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Knowledge and Practice of Emergency Contraception among Currently-Married Women in Bangladesh: Evidence from a National Cross-Sectional Survey

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Abstract

More than 30% of the total fertility of 2014 was unwanted in Bangladesh. Emergency contraception (EC) is generally used after sexual intercourse to prevent unintended pregnancy. The objective of this paper is to identify the prevalence, patterns, and determinants of knowledge and practice of EC among currently married reproductive-aged (15-49 year) women in Bangladesh. We employed the data from the nationally representative cross-sectional Bangladesh Demographic and Health Survey 2014. We performed the chi-square test and logistic regression analyses. The knowledge of EC was only 14% among currently married women in 2014. Among the women who know about EC, the prevalence of use was 13.4%, while the incidence was only 6.1%. Age, region, residence, wealth index, media access, and use of modern contraception were the significant determinants of EC. The utilization of EC as a family planning method is crucial in Bangladesh, where the prevalence of unsafe and illegal abortion is present to a great extent. This study has highlighted the necessity of strengthening the structure of family planning service delivery through the exploration of the capacity for increasing knowledge and ensuring utilization of EC in the context of Bangladesh.

Keywords

Emergency contraception (EC); knowledge of emergency contraception; practice of emergency contraception; emergency contraception in Bangladesh; family planning; use of emergency contraception

Introduction

Background

Couples' ability to decide the total number of children, and spacing between childbearing, are fundamentals to reproductive rights and public health. Though public health has a particular focus on family planning (FP) for a long time, still now about 44% of pregnancies around the world are unintended (Bearak, Popinchalk, Alkema, & Sedgh, 2018) and most of these pregnancies end up with unsafe abortions which is the most common cause of maternal morbidity and mortality (Tessema, 2015). Globally, more than 222 million women still have

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an unmet need for modern contraceptives, and by fulfilling this unmet need, the world can save the lives of 79,000 mothers and 1.1 million infants every year (Darroch & Singh, 2013). To achieve universal access to Sexual and Reproductive Health and Right (SRHR), key strategies should incorporate activities regarding strengthening FP service delivery and generation of demand, including access to emergency contraceptive pill (ECP) (Dawson, Tran, Westley, Mangiaterra, & Festin, 2015). Moreover, ECP has also been recognized as one of the thirteen life-saving commodities by the UN Commission (United Nations, 2012).

Emergency contraception (EC) is a unique contraceptive method, which can be used after sexual intercourse to prevent unintended pregnancy resulting from unprotected sex, forced sex, or failure of the contraceptive method (for example, breakage of the condom while having sex), or forgetting to take a birth-control pill (Black et al., 2016; Li, Lo, & Ho, 2014; Tessema, 2015; World Health Organization, 2018). EC helps to prevent unwanted pregnancy if it is taken within 120 hours after unprotected or under-protected sexual intercourse (Croxatto et al., 2001). ECP prevents pregnancy by delaying/preventing ovulation where the intrauterine device (IUD), which is also considered as an EC, prevents conception by a chemical change in sperm and egg before they meet (Li et al., 2014; World Health Organization, 2018). ECs, except IUD, can be easily provided to and used by women themselves (Dawson, Tran, Westley, Mangiaterra, & Festin, 2014). Though ECs have been available in the world market for a few decades, due to some barriers, few women have access to ECs (International Consortium for Emergency Contraception, 2013). The barriers toward not using ECs in low and middle-income countries are lack of social marketing, limited knowledge of service seekers, and lack of government's initiatives to include ECs in national family planning programs (Dawson et al., 2015).

The Rationale of the Study

Contraceptive prevalence rate (CPR) in Bangladesh increased a great deal from 7.7% in 1975 to 62.4% in 2014, which helped to reduce total fertility rate (TFR) from 6.3 to 2.3 within the same period (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). According to the Bangladesh Demographic and Health Survey (BDHS) 2014, unwanted TFR reduced from 1.3 in 1993-94 to 0.7 in 2014. However, women still have 11% of children more than they desire in Bangladesh. If Bangladesh could avoid these unwanted births, the TFR would be 30% lower than that of the present situation. Besides, the prevalence of menstrual regulation (MR), a process to reestablish the menstrual cycle when menstruation is absent for a short duration (up to 12 weeks), often considered as a substitute process of abortion, was also high (5.5% in 2014) among currently married women in Bangladesh (Alam & Sultan, 2019). Moreover, there were an estimated 1.194 million induced abortions performed in Bangladesh in 2014, and most were unsafe (Guttmacher Institute, 2017). Since, EC is used globally to prevent unintended pregnancy (Black et al., 2016; Li, Lo, & Ho, 2014; Tessema, 2015; World Health Organization, 2018), it also can be considered as a means to avoid unwanted pregnancy, unsafe MR, and unsafe abortion in the context of Bangladesh.

The government of Bangladesh has initiated different policies and programs to reduce unmet need for FP and hence unwanted pregnancies. However, the unmet need for FP in Bangladesh is 12%, where 5% have an unmet need for the spacing and 7% for limiting the births (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). The EC was initially introduced in Bangladesh in 1995 with the registration of an ECP by a private company. Gradually EC has been addressed by the national FP program of Bangladesh and familiarized throughout the country for addressing the high

rates of unintended pregnancy and reduce maternal mortality caused by unsafe abortions (Benevides, Fariyal Fikree, Holt, & Forreste, 2014). The World Health Organization (WHO) states that all women and girls at risk of unintended pregnancy have a right to access EC (World Health Organization, 2018). WHO also adds that EC methods should be routinely included within all national FP programs.

There is a considerable knowledge gap among the potential users of EC in Bangladesh. Also, there is a lack of quality evidence among policy-makers to take initiatives to increase their efforts on EC knowledge or boost the use of ECs (Khan, Hossain, & Bhuiyan, 2005). Though many available studies focus on contraceptive use in Bangladesh (Godha, Hotchkiss, & Gage, 2013; Kamal, 2013; Kibria et al., 2016; Shahidul, 2014), there is room for exploration which focuses explicitly on EC. As the patterns and determinants of EC in Bangladesh are still not well established, this research has been initiated to focus on that area with a view to providing quality evidence on policy formulation on EC in Bangladesh.

The Objective of the study

This research aimed to identify the prevalence and the determinants of knowledge, and use of, emergency contraception (EC) among currently-married women aged 15-49 years in Bangladesh. The findings of this study are expected to facilitate different policy initiatives towards reducing maternal and infant mortality caused by unintended pregnancy and unsafe abortions in Bangladesh. The findings of this study will also provide strong motives to take proper initiatives to spread knowledge about EC and expand all women's access to EC.

Methodology

Data Source

This study employed data from the 'Bangladesh Demographic and Health Survey 2014' (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). It is the seventh DHS undertaken in Bangladesh, following those implemented in 1993-94, 1996-97, 1999-2000, 2004, 2007, and 2011. Due to the unavailability of the information on EC, we utilized the last wave (2014) among the seven waves of the survey. The nationally representative sample for the BDHS 2014 comprises the entire population, and the detailed methodology will be found elsewhere in the report (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). The sample size of ever-married women was 17,863. We restricted the analysis to only currently married women (including currently pregnant women) sampled at 16,858 for the knowledge of EC. However, we also used a sub-sample of 2,361 currently married women aged 15-49 years for practice of EC from who had prior knowledge of EC.

Variables and Conceptual Framework of the Study

Dependent Variables

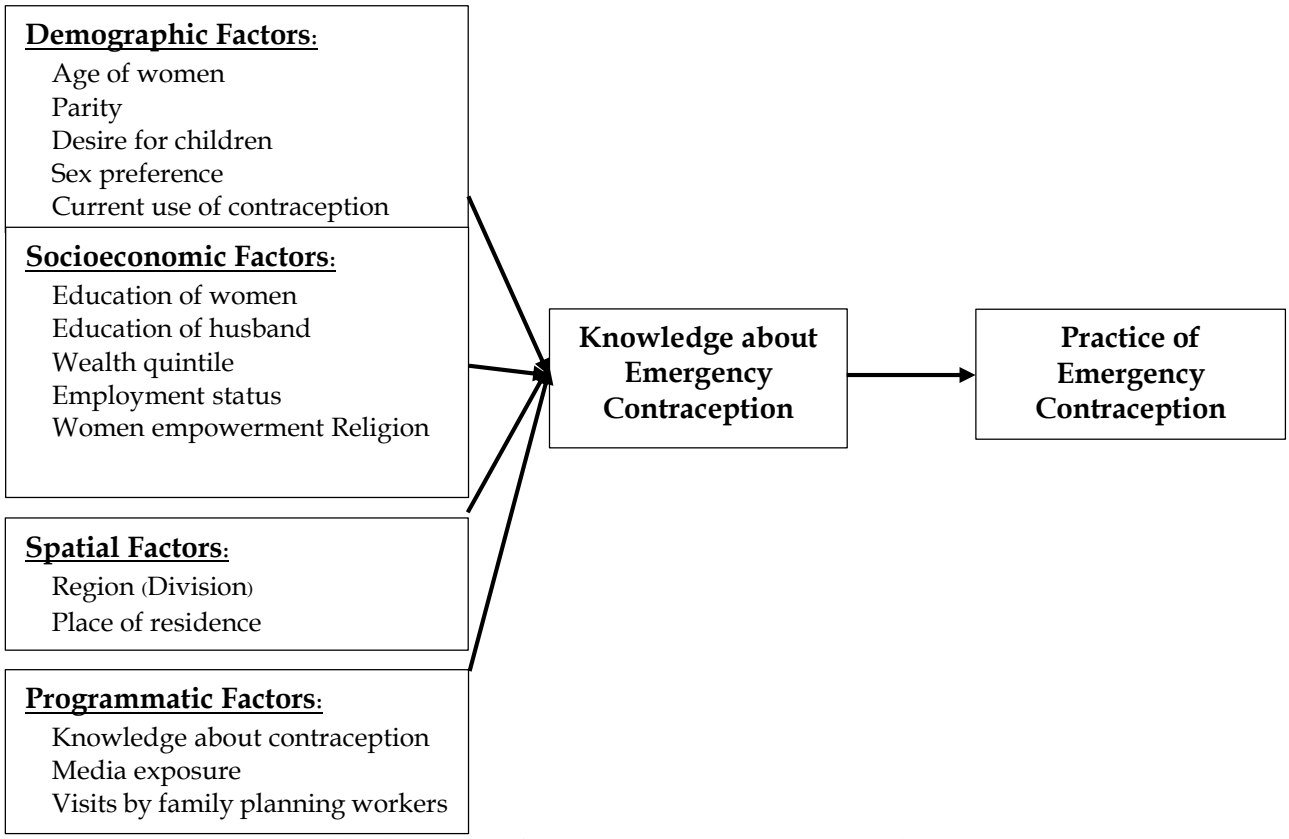
There are three binary (coded Yes/No) dependent variables of this study, namely, the prevalence of knowledge of EC which was addressed by the term 'Ever heard of ECP', the prevalence of the use of EC which was addressed by the term 'Ever used EC', and the

incidence of use of EC which was addressed by the term 'Ever used EC in last 12 months' using the following three questions available in the 2014 BDHS: (1) Have you ever heard about emergency contraception pills (ECP), (2) Have you ever used EC, and (3) Did you use EC in last 12 months? (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016).

Independent Variables

The independent variables of this study were based on the existing literature provided in the conceptual framework (Figure 1). Due to a small sample (only 317 and 145 women ever used EC and used EC in the last 12 months, respectively) in the response category, the current age of women was categorized as 15-24, 25-34, and 35-49. Three categories of age were similarly used by other researchers as well (Alam & Sultan, 2019; Rana, Sen, Sultana, Hossain, & Islam, 2019) and also used by MEASURE DHS available at STATcompiler (ICF, 2015). We also included parity (categorized as 0, 1, 2, and more than 2).

Figure 1: Conceptual Framework of the Study



Source: *Conceptual Framework has been made after reviewing existing literature (Alam & Sultan, 2019; Black et al., 2016; International Consortium for Emergency Contraception, 2013; Keller, 1997; Khan et al., 2005; Kumar et al., 2011; Lakha & Glasier, 2006; Moreau, Bouyer, Goulard, & Bajos, 2005; Rahman, Rahman, Siddiqui, & Zaman, 2014; Tesfa, 2015; Tilahun et al., 2013).*

Since the husband plays a vital role in family decision making, we also used the husband's desire for children (coded as both husband and wife wants same, wants more, wants fewer, and others) as a predictor. Emergency contraception may be used due to the contraceptive

method failure; thus, the current use of contraception (categorized as no method, traditional, and modern) was taken. Religion was categorized into Muslim and non-Muslim (Hindu, Buddhist, or Christian) due to the majority of Muslims residing in Bangladesh. Wealth index, which is used to assess the socioeconomic status of the household, was constructed from data of household possessions using principal component analysis and categories as poor, middle, and rich. We used women's working status (whether currently employed or not). We also used women empowerment which was assessed using three information: (a) The person who usually decides on the respondent's health care, (b) The person who usually decides on large household purchases, and (c) The person who usually decides on visits to family or relatives. The Cronbach's alpha value was 0.789, suggesting very good internal consistency. We categorized empowerment as high if all decisions were made by respondent alone; if all decisions were made jointly, we categorized this as moderate; and if the husbands or others made all decisions, we labelled this as low empowerment for women.

Education plays a vital role in the determination of EC, and we categorized this into four categories as no education, primary, secondary, and higher than secondary. These labeling were also in line with the Ministry of Education in Bangladesh. Since, Zip code influences the behavior, place of residence (whether residing in urban or rural) and region coded as South (Barisal and Khulna), East (Sylhet and Chattogram), Middle (Dhaka and Mymensingh), and North (Rajshahi and Rangpur) were also used. In the context of Bangladesh, FP is a success story because of the enormous contribution of workers. They strongly influence the use of contraception; therefore, we used the visits by FP workers for the last six months (coded as Yes or No). Media plays a role as an essential source for information dissemination; thus, we used women's access to any media (measured using access to any of TV, radio, newspaper, or magazines).

Analytical Plan

We performed both bivariate and multiple variables analyses. For bivariate analysis, we have used the chi-square test to explore the pattern of knowledge and practice of EC in Bangladesh. Based on the significance of the chi-square test (probability value of 0.05 or less) of knowledge of EC, we employed multiple logistic regression analyses to identify the factors affecting the EC in Bangladesh. We excluded the sex of the living children having multicollinearity with the parity. We included the educational attainment of the woman in the model but excluded the husband's education due to multi-collinearity. Religion was also excluded from the model as it was not statistically significant because more than 90% of the population are Muslims in Bangladesh. Moreover, the knowledge about contraception is absolute, and there was no variable in the dataset; hence we could not include it in the analysis. The probability value (or significance) of the chi-square test and logistic regression analysis was provided. The adjusted odds ratio (AOR) with 95% confidence interval (CI) of logistic regression analyses was produced. All analyses were carried out considering sampling weight and complex sampling.

Ethical Consideration

The BDHS was conducted by the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. The survey was implemented by Mitra and Associates, a research firm situated in Dhaka, Bangladesh. ICF International of Calverton, Maryland, USA, provided technical assistance to the project as part of its international Demographic and Health Surveys Program (MEASURE DHS). An interview was conducted only if the respondent provided their verbal consent in response to being read out

loud an informed consent statement by the interviewer. The NIPORT procured ethical approval for the survey from the BMRC (Bangladesh Medical Research Council). BDHS data set was available at https://dhsprogram.com/data, and the instructions were strictly followed for using the data.

Findings

Sample Characteristics

The essential background characteristics of the 16,858 of currently married women are in Table 1. About 31% of women were below the age of 25, while 36.6% were aged 25-34. More than one-third (34.7%) of the respondents were from the Middle zone. Nearly three in four respondents (72.1%) resided in rural areas. More than 24% of women aged 15-49 had no education, while only 8.8% of women had completed higher than the secondary level of education. Only 4.6% of women were highly empowered, while 58.9% had low empowerment. More than 74% of husbands and wives desired the same number of children. The 2014 BDHS assessed exposure to media by asking respondents if they watched television, listened to the radio, or read newspapers or magazines in the last month before the survey. More than 62% of the respondents had exposure to any media (radio, or television, or newspapers, or magazines). About 38% of currently married women were from a poor household. At the time of the survey, 31.9% of the respondents were employed. More than 10% of the respondents had no living children, while 36.8% of the respondents had more than two children. Less than 20% of the respondents had visits by the FP workers within the last six months, and more than 37% were not currently using any form of contraception.

Table 1: Sample Characteristics of the Respondents

Background Variables	Sample of women who never heard about EC, n (%)	Sample of women who ever heard about EC, n (%)	Sample of currently married, n (%)
Age of respondent			
15-24	4,482 (30.9)	668 (28.3)	5,150 (30.6)
25-34	5,213 (36.0)	955 (40.4)	6,168 (36.6)
35-49	4,801 (33.1)	738 (31.3)	5,539 (32.9)
Parity			
0	1,444 (10.0)	262 (11.1)	1,706 (10.1)
1	3,306 (22.8)	685 (29)	3,991 (23.7)
2	4,181 (28.8)	776 (31.9)	4,957 (29.4)
3 and above	5,565 (38.4)	638 (27.0)	6,203 (36.8)
Desire for children			
Couple wants the same	10,741 (74.1)	1,774 (75.1)	12,515 (74.2)
Husband wants more	1,543 (10.6)	233 (9.9)	1,776 (10.5)
Husband wants fewer	942 (6.5)	180 (7.6)	1,122 (6.7)
Do not know and Others	1,271 (8.8)	175 (7.4)	1,446 (8.6)
Use of contraception			
No method	5,573 (38.4)	757 (32.1)	6,330 (37.5)
Traditional method	1,175 (8.1)	240 (10.2)	1,415 (8.4)
Modern method	7,749 (53.5)	1,376 (57.8)	9,113 (54.1)
Religion of respondent			
Islam	13,077 (90.2)	2,110 (89.4)	15,187 (90.1)
Others	1,420 (9.8)	251 (10.6)	1,671 (9.9)
Education level			

Background Variables	Sample of women who never heard about EC, n (%)	Sample of women who ever heard about EC, n (%)	Sample of currently married, n (%)
No education	3,715 (25.6)	233 (9.9)	3,948 (23.4)
Primary	4,492 (31.0)	424 (18.0)	4,916 (29.2)
Secondary	5,452 (37.6)	1,052 (44.6)	6,504 (38.6)
Higher than secondary	838 (5.8)	652 (27.6)	1,490 (8.8)
Wealth quintile			
Poor	5,899 (40.7)	421 (17.8)	6,320 (37.5)
Middle	5,983 (41.3)	968 (41.0)	6,951 (41.2)
Rich	2,615 (18.0)	972 (41.2)	3,587 (21.3)
Working status			
No	9,790 (67.5)	1,692 (71.7)	11,482 (68.1)
Yes	4,703 (32.5)	668 (28.3)	5,371 (31.9)
Women empowerment			
Low	8,602 (59.3)	1,327 (56.2)	9,929 (58.9)
Moderate	5,235 (36.1)	922 (39.1)	6,157 (36.5)
High	660 (4.6)	112 (4.7)	772 (4.6)
Region			
South	2,333 (16.1)	446 (18.9)	2,779 (16.5)
East	3,743 (25.8)	525 (22.2)	4,268 (25.3)
Middle	4,908 (33.9)	949 (40.2)	5,857 (34.7)
North	3,512 (24.2)	441 (18.7)	3,953 (23.5)
Place of residence			
Urban	3,700 (25.5)	1,008 (42.7)	4,708 (27.9)
Rural	10,796 (74.5)	1,353 (57.3)	12,149 (72.1)
Access to any media			
No	5,824 (40.2)	428 (18.1)	6,252 (37.1)
Yes	8,672 (59.8)	1,933 (81.9)	10,605 (62.9)
Visits by FP worker			
No	11,704 (80.7)	1,841 (78.0)	13,545 (80.4)
Yes	2,792 (19.3)	520 (22.0	3,312 (19.6)
Total	14,497 (100.0)	2,361 (100.0)	16,658 (100.0)

Prevalence and Patterns of Knowledge and Practice of Emergency Contraception in Bangladesh

Table 2 represents the knowledge and practice of EC among currently married women aged 15-49 years in Bangladesh. The prevalence of the knowledge of EC (ever heard about EC) was only 14% among currently married women. The prevalence of the use of EC (ever used EC) was only 13.4% among the women who ever heard about EC, while the incidence (used EC in the last 12 months among those whoever heard about EC) was only 6.1%.

Table 2 also illustrates the patterns of knowledge of EC in Bangladesh. There was a significant difference in the prevalence of the knowledge of EC by the age of the respondents (p<0.001). The highest prevalence (15.5%) was evident among aged 25-34 years. Women from the Middle zone of the country had the highest prevalence of the knowledge of EC (16.2%), followed by the South zone (16.0%). The knowledge of EC was the lowest among uneducated women (5.9%), while women with higher education had the highest knowledge (43.8%) of EC. Women from wealthy households had a higher knowledge than women from poor and middle-income households. Similarly, women with access to media, and women who had visits by FP workers had a higher level of knowledge of EC.

The patterns of practice of EC in Bangladesh are also presented in Table 2. The prevalence of EC was the highest among aged 35-49 years and the lowest among aged 15-24 years. As with

the knowledge of EC, it was also found to vary by the region. The women of the East Zone and the Middle Zone had the highest and the lowest prevalence of the practice of EC, respectively. Urban women had a slightly higher prevalence of EC than rural women (13.7% vs. 13.2%). With the increase of the education level of husband and women, the prevalence of EC was found to increase. Compared to the poorest women, women from affluent wealth quintile families showed a higher prevalence of EC. Also, couples who used any form of modern contraception had a higher prevalence compared to non-users and traditional method users.

Table 2: Patterns of Knowledge and Practice of Emergency Contraception in Bangladesh

Background Variables	Ever heard about EC		Ever used EC		Used EC in the last 12 months	
	n=16,858 (%)	Sig.	n=2,361 (%)	Sig.	n=2,361 (%)	Sig.
Age of respondent		*0.000*		*0.417*		*0.008*
15-24	668 (13.0)		92 (13.8)		56 (8.4)	
25-34	955 (15.5)		118 (12.4)		56 (5.9)	
35-49	738 (13.3)		17 (14.5)		33 (4.5)	
Parity		*0.000*		*0.687*		*0.000*
0	262 (15.4)		40 (15.3)		31 (11.8)	
1	685 (17.2)		86 (12.6)		44 (6.4)	
2	776 (15.7)		108 (13.9)		38 (4.9)	
3 and above	638 (10.3)		83 (13.0)		31 (4.9)	
Desire for children		*0.022*		*0.070*		*0.012*
Couple wants the same	1,774 (14.2)		251 (14.1)		123 (6.9)	
Husband wants more	233 (13.1)		24 (10.3)		8 (3.4)	
Husband wants fewer	180 (16.0)		28 (15.6)		11 (6.1)	
Do not know and Others	175 (12.1)		15 (8.6)		3 (1.7)	
Use of contraception		*0.000*		*0.003*		*0.001*
No method	757 (12.0)		80 (10.6)		31 (4.1)	
Traditional method	240 (17.0)		26 (10.8)		9 (3.8)	
Modern method	1,364 (15.0)		211 (15.5)		105 (7.7)	
Religion		*0.207*		*0.891*		*0.081*
Islam	2,110 (13.9)		284 (13.5)		135 (6.4)	
Others	251 (15.0)		33 (13.1)		9 (3.6)	
Education level		*0.000*		*0.003*		*0.000*
No education	233 (5.9)		37 (15.9)		8 (3.4)	
Primary	424 (12.9)		48 (11.3)		21 (4.9)	
Secondary	1,052 (16.2)		120 (11.4)		52 (4.9)	
Higher than secondary	652 (43.8)		111 (17.0)		64 (9.8)	
Wealth quintile		*0.000*		*0.095*		*0.010*
Poor	421 (6.7)		48 (11.4)		19 (4.5)	
Middle	968 (13.9)		122 (12.6)		49 (5.1)	
Rich	2,615 (27.1)		148 (15.2)		77 (7.9)	
Working status		*0.000*		*0.212*		*0.088*
No	1,692 (14.7)		218 (12.9)		95 (5.6)	
Yes	668 (12.4)		99 (14.8)		50 (7.5)	
Women empowerment		*0.015*		*0.904*		*0.273*
Low	1,327 (13.4)		176 (13.3)		90 (6.8)	
Moderate	922 (15.0)		127 (13.8)		49 (5.3)	
High	112 (14.5)		14 (12.5)		5 (4.5)	
Region		*0.000*		*0.295*		*0.900*
South	446 (16.0)		64 (14.3)		29 (6.5)	

Background Variables	Ever heard about EC		Ever used EC		Used EC in the last 12 months	
	n=16,858 (%)	Sig.	n=2,361 (%)	Sig.	n=2,361 (%)	Sig.
East	525 (12.3)		81 (15.4)		35 (6.7)	
Middle	949 (16.2)		114 (12.0)		55 (5.8)	
North	441 (11.2)		59 (13.4)		26 (5.9)	
Place of residence		*0.000*		*0.745*		*0.081*
Urban	1,008 (21.4)		138 (13.7)		72 (7.1)	
Rural	1,353 (11.1)		179 (13.2)		73 (5.4)	
Access to any media		*0.000*		*0.953*		*0.949*
No	428 (6.8)		58 (13.6)		26 (6.1)	
Yes	1,933 (18.2)		259 (13.4)		119 (6.2)	
Visits by FP worker		*0.002*		*0.885*		*0.307*
No	1,841 (13.6)		246 (13.4)		118 (6.4)	
Yes	520 (15.7)		71 (13.7)		27 (5.2)	
Total	2,361 (14.0)		317 (13.4)		145 (6.1)	

Note: RC=Reference category; Sig.= Significance

The patterns of incidence of the practice of EC in Bangladesh are also illustrated in Table 2. The incidence of EC was found to be twice among women aged 15-24 than that of age 35-49 (8.4% vs. 4.5%). Women living in urban areas, having a higher level of education, belonging to a wealthy household, having no children, and using a modern form of contraception showed higher incidences of EC. Unlike the prevalence, the incidence showed a slightly different pattern of practice of EC. Having access to media and having been visited by FP workers showed a lower incidence of using EC. Women from other religions had higher knowledge but the lower practice of EC, which was not statistically significant.

Determinants of Knowledge and Practice of Emergency Contraception in Bangladesh

The results of multiple logistic regression for the determinants of knowledge of EC are shown in Table 3. Most of the variables, including the age of the respondent, parity, region, residence, educational level, household wealth index, access to any media, and visits by FP workers appeared to be significant determinants of knowledge of EC in Bangladesh. In comparison to those aged 15-24, the knowledge of EC was higher among women aged 25-34 (AOR: 1.427, CI: 1.247-1.632, $p<0.01$) and 35-49 (AOR: 1.727, CI: 1.466-2.036, $p<0.01$). Compared to the South Zone, the odds of the knowledge of EC were found to be lower in the other zones. The results demonstrated that the prevalence of higher EC knowledge was found among women residing in urban areas (AOR: 1.190, $p<0.01$). The likelihood of the prevalence of EC knowledge with wealthy women was 74% higher (CI: 1.468-2.067, $p<0.01$) than that of the poor. Compared to no education, women with more than higher secondary education had eight times (CI: 6.668-9.926, $p<0.01$) higher knowledge of EC. Similarly, women who had access to media were more likely to know about EC. The study revealed that desire for children, working status, and women empowerment had no significant association with knowledge of EC.

Table 3: Determinants of Knowledge of Emergency Contraception in Bangladesh

Background Variables	Knowledge about EC			
	AOR	95% CI for AOR		Sig.
		Lower	Upper	
Age of respondent				*0.000*
15-24	RC			
25-34	1.427	1.247	1.632	*0.000*
35-49	1.727	1.466	2.036	*0.000*
Parity				*0.021*
0	RC			
1	1.130	0.951	1.344	*0.165*
2	1.005	0.827	1.220	*0.962*
3 and above	0.889	0.718	1.102	*0.283*
Desire for children				*0.381*
Couple wants the same	RC			
Husband wants more	1.038	0.888	1.214	*0.641*
Husband wants fewer	1.141	0.955	1.365	*0.147*
Don't know and Others	1.106	0.923	1.324	*0.275*
Use of contraception				*0.000*
No method	RC			
Traditional method	1.366	1.147	1.627	*0.000*
Modern method	1.250	1.121	1.394	*0.000*
Education level				*0.000*
No education	RC			
Primary	1.439	1.213	1.707	*0.000*
Secondary	2.551	2.158	3.017	*0.000*
Higher than secondary	8.135	6.668	9.926	*0.000*
Wealth quintile				*0.000*
Poor	RC			
Middle	1.346	1.172	1.546	*0.000*
Rich	1.742	1.468	2.067	*0.000*
Working status				
No	RC			
Yes	1.105	0.995	1.227	*0.063*
Women empowerment				*0.489*
Low	RC			
Moderate	1.040	0.942	1.148	*0.438*
High	1.125	0.900	1.406	*0.302*
Region				*0.000*
South	RC			
East	0.796	0.686	0.922	*0.002*
Middle	0.957	0.837	1.096	*0.528*
North	0.721	0.620	0.839	*0.000*
Place of residence				
Rural	RC			
Urban	1.190	1.066	1.328	*0.002*
Access to any media				
No	RC			
Yes	1.416	1.237	1.621	*0.000*
Visits by family planning worker				
No	RC			
Yes	1.293	1.153	1.450	*0.000*
Constant	0.025			*0.000*
Model summary: Chi-square- 1589.6, df- 24, significance- *0.000*				

Note: RC=Reference category; Sig.= Significance

Table 4 depicts the factors affecting the prevalence and the incidence of the utilization of EC in Bangladesh. Husband's desire for children, current use of contraception, education level of women, wealth, and the region were the significant predictors for the prevalence of EC; while parity, husband's desire for children, current use of contraception, and working status were the significant determinants for the incidence of EC. When the husband desired for fewer children, the prevalence of EC was higher but not statistically significant. Compared to no method, couples who used modern methods were more likely to use EC for both prevalence (AOR: 1.703, CI: 1.263-2.295, $p<0.01$) and incidence (AOR: 2.548, CI: 1.620-4.007, $p<0.01$). Similarly, women from a wealthy household were more likely to use EC than that of poor for both prevalence (AOR: 1.742, CI: 1.082-2.804, $p<0.05$) and incidence (AOR: 2.020, CI: 1.010-4.036, $p<0.05$). Compared to women aged 15-24 years, the prevalence and the incidence of EC were found to be 16% and 27% lower among aged 25-34, respectively. In contrast, the prevalence of EC was found to be 9% higher, but the incidence was 34% lower among 35-49 age groups, and both were statistically insignificant. In comparison with non-working women, the probability of using EC was found to be 15% (for Prevalence, $p>0.05$) and 37% (for Incidence, $p<0.05$) lower among working women. Similarly, women having any children were 42%-60% (for incidence, $p<0.01$) less likely to use EC.

Table 4: Determinants of Practice of Emergency Contraception in Bangladesh

Background Variables	Ever used EC				Used EC in the last 12 months			
	AOR	95% CI for AOR		Sig.	AOR	95% CI for AOR		Sig.
		Lower	Upper			Lower	Upper	
Age of respondent				*0.223*				*0.359*
15-24	RC							
25-34	0.844	0.597	1.194	*0.338*	0.739	0.461	1.183	*0.208*
35-49	1.093	0.719	1.661	*0.678*	0.656	0.351	1.227	*0.187*
Parity				*0.522*				*0.011*
0	RC							
1	0.728	0.472	1.121	*0.150*	0.469	0.277	0.797	*0.005*
2	0.829	0.511	1.345	*0.448*	0.402	0.213	0.756	*0.005*
3 and above	0.793	0.453	1.387	*0.416*	0.587	0.273	1.259	*0.171*
Desire for children				*0.028*				*0.038*
Couple wants the same	RC							
Husband wants more	0.725	0.459	1.144	*0.167*	0.551	0.261	1.161	*0.117*
Husband wants fewer	1.141	0.739	1.762	*0.553*	0.937	0.486	1.808	*0.847*
Don't know and Others	0.464	0.262	0.822	*0.009*	0.202	0.058	0.705	*0.012*
Use of contraception				*0.000*				*0.000*
No method	RC							
Traditional method	0.962	0.592	1.564	*0.877*	1.091	0.492	2.422	*0.830*
Modern method	1.703	1.263	2.295	*0.000*	2.548	1.620	4.007	*0.000*
Education level				*0.022*				*0.142*
No education	RC							
Primary	0.644	0.402	1.032	*0.067*	1.356	0.578	3.181	*0.484*
Secondary	0.604	0.384	0.950	*0.029*	1.196	0.516	2.770	*0.676*
Higher than secondary	0.883	0.534	1.460	*0.627*	1.953	0.804	4.749	*0.140*
Wealth quintile				*0.058*				*0.077*
Poor	RC							
Middle	1.298	0.865	1.947	*0.207*	1.292	0.702	2.378	*0.410*
Rich	1.742	1.082	2.804	*0.022*	2.020	1.010	4.036	*0.047*
Working status								
No	RC							
Yes	0.851	0.650	1.114	*0.240*	0.637	0.436	0.932	*0.020*
Women empowerment				*0.985*				*0.331*
Low	RC							
Moderate	0.987	0.763	1.277	*0.923*	0.754	0.517	1.098	*0.141*

Background Variables	Ever used EC				Used EC in the last 12 months			
	AOR	95% CI for AOR		Sig.	AOR	95% CI for AOR		Sig.
		Lower	Upper			Lower	Upper	
High	1.039	0.574	1.882	*0.899*	1.004	0.399	2.526	*0.993*
Region				*0.042*				*0.415*
South	RC							
East	1.192	0.823	1.727	*0.352*	1.195	0.698	2.046	*0.516*
Middle	0.752	0.533	1.062	*0.106*	0.813	0.497	1.329	*0.408*
North	0.896	0.606	1.324	*0.581*	0.879	0.500	1.544	*0.653*
Place of residence								
Rural	RC							
Urban	0.859	0.645	1.145	*0.300*	1.045	0.695	1.570	*0.833*
Access to any media								
No	RC							
Yes	0.825	0.565	1.207	*0.322*	0.598	0.341	1.047	*0.072*
Visits by FP worker								
No	RC							
Yes	1.059	0.787	1.426	*0.705*	0.818	0.519	1.290	*0.388*
Constant	0.228			*0.000*	0.108			*0.000*
Model summary	Chi-square-53.5, df- 24, Sig-*0.000*				Chi-square-80.8, df- 24, Sig-*0.000*			

Note: RC=Reference category; Sig.= Significance

Discussions and Conclusions

Compare and Contrast with Existing Study

The study sought to identify the prevalence, patterns, and determinants of knowledge and practice of emergency contraception among currently married reproductive-aged (15-49 years) women in Bangladesh. The prevalence of the knowledge of EC was only 14% among currently married women. The prevalence of the practice of EC was only 13.4% among the women who ever heard about EC, while the incidence was only 6.1%. A review of DHS data in 45 countries on knowledge and use of EC found that Latin America had the highest knowledge and use of EC, followed by Europe and West Asia, Africa, and Asia (Benevides et al., 2014). There was significant variation among countries in all regions.

Regarding the knowledge of EC, the highest prevalence (15.5%) was evident among aged 25-34 years, while the highest practice of EC was found among aged 15-24 years. Compared to many African and Asian countries, the overall knowledge and practice of EC were very low in Bangladesh (Habitu, Yeshita, Dadi, & Galcha, 2018; Singh, Thakur, Nayak, & Agrawal, 2014; Tessema, 2015). The lower practice of EC was also found in many developed countries; for example, the United Kingdom (Black et al., 2016).

Findings demonstrated that there was regional heterogeneity of knowledge and use of EC in Bangladesh, which was also found in another study (Benevides et al., 2014). Women residing in urban areas had a higher knowledge of EC than that of rural areas. Similarly, a study in developing countries also revealed higher knowledge of EC in urban areas (Tesfa, 2015). Issues like poor socioeconomic status, people's lower access to information, and lower educational status in rural areas can come here as explanations behind this. Like EC, many other reproductive health outcomes were also higher in urban areas (Alam & Sultan, 2019; National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2013; 2016).

The study also revealed that socioeconomic status had a significant association with EC in Bangladesh. The knowledge of EC was the lowest among uneducated women (5.9%), while women with higher education had the highest knowledge (43.8%). Literacy is widely acknowledged as benefiting for the individual and society, and particularly for women; literacy is associated with positive outcomes related to sexual and reproductive health (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). Similarly, women from wealthy households had a higher knowledge of EC than that of the poor and the middle, which was also similar to an existing study (Black et al., 2016).

Access to information through the media (radio, or television, or newspaper, or magazine, or others) is essential to increase public knowledge and awareness (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016). As it happened for many other reproductive health outcomes (Alam & Sultan, 2019; National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2013; 2016), the study showed that women with access to media had a higher level of knowledge of EC in Bangladesh. The study also gave insight that the utilization of EC was the highest among modern contraceptive users. The likelihood of the failure of modern contraceptive methods, for example, rupturing of the condoms while having sex and forgetting to take the birth-control pill, can be attributed to this (Black et al., 2016; Li et al., 2014; Tessema, 2015; World Health Organization, 2018). It is to be mentioned here that contraceptive methods failures and discontinuation is very high in Bangladesh (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016).

Strengths and Limitations of the Study

This study has some compelling strengths as we attempted to identify the patterns and determinants of emergency contraception in Bangladesh based on the analysis of a large nationwide sample, which provided the study with a more comprehensive range of information and hence increased its acceptability to other settings. Despite such strength, the study has some limitations. The use of data from cross-sectional research was less than ideal for determining causality. Besides, due to the unavailability of data on some important variables, for example, quality of EC, information on the side effect of EC, type of EC, behavioral factors associated with the use of EC, and information on unmarried women were not included in the analysis. We found age, education, residence, wealth to be the determinants of EC in Bangladesh. However, the question remains as to why do those factors play the primary roles as determinants of EC? The reasons behind the determinants of the use of EC can be identified with further in-depth qualitative studies.

Conclusion

Despite the success in increasing contraceptive prevalence rate and reducing total fertility rate, the potential areas for Bangladesh to lower fertility by reducing the unmet need for family planning is undeniable. The large volume of occurrence of unsafe abortions in Bangladesh caused by unintended pregnancies also demands possible FP initiatives. Hence, the necessity of perceiving the essentiality of the utilization of emergency contraception, associated needs, and barriers in the context of Bangladesh has always been holding demand for attention. The study provided an effort to demonstrate the situation regarding the knowledge and practice of EC in Bangladesh. Though the emergency contraceptive pill was

introduced back in 1995 in Bangladesh, and later it was integrated with the National FP Package, the achievement related to the practice of EC is not unquestionable. Amidst the success stories of the rise of CPR, the prevalence of knowledge and practice of EC is found to be very low in Bangladesh. In this study, a significant variation regarding the knowledge and practice was observed by the background characteristics of the study population. Age, socioeconomic status, region, residence, number of living children, and current use of contraception were found as the determinants of EC in Bangladesh. The findings derived from the study indicate probable scopes for intervention, which can be an answer to the low level of knowledge and utilization of EC in Bangladesh.

However, the exploration of prevalence, patterns, and determinants of the knowledge and the practice of EC can be expected to provide exclusive rooms for potential policy considerations. Sustainable development goals (SDGs) indicator 3.7 shows that 'By 2030, ensure universal access to sexual and reproductive healthcare services, including FP, information and education, and the integration of reproductive health into national strategies and programs' where knowledge and use of EC is a key SRHR issue. However, a lower level of knowledge and practice of EC may lead to higher unwanted births, unsafe abortion, MR, maternal and infant mortality, and maternal morbidity. Thus, addressing these issues with necessary short and long-term initiatives from both supply and demand perspectives are crucial to tackling all these challenges.

Recommendation

The lower level of knowledge and utilization of EC reflects the necessity of considering possible room for modification of FP service structure while planning different policy-level initiatives. Exposure to the information of EC, especially in the rural areas, is a must to be ensured in the present context of Bangladesh to increase the utilization of ECs. However, it is crucial to realize that the presence of proper infrastructural capability of FP service providers is also of utmost importance. With all the desired modifications, it can be expected that the increased prevalence of the utilization of EC in the context of Bangladesh can effectively influence the journey towards fulfilling the SDGs and other population-related goals of the country.

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