

# Examining toilet use and menstrual hygiene practices among beneficiary households of Swachh Bharat Abhiyaan (Clean India Mission) in rural areas of Mayurbhanj district of Odisha, India

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## ABSTRACT

**Background:** Basic sanitation and waste management have always remained a central issue in India. The country launched its flagship sanitation program - Swachh Bharat Abhiyan (SBA) (Clean India Mission) in 2014 to abolish open defecation and achieve universal sanitation coverage. **Objective:** This study aimed to examine barriers to toilet use and women's menstrual hygiene practices in relation to the availability of toilets among rural residents. **Materials and Methods:** Using a cross-sectional design and multi-stage sampling method, 120 households were selected from rural villages of the Mayurbhanj district of Odisha. Structured questionnaires and direct observation methods were used for data collection. Results: All the houses had SBA latrines, yet 25% population defecated outside. About 40% households reportedly never cleaned their toilets. Most menstruating women (86.2%) preferred to change their menstrual pads/cloths in their bedroom instead of bathrooms. Incomplete construction was reported as the major reason for not using toilets. Large family size and low caste were found to be other predictors of non-use of toilets. Rural women did not use toilets for menstrual purposes as they do not consider these places as clean and safe. **Conclusion:** This study clearly suggests that constructing toilets without adequate behaviour change interventions would not solve the problem of hygiene and sanitation in India, particularly in rural areas. There must be adequate monitoring of SBA scheme and utilization of funds for toilet usage. Development and implementation of suitable behaviour change strategies for toilet use in rural areas are essential to achieve the goal of open defaecation-free India.

**Keywords:** India, menstrual hygiene, Odisha, open defecation, sanitation, Swachh Bharat Abhiyan

## Introduction

The United Nations has declared sanitation to be a human right in order to maintain an adequate standard of living.<sup>[1,2]</sup> However, an estimated 1.7 billion people worldwide lack access to a basic sanitation facility, with 494 million practising open

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defecation.<sup>[3]</sup> In addition, many households do not dispose of their young children's faeces in the latrine.<sup>[4,5]</sup> Over half of the people who practise open defecation worldwide live in India,<sup>[6,7]</sup> where approximately 53% of households and 624 million people defecate in the open.<sup>[8,9]</sup>

Basic sanitation and waste management have always remained a central issue in India.<sup>[10]</sup> In 2017, the Joint Monitoring Programme estimated that 520 million people in India defecated in the open. According to a WHO–UNICEF joint report in 2015, 9 out of 10 people residing in rural areas were practising open-field defecation.<sup>[11]</sup> As a consequence, 90% of disease burden related to sanitation and hygiene practices are more frequent, especially among under-five children.<sup>[12,13]</sup> Mortality and morbidity in children are primarily associated with diseases transmitted through faecal–oral route such as hookworm infection, ascariasis and enteric illnesses, such as diarrhoea.<sup>[4,14]</sup> These diseases cause stunting, or linear growth retardation, in children.<sup>[15]</sup>

Furthermore, poor access to water and sanitation can affect women's social, physical and mental health because of unsafe menstrual hygiene practices and increased risk of violence.<sup>[6]</sup> Women in India have reported withholding food and water to limit urinating or defecating during the day and night during menstruation.<sup>[16]</sup> Incomplete construction of toilets, distance of latrines from water sources and busy toilets during peak hours prevent families from using them.<sup>[17]</sup> Lack of privacy or resources for menstrual hygiene also pose major concerns among women. These experiences cause stress, assaults and harm to their dignity due to public exposure.<sup>[18]</sup>

Prime Minister Shri Narendra Modi launched the Swachh Bharat Abhiyan (SBA) or Clean India Mission on 2 October 2014 with an aim to eliminate open defecation and achieve universal sanitation coverage by 2<sup>nd</sup> October 2019 by building 100 million household and community toilets.<sup>[19]</sup> SBA has funded 91.99% of toilets in Odisha state, and all 30 districts of the state were declared open defecation free (ODF) in 2019. Despite the provision of subsidy for toilet construction, use of toilets has remained a challenge in rural Odisha.<sup>[20]</sup> More than half of Odisha's rural population (52.1%) still defecates in the open.<sup>[9,20]</sup> Despite SBA's efforts, Odisha's latrine coverage remains one of the lowest in India.<sup>[21]</sup>

Mayurbhanj district of Odisha has been declared ODF in Odisha. Though most of the households in the Mayurbhanj district have built latrine facilities under SBA, they still do not use toilet facilities.<sup>[20]</sup> However, not many studies have been undertaken in the Mayurbhanj district to understand barriers and facilitators of using toilet facilities constructed under SBA. This study aimed to examine toilet use practices and their barriers as well as the use of toilets for menstrual hygiene purposes among women in rural areas.

## Materials and Methods

### Study setting

The study setting for this research was the rural villages of the Mayurbhanj district of Odisha. Mayurbhanj is the third most

populous district of Odisha.<sup>[22]</sup> According to census 2011, it is home to 2.5 million populations with a sex ratio of 1,006 females per 1,000 males. It has a literacy rate of 63.9% and more than 90% population residing in rural villages. Majority of the population follows Hindu religion (83.6%) and belong to the scheduled tribe (ST) (56.6%).<sup>[23]</sup>

### Study design

This study used a cross-sectional design that analysed data from a population or a representative subset at a specific point of time. The investigators measured the outcome and exposures in the study participants at the same time.

### Sampling frame

Households who have constructed toilets under SBA were included in the study. Households who have constructed toilets on their own or who have constructed toilets under schemes other than SBA were excluded. Adults unwilling to participate, terminally ill, minors and persons unable to give consent were excluded from the study.

### Sampling

Multistage sampling method was used to select households in this study. Mayurbhanj district has four subdivisions and 26 blocks. First, two subdivisions were randomly selected out of the total four in the district. Then, one block from each of the selected subdivisions was randomly selected. The list of villages under the jurisdiction of the two selected blocks was collected from the block offices. Six villages from each of the selected blocks were randomly selected using the list. Lastly, after collecting the list of households constructed under SBA scheme from the local administrative office, 10 households from each of the selected villages were randomly selected, making it a total of 120 households. Owing to the COVID-19 restrictions during the data collection as well as lack of funding, higher sample size couldn't be achieved in this study.

### Data collection tools and methods

The data collection for this study was carried out from June to August 2020 by a female field investigator. Structured questionnaire was used to gather information on availability and usage of toilets, use of toilets for menstrual purposes, awareness about benefits and risks of use/non-use of toilets and barriers to toilet use. The women head of the households was generally preferred as respondents. If the women head was elderly (above 65 years of age) or was not able to answer to the questionnaire for any reason, the next oldest female member of the family was interviewed. If there was no female member present in the household, the male head or any other member of the household was considered. As there is a presence of menstrual hygiene practice segment in the questionnaire, female members of the household were preferred. Information on toilet cleanliness and amenities present were collected through observation by the researcher.

### Ethical approval

Ethical approval from the Institutional Review Board of the Asian Institute of Public Health University, Bhubaneswar, Odisha, was taken prior to the research. Written informed consent from each respondent was taken before the data collection with assurance to maintain the autonomy and confidentiality. In case of inability of any respondent to provide written consent, oral consent was taken.

## Results

### Household characteristics

A total of 120 households were interviewed in this study. Almost half (49.2%) of the respondents were the eldest female member of the family followed by the eldest male member of the family (30.0%). Majority of the respondents were married along with only 20% widows. The average family size of the studied household was four members per family with the median household income of Rs. 5,000 per month.

All families followed the Hindu religion. About 82.5% of the households lived in kuccha houses and 44.2% belonged to the scheduled caste (SC) or scheduled tribe (ST) category. The overall education status of these households was poor with only 23.2% households having the majority of member completed high school education. More than 90% of the households possessed ration cards. The characteristics of included households in the study are presented in Table 1.

### Toilet availability and usage

All the households (100%) reported that they have toilet in their houses which were built under the SBA program. These toilets are not shared among multiple households. However, only 65% of the households use the toilet while the remaining go for open defaecation. About 7% of the households reported that they use the constructed toilet for storage purposes.

### Awareness about benefits of toilet use and risks of non-use

More than three-quarters of the households (76.7%) reported that they are aware about the benefits of toilet use. While 68.3% households mentioned that toilet usage can prevent infections/diseases, 46.7% highlighted protection of privacy as an important benefit. Other benefits reported by the households were safety (35.8%), reduced walking long distance (47.5%) and time saving (37.5%). Similarly, about 64.2% households reported to be aware of the risks of open defaecation practices including animal attack (61.7%) and sexual assault (14.2%) as the major risks. In addition, 21.7% households were aware about the risk of infection due to open defaecation.

### Toilet amenities and cleanliness

Based on the observation of the interviewer, almost three-fourths of the toilets had water bucket (76.9%) and

soap/handwash (74.4%) among the household who reported to use toilet for defecation purpose. However, toilet cleaners and toilet slippers were less often (12.8%) found near the toilet. The interviewer further observed and found 74.4% of them as clean and odour-free. About 66.7% of toilets had wet floors. When asked about the frequency of cleaning toilets, almost 60% households reported to clean the toilet on a weekly basis. On the contrary, a little more than one-fifth of the households reported to never clean their toilets. Table 2 provides proportions of households with toilet amenities and cleanliness measures.

**Table 1: Characteristics of study households**

Characteristics	Statistical value
Type of respondent, n (%)	
Eldest male member	36 (30.0)
Eldest female member	59 (49.2)
Eldest son	8 (6.7)
Eldest daughter-in-law	16 (13.3)
Other	1 (0.8)
Family size, median (IQR)	4 (3–5)
Household education status, n (%)	
Majority members completed <10 years of schooling	92 (76.7)
Majority members completed >10 years of schooling	28 (23.2)
Caste category, n (%)	
General	15 (12.5)
OBC	52 (43.3)
SC/ST	53 (44.2)
Household type, n (%)	
Kaccha	99 (82.5)
Pucca	21 (17.5)
Monthly household income, median (IQR)*	5000 (3000–10,000)
Possession of ration card, n (%)	
No	7 (5.8)
Yes	113 (94.2)
Total, n (%)	120 (100.0)

**Table 2: Toilet amenities and cleanliness (based on observation) among those who are using toilet (n=78)**

Characteristics	n (%)
Toilet amenities	
Water bucket	60 (76.9)
Soap/Handwash	58 (74.4)
Toilet cleaner	10 (12.8)
Toilet slippers	10 (12.8)
Cleanliness characteristics (based on observation)	
Clean	58 (74.4)
Odour-free	58 (74.4)
Wet floor	52 (66.7)
Frequency of toilet cleaning	
Daily	1 (1.3)
Weekly	46 (59.0)
Fortnightly	11 (14.1)
Rarely	3 (3.8)
Never	17 (21.8)

**Table 3: Toilet use for menstrual purposes among currently menstruating women respondents (n=58)**

Characteristics	n (%)
Used of menstrual materials	
Sanitary pads	49 (84.5)
Cloth	9 (15.5)
Place of changing menstruation materials	
Bathroom	8 (13.8)
Bedroom	50 (86.2)
Characteristics of the place used for change	
Clean	53 (91.4)
Private	52 (89.7)
Safe	57 (98.3)
Able to lock	57 (98.3)
Supplied with soap/hand wash	11 (19.0)
Disposal of menstrual materials	
Disposed to water bodies	24 (41.4)
Buried under ground	17 (29.3)
Thrown away to bush/field/backward	12 (20.7)
Flushed in toilet/latrine	3 (5.2)
Disposed in wastebin	2 (3.4)

### Use of toilets for menstrual purposes among women respondents

Table 3 provides the information on menstrual hygiene practices and toilet use during the time. Among the women respondents who were currently menstruation (N = 58), 84.5% reported to use sanitary pads during menstruation while about 15.5% use cloths. Majority of these women prefer to change their menstrual pads/cloths in their bedroom (86.2%) instead of bathrooms. More than 90% of the women reported their place of changing menstrual material as clean, safe, private and locking facility.

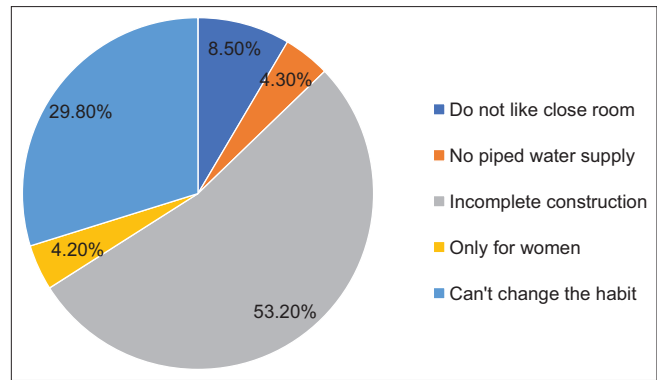
Nevertheless, less than one-fifth of them have soap/handwash at their place of changing pads/cloths since these women use the bedroom as a preferred place for change. When asked about disposal practices of menstrual materials, majority of 41.4% women reported to dispose to water bodies such as canal or pond.

### Barriers to use of toilets

The households whose one or more members still practice open defecation were asked about the barriers they face for using toilets [Figure 1]. More than half of the households (53.2%) complained of incomplete construction as the reason for not using toilets. The other major barriers for non-use were inability to change the habit (29.8%), do not like closed room (8.5%) and absence of piped water supply (4.3%).

### Factors associated with use/non-use of toilet

Binary logistic regression analysis [Table 4] identified family size and caste category as significant factors influencing the use/non-use of toilets. With increase in family size, the likelihood of using toilet decreases (OR = 0.788, 95% CI: 0.626–0.992,



**Figure 1: Barriers for not using toilet among those who still practice open defaecation (n = 47)**

$P = 0.047$ ). As compared to households belonging to the general category, those belonging to other backward castes (OBC) had significantly lesser chances (OR = 0.131, 95% CI: 0.022–0.801,  $P = 0.039$ ) of using the toilet. Similarly, the chances of SC and ST (OR = 0.155, 95% CI: 0.026–0.935,  $P = 0.042$ ) households using the toilet were significantly lower as compared to general caste households.

### Discussion

This descriptive study was conducted in rural villages of Mayurbhanj district of Odisha. It examined the availability and use of toilet among SBA beneficiaries, the awareness about health benefits/health risks of using and not using toilets, to assess menstrual hygiene and use of toilets during menstruation and to identify the barriers to using toilets.

While all the studied households confirmed the availability of toilets which were constructed under the SBA program, only 65% use them as toilets. About 7% use them as storage room to store wood, dry leaves for cooking and rest do not use them at all. This finding is similar to an earlier study where it was reported that India has succeeded in increasing latrine coverage but the actual adoption and use remained suboptimal.<sup>[24]</sup>

As half of the participants (49.2%) were female members of the family, they highlighted that privacy and protection are important benefits of toilet use. Past studies have reported that infections, animal attack and sexual assault are very common when defecating in open in rural areas.<sup>[6]</sup> Rural women generally withhold food and water in order to limit the number of times they might have to urinate or defecate.<sup>[15]</sup> This can be linked with the finding of this study in which the participants reported toilet use as safe (35.8%) and time saving (37.5%) as it reduces walking for long distances (47.5%).

This study also revealed that three-fourth households had water bucket, soap/hand wash in their toilet and they were clean and odour-free. Among the households using toilets, about 60% of the participants reported that they clean their toilet weekly while one-fifth of the households never clean their toilets. Only one in seven households had toilet cleaners and slippers which puts

**Table 4: Binary logistic regression to examine factors associated with use/non-use of toilet**

Factor	OR	95% CI	P
Family size	0.788	0.626–0.992	0.047
Household education status			
Majority members completed <10 years of schooling	Ref.		
Majority members completed >10 years of schooling	0.984	0.365–2.651	0.97
Caste category			
General	Ref.		
OBC	0.131	0.022–0.801	0.039
SC/ST	0.155	0.026–0.935	0.042
Monthly household income	1.093	0.502–3.931	0.917
Possession of ration card			
No	Ref.		
Yes	3.799	0.564–25.570	0.170

OR=Odds ratio, CI=confidence interval

the users at risk of helminth infections, particularly hookworms. These worms can penetrate the human body by walking barefoot on contaminated areas and may lead to undernutrition and physical weakness among children.<sup>[20]</sup> Lack of toilet cleaners and slippers found in this study households clearly indicates ignorance of hygienic toilet use. Moreover, more than 90% households possessed ration cards which indicates that their poor income status could also be a barrier.

Nearly 85% of female respondents who are currently menstruating reported to use sanitary pads during their menstruation. However, they prefer to change menstrual pads in their bedroom as they consider the bedroom more clean, safe, private and also has a locking facility. Moreover, the study finds not to have soap or handwash in the bedroom to clean hand after changing sanitary pads. This can put them at risk of infections due to poor menstrual hygiene.<sup>[25]</sup> Every two in three of these women (41.4%) reported that they disposed their used sanitary pads in nearby water bodies like canal or pond. Such disposal practices not only cause water pollution but also may lead to spread of infections to households depending on these water sources for drinking and other purposes.<sup>[25]</sup>

Incomplete construction of the toilets was the majorly cited cause for their non-use in this study. This may be due to lack of adequate skills and experience of masons who were engaged in constructing these toilets.<sup>[26]</sup> The subsidy amount could also have been utilized for purposes other than toilet construction.<sup>[27]</sup> The other major barriers for non-use of toilet were inability to change their habit of defecating in open (29.8%) and do not like closed space to defecate (8.5%). These warrant specific behaviour change interventions in addition to constructing toilets. As majority of the participants lived in kuccha houses whose socioeconomic statuses were low, so they cannot afford piped water supply system (4.3%) in the toilets which further restricted toilet use.

The study found that households with higher family size had lower chances of toilet use which may be due to availability of one toilet per family and timings of toilet use might be coinciding for more than one member. As compared to households belonging to general caste

categories, those belonging to OBC, SC and ST reported significantly lower use of toilets. This highlights the need for focussing the lower caste households during awareness interventions and ensuring adequate participation from these sections of the communities.

### Study limitations

The study included a small sample size due to limited availability of time and funding. The onset of COVID-19 pandemic and restrictions around social interactions hindered data collection from a large sample. Large-scale research studies are needed to be able to generalize the findings of this study.

### Conclusion

The study clearly suggests that constructing toilets without adequate behaviour change interventions would not solve the problem of hygiene and sanitation in India. While all households in this study had their toilets constructed with assistance from the SBA scheme, yet only 6 in 10 households use them. Many households never clean the toilets and majority do not have toilet slippers. Hence, wider awareness generation as well as repeated counselling are necessary to promote hygienic toilet use, especially focusing on households belonging to lower caste groups. Women respondents do not use toilets for menstrual purposes as they do not consider these places as clean and safe. There is a need for further research in this area to examine the challenges of women for using toilets for menstrual purposes which will promote menstrual hygiene behaviour. Incomplete constructed toilets and inability to change habits were cited as major barriers to use of toilets in this study. Adequate monitoring of SBA scheme, utilization of funds for toilet usage and specific behaviour change intervention promoting toilet use can aid in effective implementation of the scheme. Moreover, development and implementation of suitable behaviour change strategies for toilet use are essential in parallel to SBA program to achieve the goal of open defaecation-free India.

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## Conflicts of interest

There are no conflicts of interest.

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