Unmet Need and the Demand for Family Planning. DHS Comparative Reports No. 14. Calverton, Maryland, USA. Macro International Inc.
- WHO (2007). Adolescent pregnancy – Unmet needs and undone deeds. A review of literature and programmes. Geneva, Switzerland: WHO.
- WHO (2007). Contraceptive prevalence rate. Geneva: World Health Organization.

References

- WHO (2008). Fertility, population growth and family planning, Country profile on reproductive health in Bangladesh. Dhaka: World Health Organization. <http://209.61.208.233/en/Section13/Section36/Section1579.htm>.
- WHO (2011). Guidelines on preventing early pregnancy and poor reproductive outcomes among adolescents in developing countries. Geneva, Switzerland: WHO.
- WHO (2013). Millennium Development Goal (MDG) 5: Improve Maternal Health. 2012. 2 January 2013]; Available from: http://www.who.int/topics/millennium_development_goals/maternal_health/en/index.html.
- WHO/UNIFPA/UNICEF (1995). Study Group on Programming for Adolescent Health .: Programming for Adolescent Health. (Discussion paper). <http://www.pathfind.org/focus.htm>.
- WHO; UNICEF, UNFPA and The World Bank (2010). Trends in Maternal Mortality: 1990 to 2008. Estimates Developed by WHO, UNICEF, UNFPA and the World Bank. Geneva, Switzerland: WHO.
- Wiebe, E. R., Henderson, A., Choi, J., & Trouton, K. (2006). Ethnic Korean women's perceptions about birth control. *Contraception*, 73(6), 623-627. <http://dx.doi.org/10.1016/j.contraception.2006.02.001>
- Williamson, L. M., Parkes, A., Wight, D., Petticrew, M., & Hart, G. J. (2009). Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. *Reproductive Health*, 6(3), 1-12.
- Wong, L. P. (2012). An exploration of knowledge, attitudes and behaviours of young multiethnic Muslim-majority society in Malaysia in relation to reproductive and premarital sexual practices. *BMC Public Health*, 12(1), 865.
- World Bank (2012). World Development Indicators Online. Retrieved from <http://databank.worldbank.org/ddp/home>
- World Health Organisation (2008). Making Pregnancy Safer: Annual Report 2007 Geneva: World Health Organisation.
- World Health Organization (2002). Reducing risk , promoting healthy life . Geneva: WHO Report, Statistical annex.
- World Health Organization (2007). Unsafe abortion. Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2003 (Fifth edition). Geneva.
- World Health Organization (2011). unsafe abortion. Global and regional estimates of the incidence of unsafe abor tion in 2008. Sixthth edition. WHO, Department of Reproducti ve Heal th and Research, World Health Organization. IS BN Isbn: 978 92 4 150111 8.

References

- World Health Organization (2011a). Family Planning. <http://www.who.int/topics/familyplanning>
- World Health Organization. (2011b). Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2008.sixth ed., Geneva.
- Wu, L. (2010). A Survey on the Knowledge, Attitude, and Behavior Regarding Contraception Use among Pregnant Teenagers in Beijing, China. *Clinical Nursing Research*, 19(4), 403-415.
- Yoder, B.A., & Young, M.K. (1997). Neonatal outcomes of teen-age pregnancy in a military population. *Obstetric Gynecology*, 90, 500–506.
- Zhang, L. (2008). Religious affiliation, religiosity, and male and female fertility. *Demographic Research*, 18, 233–262.