Does women empowerment alone influence contraception utilization in Bangladesh perspective? Findings from the 2017–2018 Demographic Health Survey using a structural equation model analysis

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BACKGROUND: Women empowerment is a crucial issue that is less studied as a factor of contraceptive use among married women that helps to achieve sustainable development goals.
OBJECTIVE: This study aimed to assess the relationship between women empowerment and contraceptive use.
STUDY DESIGN: This cross-sectional study used 2017–2018 Bangladesh Demographic and Health Survey data, which included 12,006 women (weighted) aged 15 to 49 years. Hierarchical logistic regression and structural equation models were used to show the relationship between women empowerment and contraceptive use.
RESULTS: Overall, increased use of contraception was associated with increased age, urban residence, increased wealth index, and education level of both the husband and wife. After controlling individual and locality factors, the findings from the regression model showed that women empowerment in terms of women decision-making, attitude toward violence, and social independence significantly influences contraceptive use ($P<.05$). However, the structural equation model analysis revealed a negative but nonsignificant relationship between overall women empowerment and contraceptive use ($\beta=-0.138$; $P>.05$).
CONCLUSION: This study implies that greater women empowerment may not always act as a stronger determinant of contraceptive use, and therefore, other contributing factors, such as age, education, religion, husband's participation, joined decision-making, economic status, and couple relationship, should be considered.

Key words: Bangladesh, contraception, health, structural equation model, women empowerment

Introduction

Women empowerment has grown in importance on the worldwide development agenda in recent decades and is used as a common development strategy in developing countries.[1] Access to contraception through family planning programs increases the likelihood of having the number of children they want and reduces the chance of unintended pregnancy that leads to abortion-related morbidity and mortality.[2] According to a recent report about Millennium Development Goals (MDGs) achievement and preparation of Sustainable Development Goals (SDGs), only a few countries have successfully achieved the target of reducing maternal and child mortality.[3] The goal 5 of the SDGs focuses on women empowerment and gender equality.

The idea of "empowerment" for women is broad and covers various topics, including the capacity for decision-making, autonomy, mobility, reproductive rights, economic independence, and legal rights to equal treatment, inheritance, and protection from discrimination. These factors work together to provide women more control over their family planning and reproductive decisions. The need to strengthen efforts to address structural factors that influence the use of contraceptives, such as women empowerment, and to better understand these factors is

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Why was this study conducted?

This study aimed to assess whether women empowerment alone influences contraceptive use in Bangladesh using data from the 2017−2018 Demographic and Health Survey.

Key findings

This study found that although women empowerment have some influence on contraceptive use, it is not the only factor. Other variables, such as education and socioeconomic status, play crucial roles. This study determined that the relationship between empowerment and these factors increases the likelihood of contraceptive use.

What does this study add to what is known?

This study contributes to the existing literature by providing a nuanced understanding of the relationship between women empowerment and contraceptive use in Bangladesh. This study challenges the notion that empowerment alone is sufficient to drive contraceptive use and highlights the importance of considering a broader range of sociodemographic factors. The use of structural equation modeling allowed for a more detailed analysis of the complex interactions among various factors, offering insights that can inform more effective policy interventions aimed at increasing contraceptive use in similar contexts.

highlighted by behaviors.[4] There are direct or indirect connections between women empowerment and the use of contraception as a method of managing fertility. Early 1990s data showed that empowered women in rural Bangladesh were more likely to use contraception than other women.[5] In recent years, there has been a growing focus on how gender-based power dynamics in men's and women's sexual interactions affect attitudes and behaviors connected to fertility.[6]

Bangladesh is a Muslim-majority country, and men systematically have more power and authority in the decision-making process than women.[7] However, Bangladesh has made significant progress in increasing the contraceptive prevalence rate (CPR) over the past few decades. The CPR in Bangladesh increased from 8.0% in 1975 to 61.9% in 2017 (2017−2018 Bangladesh Demographic and Health Survey [BDHS]), although this prevalence is slightly lower than the 2014 BDHS data (62.4%).[8] According to several studies, the use of contraception is positively affected by the empowerment of women in the marital sphere. Women empowerment and gender equality frequently play a significant role in the use of contraceptives and the fall in fertility.[9−11] Women's autonomy significantly affects contraceptive use, especially when it comes to issues involving reproductive rights. When women feel empowered, they are more likely to exercise their right to control their fertility and opt for reliable contraception.[4] Women are more likely to have access to and be able to afford various forms of contraception if they are economically independent and actively working. Therefore, increased contraceptive use and financial independence are linked.[12] Several previous studies in Bangladesh have evaluated the relationships between contraceptive use and women empowerment, which have focused on women's involvement in decision-making,[13−17] attitude toward violence,[15] and freedom of movement.[15−17] These variables provide a narrow scope for understanding the relationship between women empowerment and contraceptive use.[18,19] Other studies have evaluated the relationship of women empowerment with either economic factors or demographical factors.[18,19] A few studies showed education as an important factor for women empowerment.[20,21] A study conducted by Darteh et al[22] concluded that women's decision-making power is influenced by educational status related to reproductive health, especially condom use. However, a recent systematic review found that women empowerment has a negative relationship with reproductive health.[23] To address the gap in the literature, the current study aimed to evaluate the relationship between women empowerment and contraceptive use in Bangladesh using the recently developed index called the Survey-based Women's emPowERment (SWPER) index.[24,25]

The calculation of women empowerment is difficult because of its multidimensional term and complex nature. To better capture the multifaceted and complex construct of women empowerment and to allow for cross-country and cross-temporal comparability, Ewerling et al[24,25] created the SWPER index based on individual-level Demographic and Health Survey (DHS) data from 34 African nations, which was recently validated in Bangladesh. In Bangladesh, it is crucial to understand whether or not women empowerment is now influencing contraceptive use. This study explored the intricate relationship between women empowerment and contraceptive use in Bangladesh.

Materials and methods

Study design

This cross-sectional study was based on the secondary data from the recent 2017−2018 BDHS.[8] Data were obtained from the DHS website (https://dhsprogram.com/). The BDHS survey is a nationally representative survey conducted by the National Institute for Population Research and Training in collaboration with International Classification of Functioning, Disability and Health (ICF) International and Mitra and Associates. This survey was based on a 2-stage stratified sample of households. This survey selected 20,250 households for data collection and collected 20,127 data from ever-married women aged 15 to 49 years covering both rural and urban areas (response rate of 99%). The details regarding the survey's sampling methods, study design, and data collection can be found in the following link (https://dhsprogram.com/methodology/survey/survey-

FIGURE 1
A flowchart of sample selection

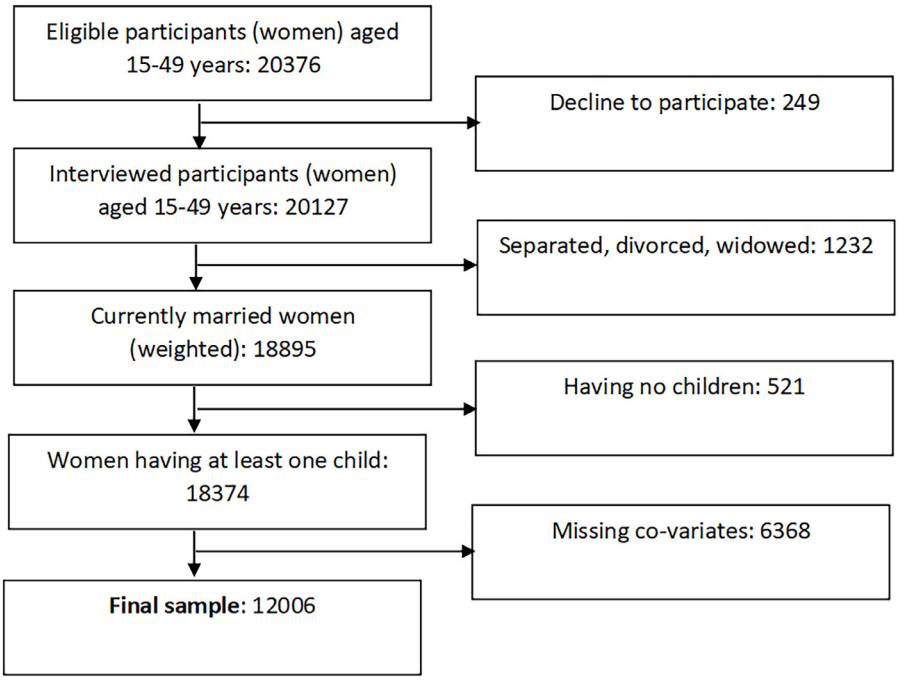

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TABLE 1
Description of exposure, outcome, and covariate variables

Exposure variables	Description
Women empowerment	Based on the SWPER index, 3 domains
	i. Decision-making (low, medium, or high empowerment) ii. Attitude toward violence (low, medium, or high empowerment) iii. Social independence (low, medium, or high empowerment)
Outcome variables	Current contraceptive use (yes or no)
	Methods of contraceptive use (no method, Folkloric method, traditional method, or modern method)
Covariates	Respondent's age (<24, 24–34, or >34 years)
	Education (primary/no education, secondary, or higher)
	Religion (Islam or others)
	Household wealth (poorest, poorer, middle, richer, or richest)
	Area of residence (rural or urban)
	Divisions
	Husband's education (primary/no education, secondary, or higher)
	Number of living child (<2, 2–4, or >4)

SWPER, Survey-based Women empowerment.

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display-536.cfm). The current study included 12,006 currently married women who delivered at least 1 child. A flowchart of selecting a sample for the current study is presented in Figure 1.

Exposure, outcome, and covariate variables

The effect of women empowerment on current contraceptive use was evaluated in the current study. The categories of exposure, outcome, and covariate variables are presented in Table 1.

Estimation of women empowerment

In the current study, women empowerment was measured using a survey-based women empowerment (SWPER) index.[24,25] The SWPER index was developed and validated for global use (including Bangladesh), which includes 3 domains: social independence (based on education, age at marriage and first child, and differences in age and education with partners), decision-making (questions related to decision-making in the household and women's work),

TABLE 2
Characteristics of respondents

Variables	Frequency (%)	Variables	Frequency (%)
Division		Wealth index	
Barisal	1023 (8.5)	Poorest	1470 (12.2)
Chittagong	1723 (14.4)	Poorer	1897 (15.8)
Khulna	1736 (14.5)	Middle	2343 (19.5)
Dhaka	1843 (15.4)	Richer	2709 (22.6)
Mymensingh	1298 (10.8)	Richest	3587 (29.9)
Rajshahi	1538 (12.8)		
Rangpur	1494 (12.4)		
Sylhet	1351 (11.3)		
Residence		Religion	
Rural	4916 (40.9)	Muslim	10,669 (88.9)
Urban	7090 (59.1)	Others	1337 (11.1)
Respondent's education		Age of respondents	
No education/primary	3768 (31.4)	<24 y	2701 (22.5)
Secondary	5789 (48.2)	24–35 y	5493 (45.8)
Higher	2449 (20.4)	>35 y	3812 (31.8)
Husband's education		Number of children	
No education/primary	4414 (36.8)	<2	1205 (10.0)
Secondary	4534 (37.8)	2–4	9451 (78.7)
Higher	3058 (25.5)	>4	1350 (11.2)

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TABLE 3
Distribution of outcome variables based on exposure variables

Variables	Contraception use (%)			Method of contraception use (%)			
	No	Yes	*P* value	Folkloric	Traditional	Modern	*P* value
Attitude toward violence			.147				.175
Low	1.3	1.7		6.7	2.0	1.7	
Medium	12.5	11.9		6.7	13.0	11.7	
High	86.2	86.4		86.6	85.0	86.6	
Decision-making			<.01				<.01
Low	5.7	5.6		6.7	4.6	5.8	
Medium	78.2	82.3		93.3	83.1	82.1	
High	16.2	12.1		0	12.3	12.1	
Social independence			.229				.081
Low	96.1	0.4		93.3	95.4	97.0	
Medium	3.5	2.9		6.7	4.0	2.7	
High	0.4	96.7		0	0.6	0.3	

P values were derived using the chi-square test.

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and attitude toward violence (includes 5 questions about the respondent's opinion on husband beating). Overall, 14 items were extracted from the DHS survey data to measure women empowerment, and principal component analysis was used to construct the index. To measure the index, the items were recoded, and the standard scores of the 3 domains were calculated using the formula of the SWPER index. Standard cutoff points were used as suggested by the authors to categorize the domains of the SWPER index into low, medium, and high empowerment.

Statistical analysis

Data were recoded, cleaned, and analyzed by using Excel (Microsoft, Albuquerque, NM) and SPSS software (version 23.0; SPSS Inc, Chicago, IL). Descriptive statistics were used to present frequencies and percentages of variables. A chi-square test was performed to evaluate the correlation of outcome variables with predictors. Binary and multinomial logistic regression models were used to assess the factors affecting contraceptive use and methods of contraception. The adjusted odds ratios (AORs) are presented to assess the strengths of association. In addition, hierarchical logistic regression was performed, where each variable was entered separately to assess the influence of women empowerment on contraceptive use.

A structural equation model (SEM) was used to test the hypothesized relationships between independent and dependent variables. The SEM analysis was performed on the basis of the maximum likelihood method and covariance matrix using SPSS Amos (version 23.0; IBM, Armonk, NY). The fitness of the model was estimated using root mean square error of approximation (RMSEA), Bentler's comparative fit index (CFI), and Tucker-Lewis Fit Index (TLI).[26] A P value of <.05 was considered statistically significant.

Ethical consideration

The study was based on secondary data, which were publicly available on the

TABLE 4
Factors affecting the use of contraception

Variables	Contraception use AOR (95% CI)	Method of contraception use AOR (95% CI)
Residence		
Rural	1 (reference)	1 (reference)
Urban	1.53 (1.38−1.68)[a]	1.16 (1.12−1.19)[a]
Age of respondents		
<24 y	1 (reference)	1 (reference)
24−35 y	1.66 (1.49−1.85)[a]	1.18 (1.14−1.23)[a]
>35 y	1.64 (1.45−1.85)[a]	1.09 (1.05−1.14)[a]
Religion		
Muslim	0.81 (0.70−0.93)[a]	0.93 (0.89−0.98)[b]
Others	1 (reference)	1 (reference)
Wealth index		
Poorest	1 (reference)	1 (reference)
Poorer	0.94 (0.80−1.11)	0.97 (0.92−1.03)
Middle	0.85 (0.73−1.003)	0.95 (0.90−1.01)
Richer	0.83 (0.70−0.97)[b]	0.93 (0.89−0.99)[b]
Richest	0.78 (0.65−0.92)[a]	0.92 (0.86−0.97)[a]
Respondent's education		
No education/primary	1 (reference)	1 (reference)
Secondary	1.04 (0.94−1.16)	1.02 (0.98−1.06)
Higher	1.35 (1.15−1.58)[a]	1.11 (1.05−1.17)[a]
Husband's education		
No education/primary	1 (reference)	—
Secondary	0.82 (0.74−0.91)[a]	0.93 (0.89−0.96)[a]
Higher	1.11 (0.95−1.27)	1.01 (0.95−1.05)
Number of children		
<2	1 (reference)	1 (reference)
2−4	4.05 (2.93−5.62)[a]	5.63 (5.01−6.34)
>4	5.33 (4.23−5.33)	1.11 (1.13−1.89)

AOR, adjusted odds ratio; *CI*, confidence interval.

[a] Significant at <0.01 level; [b] Significant at <0.05 level.

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DHS website. Therefore, there is no need for further ethical approval. Data accessibility is gained by sending a request to the DHS website.

Results

Table 2 presents the frequency and percentage of variables studied in the current study. There was an equal distribution of respondents among the administrative division and residential area. More than 88% of the women were Muslim. The weighted prevalence rates of higher education among respondents and their husbands were 20.4% and 25.5%, respectively. More than one-third of women had 2 to 4 living children. The wealth index showed that more than half of the women belonged from the middle families to the richest families.

Table 3 shows the percentage distribution of outcome variables concerning the main exposure variables. Contraceptive use among women was not associated with women's attitude toward violence and social independence. Women empowerment in decision-making was significantly associated with contraceptive use and the method of contraception. More than 90% of women who had medium to high decision-making power in the family used different types of contraceptive methods.

Women's age, education, and partner's education were significantly associated with contraceptive use and the method of contraception. Compared with women aged <24 years, those aged >35 years were 1.64 times (AOR, 1.64; 95% confidence interval [CI], 1.45−1.85) more likely to use contraceptives and 1.09 times (AOR, 1.09; 95% CI, 1.05−1.14) more likely to use modern contraceptive methods. Highly educated mothers had 1.35 times (AOR, 1.35; 95% CI, 1.15−1.58) higher possibility of using contraceptives than women who did not receive any formal education or who completed primary education. In addition, the area of residence was significantly associated with contraceptive use and the method of contraception. Muslim women were 0.81 times (AOR, 0.81; 95% CI, 0.70−0.93) more likely to use contraceptives than women of other religions. In women who belonged to the richest family, their chances of using contraceptives and modern methods of contraception increased by 0.78 times (AOR, 0.78; 95% CI, 0.65−0.92) and 0.92 times (AOR, 0.92; 95% CI, 0.86−0.97), respectively (Table 4).

The association of women empowerment in terms of attitude toward violence, decision-making power, and social independence with contraceptive use is shown in Table 5 after controlling the covariates (individual and locality factors). The findings from hierarchical logistic regression showed that women who had a medium-level attitude toward violence and social independence had significantly 0.715 times (AOR, 0.715; 95% CI, 0.515−0.994) and 0.810 times (AOR, 0.810; 95% CI, 0.655

TABLE 5
Association of women empowerment with contraception use controlling covariate factors

Variables	Use of contraception	
	AOR	95% confidence interval
Block 1: individual factors		
Respondent's age, education, religion, wealth index, and husband's education		
Block 2: locality factors		
Division and residence		
Block 3: women empowerment		
Attitude toward violence		
Low	1	
Medium	0.715[a]	0.515−0.994
High	0.746	0.545−1.021
Decision-making		
Low	1	
Medium	1.059	0.899−1.247
High	0.772[b]	0.641−0.930
Social independence		
Low	1	
Medium	0.810[a]	0.655−1.002
High	0.912	0.511−1.625

The AORs were derived from the final block of hierarchical logistic regression analysis.

AOR, adjusted odds ratio.

[a] Significant at <0.05 level; [b] Significant at <0.01 level.

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−1.002) greater chances of using contraceptives than those who had a low-level attitude toward violence and social independence, respectively. The odds of using contraceptives increased by 0.772-fold (AOR, 0.771; 95% CI, 0.641−0.930) when women had high-level decision-making power in the family.

Structural equation modeling

In the SEM analysis, the demographic variables associated with key relationships between women empowerment and contraceptive use were controlled in the model. The model (Figure 2) showed that the values of the goodness of fit, CFI, and RMSEA were 0.999, 0.995, and 0.017, respectively, indicating a good fit model.[20,21] This study assessed the effect of women empowerment in terms of social independence, attitude toward violence, and decision-making regarding contraceptive use. In controlling demographic data (number of children, women's and husband's education, and women's age), the effect of overall women empowerment on contraceptive use was negative and non-significant (β=−0.138; P=.193) (Figure 2).

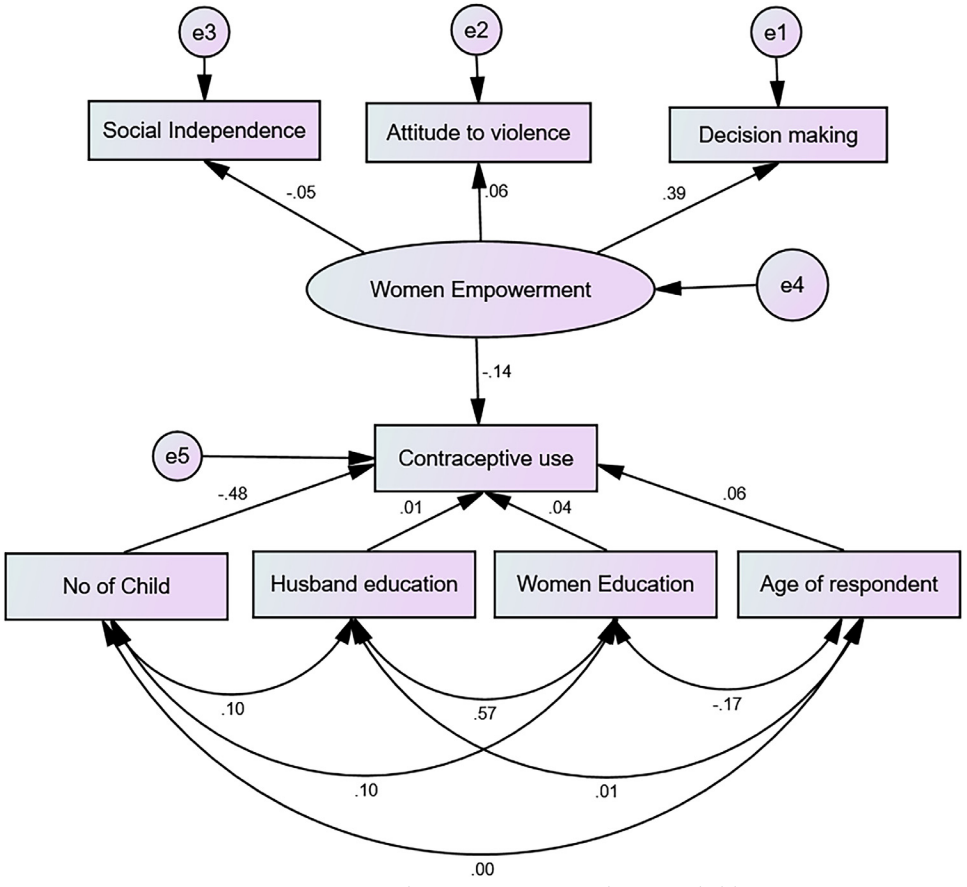
Discussion

For the betterment of national demographic outcomes, women's rights and issues in terms of women empowerment have been identified as major contributors. This current study addressed all aspects of women empowerment and its relationship with contraceptive use and the factors affecting women's use of contraceptives and different methods of contraception. This article is unique as it assesses different aspects of women empowerment through a theoretical structural model.

This study indicated a positive correlation between age and contraceptive use intervals, with older women more likely to use oral contraceptives, which is consistent with studies that were conducted in Ethiopia[27] and India.[28] A recent study conducted by Rana et al[29] in Bangladesh demonstrated that older women increasingly used contemporary methods of contraception as a result of increased availability and understanding. This mirrors a general trend, wherein women of a certain age are more motivated to engage in family planning and better comprehend the repercussions of doing so. With the increase in age, number of living children, betterment of socioeconomic condition, and women literacy, women's decision-making power increases.[30−32] However, in Bangladesh, the rate of using modern contraception methods among older women is not adequate, which can be considered an important factor for the stagnation of contraceptive use rates over the years.[33] Our findings match with the findings of the National Family Health Survey-4[28] in India, which showed that education plays a role in women receiving knowledge about contraceptives so that they can make decisions that are based on accurate information.[28] Educational initiatives explicitly aimed at younger women dramatically improve the student's comprehension of the various methods of birth control available to them.[34]

A low rate of contraceptive use among Muslim women found in this study is in line with those found in Rwanda.[35] According to Habyarimana and Ramroop,[35] this underscores the significance of taking a culturally sensitive approach when promoting, respecting, and addressing issues related to the influence of religion and cultural beliefs on family structure. In line with the current study findings, Idris et al[36] highlighted the importance of family planning programs that are culturally customized, taking into account religious beliefs while simultaneously supporting the use of contraceptives. The

FIGURE 2
Theoretical full structural model



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relationship between family wealth and increased use of contraceptives lends credence to the idea that financial resources play an essential role, which is in line with the findings of earlier research.[13,35]

The focus of the study on empowerment factors, such as aggressive intentions, decision-making power, and social autonomy, includes research conducted in India, which reveals that empowerment is a powerful factor in increasing contraceptive use among women.[37–39] The findings indicate favorable benefits, such as moderate empowerment in contraceptive use, and the relevance of women's decision-making capacity in family planning.[37,38] Similar to the findings of a study that was conducted in Nigeria,[39] this study revealed that enabling factors do not seem to affect whether women use contraceptives and the method of contraception. This study demonstrated that enabling factors do not seem to affect whether women use contraceptives. This demonstrates how critically important it is for family planning initiatives to consider the empowerment of women.

Our results demonstrate the multifaceted nature of the factors that influence women's use of contraceptives. Our findings are supported by a large body of previous research. Sociodemographic factors, such as age, level of education, religious affiliation, and socioeconomic standing, continue to have a substantial effect on contraceptive use. In addition, women empowerment, as assessed by their attitudes, decision-making power, and social independence, plays a crucial role in promoting the use of contraception and even in shaping the form of contraception that is selected. This empowerment is measured by women's social independence, decision-making capacity, and views. Empowerment, including women's education, employment, and family decision-making power, has been linked to lower fertility rates and better reproductive health.[23]

For initiatives to be successful in promoting family planning and the use of contraceptives, sociodemographic and empowerment-related characteristics should be taken into consideration, which may help to reduce fertility rates and promote healthy reproductive practices.[23] According to Wado et al[27] and Dhak et al,[28] educational efforts that target younger women and women with lower levels of education are particularly effective at raising awareness and knowledge about contraceptives. According to Habyarimana and Ramroop,[35] it is essential to employ tactics that are culturally sensitive to address the influence of religion and cultural

beliefs on decisions on family planning.[37–39] Research has shown that empowerment initiatives that promote women's participation in decision-making processes and the fight against gender-based violence can contribute to higher contraceptive use and improved reproductive health outcomes. According to Agha et al,[40] increasing the use of contemporary contraceptives requires an understanding of social norms and an effort to change those norms.

Strengths and limitations

Our study has 3 main strengths. First, our study used the multidimensional SWPER index to determine the relationship between women empowerment and contraceptive use, whereas other studies used few components of empowerment. Second, we used SEM analysis to help us explain the relationship and examine the direct and indirect relationships among the variables. Third, we used nationally representative data covering both rural and urban regions and had a large sample size that reduced the bias in the study.

However, the study is not without limitations. Although this study used a multidimensional SWPER index to estimate women empowerment, it was difficult to capture all the domains of women empowerment in a single index. As this study used secondary data, there are some limitations in the data analysis because of the available variables. We used data from women who are of reproductive age and married, which should not be generalized to women of all ages. Finally, this study cannot conclude a causal effect relationship because it is a cross-sectional study.

Conclusion

This research highlights the significance of women empowerment in influencing contraceptive use in Bangladesh. Our study emphasizes that women empowerment alone cannot influence contraceptive use. Age, education, and socioeconomic status are all important predictors of contraceptive use. Cultural and religious influences, especially among Muslim women, emphasize the importance of culturally sensitive approaches to family planning activities. Women's decision-making capacity, social autonomy, and husband's involvement are important enabling variables in increasing contraceptive use. Initiatives that promote women's participation in decision-making and reduce gender-based violence can improve reproductive health outcomes. Tailored interventions that take socioeconomic and empowering variables into account are crucial for promoting family planning and reproductive health in Bangladesh. Family planning services and community awareness programs by the Ministry of Health can help reduce attitudes toward women violence, which connect to overall reproductive health outcomes and women empowerment. More research is required to investigate these processes in greater depth and develop targeted tactics. ■

CRediT authorship contribution statement

Md. Nawal Sarwer: Writing – original draft, Visualization, Resources, Formal analysis, Writing – review & editing. **Effat Ara Jahan:** Writing – review & editing, Writing – original draft, Resources, Data curation. **Akibul Islam Chowdhury:** Writing – review & editing, Visualization, Supervision, Software, Methodology, Formal analysis, Conceptualization, Writing – original draft. ■

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