

# Role of women's empowerment in determining fertility and reproductive health in Bangladesh: a systematic literature review



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**INTRODUCTION:** Research on fertility and reproductive health has expanded rapidly. However, questions regarding the association between women empowerment and fertility in terms of the reproductive health status in Bangladesh remain unanswered. This study aimed to address these questions through a systematic literature review.

**METHODS:** In this review study, the PubMed, Scopus, Banglajol, and Google Scholar databases were searched systematically and screened in terms of the inclusion and exclusion criteria. Data from 15 articles included in this review were extracted for further assessment.

**RESULTS:** Fifteen studies with a total of 212,271 participants from Bangladesh met our selection criteria. Most of the articles were conducted on ever-married women aged 15 to 49 years using nationally representative Bangladesh Demographic and Health Survey data. The major religions were Islam (86.8%–90.2%) and Hinduism (10%–13%). The age of women at first marriage varied from 14 to 20 years, and the age at first birth ranged from 16 to 22 years. The fertility rate in Bangladesh has reduced remarkably over the period from 1975 to 2022. After controlling for other social and health factors, the study found that empowerment factors such as women's education, working status, involvement in household decision-making, participation in economic decision-making, and freedom in movement influenced the fertility and reproductive health status in Bangladesh.

**CONCLUSION:** As an initial step, this study found a negative relationship between women's empowerment and the control of fertility and reproductive health. Greater policy focus should be directed toward women empowerment factors to improve the fertility situation and reproductive health status in Bangladesh and other countries with similar sociodemographic profiles.

**Key words:** Bangladesh, fertility, reproductive health, systematic review, women empowerment

## Introduction

Fertility is the capacity of an individual to conceive offspring. Reproductive health encompasses the ability to reproduce and the freedom to choose whether, when, and how often to do so and a pleasant and safe sexual life. The 1994 International Conference on Population and Development provided an extensive definition of reproductive health, encompassing all aspects related to the health and proper functioning of the reproductive system.<sup>1</sup>

Scholars have tried to integrate existing knowledge on women's empowerment and international development. In a sole review by Blanc,<sup>2</sup> published over a decade ago, studies on the role of gender-based power in sexual relationships and its impact on reproductive health are summarized.<sup>2</sup> Reproductive health encompasses the ability to control one's own fertility, experience a safe pregnancy, and have healthy children. It is critical for all women, but it remains a significant

concern, particularly in low- and middle-income nations.

Although Bangladesh has made significant strides in the areas of health and family welfare, access to and the availability of reproductive and sexual healthcare remain challenging.<sup>3–5</sup> These challenges are further exacerbated by a lack of knowledge and awareness of the services, fear of social stigma, low reproductive health literacy, and gender violence.<sup>6,7</sup> Fertility is one of the key determinants of population change,

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## AJOG Global Reports at a Glance

**Why was this study conducted?**

Despite the rapid expansion of research on fertility and reproductive health, there is limited understanding of the impact of women's empowerment on fertility and reproductive health status in Bangladesh. This study was conducted to address this unanswered question.

**Key findings**

The findings indicate that empowerment factors such as women's education, working status, involvement in household decision-making, participation in economic decision-making, and freedom of movement were negatively associated with fertility and reproductive health status.

**What does this add to what is known?**

The study provides a comprehensive review of the literature and highlights the need for more policy attention on women's empowerment factors to improve the fertility situation and reproductive health status in Bangladesh and other countries with a similar sociodemographic profile.

because it regulates the size and structure of a country's population.<sup>8</sup> Concerns about reproductive health directly impact fertility.

Bangladesh has achieved a significant decline in fertility rates from 1975 to the present. In 1975, the fertility rate was 6.3 children per woman and reduced to 2.3 in 2014; it still remains at 2.3 children per woman based on reports of the Bangladesh Demographic and Health Survey of 2017 to 2018.<sup>9</sup> However, considering the current population size and the projected future population, the total population of the country is still high, suggesting a need for further essential reduction in fertility to prevent rapid population growth.<sup>10</sup> The fact that women struggle with fertility and reproductive health (FRH) is a sign of their limited decision-making capacity.<sup>11,12</sup> Human FRH, which are underlying components of population growth, are influenced by a variety of individual, household, community, national, and regional characteristics.<sup>13</sup> A woman's decision-making status also affects FRH outcomes in developing nations and communities.<sup>14–17</sup> Given the importance of empirical analyses for testing, rebutting, improving, and advancing theories of demographic and health outcomes, there is a need for context-relevant research on contemporary demographic change.

The literature reveals that fertility is influenced by various factors, including social, economic, demographic, and cultural aspects.<sup>18–26</sup> It is evident that the empowerment of women is a robust predictor of fertility in developed and developing countries.<sup>27–29</sup> According to Zeba and Kazi<sup>30</sup> who examined the data of 1036 Pakistani women, mobility was positively correlated with births within the last 5 years but negatively correlated with cumulative fertility. The freedom to make household purchases was also negatively correlated with recent fertility, whereas economic autonomy showed a positive correlation with recent fertility.<sup>30</sup> Empowerment can expand a woman's agency and resources, enabling her to play a crucial role in the family decision-making process, including limiting the number of children to the desired family size.<sup>15,31–33</sup> In a recent study from Nepal showed a significant correlation between women's empowerment and a woman's decision-making about their sexual and reproductive health.<sup>34</sup>

Women's empowerment has been recognized as a critical factor in reversing the fertility trends in any country. Several studies have been published on fertility and its differentials in South-Asian countries, including Bangladesh.<sup>14,16,35–40</sup> However, the findings of the studies are unevenly distributed with most of them

focusing either on the sociodemographic or the economic consequences of fertility.<sup>36,37</sup> Only a few studies investigated women's education and occupation as predictors of fertility.<sup>38,41</sup> One study demonstrated that women with secondary or higher education have a significantly smaller chance of having more births than those with primary education or illiteracy.<sup>38</sup> The same study also indicated that women who were engaged in professional activities have a lower likelihood of having more births. Education is one of the most important determinants of women's empowerment, because it was correlated with knowledge of marriage and the autonomy to engage in discussions about FRH issues among young girls.<sup>42</sup> In a study by Darteh et al,<sup>43</sup> the authors found that maternal education increases a woman's decision-making power related to reproductive health, particularly condom use.<sup>43</sup> Therefore, it can be hypothesized that the empowerment of women can play an important role in reducing fertility and improving reproductive health.

A review conducted by Upadhyay et al<sup>44</sup> included 35 studies conducted in South Asia and found positive associations between women's empowerment and lower fertility, longer birth intervals, and lower rates of unintended pregnancy.<sup>37</sup> However, previous attempts at synthesizing a summary of the existing knowledge on women's empowerment as it relates to fertility focused on fertility-related outcomes and were published more than a decade ago.<sup>44,45</sup> The findings on these directions are inconclusive, and currently, there is limited research on women empowerment in Bangladesh and other developing countries. Consequently, this study was aimed at conducting a systematic literature review to assess the impact of women's empowerment on FRH status in Bangladesh.

**Materials and Methods****Study guidelines and search strategy**

This study followed the recommendations and guidelines specified in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses

(PRISMA-P 2020).<sup>46</sup> The related articles indexed in the databases PubMed, Scopus, Banglajol, and Google Scholar were systematically searched and reviewed. We searched for articles on the role of women empowerment in the determination of FRH in the Bangladeshi population. For this, the search terms were as follows: “Women Empowerment and Fertility” OR “Women Autonomy and fertility” OR “Decision-making Autonomy” AND “Fertility” OR “Fertility Preferences” OR “Family Size” OR “Ideal Family Size” OR “Actual Fertility” OR “Desire Fertility” OR “Number of Children” OR “Reproductive Health” AND “Birth Intervals” AND “Contraception” OR “Contraceptive use” AND “Unplanned Pregnancy” OR “Unintended Pregnancy” OR “Pregnancy” OR “Pregnancy Spacing/Intervals” AND “Childbearing” AND “Bangladesh” according to the indices of the various databases (Table 1). We also scanned the reference lists of all the selected articles. All records were managed using Mendeley (version 1.19.4) reference manager to eliminate duplication.

**Study selection criteria**

Numerous inclusion and exclusion criteria were used during the selection of studies. Articles were included if they assessed the role of women’s empowerment in fertility in Bangladesh. The inclusion criteria for the studies were as follows: observational studies, cross-sectional studies, cohort studies, and case reports; studies published only in the English language; studies that examined women’s empowerment and fertility as either an independent or dependent variable; studies that examined women’s education or literacy; and studies conducted solely on the Bangladeshi population. Published books, newspaper articles, and editorials were excluded from the study. However, related book chapters were not excluded. The steps followed in the literature search are illustrated in Figure 1.

**Data extraction**

Data were extracted from all the relevant articles. After reaching a final decision, the following variables were extracted and included in the review for further processing: publication details (title, first author, publication year,

journal name, and publisher); design and study population (study area, study design, data source, and sample size); participant characteristics and major findings (Cronbach’s alpha for assessing study data quality, women’s age, domains of women’s empowerment, how autonomy was defined, how autonomy was measured, independent variables, dependent variables, and key outcomes). Two investigators (S.C. and M.M.R.) independently evaluated the full-text articles for inclusion after screening the titles and abstracts using the eligibility criteria. Disagreements were resolved through formal discussions with the coauthors. Following the guidelines, the study finally included 15 research articles for detailed analysis.

**Critical appraisal**

The risk of bias (ROB) score was calculated for each selected study using the modified ROB operational criteria according to the method described by Hoy et al<sup>47</sup> in 2012. Study quality was categorized as low risk (score, 0–3), moderate risk (score, 4–6), and high ROB (score, 7–9). Among the 15 selected studies, all of them were found

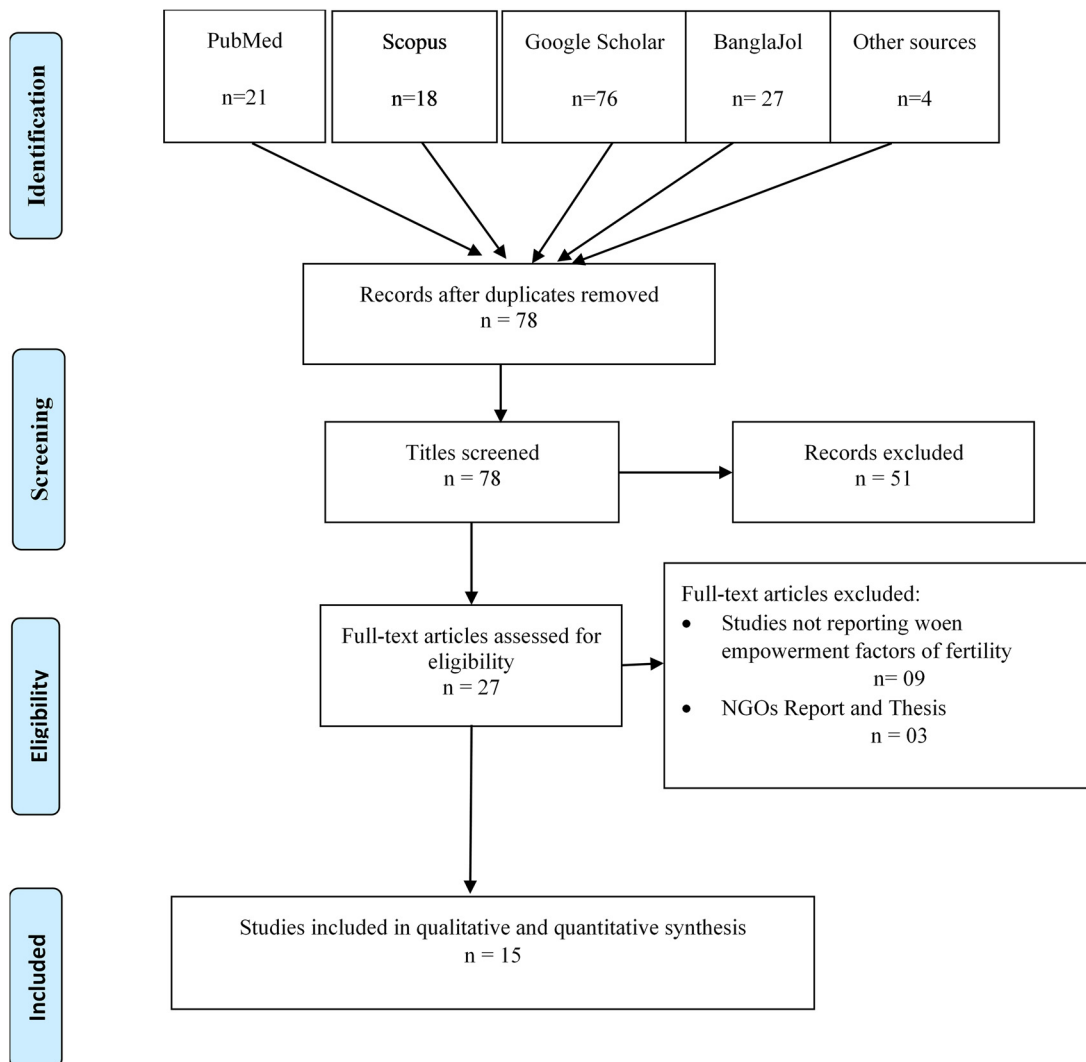
**TABLE 1**  
**Search strategy used in different databases**

PubMed and Scopus	Google Scholar	BanglaJol
Search((((((((((((((Women Empowerment)) OR (Women Autonomy)) OR (Decision-making Autonomy)) AND (Fertility[MeSH Terms])) OR (fertility preferences)) OR (Family Size)) OR (Ideal Family Size)) OR (Actual Fertility)) OR (Desire Fertility)) OR (Number of Children)) OR (Reproductive Health)) AND (Birth Intervals)) OR (Unplanned Pregnancy)) OR (Unintended Pregnancy)) OR (Pregnancy)) OR (Pregnancy Spacing/Intervals)) AND (Childbearing)) AND (Contraceptive use)) AND (Bangladesh)	((Women Empowerment) OR (Women Autonomy) OR (Decision-making Autonomy)) AND ((Fertility) OR (fertility preferences) OR (Family Size) OR (Ideal Family Size) OR (Actual Fertility) OR (Desire Fertility) OR (Number of Children) OR (Reproductive Health)) AND ((Birth Intervals) OR (Unplanned Pregnancy) OR (Unintended Pregnancy) OR (Pregnancy) OR (Pregnancy Spacing/Intervals)) AND (Childbearing) AND (Contraceptive use) AND (Bangladesh)	1. Women Empowerment 2. Women Autonomy 3. Decision-making Autonomy 4. Fertility 5. fertility preferences 6. Family Size 7. Ideal Family Size 8. Actual Fertility 9. Desire Fertility 10. Number of Children 11. Reproductive Health 12. Birth Intervals 13. Unplanned Pregnancy 14. Unintended Pregnancy 15. Pregnancy 16. Pregnancy Spacing/Intervals 17. Childbearing 18. Contraception 19. Contraceptive use 20. Bangladesh

MeSH, Medical Subject Heading.

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**FIGURE 1**  
Flow diagram for included studies in the systematic review



NGOs, nongovernment organizations.

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to have a low ROB, and none of them was categorized as having a moderate or high ROB (Table 2).

### Statistical analysis

This study defined and characterized the measures of empowerment and fertility as they were used in other studies. The online literature management tool, Mendeley (Mendeley Headquarter, White Bear Yard, 144a Clerkenwell Road, London EC1R 5DF; England, United Kingdom), was used to facilitate the review process. The backgrounds and key findings of the research were summarized and synthesized in tables

and figures. The domains related to women's empowerment and fertility were summarized in a tabular format.

### Results

#### Selection of the research articles

Our systematic search initially identified a total of 146 articles from different databases. Of these articles, 68 were removed because of duplication or because they did not meet the inclusion criteria or because of the exclusion criteria. This left us with a pool of 78 articles for further screening. After screening the titles and abstracts, 51 articles were excluded, and 27 articles

were selected for full-text assessment of eligibility. Following a thorough examination of the methodology and results in the full-text articles, an additional 12 articles were excluded, giving a final selection of 15 articles for further investigation (Figure 1).

#### Background characteristics of the reviewed articles

A total of 13 of the 15 included studies were conducted in both rural and urban settings. In 87% (n=13) of the studies, secondary survey data sets, such as the Bangladesh Demographic and Health Survey (BDHS), World Fertility Survey,

**TABLE 2**  
**Modified ROB score sheet for each study included in the review**

Study	①	②	③	④	⑤	⑥	⑦	Overall score
1 Islam, <sup>48</sup> 2014	0	0	0	0	0	1	0	Low ROB
2 Afroja et al, <sup>49</sup> 2018	0	0	0	0	0	1	0	Low ROB
3 Paul et al, <sup>38</sup> 2014	0	0	0	0	0	1	0	Low ROB
4 Duvendack and Palmer-Jones, <sup>17</sup> 2016	0	0	0	0	0	1	0	Low ROB
5 Haq, <sup>50</sup> 2018	0	0	0	0	0	1	0	Low ROB
6 Alam et al, <sup>51</sup> 2018	0	0	1	0	0	0	0	Low ROB
7 Islam and Nesa, <sup>52</sup> 2009	0	0	0	0	0	1	0	Low ROB
8 Haq et al, <sup>53,54</sup> 2019	0	0	0	0	0	1	0	Low ROB
9 Haq et al, <sup>53,54</sup> 2019	0	0	0	0	0	1	0	Low ROB
10 Rahman et al, <sup>55</sup> 2014	0	0	0	0	0	0	0	Low ROB
11 Kabir et al, <sup>56</sup> 2005	0	0	0	0	0	1	0	Low ROB
12 Kabir et al, <sup>56</sup> 2005	0	0	0	0	0	1	0	Low ROB
13 Haq et al, <sup>5</sup> 2017	0	0	0	0	0	1	0	Low ROB
14 Schuler et al., <sup>74</sup> 1997	0	0	1	0	0	1	1	Low ROB
15 Deb et al, <sup>57</sup> 2010	0	0	0	0	0	1	0	Low ROB

NM, not mentioned; ROB, risk of bias.

①, Target population was a close representation of the population; ②, sampling frame a close representation of the target population; ③, a census was undertaken; ④, underreporting or ascertainment bias; ⑤, acceptable case definition; ⑥, study instrument that measured the parameter of interest shown to have reliability and validity; ⑦, same mode of data collection used for all subjects.

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and Bangladesh Fertility Survey, were used for data analysis. Only 2 studies collected primary cross-sectional data. In most of the studies, the sample size was sufficiently large and quantitative data analysis techniques were employed. The majority of the studies investigated the relationship between women's empowerment and fertility progression in Bangladesh using a nationally representative secondary survey data set. Of all the studies, 80% (n=12) focused on ever-married women, whereas the remaining 3 studies included currently married women of reproductive age (Table 3).

### Sociodemographic status of women reported in the reviewed studies

The sociodemographic profiles of women were reported in Supplemental Table. Across the 15 reviewed studies, the age of mothers ranged from 12 to 49 years with a mean age varying from 27.19 to 29.8 years. The illiteracy rate decreased to 10.5% in 2018 when compared with a rate of 68.9% in 1989. The

majority of the women identified as Muslim (86.8%–90.2%), followed by Hinduism as the second most popular religion (10%–13%). Respondents' current economic status showed improvements based on the wealth index with more women engaging in employment. The age at first marriage for women ranged from 14 to 20 years, whereas the age at first birth varied from 16 to 22 years (Supplemental Table).

### Dependent variables and domains of fertility and reproductive health used in the reviewed studies

In this study, 7 dependent variables were identified that assessed FRH behaviors (Figure 2). The variables include fertility measures (such as cumulative fertility, number of living children, parity-specific fertility, and total fertility rate [TFR]), fertility control behavior, current use of contraception, intention to use contraception in the future, maternal health-seeking behavior (including antenatal and

postnatal care), discussion with husband around contraception use, and the desire for additional children.

In addition, we identified 18 independent variables that were representative of the domains of FRH in Bangladesh. Of these variables, 10 were sociodemographic and economic factors, 5 were related to health, and 3 were related to women's empowerment (Figure 2).

The most frequently observed women's empowerment domains included women's participation in household decision-making (such as participating in household matters, healthcare, child healthcare, personal healthcare, and contraceptive decision-making), women's involvement in economic decision-making (including decision-making related to spending money, final say on large household purchases and daily needs, and involvement in microfinance or Non-Government Organizations), and mobility or freedom of movement (such as having the final say on visiting family or relatives and the ability to go to health centers or hospital alone).

### The role of women empowerment factors in fertility and reproductive health

The empowerment factors associated with the FRH among Bangladeshi women are presented in Table 4. The frequently observed significant empowerment-related risk factors included female education, freedom of mobility, economic security with contribution to family support, partner's education and occupation, family wealth index, and participation in family decision-making. Most of the studies indicated that women with higher education and employment had greater empowerment in decision-making, which in turn contributed to reduced fertility rates and improved healthcare seeking behaviors within the family. Furthermore, it was evident that empowered women were more likely to use contraception and less likely to have higher numbers of births. Women's freedom of mobility and involvement in various microfinance activities were also found to be associated with empowerment and a decrease in fertility rates.

**TABLE 3**  
**Background characteristics of reviewed studies**

Author	Setting	Study objectives	Study design	Sample size	Data source
Islam, <sup>48</sup> 2014	Urban and rural	Explored the link between female education and cumulative fertility and progression of parity-specific fertility (up to the 4th birth) in Bangladesh.	Representative survey	N=17,833 ever-married women	BDHS 2011
Afroja et al, <sup>49</sup> 2018	Urban and rural	Assessed the impact of women empowerment in use of maternal healthcare	Representative survey	n=17,842 ever-married women, 1875 recently married women aged 15-49 y	BDHS 2014
Paul et al, <sup>38</sup> 2014	Urban and rural	Identified the possible impact of women's status on fertility behavior in Bangladesh	Representative survey	N=10,192 currently married women	BDHS 2007
Duvendack and Palmer-Jones, <sup>17</sup> 2016	Urban and rural	Analyzed the relationships among microfinance, women's empowerment, and fertility reduction	Representative survey	Not mentioned	WFS 1975, BFS 1989, BDHS 1993–2011
Haq, <sup>50</sup> 2018	Urban and rural	Examined the relationship between women's empowerment and their contraceptive norms in Bangladesh	Representative survey	N=17,989 ever-married women aged 15-49 y; 5047 ever married in urban and 12,816 ever married women in rural areas	BDHS 2014
Alam et al, <sup>51</sup> 2018	Rural	Aimed to identify the regional variations in fertility control behavior among reproductive women in rural Bangladesh with its associated factors applying TPB	Representative survey	N=1285 married women of reproductive age (15–49 y) having at least 1 child	Cross-sectional survey
Islam and Nesa, <sup>52</sup> 2009	Urban and rural	Determined the major sociodemographic determinants of contraceptive use in Bangladesh	Representative survey	N=11,440 ever-married women	BDHS 2004
Haq et al, <sup>53,54</sup> 2019	Urban and rural	Aimed to find the relationship between female education and desired family size	Representative survey	N=38,648 ever-married women	BDHS 1993–1994, 2004, and 2014
Haq et al, <sup>53,54</sup> 2019	Urban and rural	Assessed the relationship between the impact of woman's status on fertility and contraceptive use in Bangladesh	Representative survey	N=17,886; ever-married women	BDHS 2014
Rahman et al, <sup>55</sup> 2014	Urban and rural	Explored the women's decision-making autonomy as a potential indicator of the use of contraception in Bangladesh	Representative survey	N=8456 currently married and nonpregnant women	BDHS 2007
Kabir et al, <sup>56</sup> 2005	Urban and rural	Identified the contribution of proximate factors on fertility transition in Bangladesh	Representative survey	N=9696 currently married women	BDHS 1999-2000
Kabir et al, <sup>56</sup> 2005	Urban and rural	Aimed to determine the factors contributing to decreasing fertility in Bangladesh	Representative survey	N=30,674 ever-married women	BFS 1989; BDHS 1993–94, and BDHS 1996–97

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(continued)

**TABLE 3**  
**Background characteristics of reviewed studies** (continued)

Author	Setting	Study objectives	Study design	Sample size	Data source
Haq et al, <sup>5</sup> 2017	Urban and rural	Examined the role of education on fertility reduction in Bangladesh and identified the factors of fertility, explained the fertility transition according to various educational groups of women in Bangladesh	Representative survey	N=38,648 ever-married women (9495, 11,290, and 17,863)	BDHS 1993–1994, 2004, and 2014
Schuler et al., <sup>74</sup> 1997	Rural	Assessed the relationships between credit programs, women's empowerment, and contraceptive use in Bangladesh	Representative survey	N=1305 married women	Survey and ethnographic research
Deb et al, <sup>57</sup> 2010	Urban and rural	Examined the association between mean age at marriage, education, and fertility among the residence of Bangladesh	Representative survey	N=10,996 ever-married women	BDHS 2007

BDHS, Bangladesh Demographic and Health Survey; BFS, Bangladesh Fertility Survey; TPB, Theory of Planned Behavior; WFS, World Fertility Survey.  
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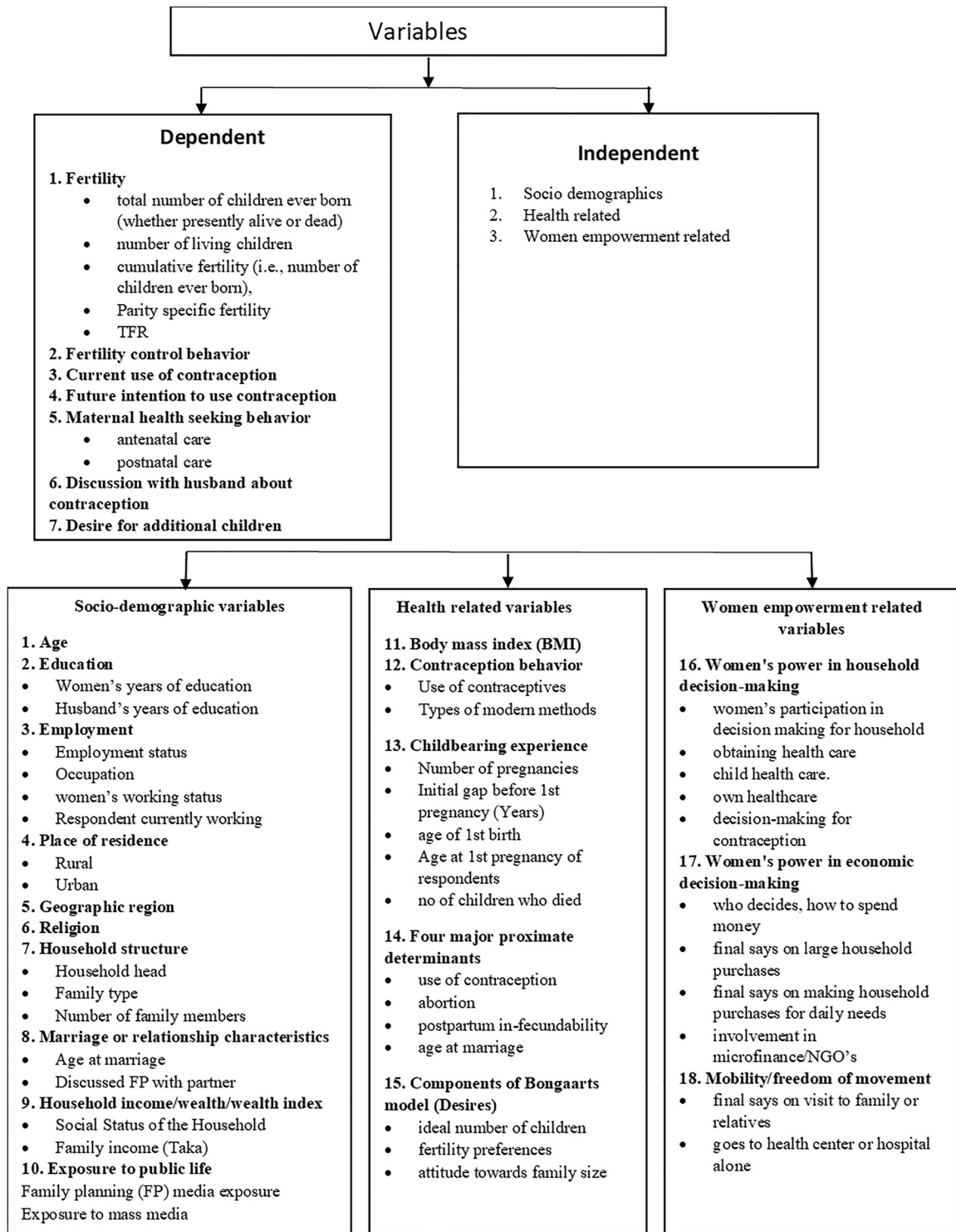
## Discussion

Women's FRH play a crucial role in the broader context of public health. Previous research focused on various social, economic, and health factors that influence fertility control. However, recent literature suggests that women's empowerment—related factors also contribute to FRH control.<sup>5,38,49,51</sup> Although social and health factors directly influence fertility control, it is hypothesized that women's empowerment is also linked to FRH.<sup>5,15,49,51,58–61</sup> Understanding current and total fertility is essential for monitoring population growth and developing policies and programs. The fundamental drivers of population growth, namely human FRH outcomes, are influenced by various individual, household, community, national, and regional characteristics. During the initial literature search, we found that there were very few studies discussing women's empowerment—related issues in FRH control in Bangladesh.<sup>17,38,45,48–50,52–54,57</sup> Most of these studies were cross-sectional in nature, and we did not find any review-based studies on this topic. As a first initiative to address all these issues, we reviewed several Bangladesh-based articles from different time periods to provide a more comprehensive understanding of the relationship between women's empowerment and fertility and reproductive behavior.

Overall, this study identified various women's empowerment factors related to FRH in Bangladesh. The most frequently observed factors in the included studies were women's education, employment status, household decision-making power, power in economic decision-making, and freedom of movement.<sup>5,38,49–51</sup> This review study examined the inverse relationship between women's empowerment and fertility and the positive association between women's empowerment and reproductive health in Bangladesh. This suggests that an empowered woman can contribute to fertility control and improve their reproductive health.

Education is widely recognized as a powerful tool for a woman in the society. Educated women have the ability to

**FIGURE 2**  
**Dependent and independent variables used in the reviewed studies**



NGOs, nongovernment organizations; TFR, total fertility rate.

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**TABLE 4**  
**Determinants, key outcomes, and limitation of fertility reported in the reviewed studies**

Study	Risk factors of fertility and reproductive health	Key outcomes	Limitation
Islam, <sup>48</sup> 2014	Female education, age at first cohabitation, labor market participation, positive attitude toward small family, wealth index, partners education	<ol style="list-style-type: none"> <li>1. Education of females was inversely related with cumulative fertility.</li> <li>2. Females with higher levels of education were more likely to have a lower chance of having children and lower progression to parity-specific fertility than their counterparts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regional variations in fertility were not considered.</li> <li>2. Respondents' employment status and wealth index were not truly reflective of their employment situation at the time of each birth.</li> </ol>
Afroja et al, <sup>49</sup> 2018	Women's education, wealth index, decision maker for using contraception, partner's education, women's working status, beating justified if wife goes out without telling husband, neglects the children, argues with husband, refuses to have sex with husband, burns the food.	<ol style="list-style-type: none"> <li>1. Respondent's education, wealth index, decision-making regarding contraception use, husband's education, working status, beating justified if wife goes out without telling husband, neglects the children, argues with husband, refuses to have sex with husband, burns the food, women's body mass index, and age at 1st birth were the significant factors that determined antenatal care receipt.</li> <li>2. Wealth index, working status, person who usually decides on visits to family or relatives, and beating justified if wife argues with husband were the significant factors associated with receipt of postnatal care.</li> <li>3. Higher educated and working women were more empowered in decision-making, which helped them to seek healthcare.</li> </ol>	Not mentioned
Paul et al, <sup>38</sup> 2014	Women's age at marriage, education	<ol style="list-style-type: none"> <li>1. Female's status indicators uniformly affected the fertility.</li> <li>2. Women married at later ages were less likely to give more births than those who were married at early ages.</li> </ol>	Not mentioned
Duvendack and Palmer-Jones, <sup>17</sup> 2016	Women's microfinance involvement, education, employment, wealth, residence, age at first marriage, participation in family decision-making	<ol style="list-style-type: none"> <li>1. Improved well-being was claimed to be a paradigmatic case of modern family planning</li> <li>2. Microfinance leading to women's empowerment and fertility reduction.</li> <li>3. Causal links between microfinance and family planning through women's empowerment needs to be reconsidered further.</li> </ol>	Not mentioned
Haq, <sup>50</sup> 2018	Empowerment status	<ol style="list-style-type: none"> <li>1. Empowerment status was a significant determinant of women's contraceptive norms.</li> </ol>	Not mentioned
Alam et al, <sup>51</sup> 2018	Women's empowerment, fertility control knowledge, FP attitude, social influence, perceived behavioral control, fertility intention.	<ol style="list-style-type: none"> <li>1. Implicit regional variations were observed in fertility control behavior of rural women.</li> <li>2. Empowered women were more likely to use contraception and less likely to give more births.</li> </ol>	<ol style="list-style-type: none"> <li>1. Study sampling was not representative.</li> <li>2. The study had few inherent limitations to describe the significance of predictors with fertility control behavior of women.</li> </ol>
Islam and Nesa, <sup>52</sup> 2009	Education, age at first marriage, wealth, and current working status	<ol style="list-style-type: none"> <li>1. Education, age at first marriage, wealth, and current working status were found to be significant factors in determining women's contraceptive use.</li> <li>2. Women's decision in their desired number of children may increase the practice of contraceptives.</li> </ol>	Not mentioned

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(continued)

**TABLE 4**  
**Determinants, key outcomes, and limitation of fertility reported in the reviewed studies** (continued)

Study	Risk factors of fertility and reproductive health	Key outcomes	Limitation
Haq et al, <sup>53,54</sup> 2019	Education	<ol style="list-style-type: none"> <li>1. Well-educated women were observed to have fewer children than women who were uneducated.</li> <li>2. The average age at marriage was 2 years older for women with secondary or higher level of education than for those who had no education.</li> <li>3. Educational attainment of a woman was inversely related to the desire for additional children.</li> </ol>	Not mentioned
Haq et al, <sup>53,54</sup> 2019	Education, employment status, discussed FP with partner	<ol style="list-style-type: none"> <li>1. About 78% have used contraceptives in their lifetime.</li> <li>2. Education, occupation, and discussion around FP with partners were significantly associated with the number of living children and ever use of contraception.</li> <li>3. Significant negative correlation found between the number of living children and FP discussion with the partner, age at first marriage, and age.</li> <li>4. Discussing FP with partners led to a 3.5-times significantly greater possibility of ever using contraceptives than those who did not discuss FP.</li> </ol>	1. Not so many control variables were addressed. Some more models and interaction terms could have been introduced to validate the effect of control variables.
Rahman et al, <sup>55</sup> 2014	Household decision-making autonomy, currently working status, and women's education	<ol style="list-style-type: none"> <li>1. Household decision-making autonomy was significantly associated with current use of contraception, future intention to use contraception, and discussion with husbands about contraception.</li> <li>2. Women's participation in household decision-making can greatly increase the use of contraception in Bangladesh.</li> <li>3. Women's current work status, religion, and place of residence were statistically significantly associated with current use of contraception and discussing contraception use with husband.</li> <li>4. Currently working women and urban women were significantly more likely to use contraception and discuss it with husband.</li> <li>5. Delay in childbirth may be caused by the loss of their earnings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Women's autonomy has a multidimensional nature, but the author measured women's autonomy using only some family decision-making domains and ignored other important factors such as freedom of movement and economic freedom.</li> <li>2. Women were only asked about current decision-making patterns, whereas most of the childbearing was done in the past.</li> <li>3. The authors only considered decision-making from the point of view of the woman, not both members of the married couple.</li> <li>4. Cause-effect relationships cannot be inferred.</li> </ol>
Kabir et al, <sup>56</sup> 2005	Residence, women's education, and wealth status	<ol style="list-style-type: none"> <li>1. Women with higher education were less likely to experience early marriage and more likely to use contraception and abortion services.</li> <li>2. Women's economic status positively affected marriage, contraception, and induced abortion.</li> <li>3. Postpartum infecundability was negatively associated with economic status</li> </ol>	Not mentioned
Kabir et al, <sup>56</sup> 2005	Age at marriage, education, residence, mass media exposure, and religion	<ol style="list-style-type: none"> <li>1. Women's age at marriage, education, residence, mass media exposure, and religion were the important determinants of fertility transition in</li> </ol>	Not mentioned

**TABLE 4**  
**Determinants, key outcomes, and limitation of fertility reported in the reviewed studies (continued)**

Study	Risk factors of fertility and reproductive health	Key outcomes	Limitation
Haq et al, <sup>5</sup> 2017	Women's residence, education, and wealth index	Bangladesh. 2. Older age at first marriage significantly reduced the TFR of women. 1. Fertility dropped significantly with respect to residence with women's education and wealth. 2. Women having secondary and higher education attained near replacement level of fertility. 3. The women who were illiterate and poor had the highest TFR (4.1), whereas a rich woman with secondary education had the lowest TFR in Khulna and Rajshahi divisions.	1. Logic behind Poisson regression was not mentioned adequately and also truncated or deflated Poisson regression can be addressed.
Schuler et al., <sup>74</sup> 1997	Freedom of mobility, economic security, and contribution to family support.	1. Women's involvement in credit programs increased contraceptive use in rural Bangladesh. 2. Three measures of women's empowerment (eg, economic security and involvement in family support, freedom of mobility, and relative freedom from domination by the family) were found to be statistically significant effects on contraceptive use.	Not mentioned
Deb et al, <sup>57</sup> 2010	Women's residence, age at first marriage, and education	1. There was a negative but significant association between children ever born and age at first marriage and education. 2. The increase in age at marriage significantly reduced the total fertility of women. 3. Secondary and higher education of women tended to have 1.45 times fewer children than uneducated women.	1. Methodological limitations were observed.

FP, family planning; TFR, total fertility rate.

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voice their opinions and to make decisions regarding childbearing.<sup>62–64</sup> The impact of women's education on fertility is both direct and indirect.<sup>65,66</sup> Education can influence the age at first marriage and first birth, child breast-feeding practices, desired fertility, and social norms surrounding family size.<sup>65–67</sup> Research suggests that higher levels of education are associated with a lower number of children and reduced progression to parity-specific fertility when compared with women with lower education levels.<sup>48</sup> A study conducted by Islam and Nesa<sup>52</sup> in 2009 revealed that across all education levels, rural areas had higher TFRs and total marital fertility rates than urban areas. Similarly, a study by Haq et al<sup>54</sup> in 2019 found that women who resided in rural areas had a higher tendency to have more children than their urban counterparts. In addition, Kabir et al<sup>56</sup> in 2004 observed differences in education levels between rural and urban populations with higher levels of education noted among urban residents.

Women's occupation or employment status has emerged as a crucial factor in controlling fertility and promoting reproductive health in Bangladesh as indicated by the findings of numerous studies. The majority of the studies concluded that women who were currently employed were significantly more inclined to use contraception and to engage in discussions about contraception with their husbands than women who were not employed. This relationship has been supported by several other studies.<sup>68–70</sup>

Women's power in household decision-making has been identified as an important factor in controlling fertility and promoting reproductive health.<sup>55</sup> Our review study revealed a significant positive association between women's empowerment in household decision-making and contraceptive behavior. Increased participation of women in household decision-making was found to be associated with higher contraceptive use and lower fertility rates in Bangladesh.<sup>55,71</sup>

Furthermore, women's involvement in family economic decision-making

was found to be another key factor in controlling FRH in Bangladesh. Several studies indicated that women who participated in decision related to household purchases, savings, and microfinance or NGOs had a lower number of children than those who had limited involvement.<sup>17,72</sup>

In addition, women's mobility or freedom of movement emerged as a significant risk factor in controlling FRH. Women's say in visiting family or relatives and in going to the market, health centers, or hospital was linked to women's empowerment, which in turn contributed to controlling FRH. The findings align with previous studies on the subject.<sup>49,51,73</sup>

The purviews of this review are similar to other systematic review studies in that its search terms and eligibility standards would possibly restrict the scope of review. Many of the selected articles did not report the limitations of their studies, and most of the reviewed articles were cross-sectional in nature, limiting our understanding of the causal pathways and directionality of the relationship between women's empowerment and fertility. Moreover, women's empowerment is a multidimensional concept, but few studies only measured it using specific domains of household decision-making while neglecting other influential factors such as freedom of movement and financial freedom. In addition, some studies focused only on women's current decision-making patterns without considering the patterns at the time of childbirth. Furthermore, the review primarily focused on currently married women with no examination of never-married women. Future research should consider collecting data from both partners to account for men's behaviors and fertility aspirations and to assess concordance between couples about reproductive intentions.

### Conclusion

Our review provides a substantial body of evidence that supports the hypothesis that the empowerment of women is inversely related to fertility and positively associated with women's reproductive health. Since its independence,

Bangladesh has seen a remarkable reduction in its fertility rate, and among the contributing factors, empowerment-related factors have played a significant role. These factors include women's education, employment status, involvement in household decision-making, participation in economic decision-making, and freedom of movement and contribute to the ongoing debate among demographers and health researchers on the primary drivers of fertility declines, highlighting the importance of female empowerment. Considering the aim of slowing rapid population growth, prioritizing women's empowerment becomes crucial. We anticipate that this review will serve as a valuable resource for researchers, practitioners, and policymakers by providing guidance for future research endeavors and programmatic efforts. ■

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### Supplementary materials

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