Disability and Health Journal 17 (2024) 101651

Contents lists available at ScienceDirect

Disability and Health Journal

journal homepage: www.disabilityandhealthjnl.com

Pattern of contraceptive use among reproductive-aged women with disabilities in Bangladesh: Evidence from multiple indicator cluster survey 2019

Md Badsha Alam, BSS [a], Md Shohel Rana, BSS [a], Md Awal Kabir, PhD [b], Shimlin Jahan Khanam, MSS [a], Md Nuruzzaman Khan, PhD [a,*]

[a] Department of Population Science, Jatiya Kabi Kazi Nazrul Islam University, Trishal, Mymensingh, Bangladesh
[b] Department of Social Work, Pabna University of Science and Technology, Pabna, Bangladesh

ARTICLE INFO

Keywords:
Contraceptive use
Women with disabilities
Multiple indicator cluster survey
Bangladesh

ABSTRACT

Background: Contraception is crucial for reproductive-aged women with disabilities, empowering them to manage reproductive choices and enhancing overall health, autonomy, and well-being.
Objective: The objective of this study was to examine the usage patterns of contraceptive methods among reproductive-aged women with disabilities in Bangladesh.
Methods: We analyzed data from 47,465 reproductive-aged women from the 2019 Bangladesh Multiple Indicator Cluster Survey. Outcome variables included contraceptive usage patterns, grouped into any contraceptive methods, any modern contraceptive methods, and any traditional contraceptive methods. The primary explanatory variable considered was disabilities level (women with no disabilities, women with moderate disabilities, and women with severe disabilities), along with types of disabilities. A multilevel mixed-effects logistic regression model was used to assess associations between outcomes and explanatory variables while accounting for confounding.
Results: The prevalence of any contraceptive methods use was 66.4 %, declining to 54 % among women with severe disabilities. The odd of modern contraception use was 31 % lower (aOR, 0.69, 95 % CI, 0.65–0.73) among women with moderate disabilities and 47 % lower (aOR, 0.53, 95 % CI, 0.47–0.60) among those with severe disabilities, compared to women with no disabilities. Within the individual domains of disabilities, those with vision, walking, cognitive, and self-care-related disabilities reported lower odds of modern contraception uptake than those with no disabilities.
Conclusions: The study highlights that women with disabilities use contraceptives less often, increasing vulnerability to unintended and short interval pregnancies and unsafe abortion. Strengthening family planning and prioritizing women with disabilities for modern contraceptives are vital.

Introduction

On a global scale, approximately 1.3 billion individuals have disabilities, and a striking 80 % of this population calls low- and middle-income countries (LMICs) as their home.[1] Among these countries, the prevalence of disabilities among reproductive-aged women (15–49 years) is estimated to range from 10 % to 15 %. However, it is important to note that this rate can vary significantly depending on the categorization of the disabilities measures employed.[2] Consequently, this demographic encompasses an estimated 100 to 150 million women with disabilities of reproductive age across LMICs.[1,3] The growing population of individuals with disabilities in LMICs is expected to increase in the coming years, driven by improved medical care that enhances survival rates.[4] Persons with disabilities, often isolated from mainstream society and heavily depend on family and government support for their livelihoods.[5] In this context, their sexual and reproductive health is marginalized, leading to lower uptake of family planning and contraceptive methods, increasing the risk of unintended and short-interval pregnancies.[6–8] It also places women with disabilities at a higher risk of induced abortion; however, related data are scarce. Globally,

* Corresponding author. Department of Population Science, Jatiya Kabi Kazi Nazrul Islam University, Bangladesh.
E-mail addresses: sumonrupop@gmail.com, nuruzzaman.khan@unimelb.edu.au (M.N. Khan).

https://doi.org/10.1016/j.dhjo.2024.101651
Received 31 August 2023; Received in revised form 16 April 2024; Accepted 6 June 2024
Available online 7 June 2024
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approximately half of all unintended pregnancies are terminated by abortion.[9] In Bangladesh, this equates to around 1,580,000 abortions each year, the majority of which are illegal, given that abortion is completely prohibited in the country except when necessary to save the mother's life.[9,10] This situation places women with disabilities at a higher risk of adverse maternal and child outcomes, as documented in existing literature on LMICs.[11–13]

Limited research has been conducted to explore the extent of family planning and contraceptive method utilization among women with disabilities in LMICs. The majority of these studies have been conducted in African settings, including Nigeria, Uganda, and Ghana.[1,14–18] However, research in South Asian settings is notably scarce.[19,20] This stands in stark contrast to the abundance of evidence indicating that sexual activity is similar among individuals with or without disabilities,[14] and a comprehensive exploration of contraception use among general population at the national and regional levels, considering a wide range of covariates.[21–25] Furthermore, the impact of ensuring contraception among women with disabilities is shown to be more significant than among those without disabilities, revealing a return of US$10 for every US$1 spent compared to the US$8 for every US$1 spent in the general population.[1,26] Existing studies have highlighted that only one-third (27–49 %) of reproductive-aged women with disabilities use contraception, which is mostly less than half of the overall prevalence of contraception use in corresponding countries.[19,27–30] This situation diverges notably from developed countries, where contraception use among women with disabilities is notably high, surpassing 70 %.[14,31]

Contradictions also exist among studies in LMICs concerning the methods of contraception used. Some studies reported long-acting methods are dominating among women with disabilities while other studies indicated no difference in the uptake of modern contraceptive methods and a higher reliance on traditional contraceptive methods.[14,32,33] These discrepancies are exacerbated by the analysis being conducted at regional levels and with smaller sample sizes, as none of the studies have analyzed nationally representative data thus far.[27–30] The emphasis placed on family planning and contraceptive methods at both the national and regional levels, coupled with tailored programs designed to address the specific needs of this demographic, further widens this gap.[24,34]

These gaps present significant challenges for Bangladesh, where 3.1 % of reproductive-aged women are living with disabilities, and their sexual and reproductive health, especially family planning and contraception use, remains largely unexplored with available studies primarily analyzing regional-level data and lacking comprehensive explorations.[19,35,36] This underscores the need for country-level analyses to uncover the prevalence of contraceptive method uptake among women with disabilities.

To address this gap, the current study focuses on exploring the prevalence of contraceptive method uptake among women with disabilities in Bangladesh. Additionally, the study delves into variations in contraceptive method uptake across different levels and types of disabilities.

Methods

Study design and sampling strategy

Data were extracted from the 2019 Multiple Indicator Cluster Survey (MICS), a nationally representative cross-sectional survey that aims to gather data on various indicators related to the well-being of women and children.[37] The survey was conducted by the Bangladesh Bureau of Statistics (BBS) in collaboration with the United Nations Children's Fund (UNICEF) and other collaborators, including UNFPA. The survey was carried out using a two-stage stratified cluster sampling technique covering all 64 districts of Bangladesh. At the first stage of sampling, a total of 1300 PSUs (an area with an approximate population of 200–300 households) were selected. At the second stage, 20 households were selected from each PSU through systematic random sampling techniques, resulting in a total sample of 64,400 households. Among the selected households, 61,602 were occupied, of them, 61,242 were successfully interviewed for a household with a response rate of 99.4 %. Among the selected households, a total of 68,711 eligible women met the inclusion criteria: reproductive aged married women who either reside in the selected households as usual residents or stayed there during the most recent night. Of these eligible women, 64,378 women were successfully interviewed, yielding a response rate of 93.7 %. Detailed information on the sampling procedure has been published elsewhere.[37]

Analyzed sample

We analyzed a total of 47,465 women data from the original sample who met the inclusion criteria for this study. The criteria were: (i) women aged 15–49 who were married at the time of the survey, (ii) women not pregnant or in the post-partum amenorrhea period, (iii) women not desiring pregnancy within two years of the survey date, and (iv) women who reported their disabilities status.

Outcome variables

The primary focus was on the utilization status of contraception. We categorized this into three groups based on the survey data regarding contraceptive method usage and the specific types used. These groups encompass: (i) any methods (modern or traditional contraceptive methods vs no methods), (ii) modern methods (modern contraceptive methods vs traditional or no methods), and (iii) traditional methods (traditional method vs no methods). The relevant information was collected through the question, "*Are you currently using any method to delay or prevent pregnancy?*" Responses were categorized as "yes" or "no". For those responding "yes," additional questions were posed, such as "*What methods are you currently using to prevent pregnancy?*" The gathered responses were consolidated to form the variables considered in this study, aligning with World Health Organization recommendations.[38] Modern contraception methods encompass sterilization (male and female), intra-uterine device (IUD), injectables, implants, pills, condoms (male and female), and Diaphragm/Foam/Jelly. Traditional contraception methods include periodic abstinence and withdrawal.

Explanatory variables

The primary exposure variables in this study were the level of disabilities (women with no disabilities, women with moderate disabilities, women with severe disabilities) and types of disabilities. These variables were derived from the responses to a set of six questionnaires administered during the survey, following the guidelines provided by the Washington Group on Disability.[39] These six questionnaire encompassed all six domains for assessing disabilities: vision, hearing, mobility, self-care, communication, and cognition [39]**.** They were: (1) *Do you experience difficulty with your vision, even while using glasses?* (2) *Do you experience difficulty with your hearing, even with the assistance of a hearing aid?* (3) *Do you encounter difficulty with walking or ascending stairs?* (4) *Do you face challenges with remembering or maintaining focus?* (5) *Do you find self-care activities, such as bathing, dressing, feeding, toileting, etc., to be problematic?* and (6) *Do you struggle with communication, such as comprehending or being understood?* Respondents were given four options for each question to response: (a) no difficulty, (b) some difficulty, (c) a lot of difficulty, or (d) unable to see/hear/walk/remember/self-care/communicate at all. We utilized these responses to determine the levels of disabilities. Women were classified as no disabilities if they reported no difficulty in all six questions, moderate disabilities if they reported some difficulty in any of the six questions, and severe disabilities if they reported "a lot of difficulty" or "were unable to function" in any of the six domains. Furthermore, the

types of disabilities were also considered as explanatory variables.

Covariates

Several covariates were included to account for potential confounding influences on the relationship between the exposure variables and the outcome variables. These covariates were chosen through an extensive review of prior literature and their availability in the MICS dataset.[27,29,40,41] The included covariates were then classified as individual, household, and community level factors. Individual level factors were women's age (18–24 years, 25–34 years, and ≥35 years), education (pre-primary, primary, secondary, and higher), maternal parity (no children, 1–2 children, and 3 or more children), and exposure to mass media (not exposed, exposed). Household wealth quintile (poorest, second, middle, fourth, and richest) was included as the household level factor. The community level factors included were place of residence (urban and rural), and administrative divisions (Barishal, Chattogram, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, Sylhet).

Statistical analysis

Descriptive statistics were used to describe the characteristics of the respondents. Multilevel mixed-effects logistic regression models were used to explore the association between exposure and outcome variables adjusted for covariates. The multilevel mixed effects logistic regression model was used because of nesting structure of the MICS data, where individuals were nested within a household and households were nested within a cluster. Previous studies have indicated that the simple logistic regression model overestimates or underestimate the true effects for nested data and recommended using multilevel logistic regression model.[42] We run both unadjusted and adjusted models for each of the three outcomes. Unadjusted models were run with only outcome and explanatory variable whereas in adjusted model effects of covariates were adjusted in the association between exposure and outcome variable. We considered the sampling weight and complex survey design in all analyses. Results were recorded as unadjusted (cOR) and adjusted odds ratio (aOR) along with their corresponding 95 % confidence intervals (95 % CI). This study was designed and reported following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[43] All statistical methods were incorporated in accordance with the relevant guidelines and regulations. All statistical analyses were conducted using the Stata software (version 14.0; Stata Corp.org, College Station, Texas, USA).

Results

Background characteristics of the study participants

Table 1 presents background characteristics of the respondents. The mean age of the respondents was 32.7 (±8.5) years. Nearly 19 % of total respondents did not receive any formal education. Among the respondents, approximately 54 % had 1-2 children at the time of the survey. Around 77 % of the total respondents resided in rural areas. One-fourth of the total women reported Dhaka as their region of residence.

Prevalence and types of disabilities among reproductive aged women in the sample

Among the study sample, we observed a prevalence of 21.9 % for moderate disabilities and 3 % for severe disabilities (Table 2). Among women with severe disabilities, the most prevalent form of disabilities (1.1 %) was related to vision, followed by walking disabilities (0.8 %) and cognitive disabilities (0.8 %). The distribution of disabilities across age groups reveals its presence in all age categories, with a higher prevalence observed among women aged 35 and older (Fig. 1).

Table 1
Background characteristics of the respondents, MICS, Bangladesh, 2019 (N = 47,465).

Characteristics	Percentage	95 % CI
Individual level factors		
Ages of women, mean (±SD)	32.7 (±8.5)	
18–24 years	20.4	20.0–20.9
25–34 years	37.6	37.1–38.1
≥35 years	42.0	41.4–42.4
Women's education		
Pre-primary	18.6	18.1–19.1
Primary	26.0	25.5–26.5
Secondary	42.1	41.6–42.7
Higher	13.3	12.8–13.8
Maternal parity		
No children	6.6	6.4–6.9
1–2 children	54.1	53.6–54.7
3 or more children	39.2	38.7–39.8
Exposure to mass media		
Not exposed	31.5	30.7–32.2
Exposed	68.5	67.8–69.3
Household level factors		
Wealth status		
Poorest	17.8	17.1–18.4
Second	19.5	19.0–20.0
Middle	20.2	19.6–20.7
Fourth	21.0	20.4–21.6
Richest	21.5	20.8–22.3
Community level factors		
Place of residence		
Urban	23.0	22.5–23.4
Rural	77.0	76.6–77.5
Administrative divisions		
Barishal	5.6	5.5–5.8
Chattogram	18.3	17.9–18.7
Dhaka	25.5	25.0–26.0
Khulna	12.4	12.1–12.7
Mymensingh	6.5	6.3–6.7
Rajshahi	14.0	13.7–14.3
Rangpur	11.4	1.2–11.6
Sylhet	6.2	5.9–6.6

Table 2
Distribution of disability and their levels and types in the sample of the 2019 Multiple Indicator Cluster Survey, Bangladesh.

Disability level	Percentage (95 % CI)
Women with no disabilities	75.1 (74.6–75.6)
Women with moderate disabilities	21.9 (21.4–22.4)
Women with severe disabilities	3.0 (2.9–3.2)
Six domains of severe disabilities status	
No disabilities	97.0 (96.8–97.1)
Vision related disabilities	1.1 (1.0–1.2)
Hearing related disabilities	0.2 (0.2–0.3)
Walking disabilities	0.8 (0.7–0.9)
Cognitive disabilities	0.8 (0.7–0.9)
Self-care related disabilities	0.1 (0.1–0.2)
Communication related disabilities	0.04 (0.02–0.06)

Contraception usage patterns among women of reproductive age in the sample across different disabilities levels

The pattern of contraceptive methods uses among women whose data were analyzed is presented in Table 3. Reported prevalence of any contraceptive methods use in the sample was 66 % (95 % CI: 65.9–77.0). This percentage was 54 % (95 % CI: 51.2–56.7) among women having severe disabilities. Among all contraceptive method users, almost 63 % (95 % CI: 62.0–63.2) reported using any modern contraceptive methods. This was approximately 14 % and 7 % higher than the usage rates of 49 % (95 % CI: 46.3–51.8) and 55.7 % (95 % CI: 54.6–56.8) for modern contraceptive methods among women with severe and moderate disabilities, respectively. Oral contraceptive pills (36.3 %, 95 % CI:

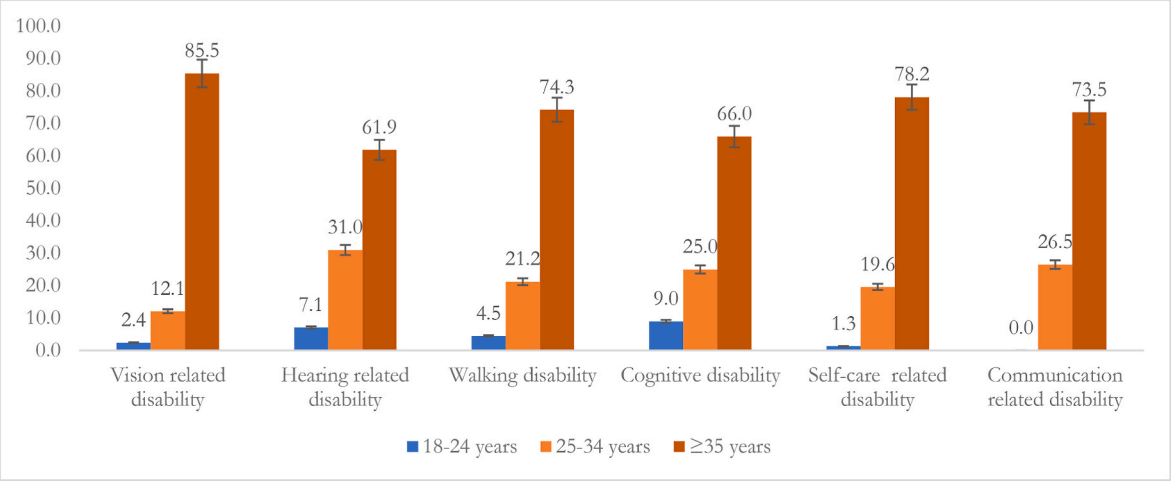


Fig. 1. Distribution of disabilities across age groups.

35.8–36.9) and injectables (12.8 %, 95 % CI: 12.4–13.2) were two most commonly used forms of contraceptive methods in the sample we analyzed.

Distribution of contraceptive methods use among reproductive aged women in the sample with several types of disabilities

The distribution of contraceptive method usage across domains of disabilities is presented in Table 4. Among women with moderate disabilities, the prevalence of contraception uptake ranged from 56 % (n = 288) to 64 % (n = 2062), depending on the type of disabilities. In the case of severe disabilities, this prevalence declined to 49 % (n = 376)-53 % (n = 518), depending on the types of disabilities. The lowest prevalence modern contraception uptake was found among women with self-care-related disabilities, both for those with moderate disabilities and those with severe disabilities. When considering covariates, a higher utilization of modern contraceptive methods was observed among women with relatively younger ages and higher levels of education (Supplementary Table 1). Conversely, traditional contraceptive methods were more prevalent among women with lower educational attainment and those residing in the Sylhet division.

Association between disabilities and contraceptive methods uptake in the sample

The unadjusted and adjusted associations between contraceptive method uptake and disabilities levels are presented in Table 5. The results of the full model are presented in Supplementary Tables 2–3. The unadjusted models demonstrated a reduced prevalence of both any contraceptive methods and modern contraceptive methods used, along with an increased prevalence of traditional contraceptive methods used, among women with disabilities across various levels. These associations predominantly persisted even after adjusting for covariates at the individual, household, and community levels. Specifically, we observed the odds of modern contraception use declined by around 31 % (aOR, 0.69, 95 % CI, 0.65–0.73) and 47 % (aOR, 0.53, 95 % CI, 0.47–0.60) among women with moderate disabilities and severe disabilities, respectively. Conversely, for traditional contraceptive methods, we found higher odds for women with moderate disabilities (aOR, 1.27, 95 % CI, 1.11–1.46) and self-care-related disabilities (aOR, 3.93, 95 % CI, 1.19–12.99). Of the adjusted factors, women's higher education, higher exposure to mass media, and administrative divisions in Khulna, Rajshahi, and Rangpur were associated with increased uptake of any contraception and modern contraception (Supplementary Tables 2–3). The effects of these adjustment factors remained consistent when subgroup analysis was conducted based on the types of disabilities (Supplementary Tables 4–6).

Discussion

The objective of this study was to investigate the patterns of contraceptive method uptake among women with disabilities and analyze the associations between contraceptive method uptake and disabilities levels and types of disabilities. Around 63 % of sample analyzed reported use of modern contraceptive methods, a figure that decreased to 49 % among women with severe disabilities. This percentage exhibited further disparities across various forms of disabilities, with women facing self-care and walking-related disabilities reporting the lowest use of modern contraceptive methods. Among those who did report any contraceptive use, women with disabilities were less likely to use modern methods compared to their peers without disabilities. Moreover, those with disabilities were more likely to use traditional contraceptive methods. These findings are robust as they are produced from large sample sizes and have been adjusted for a wide array of covariates. The outcomes underscore the fact that women with disabilities in Bangladesh exhibit lower contraceptive method uptake, potentially elevating their risk of unintended pregnancies and pregnancies with shorter intervals, leading to higher parity. These circumstances impose a significant burden on women with disabilities, particularly escalating the risks of adverse maternal and child health outcomes, including maternal and child mortality.

The findings of this study highlighting the reduced odds of contraceptive method uptake among women with disabilities, coincide with studies conducted in India that have reported analogous trends of decreased utilization of modern contraceptive methods among women with disabilities.[20,28] However, these results contrast with the findings of studies conducted in the USA,[44] presenting a differing perspective on this issue. Such disparities across countries, contingent on the economic and socio-economic statuses of each nation, could be attributed to the intricate interplay of social, cultural, and community level factors. Women with disabilities in LMICs and Bangladesh face obstacles at the community level, including restricted access to comprehensive sexual and reproductive health information through direct consultation, which has declined over the years in Bangladesh.[1,45,46] Another important method of disseminating family planning information in Bangladesh is through mass media exposure, which has been found effective in increasing contraception uptake among women with disabilities in this study, as in other studies involving the general population.[24,35,46] The underlying reasons are that mass media raise awareness about the importance of family planning, contraception options, and how to access

Table 3
Patterns of contraceptive methods use among women included in the 2019 Multiple Indicator Cluster Survey, Bangladesh.

Contraception use	Total %, (95 % CI) (N = 47,465)	Women with no disabilities, % (95 % CI) (N = 35,637)	Women with moderate disabilities, % (95 % CI) (N = 10,387)	Women with severe disabilities, % (95 % CI) (N = 1441)
Any contraception use	66.4 (65.9–77.0)	66.8 (66.3–67.4)	61.1 (60.1–62.2)	54.0 (51.2–56.7)
Modern contraception use	62.6 (62.0–63.2)	63.0 (62.5–63.6)	55.7 (54.6–56.8)	49.0 (46.3–51.8)
Female sterilization	3.5 (3.3–3.7)	3.4 (3.3–3.6)	5.1 (4.6–5.6)	5.6 (4.4–7.1)
Male sterilization	0.5 (0.5–0.6)	0.5 (0.5–0.6)	0.8 (0.6–1.0)	0.8 (0.4–1.4)
Intrauterine device (IUD)	0.7 (0.6–0.8)	0.7 (0.6–0.8)	0.8 (0.6–1.1)	1.0 (0.6–1.8)
Injectables	12.8 (12.4–13.2)	12.9 (12.5–13.3)	12.4 (11.7–13.2)	10.3 (8.7–12.2)
Implants	1.7 (1.6–1.9)	1.7 (1.6–1.9)	1.6 (1.3–1.8)	1.6 (1.0–2.4)
Pills	36.3 (35.8–36.9)	36.7 (36.2–37.3)	28.7 (27.7–29.7)	24.2 (21.8–26.7)
Condoms (male and female)	6.9 (6.6–7.2)	6.9 (6.6–7.2)	6.2 (5.6–6.8)	5.2 (4.1–6.5)
Diaphragm/Foam/Jelly	0.03 (0.01–0.06)	0.02 (0.01–0.05)	0.08 (0.04–0.2)	0.1 (0.03–0.8)
Lactational Amenorrhea Method (LAM)	0.1 (0.1–0.2)	0.1 (0.01–0.1)	0.1 (0.1–0.2)	0.3 (0.1–0.7)
Traditional contraception use	4.3 (4.0–4.5)	4.2 (4.0–4.5)	6.1 (5.6–6.7)	5.6 (4.2–7.3)
Periodic abstinence	2.5 (2.3–2.6)	2.4 (2.3–2.6)	3.6 (3.2–4.0)	3.7 (2.6–5.2)
Withdrawal	1.8 (1.6–2.0)	1.8 (1.6–2.0)	2.5 (2.2–2.9)	1.9 (1.2–2.9)
Currently not using	33.6 (33.0–34.1)	33.2 (32.6–33.7)	38.9 (37.8–40.0)	46.0 (43.3–48.8)

Notes: All percentages are weighted. Column percentages are presented. 95 % CI = 95 % Confidence Intervals.

Table 4
Distribution of contraceptive methods use among women with moderate and severe level of disabilities in Bangladesh (N = 11,828).

Women with moderate disabilities (N = 10,387)				Women with severe disabilities (N = 1441)			
Disability domains	Any methods use, % (95 % CI)[+]	Any modern methods use, % (95 % CI)[++]	Any traditional methods use, % (95 % CI) [++]	Disability domains	Any methods use, % (95 % CI)[+]	Any modern methods use, % (95 % CI) [++]	Any traditional methods use, % (95 % CI) [++]
Vision related disabilities (n = 3335)	62.0 (52.4–70.3)	55.9 (36.0–77.1)	6.7 (6.4–7.2)	Vision related disabilities (n = 518)	53.4 (48.6–58.3)	47.5 (42.7–52.3)	7.0 (4.5–10.5)
Hearing related disabilities (n = 572)	64.3 (55.6–75.0)	60.2 (51.1–73.2)	4.4 (2.7–7.2)	Hearing related disabilities (n = 106)	61.9 (51.4–71.3)	60.6 (50.1–70.1)	1.4 (0.3–5.9)
Walking disabilities (n = 2062)	60.4 (50.1–69.0)	54.7 (43.0–51.3)	6.3 (6.5–8.1)	Walking disabilities (n = 376)	49.7 (44.3–55.1)	44.5 (39.2–50.0)	5.6 (3.4–9.1)
Cognitive disability (n = 3874)	60.9 (52.0–72.1)	56.0 (35.8–76.2)	5.6 (3.4–9.2)	Cognitive disabilities (n = 369)	57.2 (52.0–62.3)	53.4 (48.1–58.6)	4.0 (2.4–6.7)
Self-care related disabilities (n = 288)	55.7 (50.3–61.2)	49.0 (35.1–51.2)	7.4 (5.1–11.2)	Self-care related disabilities (n = 54)	49.9 (35.9–63.8)	40.4 (27.8–54.9)	13.0 (4.8–30.5)
Communication related disabilities (n = 257)	59.1 (48.6–68.7)	55.1 (49.5–61.2)	5.4 (3.1–8.9)	Communication related disabilities (n = 18)	57.2 (34.6–77.1)	57.2 (34.6–77.1)	0

Note: [+], [++]Row percentages is presented for all cases. [+]Sum of any modern methods use and any traditional method use.

Table 5
Multilevel mixed-effects logistic regression model to assess the associations of contraceptive use among women with disabilities adjusted with individual, household, and community level factors in Bangladesh, 2019 (N = 47,465).

Exposures	Contraceptive methods					
	Any methods use		Any modern methods use		Any traditional methods use	
	cOR (95 % CI)	aOR (95 % CI)+	cOR (95 % CI)	aOR (95 % CI)+	cOR (95 % CI)	aOR (95 % CI)+
Disability level						
Women with no disabilities (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Women with moderate disabilities	0.72 (0.68–0.76)[a]	0.70 (0.66–0.75)[a]	0.67 (0.63–0.71)[a]	0.69 (0.65–0.73)[a]	1.67 (1.45–1.90)[a]	1.27 (1.11–1.46)[a]
Women with severe disabilities	0.53 (0.47–0.60)[a]	0.53 (0.47–0.61)[a]	0.51 (0.45–0.57)[a]	0.53 (0.47–0.60)[a]	1.56 (1.14–2.15)[a]	1.16 (0.84–1.60)
Six domains of severe disabilities						
No disabilities (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Vision related disabilities	0.59 (0.48–0.73)[a]	0.65 (0.52–0.81)[a]	0.55 (0.45–0.68)[a]	0.63 (0.51–0.78)[a]	1.63 (1.00–2.67)[b]	1.24 (0.76–2.04)
Hearing related disabilities	0.79 (0.51–1.23)[a]	0.73 (0.46–1.16)	0.86 (0.55–1.34)	0.80 (0.51–1.27)	0.39 (0.09–1.82)	0.39 (0.08–1.77)
Walking disabilities	0.49 (0.39–0.62)[a]	0.51 (0.40–0.64)[a]	0.48 (0.38–0.61)[a]	0.53 (0.42–0.67)[a]	1.19 (0.67–2.09)	0.83 (0.47–1.45)
Cognitive disabilities	0.64 (0.51–0.81)[a]	0.65 (0.52–0.82)[a]	0.64 (0.51–0.80)[a]	0.66 (0.52–0.83)[a]	1.05 (0.59–1.84)	0.93 (0.53–1.65)
Self-care related disabilities	0.49 (0.27–0.91)[b]	0.56 (0.29–1.09)	0.38 (0.20–0.72)[a]	0.44 (0.22–0.86)[a]	4.37 (1.36–14.05)[b]	3.93 (1.19–12.99)[b]
Communication related disabilities	0.59 (0.23–1.60)	0.59 (0.20–1.69)	0.68 (0.26–1.80)	0.71 (0.26–1.98)	**0**	**0**

Note.
aOR: adjusted odds ratio. cOR: Crude odds ratio. Ref: reference category. CI: Confidence interval. +Models were adjusted for women's age, education, maternal parity, exposure to mass media, household wealth status, place of residence, and administrative division.
[a] $p < 0.01$.
[b] $p < 0.05$.

them.[32,47] However, this prevalence has also declined in Bangladesh over the decades, in line with the government's priority to focus on population management rather than population control.[47] This decline severely impacts family planning and contraception knowledge at the grassroots level, particularly among women with disabilities. Moreover, there is a community perception that family planning and contraception are not important for women with disabilities. They also face higher societal stigmatization which hindering them candid conversations about reproductive choices.[1,45] These are particularly higher among illiterate women and rural women.[35,40,48] These findings can also lead to the discovery of higher uptake of traditional contraception among women with disabilities in the Sylhet division, as reported in this study, which is also comparable to other studies covering the general population.[25,47,49] However, the higher prevalence of community and religious misconceptions, as well as the longer distance to the nearest healthcare facility in the Sylhet division, may also contribute to the higher uptake of traditional contraception there,[47,49] although these possibilities have yet to be confirmed. These barriers negatively impact their knowledge of the significance of family planning and contraception, ultimately leading to lower contraceptive methods uptake as well as higher use of traditional contraception.

These barriers are further intensified by challenges at the family planning provider level. In Bangladesh, the Director General of Family Planning Services plays a pivotal role in providing family planning and contraception services at the community level. This includes visiting eligible couple homes in every 14 days to provide family planning counselling and contraception through community-based family planning assistants. Nevertheless, these services frequently exhibit concerning characteristics, including a consistent decline in household visits (from 46 % in 2000 to 18 % in 2017/18) and sporadic provision of family planning counselling and contraceptive methods.[46,50,51] Regrettably, such practices often overlook the specific requirements of individuals with disabilities. This increases private sector contribution (from 28 % in 2000 to 49 % in 2017/18) to provide contraceptive methods.[7,47] However, accessing these services requires a service charge, which is prohibitively expensive for people with disabilities in Bangladesh, given their greater reliance on family and government social safety nets to meet their basic needs.

Additionally, within the current family planning framework in Bangladesh, family planning and contraception services are available both household level and healthcare facilities level, with long-acting modern contraception primarily accessible at healthcare centers.[49] This represents a significant departure from the previous approach of ensuring family planning and contraception at the household level with the aim of increasing uptake of contraception.[7,49] However, this change often has unintended consequences, as community-based family planning assistants, who are responsible for providing contraception at the household level, may assume that respondents have alternative options if they miss home visits.[47] These are in addition to the community level perception that family planning and contraception are less important for women with disabilities. Nevertheless, the physical challenges experienced by women with disabilities hinder their mobility and ability to access healthcare facilities.[52,53] Furthermore, healthcare facilities in Bangladesh are typically not disability-friendly concerning physical access, the provision of accessible information and communication, and the training of staff to cater to people with disabilities.[54] Women with disabilities are frequently treated similar to other persons. These challenges are compounded by factors, such as, overcrowding, prolonged waiting times, the lack of designated spaces to provide family planning and contraception services with privacy in mind, and a scarcity of specialized equipment.[55] Healthcare center personnel in Bangladesh often do not feel comfortable providing family planning and contraception despite holding an MBBS degree.[7] They also frequently consider providing family planning and contraception not as their sole duty, unlike community-based family planning assistants.[7,47] These obstacles collectively present daunting challenges, particularly for women with

limited literacy and knowledge that might otherwise enable them to access family planning services from the private facilities that are gradually becoming the dominant source of family planning and contraception in Bangladesh.[47]

The lower uptake of contraception among women with disabilities in Bangladesh serves as a stark reminder of their heightened vulnerability of experiencing adverse maternal and child health outcomes, including unintended pregnancies and short inter-interval pregnancies, and induced abortion.[11,13] These challenges are often exacerbated by the limited access to maternal healthcare services for women with disabilities, primarily due to the obstacles they encounter in accessing family planning and contraceptive methods.[6,28] Access to abortion services is not legally available in Bangladesh, leading to an increased risk of unsafe induced abortions outside formal healthcare facilities. Consequently, these adverse circumstances contribute to higher rates of maternal and child morbidity and mortality.

Addressing these challenges requires a multifaceted approach, encompassing comprehensive policies and programs that effectively address the hurdles faced by women with disabilities in accessing family planning and contraception at both the community and healthcare facility levels. These strategies must simultaneously target pre-existing issues, such as the relatively lower contraception uptake among older women, limited exposure to mass media, and disparities between urban and rural areas, as well as regional variations, in the accessibility and availability of family planning and contraceptive methods. These factors have been identified as being associated with the contraception uptake in this study, similar to previous studies in Bangladesh.[7,25,32,47,49,56]

The presents study has several strengths and a few limitations. Notably, it is the first study in Bangladesh to explore patterns of contraceptive methods among women with disabilities. The analyzed data originates from a nationally representative survey with a comparably large sample size. It has been comprehensively examined using sophisticated statistical methods, including covariates at the individual, household, and community levels. Consequently, the findings are robust and should be considered for national-level policy and program making. However, the cross-sectional nature of the survey data confines the study's findings to correlations only rather than establishing causal relationships. Data reported in the survey are self-reported, which indicates the potential for recall bias. Additionally, beyond the factors adjusted for in the model, community and health facility-level factors also influence the uptake of contraceptive methods. Consequently, they should be adjusted in the model, yet the lack of relevant variables in the survey constrains us from doing so. However, regardless of these limitations, robustness of the analysis and the insights gained from the research should guide the formulation of inclusive policies and targeted interventions for the women with disabilities in Bangladesh. Future research should be conducted using prospective cohort survey data encompassing a broad range of factors at the individual, household, community, and health facility level factors. Additionally, given the availability of data, such as MICS, which allows for cross-country comparisons, further studies could explore multiple countries to ascertain cross-country patterns and the most crucial factors to consider. To achieve this, all available MICS surveys should be analyzed, rather than focusing on a specific region like Asia or Africa.

Conclusion

Our findings consistently revealed lower odds of using any contraceptive methods and modern contraceptive methods among women with disabilities. Notably, women with moderate disabilities to severe level of disabilities and those with self-care-related disabilities exhibited elevated odds of relying on traditional contraceptive methods. These observations underline the vulnerability of women with disabilities and their heightened risk of experiencing unintended pregnancies and short inter-interval pregnancies. The formulation of policies and programs to ensure accessible family planning and contraceptive methods for women with disabilities is of paramount importance. This should involve prioritizing regular visits by community-based family planning assistants to ensure that family planning and contraceptive services are accessible to and inclusive of women with disabilities. It also requires enhancing the preparedness of healthcare facilities by addressing structural and personnel-related challenges in delivering family planning and contraceptive services tailored to the needs of women with disabilities.

Data sharing statement

The datasets used and analyzed in this study are available from the UNICEF MICS Archive website: https://mics.unicef.org/surveys.

Funding

This research did not receive any specific funds.

CRediT authorship contribution statement

Md Badsha Alam: Formal analysis, Data curation, Conceptualization. **Md Shohel Rana:** Software, Formal analysis, Data curation. **Md Awal Kabir:** Supervision, Resources. **Shimlin Jahan Khanam:** Writing – review & editing, Writing – original draft, Methodology. **Md Nuruzzaman Khan:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization.

Declaration of competing interest

The authors have no conflicts of interest to declare.

Acknowledgement

We would like to express our gratitude to the UNICEF MICS for granting access to the 2019 BMICS data to conduct the study. Moreover, we also acknowledge the support of Department of Population science, Jatiya Kabi Kazi Nazrul Islam University, Bangladesh, where the study was conducted.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dhjo.2024.101651.

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