






## Research Paper

# A participatory SWOT analysis on water, sanitation, and hygiene management of disabled females in Dhaka slums of Bangladesh

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## ABSTRACT

Rampant slum growths add more barriers to scaling up sustainable WASH facilities coupled with safe MHM amenities for megacities. On top of inequalities in accessing to WASH provision, MHM sensitivity to the needs of disabled girls or women is commonly denied. Low-income community case studies from the megalopolis of Dhaka, Bangladesh, capture multi-faceted links between disabled-female's agony and hygiene issues. Layers of discrimination are faced starting from no education after puberty to becoming a family burden. An overall assessment was further extended to identify SWOT for water and sanitation access to hygiene and MHM practices from the gender perspectives applying several mixed-method participatory approaches. Insufficient government support amount, inadequate pipeline water supplies, inconvenient infrastructures, and pricey hygiene products are considered as key weaknesses. Immediate demands include policies for empowerment via training, education coupled with caring services, and adequate, affordable, and disabled inclusive MHM amenities at public places. Finally, the analyses suggest community choices classifying recommendations into three broad categories, namely policy, intervention, and research to serve policymakers and gender experts in identifying potential measures to achieve the global targets of SDGs 3, 5, 6, and 10. Among many solutions, income opportunity via non-governmental loans for caretakers was proposed by most.

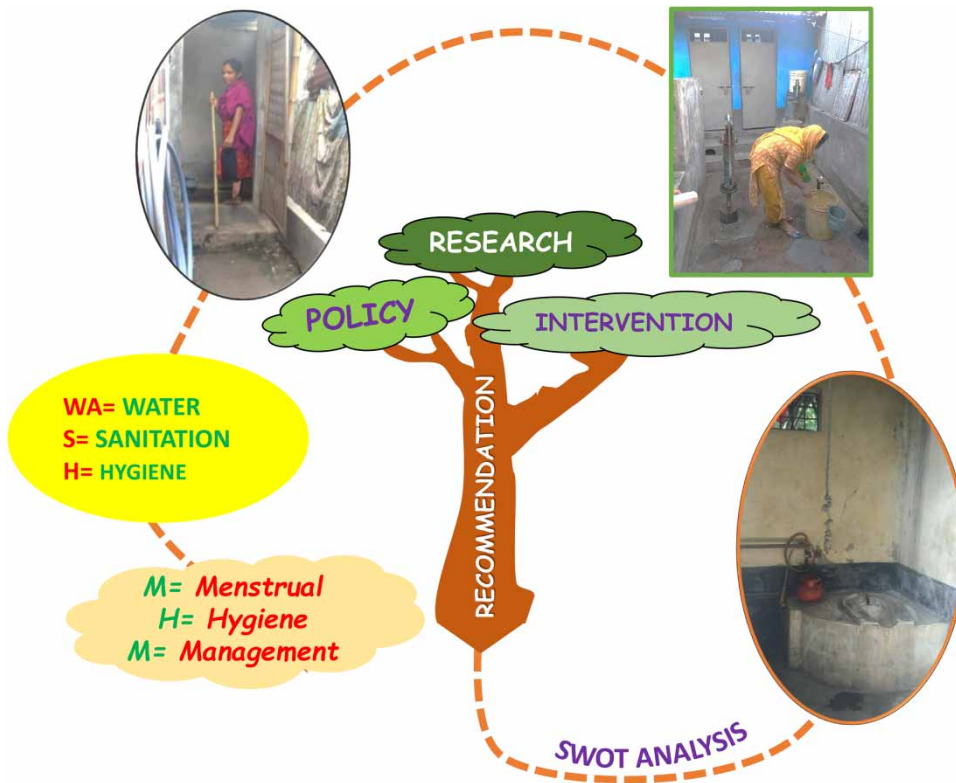
**Key words:** female hygiene, gender, inequalities, participatory SWOT

## HIGHLIGHTS

- Available amenities are not designed to tackle the complex support needs of disabled-females.
- Expensive menstrual commodities are often barriers to self-dependency.
- Immediate demand includes empowerment via training and/or entrepreneurship.
- A facilitative support worker at school is highly recommended.
- Running Theory of Change Workshops is necessary to break social taboos towards MHM and females with disability.

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## GRAPHICAL ABSTRACT



## 1. INTRODUCTION

Despite several constraints, Bangladesh in recent years has gained prominent development in Water, Sanitation, and Hygiene (WASH). Government (GO) and non-government organisations (NGOs) have been working to improve healthcare services for all (Angeles *et al.* 2019). The key achievement was the shift from open defecation to ‘fixed point defecation’ (Mahmud & Mbuya 2015). Open defecation has been abandoned for many years and is considered as a historical practice now. Among many WASH-related successes, the installation of separate toilet facilities for men and women in important public places is worth mentioning (Snehalatha *et al.* 2015). In line with the global development agenda, menstrual issues also have gained attention in Bangladesh with a focus to increase awareness and access to menstrual hygiene management (MHM) for women and girls (Warrington *et al.* 2021). The 7th Five-Year Plan of the GO set a target to achieve safe water access for all, and improved sanitation for 100% of people in urban and 90% of people in rural areas by 2021. According to the United Nations International Children’s Emergency Fund (UNICEF) and the World Health Organization (WHO) (2021), 97% of Bangladesh’s urban population has a basic level of drinking water through piped (37%) and non-piped (62%) connections. Forty-five percent of the 82% of the population with access to water sources on premises can use water free from contamination. In the case of basic sanitation services, 51% of urban dwellers have access to basic services, 32% have limited or shared toilets, 18% still use unimproved sanitation and only less than 1% defecate in the open (WHO & UNICEF 2021).

Around 30% of Dhaka’s 14 million residents have been living in slums in unhygienic conditions with overcrowded and cramped spaces in homes that have no secure land tenure (Ahmed 2014). Basic services are commonly denied despite these poor conditions contributing extensively to the city’s productivity and growth. According to the survey of 2013 (WFP 2015), more than 3 in 4 families share a single room with an area of 12 m<sup>2</sup> on average. On the whole, sanitation and drainage are subject to frequent flooding (Olthuis 2020), alongside a lack of clean water, reflected by the absence of water collection points, and a lack of bathing facilities. 91% of families state to share a toilet with other households having 1 in 10 families using a temporary hanging toilet. Adolescent girls also face multiple health-related problems

abstaining themselves from availing the low standard services of public toilets (Hussain & Wakkas 2019). Government policies and strategies still lack the appropriate measures for improving MHM.

So far several studies (Angeles *et al.* 2019; Haque 2019; Sehreen *et al.* 2019) have been done on slums regarding water and sanitation globally as well as in Bangladesh. Most of the researchers highlighted the ignored needs of women, girls, and children. However, limited studies (Warrington *et al.* 2021; Wilbur *et al.* 2021) have been done on disabled-female of the global south, particularly on their MHM aspects. It is now highly needed to identify and manage the SWOT (an acronym standing for strengths, weaknesses, opportunities, and threats) of the urban slums with respect to disabled-females to help in providing a sustainable gender-inclusive plan in the future policy framework.

Therefore, the research aims to (i) perform SWOT analyses on ongoing WASH and MHM practices of disabled-females in slums and (ii) formulate recommendations and community choices for the improvement of the current situation. The paper is divided into six sections. The first section summarises the existing living situation of slum dwellers affecting WASH in Dhaka city and pointed out the value of understanding SWOT of disabled-female's life in slums. Sections 2 and 3 depict the study area and research analysis methods used, respectively. Section 4 discusses the issues and problems associated with WASH and MHM of disabled-female in Dhaka slums through the lens of two specific case studies. From the findings of the case studies review, the paper suggests, in Section 5, what needs to be done for disabled-female living in slums. Finally, Section 6 emphasises the key messages the paper seeks to convey.

Dhaka, being a slum-choked-sky-climbing city in the developing world with greater than 1 million disabled inhabitants (Sakakijibon & Gomes 2018) is selected as a case study in this regard. It is expected that understanding the field level reality may guide different stakeholders, i.e., GO, NGOs, healthcare service providers, and receivers in (re)taking up necessary steps to meet up SDGs 3 (good health and well-being), 5 (gender equality), 6 (clean water and sanitation), and 10 (reduced inequalities) at the local level and scaling up the same concept at the global level.

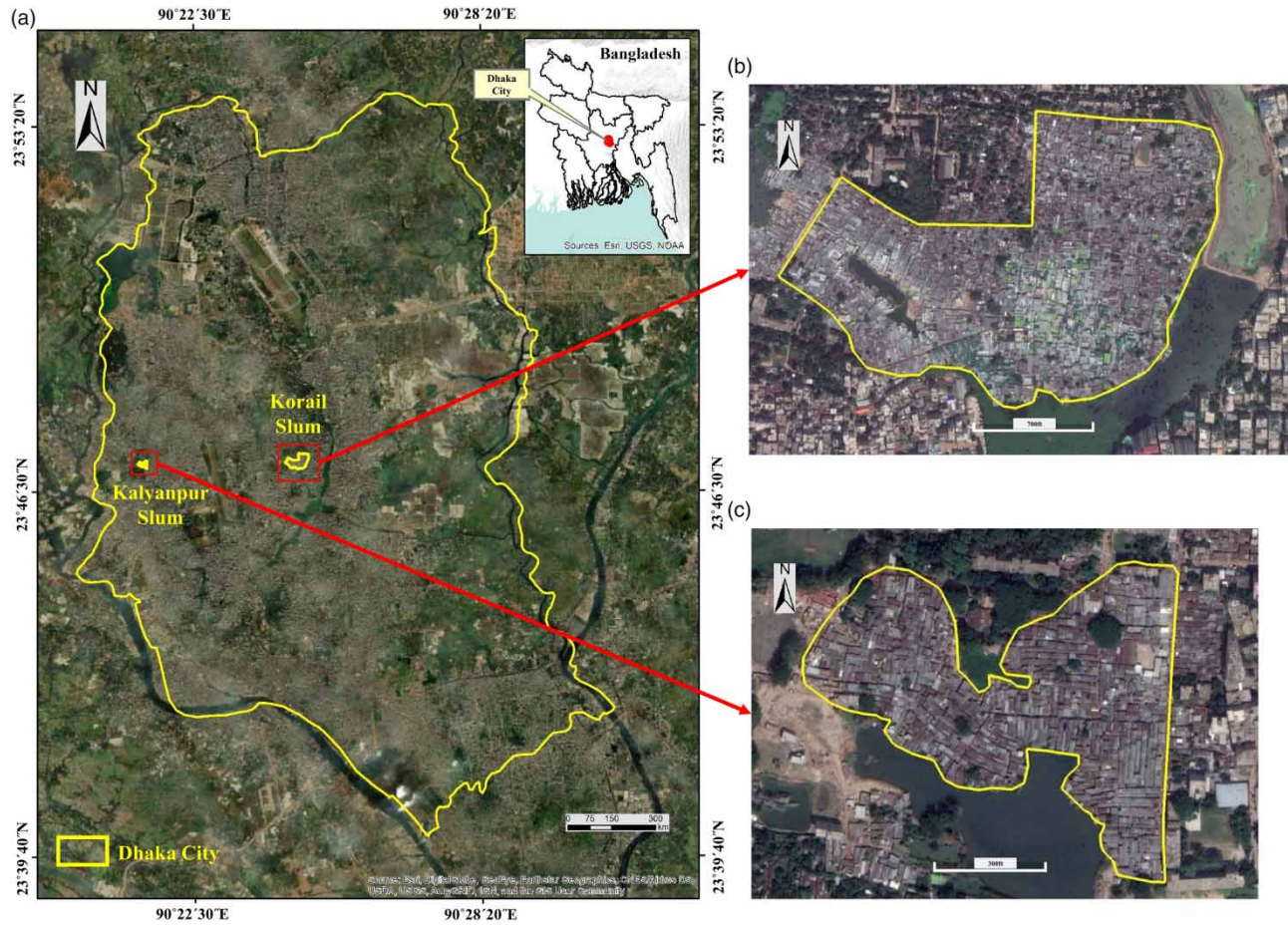
## 2. STUDY AREA AND METHODOLOGY

### 2.1. Study area

Since the birth of Bangladesh, the capital Dhaka has been receiving a huge influx of intra district migrants due to both pull and push factors. According to the official record, this city has around 3,394 slums occupied by more than six lakh people (The Daily Star 2019). Korail and Kalyanpur slums were purposefully selected according to (un)availability of disabled-friendly amenities to provide a point of comparison/common features (Figure 1). Between these two informal settlements, since the late 1980s, Korail has been the largest (0.81 square kilometres) as well as the longest-standing slum in the middle of Dhaka but does not have any disabled-friendly latrines. Korail has a density of 1,111 persons per acre (Alam & Matsuyuki 2017) with more than 20,000 families living (Akter Datta & Khan 2017). On the other hand, Kalyanpur, which originated back in 1988 in eastern Dhaka, is more susceptible to eviction compared to the Korail slum. Here, the number of households is 2,184 (BBS 2015) with a population density of 40,000 living within 0.06 square kilometres (Badhan *et al.* 2017). Digitised social maps of slums locally produced during 2015–16 are presented in Supplementary Material, Figure S1.

### 2.2. Methodology

A mixed method approach was adopted. Six focus groups were conducted in each slum. Thirty in-depth interviews and 22 key informant interviews were conducted using questionnaires across both sites. A flowchart on methodology is presented in Figure 2. Regarding social information, 31.3% of the female respondents were non-disabled and belonged to the age group of 30 years or older. A total of 66.6% of disabled-female respondents were between 12 and 17 years and 18 to 23 years age groups (Table 1). Besides, 68.8% of the non-disabled-female respondents were found married, while a majority (86.7%) of the disabled-female respondents were unmarried. Population size included disabled-females, their family members, neighbours, stakeholders from GO and NGOs. Menstruating females with intellectual and physical disabilities were included in the study. However, in the case of persons with intellectual disabilities, their caretakers were approached instead of the people with disabilities. Teachers, school administrators, doctors, community health service providers, etc., working in slums both from GO and NGO sectors were considered as the key-informants. FGDs were mainly conducted with families having a disabled member(s) including caretakers and with neighbours that have at least one disabled female in the community. The purpose was to understand caretakers' and neighbours' everyday experiences while maintaining a delicate balance with females with intellectual disabilities. It was to assess or reflect upon the socio-economic environment these disabled groups were residing. Particularly, full and effective participation of caretakers helped understand the responses of females



**Figure 1** | Location of Korail and Kalyanpur slums in Dhaka city.

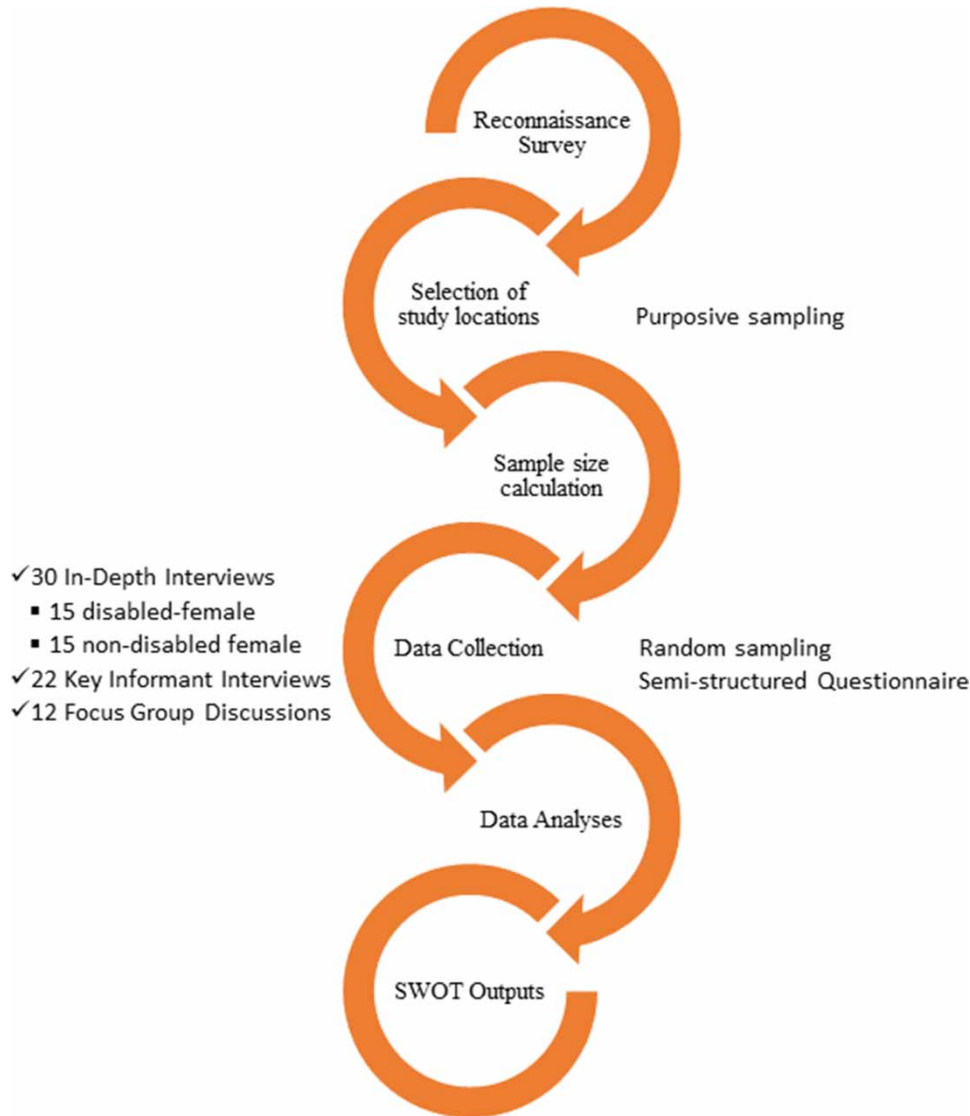
with intellectual disabilities. This group was even found to be fully dependent on their mothers or sisters for access to adequate amenities or educational attainment as well as for expressing feelings. Without the support of such informal caretakers, this group of disabled females was not able to properly maintain their daily cleanliness or hygiene and manage medication by themselves.

The Selected Korail block (by stratified sampling) had 10 disabled-females. In the case of Kalyanpur, out of approximately 60 disabled people, 15 were females/girls, of which 7 were physically challenged. Using the sample size formula (Equation (1)), a total of 15 disabled-females (i.e., 10 at Korail and 5 at Kalyanpur) were approached.

$$n = \frac{Z^2 \times P(1 - P)}{\varepsilon^2} \quad (1)$$

Where  $n$  denotes sample size,  $z$  is the  $z$ -score at a 90% confidence interval,  $\varepsilon$  is the margin of error (5%), and  $P$  is the population proportion (50%). Additionally, a total of 30 (by simple random sampling) IDIs were conducted: 15 with disabled-females and 15 with non-disabled-females. In the case of disabled IDIs, special emphasis was given to the perspectives shared by their caretakers regarding social taboos (WASH and MHM related) diseases that women and girls with disabilities commonly experience, monthly medical costs, and economic burden. It is because personal emotion-driven sensitive issues to share with an outsider (i.e., interviewer) might go against traditional norms for a socially excluded disabled-female.

Quantitative data of the questionnaires were evaluated by the Statistical Package for the Social Sciences (SPSS) software. Apart from that, FGDs, IDIs, and KIIs were also helpful for SWOT analysis in identifying internal dimensions (i.e., strengths and weaknesses) and external dimensions (i.e., opportunities and threats), as explained by Gürel & Tat (2017) and



**Figure 2** | Flowchart on the methodology followed in research.

van Wijngaarden *et al.* (2012). Outputs from both disabled and non-disabled females were ultimately used in situation analyses for a comparative SWOT product. Notably, all ethical issues were carefully maintained and participants' consents were taken while conducting research.

### 3. RESULTS AND DISCUSSION

Societal disparities in slums for women living in slums are already intensified. On top of that intellectual or physical impairment is a barrier for disabled-female residents making them more fragile to be deprived of equitable water and MHM access. Thereby, the following sections state, in brief, the SWOT outputs for both WASH and MHM perspectives of non-disabled-female residents in slums (Table 2) and subsequently of disabled-female (Table 3) for comparison purposes.

#### 3.1. SWOT analysis from a WASH perspective

##### 3.1.1. Non-disabled-female

From the perspective of WASH for non-disabled-females, strengths identified from WASH perspectives were access to water sources and toilets, community initiatives to maintain water and toilet facilities, as well as measures to regulate

**Table 1** | Social information of the female respondents

SI	Aspects		Non-disabled-Female (%)	Disabled-Female (%)
1	Age of the respondents	Less than 12	–	6.7
		12–17	12.5	33.3
		18–23	25	33.3
		24–29	25	13.3
		30 and more	31.3	13.3
2	Marital status of the respondents	Unmarried	25	86.7
		Married	68.8	6.7
		Widow	–	6.7
3	The education level of the respondents	No Schooling	43.8	86.7
		Primary	–	13.3
		Secondary	18.8	–
		Higher Secondary	25	–
		Graduation and Above	6.3	–
6	Family size	3 or less	43.8	20
		4–6	37.5	53.3
		7–9	12.5	26.7
7	Size of the house (sq. feet)	Less than 100	12.5	26.7
		100–150	31.3	73.3
		150–200	50	–
8	Number of rooms	1	68.8	73.3
		2	25	26.7
9	Materials of house	Tin	75	93.3
		Bamboo	6.3	6.7
		Tin and Brick	12.5	–

and maintain hygiene and cleanliness in the toilet where female participation is ensured, increasing literacy rate among slum girls, and willingness of the community to pay for safe water and enthusiasm in gaining relevant knowledge on WASH, etc. (Table 2).

Weaknesses were insufficiency and irregularity of water supply, long queues and facing crowds during water collection, and no separate water and toilet facilities for males and females all over the slum area, etc. Most common WASH-related issues such as inconsistent/infrequent and inequitable supply of water, insufficient/inadequate number of toilets with disputes in maintaining the hygiene of the sanitation system, expensive sanitary pads, drainage congestion, and irregular waste/garbage handling are affecting non-disabled-female.

In addition, opportunities were the willingness of people especially females to manage water sources and to maintain proper sanitation, people's support in separating out water points and toilets for males and females with the ownership of land, and GO/NGO initiatives to ensure environment-friendly toilet technology, etc.

On the other hand, increasing population density, risk of waterborne diseases (e.g., skin diseases) from unsafe poor water quality, movement constraints due to waterlogged conditions, and poor road communication were identified as threats.

### 3.1.2. Disabled-female

In the case of SWOT for the disabled-females, identified strengths were family support in collecting water and using the toilet, helpful neighbours and sometimes neighbours, willingness to gain WASH-related knowledge through training, etc. (Table 3). Disabled-females are found to be enthusiastic about developing skills and availing income-generating services to contribute to the family income.

Reported weak points were the infrequent and inequitable supply of water, inadequate cum far-reaching disabled-friendly facilities with poor road communication, absence of disabled-friendly structures, and priority-based access to the water collection point and toilet, e.g., higher plinth level of toilets with no pipeline supply.

**Table 2** | SWOT aspects regarding WASH and menstruation for the non-disabled-female

Aspects	WASH	MHM
Strength	<ul style="list-style-type: none"> <li>Access to water sources</li> <li>Access to toilet</li> <li>Community initiatives to maintain water facilities</li> <li>Willingness to pay for safe water</li> <li>Willingness to achieve WASH and MHM relevant knowledge</li> <li>Increasing literacy rate</li> <li>Community measures to regulate and maintain hygiene and cleanliness in the toilet</li> </ul>	<ul style="list-style-type: none"> <li>Female can maintain hygiene during menstruation</li> <li>Willingness to achieve knowledge</li> <li>Availability of MHM products like sanitary pad and cloth (in some cases)</li> <li>Knowledge on how to use sanitary pad and cloth</li> <li>Family support</li> </ul>
Weakness	<ul style="list-style-type: none"> <li>Insufficient supply of water</li> <li>Irregular supply of water</li> <li>No separate water and toilet facilities for male and female</li> <li>Long queue and crowd during water collection from the water pump</li> <li>Narrow and poor road communication</li> <li>Insufficient space to construct the individual toilet</li> <li>Insufficient number of toilets</li> <li>Poor toilet structure, e.g., jute or cloth in place of walls</li> <li>Lack of affordability of medical cost</li> <li>The risk associated with easily transmitted diseases</li> <li>Risk of evacuation and fire</li> <li>Political disturbances to implement relevant initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Negative social views</li> <li>Superstition</li> <li>Lack of affordability to manage sanitary pad and other facilities during menstruation</li> <li>Scarcity of space in the toilet to change clothes and sanitary pad</li> <li>Less space in slum and home to clean, dry, and store of menstrual cloths</li> <li>Disposal of the used pad</li> <li>Inaccessibility to proper knowledge</li> <li>Unaware of the standard and importance of MHM</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>The willingness of people especially female to manage water sources</li> <li>Separate water points for male and female (in some cases)</li> <li>To get ownership of land</li> <li>People willingness to maintain proper sanitation</li> <li>Separate toilet (in some cases)</li> <li>Increasing income</li> <li>Environment-friendly toilet technology (in some cases)</li> <li>Improvement of Knowledge and awareness</li> <li>GO/NGO initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Increasing education rate</li> <li>Awareness is rising among all</li> <li>Technical learning</li> <li>Availability of MHM product in some cases</li> <li>Changing views in family and society level</li> <li>NGO initiatives</li> </ul>
Threats	<ul style="list-style-type: none"> <li>Increasing population density</li> <li>Increasing waterborne diseases like skin diseases</li> <li>Crime and drug business</li> <li>Social conflict</li> <li>Waterlogged during rain</li> <li>Risk of fire</li> </ul>	<ul style="list-style-type: none"> <li>Unhygienic management of menstruation may cause infectious diseases</li> <li>Misconduct of knowledge on how to use pad or cloths</li> <li>Lack of family knowledge</li> </ul>

In addition, identified opportunities were utilising support from the community (e.g., neighbours, landlords), application of modern technology-based facilities (like a wheelchair, pipeline supply, better commutes, roads, etc.), and arrangement of Community-based Health Care programmes in the slum. Access to credits for families with disabled members can be useful to reduce the dependency ratio by increasing the workforce. A separate toilet complex for males and females with the application of modern technology-based facilities (like a wheelchair) would provide confidence to the disabled-females to be independent. More GO/NGO initiatives with the listed participatory SWOT outputs in [Table 3](#) can be beneficial to overcome their limitations and improve the current state of affairs. Especially, an equity-based affordable housing plan or civic engagement informal land tenure (i.e., land ownership through selling and long-term leasehold) ([Alam & Matsuyuki 2017](#)) can be emphasised where the government will play a facilitator role; thus, community ownership will be built.

**Table 3** | SWOT aspects of WASH and MHM from the perspectives of the disabled-female

Aspects	WASH	MHM
Strengths	Favourable attitudes of family, neighbours and landlords Existence of disabled-friendly facilities Monthly government allowance Willingness of the community to learn through training	Favourable attitudes of family and neighbours Easily available MHM products Social acceptance in using MH products Non-existence of taboo or discrimination or social exclusion
Weakness	Infrequent and inequitable supply of water Inadequate cum far-reaching disabled-friendly facilities with poor road communication Disputes in maintaining cleanliness or hygiene Absence of disabled-friendly water collection point Irregular waste/garbage handling that also causes drainage congestion Lack of space or care centres Physical/mental limitation enforces dependency on family members No priority-based access to toilet and water collection point Higher plinth level of toilets with no pipeline supply	Expensive MH products Unaffordability in maintaining regular medical services Lack of education/capacity for employment/business Physical/mental limitation to use MH products Lack of space/air, awareness in households for hygiene care Learning limitations of mentally challenged disabled-females Lack of policy or programme for disabled-females In few cases, superstition and ignorance of MHM
Opportunities	Utilise community support (e.g., neighbours, landlords) Provide modern facilities like wheelchair, pipeline supply, better commutes and roads, etc. Community-based Health Care programme Empowerment of women/family having a disability, e.g., capacity building for in-house income generation Involvement of family male members Enforce or encourage special care centres or trained personnel at school beyond primary education Increase the literacy rate including vocational training with favourable environment Equity-based affordable housing plan where the government will play a facilitator role, community ownership will grow	Utilise community support Provide education to disabled-females beyond primary level coupled with caring facilities Community-based Health Care programme Empowerment of women/family having a disability Targeted training to disabled-females for income generation Enforce or encourage special care centres or trained personnel at school beyond primary education Continuing awareness programme on MHM Include policy for disabled-females Include community awareness in the disposal of MH wastes Subsidy on MH products for disabled-females
Threats	Incremental population demand making slum life more competitive Risk of spreading waterborne, vector-borne diseases, pandemics like COVID-19 with climate change Water quality deterioration or contamination Scarcity of supply water or Water table declination Unavailability of land due to high land price Hazards like earthquake, water logging, fire, etc.	A huge challenge in tackling the increased disposals of MH products Non-biodegradable MH wastes, if unmanaged on-time Risk of spreading of sexually transmitted diseases and infectious diseases including pandemic like COVID-19 Stigma resulted in ignoring the importance of MHM Risk of poverty Price increase of MH products

Also, regarding the threats from the WASH aspect, increasing population density, risk of spreading waterborne and vector-borne diseases, deterioration or contamination of water quality, scarcity of supply water, etc., were identified as threats. But inadequate numbers of disabled-friendly structures located far away with poor road connections are the most reported weak points in the slums for disabled-females (see [Figure 3](#)).

### 3.2. SWOT analysis from an MHM perspective

In general, the strengths of MHM are similar to WASH for disabled-females. Interestingly, most school-going girls and employed women in slums are in favour of availing MH commodities, and extra expenditures for toiletries for them are willingly financed by family ([Table 2](#)). Different organisations are trying to make the MH products available, accessible, and





**Figure 3** | Narrow communication roads in slums with (a) pipeline connections blocking road spaces, (b) slippery conditions due to mud and puddles even during dry season, and (c) filled up bricks and construction materials.

affordable to all females in the slum areas. On top of that, social acceptance in using MH products, and the non-existence of MHM related taboo or discrimination, or social exclusion are well noted (Table 3).

Weaknesses include females being stigmatised when it comes to open discussion on menstruation with the opposite gender. Many have experienced negative social vibes on sharing feminine issues related to MHM. The use of available MH products gets low priority for the rest of the aged (35+ years), unemployed, and disabled females because sanitary pads require money. A limited number of disabled-friendly structures are situated far apart, have poor communication pathways, and are poorly maintained (Figure 4(a)). Most toilet-provision systems are located on high grounds (see Figure 4(b)); hence, frequent slipping accidents are common. No pipeline water source exists inside the toilets, hence, carrying heavy water pots is a must (see Figure 5). Also, there is no disabled inclusive school that can manage adolescent girls. Poverty and low financial affordability force disabled girls to retain unhygienic old used MH products for a long period. Apart from the issues mentioned above, adolescent girls with mental/learning disabilities, being utterly unaware of MHM, only use clothes to absorb menstrual blood. It is because the community believes in keeping the stigma surrounding MHM silent. Even no evidence is found of visiting doctors during menstruation associated pains like stomach aches and depression.



**Figure 4** | (a) Disable-friendly toilet but not in working condition due to poor maintenance and (b) common public toilet's pan at high plinth level.



**Figure 5** | A respondent with a physical disability is showing how she uses her nearby public toilet.

On the contrary, there are many promising opportunities in slum areas. For example, increasing literacy rates can give females the confidence and space to voice their need for improved menstrual hygiene. Advertisements, awareness programmes, and gender education for adolescents can change societal views. Easy access and availability of MH products can improve living standards. Involvement of the male members in support of many more gender roles, such as reproductive and community roles can reduce the burden on women. Coupled with the opportunities stated in Section 3.1, promoting MHM awareness can replace current perspectives but, infectious diseases stemming from the unhygienic management of napkins or prolonged contact with sanitary pads may pose a threat.

In general, identified threats were increasing population demand management and the risk of extreme climatic events causing uncontrollable hazards and damages may become a huge challenge. MHM services will continue to be a challenge as the unhygienic management of menstrual pad disposals will increase the risk of diseases (Table 3). In this regard, slum girls and women are found to be more exposed to the risk of spreading infection and transmitting diseases including pandemics like COVID-19. Also, the risk of poverty and the high price of MH products may emerge as threats in the future.

#### 4. RECOMMENDATIONS

Based on the findings and concerns of the respondents, recommendations are suggested in Table 4 classifying them into three categories, namely, policy, intervention, and research.

##### 4.1. Policy

Policy actions taken or proposed have to be participatory based. In this context, study recommendations emphasise self-help and *in-situ* advancement coupled with (enough) schools and healthcare centres, where adolescent disabled-females can get a priority. Different types of small-scale activities related to 'Cheap WASH' (i.e., water access, sanitation access, and hygiene practices) (Ross *et al.* 2020) and MHM have to be disabled inclusive and conducted in a disabled-friendly environment. In the case of MHM, the higher price of MH products can be minimised by creating empowerment opportunities. But, further disposal of non-biodegradable used MH products may appear like a huge challenge or threat. Expert informants highlighted inter-institutional programmes and initiatives to involve all stakeholders: GO, NGOs, and community people. Targeted training for income generation, access to credits, and awareness programmes for disabled-females should be initiated. Formal education cum caring facilities for disabled-females can be introduced in laws/acts 2013 for protecting disabled-female rights.

##### 4.2. Intervention

Improvement of drainage lines and pipeline water supply requires immediate attention with regular maintenance in the budgetary processes. High seats instead of high plinth platforms in toilets and support rails for easy accessibility should be encouraged in flood-prone areas. Priority for families with a disabled member to receive faster pipeline connections; extra

**Table 4** | Recommendation from policy, intervention, and research aspects to ensure sustainable WASH and menstruation issues in the slum for the disabled-female

Policy	<ul style="list-style-type: none"> <li>✓ Introduce participatory slum-gender-disabled-females inclusive planning/policy melding with national planning to ensure improved WASH and MHM.</li> <li>✓ Formal/vocational education beyond the primary level for adolescents (or above) girls with disabilities should be enforced.</li> <li>✓ Awareness programmes on WASH should include/encourage MHM discussions enabling environment for disabled-females.</li> <li>✓ Empowerment options, e.g., the quota system for disabled-females can be initiated.</li> <li>✓ Income opportunities for disabled-females or her family should be created. Zero-interest credit access or incentives may encourage in this regard.</li> <li>✓ GO incentive for improvement, e.g., cheap food ration cards can be provided for basic needs.</li> <li>✓ Vigorous guidelines should be set for the maintenance and monitoring of existing disabled-friendly structures including water supply.</li> <li>✓ Disabled-females should get priority for renting accommodation within the premises of existing disabled-friendly washrooms.</li> <li>✓ Disabled focus initiatives and programmes by GO and NGOs should be enhanced.</li> <li>✓ Youth advocacy groups can be formed in the slum to negotiate with GO service providers.</li> <li>✓ Options for legal land set up with relevant investment/infrastructure/charity through legal advocacy can be promoted, such as self-help and <i>in-situ</i> upgradation or resettlement.</li> </ul>
Intervention	<ul style="list-style-type: none"> <li>✓ Drainage lines maintenance or replacement is immediately required.</li> <li>✓ More disabled-friendly structures (e.g., toilets, water points) and public services (e.g., care centres, affordable accommodation, local transport) can be established through co-funding or GO–NGO partnership.</li> <li>✓ Provide adequate inclusive toilet facilities in public places with the availability of menstrual hygiene commodities at affordable prices.</li> <li>✓ Disabled-friendly toilet should ensure necessary facilities such as low plinth platform but elevated toilet structure, wide accessible entrance, ramp or stairs with handle in walls, electric light, etc.; introduce piped water system inside and a regular budget for maintenance.</li> <li>✓ Separate water supply lines for drinking and other domestic uses as a solution to reduce the problems related to water scarcity.</li> <li>✓ Separate in-house water supply dedicated for disabled-females to be constructed with easy access to water sources.</li> <li>✓ Schools should have a provision of extra care or health services in and around slums for disabled-females to get extra care and benefit related to WASH and menstruation.</li> </ul>
Research	<ul style="list-style-type: none"> <li>✓ Skill development programmes, e.g., group/collective business plan for entrepreneurship development for disabled-females can be introduced.</li> <li>✓ More research on changing social views and behaviour towards MHM and disabled-females can contribute to increasing awareness. Knowledge gathering may also be able to reverse the powerlessness situation for disabled-females.</li> <li>✓ Identify scope to self-help, rehabilitate, or <i>in-situ</i> slum upgradation for Dhaka.</li> <li>✓ Identify the knowledge gaps and scopes to meld inter-sectoral conflict; hence, improve coordination that can be effective in creating ownership.</li> </ul>

and affordable care centres with the provision of training, medicine supply, and MH products through GO–NGO partnership; and a facilitative support worker at school are also recommended.

### 4.3. Research

This study sought to identify which theories of change are needed to implement interventions to support women and girls with disabilities. Running Theory of Change Workshops can effectively break social taboos towards MHM and females with disability. Identifying the scope for self-help by skill development, entrepreneurship, etc., melding inter-sectoral conflict, and improving community coordination are particularly pressing for disabled-females with more complex support needs.

## 5. CONCLUSION

The lived reality of disabled females in slums is complicated partly due to hampered WASH and menstruation issues. Understanding female-specific SWOT of disabled slum dwellers is crucial to ensure inclusive management approaches to be applied

to the community programme and assist in future policy frameworks. Despite having many interventions of GO and NGOs, some weaknesses and threats still render their vulnerable situation unsafe. They agonise most over inaccessibility and inconveniences linked to the existing inadequate number of toilets and unavailable MHM facilities. Available amenities are not designed to tackle their complex support needs and are often barriers to self-dependency. Immediate demand includes empowerment via non-governmental loans and skill development training for families with a disabled member and formal education facilities with caretaker support. Current plans and policies need to focus on adequate and inclusive toilet facilities for disabled-females in public places and should address the affordability and availability of the MH products for all. Policy, intervention, and research study recommendations based on community choices thus set guidelines for sustainable gender-inclusive steps. Vigorous policy recommendations will also help in preparing a gender comprehensive road map to meet up SDGs for other slums in the global south.

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## DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

## CONFLICT OF INTEREST

The authors declare there is no conflict.

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