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Knowledge and Practice of Menstrual Regulation (MR) in Bangladesh: Patterns and Determinants

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Abstract

Menstrual regulation (MR) is often used as a substitute for abortion in Bangladesh. This study attempts to assess the patterns and determinants of the knowledge and practice of MR in that country. Data from the nationally representative cross-sectional Bangladesh Demographic and Health Survey 2001-2014 were employed and both bivariate and multivariable analyses were used. The findings show that both the knowledge and practice of MR is decreasing in Bangladesh. The knowledge of MR was about 82% in 2004, but it dropped to 45% in 2014. The prevalence of MR was 6.4% in 2011, but it decreased to 5.5% in 2014. The incidence of MR was 2.1% in 2011, which fell to 1.4% in 2014. Age, region, place of residence, wealth index, access to media, and use of contraception appeared to be significant determinants of MR. In order to reduce the frequency of MR being used as a form of contraception, this study highlights the necessity to emphasize the delivery of family planning services in Bangladesh to ensure the utilization of alternative modes of contraception.

Introduction

In the context of Bangladesh where abortion is illegal except in cases where it is necessary to save a woman's life (Chowdhury & Moni, 2004), menstrual regulation (widely known as MR) is often considered a substitute process. The process of MR is not regulated by the penal code and thus legislative barriers are not present in its case in Bangladesh. MR has been defined as an 'interim method for establishing non-pregnancy' or, in other words, 'a process to regulate or reestablish the menstrual cycle when menstruation is absent for a short duration'. In spite of the presence of very strict abortion laws, Bangladesh has successfully included MR services in its national family planning program (Singh et al., 2012). The commencement of MR services in Bangladesh began in 1974 (Planning Commission, 1973). The national family planning program of Bangladesh then adopted MR as a service in 1979 (Ministry of Health and Family Welfare, 2014). Though they initially played the role of a substitute or backup for accidental contraceptive failures, MR services have become an important component of the overall reproductive health services of the country and have played a crucial role in tackling maternal morbidity and mortality (Ministry of Health and Family Welfare, 2014).

Being a part of the national family planning programs, activities regarding MR services and processes in Bangladesh have been regulated by government authorization rules where specific indications have been provided regarding the types of providers who are eligible to provide MR services in different authorized health care facilities and also regarding the maximum number of weeks after the last menstruation until which the performing of MR is permitted (Hossain et al., 2017). Eligible service providers according to authorization rules have included Family Welfare Visitors (FWV), physicians, and gynaecologists from primary, secondary, and tertiary government health care service centres. The service has also been provided by selected NGOs and private clinics during the past three decades in Bangladesh

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(Hena et al., 2013). Regarding the legal time period, the permitted time for the MR procedure is up to 10 weeks since the last menstrual period. But in reality, it has been reported as being performed up until 12 weeks (Islam, Rob, & Chakroborty, 2004).

In spite of the presence of strict prohibition, according to the Guttmacher Institute, almost 650,000 induced abortions occurred in Bangladesh in 2010, most of which were considered to be unsafe and as resulting in serious health consequences (Hossain et al., 2017). In this context, MR could be a substitute form of birth control and could also potentially address the risks associated with the huge prevalence of induced abortion in Bangladesh. However, a sharp decline has been observed in the utilization of MR services.

In 2014, a decline of about 34% was found compared to 2010 in performing MR processes, with the number decreasing to almost 430,000 procedures (Hossain et al., 2017). The annual rate of performing MR procedures also reflects a similar declining pattern. The annual rate of MR decreased from 17 per 1,000 in 2010 to 10 per 1,000 women aged 15-49 in 2014 (Hossain et al., 2017). Authorized facilities (both public and private) also went through a declining pattern in providing MR-related services nationwide. Only 42% of authorized facilities provided MR-related services in 2014, compared to 57% in 2010 (Hossain et al., 2017). In rural areas, where most of the population resides, primary health-care services are mainly provided by Union Health and Family Welfare Centers (UHFWCs). Only about 50% of UHFWCs provided MR related services in 2014 (Hossain et al., 2017). This decline in MR procedures, especially in government facilities, reflects an issue of concern as the government sector accounts for about two-thirds of all MR procedures performed throughout the country (Vlassoff, Hossain, Maddow-Zimet, Singh, & Bhuiyan, 2012).

Different supply-side barriers and demand-side barriers may play a role in the reduction of the value of MR procedures on a large scale. One structural barrier is the inadequacy of action by the government of Bangladesh over the last several years regarding the training of FWVs. A lack of such training can result in a decreasing of service provision in a context where previously trained FWVs are reaching retirement age and leaving the workplace (Vlassoff et al., 2012). Different demand-side issues also can be present because of which the health care seeking pattern regarding MR services is hampered or discontinued. The knowledge level of potential service users can be a crucial demand-side issue which can determine the utilization of MR procedures from health-care service centres. It was found in a large scale study (in Bangladesh) that 57% of unmarried adolescents and 40% of married adolescents have not even heard of menstrual regulation (Uddin, 2012). Different service-related confusions and unwillingness have also been found to be generated from the lack of knowledge of MR resulting in non-utilization of MR services in the context of Bangladesh (Uddin, 2012). Different perceptions regarding MR (such as a preference for MR compared to contraceptives, justification of adopting these processes, openness etc.) based on the presence or absence of proper knowledge have been found in studies shaping the MR service-seeking related attitude of service seekers (Nashid & Olsson, 2007).

In this study, an effort has been made to assess women's knowledge of MR and explore the pattern of practice and the determinants of MR in Bangladesh.

Methodology

Data Source

This study used data from the Bangladesh Demographic and Health Surveys (BDHS) from 2001 to 2014, which is a nationally representative cross-sectional survey (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016; National Institute of Population Research and Training (NIPORT), Mitra and Associates, & Macro International, 2009; National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ORC Macro, 2005; NIPORT, Mitra and Associates, & ICF International, 2013). There were seven waves of surveys. Due to the availability of MR and wealth index variables, we used the last four waves (2004, 2007, 2011, and 2014) to explore changes over time; while the pooled data of the last two waves (2011 and 2014) were employed for patterns and determinants. The sample size was 11,440, 10,996, 17,842, and 17,863 ever-married women for 2004, 2007, 2011 and 2014 BDHS respectively. After pooling the last two waves, the sample size was 35,705.

Variables of the Study

The dependent variables of this study are 'Knowledge of MR' (coded Yes or No) and 'Practice of MR' (coded Yes or No). The independent variables, which are taken from the existing literature (Ahmed, Rahman, & Ginneken, 1998; Chowdhury & Moni, 2004; DaVanzo & Rahman, 2014; Elul, 2011; Kapil Ahmed, van Ginneken, & Razzaque, 2005; Uddin, 2012), are 'current age of woman', 'place of residence', 'region (division)', 'wealth index of household', 'educational attainment of woman', 'husband's educational attainment', 'number of visits by family planning (FP) workers over the last six months', 'number of living children', 'sex of living children', 'body mass index of woman', 'woman's working status', 'access to media (TV, Radio, Newspaper or Magazines)', and 'religion of the woman'.

Analytical Plan

We used both bivariate and multiple variables analyses. For the bivariate analysis, we used a chi-square test to explore the pattern of knowledge and practice of MR in Bangladesh. Based on the significance of the Chi-Square Test, we applied multiple logistic regression models to identify the factors affecting MR in Bangladesh.

Findings

Knowledge and Practice of Menstrual Regulation in Bangladesh

The trends of knowledge and practice of MR in Bangladesh are shown in Table 1. Knowledge of MR, as shown in the table, decreased over the time period examined, while the prevalence of the practice of MR showed an overall increase from 2001 to 2014, with fluctuations between 2005 and 2011. In contrast to the prevalence MR, the incidence of MR (used MR services in past 3 years) decreased from 2.1% in 2011 to 1.4% in 2014.

Table 1: Trends of Knowledge and Practice of Menstrual Regulation in Bangladesh

MR in Bangladesh	2001-2004	2005-2007	2008-2011	2012-2014
Ever heard of MR (%)	81.6	80.3	69.6	45.3
Ever used of MR (%)	5.2	6.1	6.4	5.5
Use of MR in past 3 years (%)	N/A	N/A	2.1	1.4

The patterns of knowledge and practice of MR in Bangladesh are shown in Table 2. It is evident that knowledge of MR was highest (74.5%) among women aged 25-29 but lowest among those aged 15-19 (59.3%) between 2008 to 2011. Between 2012 and 2014, it was highest among women in the 30-34 age group. The knowledge of MR varied by division. The prevalence of knowledge was 75% among the women of Barisal in 2011 and 60.4% among the women of Rangpur in 2014. Women residing in urban areas had a higher knowledge of MR in both 2011 and 2014. Similarly, working women, women from rich families, women with access to media, women with secondary or higher education, and those using contraceptives had a higher level of knowledge of MR in both 2011 and 2014.

The prevalence of MR was found to be highest among adults aged 30-39 and lowest among adolescents (aged 15-19). As with the knowledge of MR, this was found to vary by division e.g. Rangpur and Sylhet showed the highest and the lowest prevalence of practice of MR, respectively. Urban women had a higher prevalence of MR than rural women. With increases of the educational level of husbands and women, the prevalence of MR was found to increase. Women with access to media showed a higher prevalence of MR. The higher the wealth, the better the access to health facilities was likely to be, and compared to the poorest women, women from richer wealth quintile families showed a higher prevalence of MR. Women with 2-3 children had a prevalence of 2.6% and 1.5-1.7% in 2011 and 2014 respectively. In addition, women having a son were found to have a higher prevalence of MR, and couples who used oral pills, or injections, or condoms as contraception, had a higher prevalence compared to others (including non-users and users of other methods).

Table 2: Patterns of Knowledge and Practice of Menstrual Regulation in Bangladesh

Background Characteristics	Ever heard of MR (in %)		Ever used MR (in %)		Used MR in past 3 years (in %)	
	2008-2011	2012-2014	2008-2011	2012-2014	2008-2011	2012-2014
Age in 5 years age group	***	***	***	***	***	***
15-19	58.3	33.8	1.6	1.0	1.2	0.8
20-24	69.3	44.2	3.8	3.2	2.2	1.5
25-29	74.5	49.6	6.9	5.8	3.2	2.4
30-34	73.6	50.1	8.8	7.6	3.1	2.2
35-39	73.5	47.5	9.9	7.7	2.7	1.3
40-44	69.5	46.3	7.6	7.2	1.2	0.4
45-49	63.1	39.6	6.1	6.1	0.2	0.1
Division (Region)	***	***	***	***	*	**
Barisal	75.0	55.8	7.8	6.0	2.0	1.3
Chittagong	67.2	47.8	5.8	4.9	2.0	1.3
Dhaka	72.0	42.4	6.1	6.4	2.3	1.7
Khulna	60.3	34.7	5.4	3.6	1.5	0.9
Rajshahi	74.3	50.9	7.6	5.4	2.3	1.2
Rangpur	72.5	60.4	8.0	7.9	2.7	2.0
Sylhet	60.1	24.5	3.6	1.8	1.4	0.6
Place of Residence	***	***	***	***	***	***
Urban	78.0	60.8	10.0	8.2	3.2	1.8
Rural	66.7	39.1	5.1	4.5	1.8	1.3

Background Characteristics	Ever heard of MR (in %)		Ever used MR (in %)		Used MR in past 3 years (in %)	
	2008-2011	2012-2014	2008-2011	2012-2014	2008-2011	2012-2014
Respondent Educational level	***	***	***	***	***	**
No education	58.2	29.1	4.3	3.8	1.3	0.8
Primary	67.5	40.3	5.7	4.9	1.7	1.4
Secondary	76.4	52.3	7.9	6.4	3.0	1.7
Higher	89.5	78.9	9.5	9.1	2.8	2.2
Access to Any Media	***	***	***	***	***	***
No	59.9	30.1	3.9	3.4	1.4	1.0
Yes	74.9	54.4	7.7	6.8	2.5	1.7
Household Wealth Index	***	***	***	***	***	**
Poorest	58.0	27.5	2.8	2.6	1.3	0.9
Poorer	63.5	34.9	4.5	3.6	1.7	1.2
Middle	68.4	42.2	5.3	5.0	1.7	1.4
Richer	73.6	50.7	7.0	6.2	2.3	1.6
Richest	82.7	67.8	11.5	9.7	3.4	1.7
Number of Living Children	***	***	***	***	***	*
0	61.4	38.8	2.1	2.5	1.6	1.5
1	71.7	47.5	4.1	3.7	2.0	1.5
2	73.6	51.3	8.0	7.2	2.6	1.7
3	72.2	45.8	9.1	7.3	2.6	1.5
4 or above	63.5	35.3	6.1	5.1	1.5	0.7
Husband's Educational Level	***	***	***	***	***	**
No education	60.3	30.5	4.0	3.4	1.3	0.9
Primary	66.4	39.7	5.3	5.1	2.0	1.4
Secondary	74.5	52.4	7.6	6.5	2.5	1.6
Higher	87.4	71.7	11.2	8.9	3.4	2.0
Respondent currently working	**	***	*	***	*	
No	69.3	44.0	6.2	5.0	2.1	1.4
Yes	72.0	47.8	7.4	6.6	2.4	1.4
Religion						
Muslim	69.7	45.0	6.4	5.6	2.2	1.4
Others	68.8	47.5	5.6	5.3	1.8	1.4
Visit by FP Worker	***	***				
No	68.8	44.8	6.3	5.5	2.1	1.4
Yes	75.1	47.4	6.5	5.7	2.3	1.3
Sex of the Living Children	***	***	***	***	*	
No Child	61.4	38.8	2.1	2.5	1.6	1.5
Male	72.7	47.1	6.0	5.1	2.1	1.6
Female	69.9	45.6	7.2	6.2	2.2	1.3
Contraceptive Use	***	***	***	***	***	***
Not Using	65.8	39.9	4.7	4.1	1.4	0.8
Pill	73.4	48.8	7.0	6.0	2.7	2.2
Injections	65.9	39.8	5.4	3.6	2.3	1.4
Condom	82.4	67.4	12.4	10.7	5.0	3.1
Other Modern	70.2	45.5	6.6	7.5	1.5	1.0
Traditional and Others	73.6	52.1	9.6	8.8	2.7	1.1
Total	69.6	45.3	6.4	5.5	2.1	1.4

*Note: *** denotes 0.001, ** denotes 0.01, and * denotes 0.05 level of significance for X2.*

Table 2 also presents the incidence of MR (used MR in past 3 years of survey) in 2011 (2008-2011) and 2014 (2012-2014). The incidence of MR was found to be 3.2% and 2.2% among women aged 25-29 in 2011 and 2014, respectively. As with prevalence, incidence shows a similar pattern of practice of MR. Women living in Rangpur division, residing in urban areas,

having higher level education, having access to media, belonging to the richest wealth quintile, having 2-3 children, and having a son showed higher incidences of MR. Also, couples who used an oral pill, or injection, or condom had a higher incidence compared to non-users and users of other methods.

Determinants of Menstrual Regulation in Bangladesh

Table 3 depicts the factors affecting the knowledge of MR in Bangladesh. All the variables including age of the respondent, division, residence, educational level of the respondent, wealth index, access to media, and religion of the respondent appeared to be significant for determining knowledge of MR in Bangladesh. As given in the table, the prevalence of knowledge was higher (47% to 230%) among women aged 20-45 in comparison to those aged 15-19. Compared to the Sylhet division, the odds of the knowledge of MR were found to be highest in the Rangpur division, and the likelihood of prevalence of MR knowledge for the richest women was 63% higher than that of the poorest. Similarly, more educated women and women having educated husbands were more likely to have knowledge about MR. More highly educated women were 4 times more likely to have knowledge of MR. In comparison with rural areas, women living in urban areas were 34% more likely to have MR knowledge. Regarding religion, Muslims were found to have relatively lower MR knowledge.

Table 3 also indicates that, compared to non-working women, working women have a higher knowledge of MR. Among high parity women, knowledge of MR was found to be lower. Compared to no children, women with children had 23-41% more knowledge of MR. Knowledge was also found to vary by access to media. Women with access to media had 42% more knowledge of MR. Compared to 2011, there was almost 70% less MR knowledge found overall in 2014. Compared to no method, any contraceptive method users (except injectable users) were found to have more knowledge of MR. In the context of Bangladesh, injectable users had less MR knowledge.

Table 3: Determinants of Knowledge of Menstrual Regulation in Bangladesh

Background Characteristics	Adjusted Odds Ratio (AOR)	95% CI of AOR		P Value
		Lower	Upper	
Age in 5-year groups (Ref: 15-19)				
20-24	1.437	1.309	1.577	0.000
25-29	1.934	1.746	2.143	0.000
30-34	2.198	1.965	2.459	0.000
35-39	2.286	2.029	2.575	0.000
40-44	2.292	2.026	2.593	0.000
45-49	1.803	1.585	2.051	0.000
Division (Ref: Sylhet)				
Barisal	2.512	2.272	2.778	0.000
Chittagong	1.493	1.365	1.632	0.000
Dhaka	1.466	1.341	1.602	0.000
Khulna	0.947	0.863	1.039	0.250
Rajshahi	2.150	1.955	2.365	0.000
Rangpur	2.870	2.606	3.161	0.000
Place of residence (Ref: Rural)				
Urban	1.325	1.251	1.403	0.000
Educational level of the respondent (Ref: No education)				
Primary	1.505	1.408	1.609	0.000
Secondary	2.060	1.903	2.229	0.000
Higher	3.952	3.435	4.547	0.000
Wealth index of household (Ref: Poorest)				
Poorer	1.122	1.040	1.211	0.003

Background Characteristics	Adjusted Odds Ratio (AOR)	95% CI of AOR		P Value
		Lower	Upper	
Middle	1.186	1.095	1.285	0.000
Richer	1.340	1.230	1.461	0.000
Richest	1.650	1.492	1.826	0.000
Access to any media (Ref: No)				
Yes	1.424	1.344	1.508	0.000
Number of living children (Ref: No child)				
1	1.407	1.282	1.543	0.000
2	1.415	1.276	1.569	0.000
3	1.394	1.244	1.561	0.000
4 or above	1.233	1.095	1.389	0.001
Husband/partner's education level (Ref: No education)				
Primary	1.104	1.035	1.177	0.003
Secondary	1.337	1.244	1.437	0.000
Higher	1.661	1.493	1.848	0.000
Respondent currently working (Ref: Yes)				
No	0.847	0.798	0.898	0.000
Visits by family planning worker for last six months (Ref: Yes)				
No	0.815	0.763	0.871	0.000
Contraceptive Use (Ref: No method)				
Pill	1.132	1.062	1.206	0.000
Injections	0.975	0.898	1.057	0.535
Condom	1.325	1.176	1.492	0.000
Other Modern	1.236	1.125	1.358	0.000
Traditional and Others	1.316	1.198	1.445	0.000
Year of interview (Ref: 2011)				
2014	0.302	0.287	0.317	0.000
Constant	0.262			0.000
Model chi^2:7242.4; -2 Log likelihood:41017.0; Cox & Snell R^2:0.184; Nagelkerke R^2:0.248				

Table 4 shows the factors affecting the prevalence and the incidence of MR in Bangladesh. According to the table, both the prevalence and incidence of MR increased with increases in age. The prevalence of MR was found to be 2-4.7 times higher among reproductive age groups other than adolescents. Both the odds of the prevalence and incidence of MR for the richest households were more than twice those of the poorest households. Like the richest households, more educated women and women having educated husbands were more likely to show the prevalence of MR but regarding the incidence of MR, the difference was not significant.

In comparison with rural women, the probability of using MR was found to be 35% (for prevalence) and 23% (for incidence) higher among urban women. Compared to working women, MR was 17-20% less likely to be found among unemployed women, but this result is not statistically significant. The rate of MR was found to be the lowest in the Sylhet division and highest in the Rangpur division. Compared to no method, couples who used condoms were found to be 68% to 240% more likely to use MR. Women having 3 children were 240% more likely to use MR (prevalence). However, the incidence of MR does not seem to be significantly correlated with the number of living children. Finally, the MR usage trend during the period examined was found to be downwards. Compared to 2011, 2014 showed a 24% lower MR prevalence and an almost 50% lower MR incidence.

Table 4: Determinants of Practice of Menstrual Regulation in Bangladesh

Background Characteristics	Ever used MR				Used MR in past 3 years			
	AOR	95% CI of AOR		Sig.	AOR	95% CI of AOR		Sig.
		Lower	Upper			Lower	Upper	
Age in 5-year groups (Ref: 15-19)								
20-24	1.98	1.46	2.69	0.000	1.59	1.10	2.30	0.013
25-29	3.16	2.32	4.29	0.000	2.20	1.50	3.23	0.000
30-34	4.21	3.08	5.75	0.000	2.38	1.59	3.58	0.000
35-39	4.68	3.40	6.45	0.000	1.44	0.92	2.25	0.112
40-44	4.03	2.90	5.59	0.000	0.72	0.43	1.21	0.219
45-49	3.66	2.60	5.14	0.000	0.16	0.06	0.38	0.000
Division (Ref: Sylhet)								
Barisal	2.62	2.11	3.26	0.000	1.52	1.04	2.22	0.030
Chittagong	1.69	1.36	2.09	0.000	1.41	1.00	2.00	0.053
Dhaka	1.84	1.50	2.26	0.000	1.53	1.09	2.15	0.015
Khulna	1.68	1.35	2.09	0.000	1.22	0.84	1.77	0.302
Rajshahi	2.27	1.84	2.81	0.000	1.48	1.03	2.13	0.033
Rangpur	3.40	2.76	4.20	0.000	2.34	1.65	3.32	0.000
Place of residence (Ref: Rural)								
Urban	1.35	1.22	1.50	0.000	1.23	1.02	1.48	0.028
Educational level of the respondent (Ref: No education)								
Primary	1.29	1.12	1.49	0.000	1.08	0.83	1.40	0.577
Secondary	1.59	1.36	1.87	0.000	1.11	0.83	1.48	0.471
Higher	1.35	1.08	1.68	0.008	0.94	0.63	1.41	0.773
Wealth index of household (Ref: Poorest)								
Poorer	1.31	1.08	1.58	0.006	1.44	1.05	1.98	0.024
Middle	1.35	1.12	1.64	0.002	1.31	0.94	1.82	0.113
Richer	1.59	1.31	1.94	0.000	1.66	1.19	2.32	0.003
Richest	2.08	1.68	2.57	0.000	1.67	1.15	2.42	0.007
Access to any media (Ref: No)								
Yes	1.32	1.16	1.50	0.000	1.27	1.01	1.59	0.037
Number of living children (Ref: No child)								
1	1.42	1.10	1.83	0.008	1.00	0.71	1.41	0.995
2	2.00	1.54	2.60	0.000	0.98	0.68	1.42	0.923
3	2.38	1.81	3.13	0.000	1.29	0.86	1.94	0.221
4 or above	2.03	1.52	2.70	0.000	1.20	0.76	1.90	0.424
Husband/partner's education level (Ref: No education)								
Primary	1.21	1.05	1.39	0.010	1.28	1.00	1.64	0.050
Secondary	1.36	1.17	1.58	0.000	1.20	0.92	1.57	0.186
Higher	1.48	1.22	1.78	0.000	1.39	0.99	1.94	0.059
Respondent currently working (Ref: Yes)								
No	0.80	0.72	0.89	0.000	0.87	0.72	1.06	0.166
Contraceptive Use (Ref: No method)								
Pill	1.21	1.07	1.37	0.002	1.72	1.39	2.13	0.000
Injections	1.00	0.84	1.19	0.995	1.45	1.09	1.93	0.011
Condom	1.63	1.38	1.93	0.000	2.45	1.84	3.26	0.000
Other Modern	1.23	1.03	1.45	0.019	1.01	0.69	1.49	0.940
Traditional and Others	1.46	1.25	1.70	0.000	1.51	1.10	2.09	0.012
Year of interview (Ref: 2011)								
2014	0.77	0.70	0.84	0.000	0.64	0.54	0.75	0.000
Constant	0.002			0.000	0.003			0.000
Model chi²	1,475.6				396.3			
-2 Log likelihood	15,277.8				6,015.9			
Cox & Snell R^2	0.041				0.011			
Nagelkerke R^2	0.108				0.067			

Discussion and Limitation

The study reflected a slight rise in the utilization pattern of MR services; however, according to our analysis, knowledge regarding MR has been seen to be declining. There has also been a slight decrease in the utilization of menstrual regulation related services over the past three years according to the study. This finding is consistent with that of another study (Hossain et al., 2017) where a similar decline of MR-related knowledge in Bangladesh was found during the period from 2010-2014. Regarding the knowledge of menstrual regulation services, it was found to be highest among women aged 20-25 and lowest among women aged 15-19. Another study (Hossain et al., 2017) has indicated that even in cases where women are aware of the service provision, they are not knowledgeable enough to utilize this information in time for their urgent needs and because of this, existing knowledge was seen to be having little impact on utilization patterns.

A divisional variation was also explored in the study and it was found that Barisal had the highest percentage of women (around 75%) having knowledge of MR and, overall, women living in urban areas are found to be more knowledgeable compared to women living in rural areas. Consistent with this finding, Uddin, (2012) found that the presence of NGO programs, mostly in urban areas, further influenced the knowledge of menstrual-service related provisions of women residing in different urban settings.

Regarding prevalence, the utilization of MR services was found to increase with increasing age until the age of 39 years, and then to fall. It was found that the utilization of menstrual regulation services was most prevalent among women aged 30-34 years and lowest among adolescents. In Bangladesh, sexual and reproductive health-related services have been limited to married adolescents, and this can be considered a byproduct of considering sexual and reproductive health issues synonymous with family planning, which is only one factor in the area of sexual and reproductive health issues and is only permissible for married couples in the context of Bangladesh (Ainul, Bajrachrya, & Reichenbach, 2017). Similar concerns have also been stated in another study conducted in the context of Bangladesh (Huda, Sarker, Azmi, & Reichenbach, 2013) where it was found that despite the availability of safe menstrual regulation services, young adolescent women resorted to illegal and unsafe abortions in order to avoid probable public shaming, and this had a detrimental impact on their health.

This study found the highest prevalence of MR to be in Rangpur and the lowest prevalence in Sylhet. Other studies also shed light on such exploration of divisional variations; it has been shown, for example, that the rate of menstrual regulation was substantially below average in Sylhet and Khulna and above average in Rajshahi division (Singh et al., 2012). Considering incidence, Rangpur was also found to be in the top position according to this current study. Women residing in urban areas, being in the richest wealth quintile and having a higher level of education were found to have more incidences of menstrual regulation in the context of Bangladesh, thus expressing a similar pattern of prevalence to the analysis of the current study.

Like many other studies, this study is not without its limitations. The use of data from cross-sectional research was less than ideal for determining causality. We found education, residence, wealth etc. to be the determinants of MR in Bangladesh. However, the question remains as to why do those play the primary roles as determinants of MR? The full reasons for MR cannot be identified without an in-depth qualitative study. Besides this, due to the unavailability of data, actual trend analysis, as mentioned in the literature, was not carried out (Clegg, Hankey, Tiwari, Feuer, & Edwards, 2009).

Conclusion and Recommendation

This study provides an effort to illustrate the situation regarding the knowledge and practice of MR in Bangladesh which is a part of a service package of Family Planning programs in the country. Exploration of trends, patterns, and determinants of the knowledge and practice of MR can be expected to provide room for potential policy considerations in this sector as MR is seen to be a vital component of the family planning package run by the government. The decreasing pattern of knowledge regarding MR reflects the necessity of modifying initiatives to increase the level of knowledge as this could be crucial in determining the family planning strategies of the country. A slightly declining pattern of utilization of menstrual regulation services from the recent past also merits prominent attention in differentiating demand and supply-side issues which may be responsible for this downward movement. In a context like Bangladesh where child marriage is still very prominent, the downward trend of knowledge and utilization patterns of MR services, especially in the age groups of 15-24, where the presence of family planning service packages can create crucial differences, should be considered important.

With regard to regional variations, apart from Dhaka, a decline during the time period studied was found to have taken place in all divisions. In regions like Sylhet, the decline was almost 50%. With regard to the specific regional issues which could cause such variations, these can be tackled with proper policy level initiatives. The role of the media in this regard is important. Among the campaign of family planning products and services through media, the presence of issues regarding the service provisions of menstrual regulation is still not conspicuous enough. Integration of campaigning with the inclusion of information related to MR safety and legality could play a crucial role in widening the accessibility of potential service seekers for desired services. In addition, to eliminate the possibility of conducting unsafe MR processes, which can cause severe detrimental health impacts, an emphasis on ensuring the proper utilization of existing modern family planning methods is of great importance. Necessary modification in different supply- and demand-side factors can ensure the continuous and proper utilization of current modern family planning methods and thus it can reduce the possibility of occurrences of unsafe MR to a great extent.

The declining pattern of knowledge and utilization of MR services indicates challenges both from the supply- and demand-side structure which should be considered in policy-level planning. Access to proper MR services with the presence of timely and suitable information, the provision of proper community and health education and cultural sensitization to widen the acceptability of these services can all be expected to play crucial roles in ameliorating the situation from the demand side. It's important to note, however, that the presence of proper infrastructural capability is also of critical importance. Ensuring the provision of services with the presence of trained and skilled health-care service providers and extensive and thorough campaigning of the service provisions can enhance capability building in this regard. And after all these potential changes, it can be expected that MR as a portion of the family planning program of the country can successfully contribute to the reaching of the desired population-related goals of the country.

Ethical Considerations

The BDHS was conducted by Mitra and Associates under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family

Welfare. It was a part of a project of MEASURE DHS funded by USAID. Technical assistance was provided by ICF International of Calverton, Maryland, USA. Before the interview, verbal consent from the respondents was taken. The BDHS data is publicly available at https://dhsprogram.com/data. We used the data with permission.

Contributors

MZA and SS made the proposal based on reviewing a variety of literature and the Bangladesh Demographic and Health Surveys. After discussions with SS, MZA contributed to the developing of the analytical plan and the completion of the analysis. Both authors contributed to the drafting and reviewing of the paper.

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References

Ahmed, B.M.K., Rahman, M., & Ginneken, J. Van. (1998). Induced abortion in Matlab, Bangladesh: Trends and determinants. *International Family Planning Perspectives*, *24*(3), 128–132. Retrieved from http://0-www.jstor.org.wizard.umd.umich.edu:80/stable/pdfplus/3038209.pdf

Ainul, S., Bajrachrya, A., & Reichenbach, L. (2017). Adolescents in Bangladesh: A situation analysis of programmatic approaches to sexual and reproductive health education and services. *Population Council, The Evidence Project*. Retrieved from http://evidenceproject.popcouncil.org/wp-content/uploads/2017/02/Bangladesh-ASRH-Report_January-2017.pdf

Chowdhury, S.N.M., & Moni, D. (2004). A situation analysis of the menstrual regulation programme in Bangladesh. *Reproductive Health Matters*, *12*(24 SUPPL.), 95–104. doi: https://doi.org/10.1016/S0968-8080(04)24020-4

Clegg, L.X., Hankey, B.F., Tiwari, R., Feuer, E.J., & Edwards, B.K. (2009). Estimating average annual per cent change in trend analysis. *Statistics in Medicine*. doi: https://doi.org/10.1002/sim.3733

DaVanzo, J., & Rahman, M. (2014). Pregnancy termination in matlab, Bangladesh: Trends and correlates of use of safer and less-safe methods. *International Perspectives on Sexual and Reproductive Health*. doi: https://doi.org/10.1363/4011914

Elul, B. (2011). Determinants of induced abortion: An analysis of individual, household and contextual factors in Rajasthan, India. *Journal of Biosocial Science*. doi: https://doi.org/10.1017/S0021932010000490

Hena, I.A., Rob, U., Sultana, N., Hossain, M.I., Yasmin, R., Das, T.R., & Ahmed, F.U. (2013). Introducing medical MR in Bangladesh MRM. *Population Council*, 28. Retrieved from https://www.popcouncil.org/uploads/pdfs/2013RH_STEPUPMRMBangladesh.pdf

Hossain, A., Maddow-Zimet, I., Ingerick, M., Bhuiyan, H.U., Vlassoff, M., & Singh, S. (2017). *Access to and quality of menstrual regulation and postabortion care in Bangladesh: Evidence from a survey of health facilities, 2014*. Retrieved from https://www.guttmacher.org/sites/default/files/report_pdf/menstrual-regulation-postabortion-care-bangladesh_0.pdf

Huda, A., Sarker, K., Azmi, A.J., & Reichenbach, L. (2013). Understanding unintended pregnancy in Bangladesh: Country profile report. *STEP UP Research Report*. doi: https://doi.org/10.1177/0022034510376046

Islam, M.M., Rob, U., & Chakroborty, N. (2004). Menstrual regulation practices in Bangladesh: An unrecognized form of contraception. *Asia-Pacific Population Journal*. Retrieved from https://www.researchgate.net/publication/237051031_Menstrual_Regulation_Practices_in_Bangladesh_An_Unrecognized_Form_of_Contraception

Kapil Ahmed, M., van Ginneken, J., & Razzaque, A. (2005). Factors associated with adolescent abortion in a rural area of Bangladesh. *Tropical Medicine & International Health: TM & IH*, *10*(2), 198–205. doi: https://doi.org/10.1111/j.1365-3156.2004.01362.x

Ministry of Health and Family Welfare (2014). পরিবার পরিকল্পনা অধিদপ্তর-স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়. [History | Directorate general of family planning, Ministry of health and family welfare]. Retrieved October 6, 2016, from http://www.dgfp.gov.bd/site/page/ca81e7a3-33dd-442b-90bc-da21a34a0c13/History

Nashid, T., & Olsson, P. (2007). Perceptions of women about menstrual regulation services: Qualitative interviews from selected urban areas of Dhaka. *Journal of Health, Population, and Nutrition*, *25*(4), 392–398. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18402181

National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International (2013). *Bangladesh Demographic and Health Survey 2011*. Retrieved from http://dhsprogram.com/publications/publication-FR265-DHS-Final-Reports.cfm

National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International (2016). *Bangladesh Demographic and Health Survey 2014*. Retrieved from http://dhsprogram.com/publications/publication-FR311-DHS-Final-Reports.cfm

National Institute of Population Research and Training (NIPORT), Mitra and Associates, & Macro International (2009). *Bangladesh Demographic and Health Survey 2007*. Retrieved from http://dhsprogram.com/publications/publication-FR207-DHS-Final-Reports.cfm

National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ORC Macro (2005). *Bangladesh Demographic and Health Survey 2004*. Retrieved from http://dhsprogram.com/publications/publication-FR165-DHS-Final-Reports.cfm

Planning Commission (1973). *The first five-year plan, 1973-1978*, 549.

Singh, S., Hossain, A., Maddow-Zimet, I., Bhuiyan, H.U., Vlassoff, M., & Hussain, R. (2012). The incidence of menstrual regulation procedures and abortion in Bangladesh, 2010. *International Perspectives on Sexual and Reproductive Health*, *38*(3), 122–132. doi: https://doi.org/10.1363/3812212

Uddin, M.N. (2012). Knowledge and practice of menstrual regulation: an assessment among the underprivileged people in Bangladesh. *Antrocom Online Journal of Anthropology*, *8*(2).

Vlassoff, M., Hossain, A., Maddow-Zimet, I., Singh, S., & Bhuiyan, H.E. (2012). Menstrual regulation and postabortion care in Bangladesh: Factors associated with access to and quality of services. *Guttmacher Institute*. Retrieved from https://pdfs.semanticscholar.org/240a/d34741ae2c70e8619247e1395538a0196f62.pdf