

# Open Defecation: In the Age of Swachh Bharat Abhiyan- KAP Study in Urban Slum of Midnapore District, West Bengal

**Running title:** Open Defecation: KAP Study West Bengal

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## Abstract

*Background:* Open defecation continues to pose a serious threat to global health in the twenty-first century. An estimated 892 million individuals worldwide still defecate in open fields. Sanitary conditions have been recognised as one of the most significant factors in determining health status of a nation. *Methods:* A community-based cross-sectional study was carried out in two urban slum areas of Medinipur municipality, Paschim Midnapore, West Bengal. Total 244 households were visited. The head of the family members of these participating households were interviewed about their sanitation knowledge, attitude and practices towards safe sanitation and open defecation. *Results:* 159 households were aware about the bad effects of open defecation on the environment whereas, 190 households had the perception that open defecation is a bad practice. The present study revealed that 73.8% of participating households were using toilets and 26.2% of participating households were defecating in open. 91.8% of participating households had confirmed that there was no provision of water for use in the toilet therefore 84.8% of total open defecation were practiced besides the drainage system. *Conclusions:* The study showed that the lack of proper infrastructure, such as water supply in the toilets, cleanliness and maintenance, as well as low income and a dearth of health promotion initiatives to influence behaviour towards toilet use, may be the root causes of open defecation. The study also exhibited that many people were defecating besides drainage system, which might contaminate the surface and ground water make unfit for the consumption. To confirm the results of the current study, additional research is needed to determine the relationship between these variables.

**Keywords:** Open Defaecation, Swachh Bharat, Knowledge, Attitude, Practice, KAP

## Introduction

Open field defecation causes a number of infectious disorders, including schistosomiasis, trachoma infection, diarrhoea, and soil-transmitted helminth. Inadequate sanitation for open field faeces may also contribute to stunting and environmental enteropathy, raising the risk of infectious diseases, impairing development, lowering academic activities in schools, and reducing productivity in adulthood [1].

The Swachh Bharat Mission (SBM) or Clean India Mission was initiated by Indian Prime Minister Narendra Modi in October 2014 with the goal of eradicating open defecation (OD) by 2019. The number of families with latrines must rise, and the number of household members using latrines must rise, in order to achieve this goal [2]. The overall aim of the Swachh Bharat Abhiyan (SBM), is to clean up India's streets, roads, sewage system, and infrastructure in order to create a "open defecation-free" India by the second of October 2019 by building 90 million toilets in rural areas. Additionally, the mission will assist India in achieving the Sustainable Development Goal 6 (SDG 6) set forth by the United Nation in 2015 [3].

According to a survey in India, 53% of households or 600 million people defecate in open, out of which 69.3% belong to rural areas and 18.6% belong to urban areas [4]. The national sanitation coverage rose to 65% in 2017 which was 38.7% on 2nd October 2014 before the start of the campaign. It was 90% in August 2018. There was an increase of 60.28% in households with toilets since the date of implementation and more than 22 lakhs toilets were newly built-in 2018-2019 all over India [5]. West Bengal launched its sanitation campaign called "Mission Nirmal Bangla" in November 2013 when sanitation coverage was just 58.19%. According to "Swachh Bharat Abhiyan", a

December 2018 report, there is 95% sanitation coverage in the rural area of West Bengal where urban sanitation coverage is still low. In 2018, 20 districts of West Bengal were open defecation free [4]. There are total 85 slums under Medinipur municipality Paschim Midnapore district, West Bengal. A recent study reported 52.3% open defecation in Paschim Midnapore [6]. According to 2011 census Dantan-II had the lowest open defecation practices rate (16.6%) and Binpur-I had the highest open defecation practices rate (90.4%) [7]. The objectives of this study were: 1) To explore the level of knowledge, attitude, practice level of open defecation under "Swachh Bharat Abhiyan" among people living in the urban slum area of Medinipur Municipality, West Bengal, India and to explore the contributing factors which prevent successful implementation of 'Swachh Bharat Abhiyan' in the urban slum of Midnapore, India.

## Methodology

### Study Design

The present study is a quantitative study. A community-based cross-sectional study design approach was adopted to examine the level of knowledge, attitude and practice of the people living in the urban slum of Medinipur Municipality, Paschim Midnapore District, and West Bengal. The study was conducted over four months from March to June 2019 (started on 1st March 2019 and ended on 23rd June 2019).

### 2.2 Sampling criteria and techniques

The interested participants of this study were selected from two urban slums of total 85 urban slum areas of Medinipur Municipality, Paschim Midnapore District, West Bengal. The study area selected through lottery system (simple random sampling method). Exclusion criteria were below 18 years and above 80 years participants in this study. Any head of the

family who refused to sign on written consent was excluded. Every household was considered as sample and was visited and observed to fulfill the requirement of this study. The ward counselors of the selected slums were informed about the study and written permission was taken from the Medinipur Municipality, sanitation department. A simple random sampling design was used to select a representative sample of people living in the urban slum area of Medinipur municipality, Paschim Midnapore District. To ensure the reliability of the research instruments, the questionnaire was pre-tested on 10 people from the study area to ensure that the questions were easily understandable by the local people. Corrections were made wherever necessary.

### **Sample Size**

From the previous literature review, we found that the practice rate of open defecation in urban slum varies from 21% to 66.7% where knowledge level was 87% and attitude were 78% almost. So, I took a conservative prevalence of 21%; a power of 80%, and a confidence interval of 95% for the calculation of our sample size. A design effect of 1.5 was also included in our sample size calculation. Considering my final sample size was estimated to be 244 [11].

### **Data Collection**

Quantitative data was collected from the community by using a close-ended questionnaire regarding their socio-demographic condition, knowledge, attitude, and practices towards Swachh Bharat Mission and their source of information regarding Swachh Bharat Mission. Face-to-face interviews and thorough observation were the only study method for my survey. A pre-tested questionnaire approved by the ethical committee of Utkal University was used for the data collection. The questionnaire

was translated into the local Bengali language.

### **Findings**

A total number of 244 households were listed as participants in this study, these participants were from two urban slums of Medinipur Municipality, Paschim Midnapore i.e. Beharapur which comes under ward no 11 and another Harijan Basti of ward no 12. There were only five government-made community toilets which was free of cost and one community toilet was there on payment basis (1 rupee for a toilet and 2 rupees for latrine purposes).

### **Socio-demographic data**

Out of total 244 households, 148 households had a female head and 96 households had a male head. As per data collected about religion it was reported that people of different religions were living in the selected urban slums. 90.2% of them were Hindus, 8.6% were Muslims, 0.4% were Christian and 0.8% were from other categories of religions. 2% families were belonging to the general category. The major categories of these two slums were 76.6% Scheduled Castes (SC), 11.9% Other Backward Class (OBC), and 8.6% Scheduled tribes (ST). There were 0.8% families who were not aware about their categories. Average monthly income of 59.4% families ranged between 1001/- to 5000 whereas, average monthly income of only 0.8% of families comes under 15001/- to 20000/- range. According to data collected 70.1% (i.e. 171 households out of 244) family heads had primary education, 4.9% of the family head had secondary education and only 1.6% head of the family were graduated and above. In the present study 23.4% family head were illiterate.

### **Knowledge and Attitude regarding open defecation-related data**

The analysed data revealed that, 76.6 % of families did not hear about launching of Swachh Bharat Abhiyan and 80.3 % did not hear about open defecation under Swachh Bharat Abhiyan. However, 77.90% of participating household members were aware about the fact that using footwear during defecation is safe from health point of view (Table 1). After cross-tabulation between the use of sanitary latrines and the perception of family members about open defecation out of total 64 households who were practicing open defecation 18 household's family members thought that open defecation is good practice and 46 family members thought that open defecation is a bad practice whereas, the households who were using sanitary latrines 27% perceived that open defecation practice is a good practice and 144 participating household believed that open defecation is a mal practice for human health and the environment. It was also noticeable that 64 participating households who are practicing open field defecation, among them 44 households were aware of health hazards which occurred due to open defecation practices, 18 families were not aware of health hazards and only 2 families did not know about health hazards of open defecation. Out of 180 families who were using sanitary latrines among them, 74 families were unaware of the health hazards of open defecation and 5 families were not responding about health hazards of open defecation. Data analysis revealed that among 180 sanitary latrine usage families, 119 families were not aware about the environmental hazards which happen due to open field defecation and 5 families had no idea (Table 2).

### **Practice of Using Toilet Facility**

In the present study, 29.90% of families were not using toilets, and 23% of families were not using toilets as they found defecating in open better option than latrine usage. 1.60% of families were not using the toilets due to inadequate water

supply in the toilets. Regarding access of toilet facility, 39.3% of the household had no toilet, 24.6% of households accessed to their community toilet, and 19.7% of the household had a shared toilet outside their premises. Thus, out of total 73.8% of participating households using toilets 91.8% participating households confirmed that there is no provision of water for the use of the toilet. Furthermore, despite of informing to Midnapore municipality several times 90.6% of participating households confirmed that the community toilets were neither in hygienic condition nor "fly-proof". During the survey, data were also collected about the methods of excreta discharged from the toilet where, 52.0% of households made enclosed single pits for excreta discharged from the toilets, 22.5% of households made enclosed twin pits for excreta discharge, and 3.7% of households made closed septic tank with a soak pit for discharging excreta. Still, 1.6% of households were using pit latrines and 0.8% of households were using open pits for excreta discharge. 66.4 % of participants informed that they cleaned their community toilet by making a group in an alternative way, and 16.0% of participants informed that they cleaned the toilet on their own. 1.6% of participants informed that sweepers were organized by the municipality to clean their toilets. 53.7% of participating households use community toilets for defecation. 11.9% of participating households are still going for open defecation completely. 77.9% family who actively participated in data collection had informed that few of their family members were using open field for defecation. (Table 3).

In the present study, 148 households were female head participating households and 96 families were male head participating households. Among these total 148 female head families, 64 families or households were unable to access the toilet facility and among 96 male head families, 32 families were unable to access the toilet facility

Among these 148 female head families, 112 female head households were using the sanitary latrine and only 36 female head households were not using sanitary latrines for defecation whereas, 68 male head households were using the sanitary latrines for defecation and 28 male head households were not using sanitary latrines for defecation (Table 4).

## Discussion

The present cross-sectional study about open defecation on Swachh Bharat Abhiyan of the urban slum of Medinipur, Paschim Midnapore District, West Bengal, India, explored the level of knowledge, practice, and attitude of the people living in the study area.

We are aware that the practice of open field defecation is common in low- and middle-income countries that results into environmental degradation and directly affects the health and quality of life of millions of people [14]. Therefore to know the awareness level, perception and practice of study population on open defecation and usage of toilets, the present study reported that in these two urban slums 59.4% of family's monthly income ranged between 1001 INR to 5000 INR which was quite low for constructing and maintaining the sanitation standards of the toilets. As per the findings, 39.3% of households did not have any toilet facility in their surroundings so some of them were using shared toilet or government toilet for defecation. Since, maximum population work as daily workers so they need to move out for work early in the morning which also provoked them for open defecation. 91.8% population confirmed that there was no provision of water for use in the toilet which also indicated towards poor sanitation standards of the toilets [12]. In the present study it was identified that though 99.2% (242 out of total 244 households) were aware of maintaining the cleanliness of the toilet which could be attributed to the fact of

76.6% literacy in the study area. But still 26.2% people were defecating in open in the study area which might be because of 23.4% illiteracy, low income, non - availability or inadequate supply of water in the toilets and also poor sanitation standards of the toilet. It has also been reported in several studies that these open defecation practices eventually blocks the drainage systems and becomes the breeding ground for the mosquitoes and other pests, surface water sources such as a ponds, rivers and lakes etc gets polluted and turned into public health hazards [13]. The usage of sanitary laterines by more female heads of study area reflected that females were more aware and found more secure as compare to defecating in the open. These findings also reflected the progressive mindset of the females of the Medinipur municipality of Paschim Midnapore, West Bengal with regard to usage of toilets and sanitary latrines.

## Conclusion

Several studies reported that open defecation is one of major causes of diarrheal diseases and leads to morbidity and mortality among children in the world. In the present study, it was observed that only 26.2% population of the study area were defecating in the open, indicating that majority (73.8%) of the population of these two urban slums were using the toilets for discharging their excretory matter. However, there could be multiple factors for the people who were still defecating (26.2%) in the open, it might be because of illiteracy (23.4%), falling under the low income group (59.4%), and paucity of time and water availability, poor maintenance of the community toilets. The study also highlighted the that due to paucity of water in the toilets, majority of open defecation practice was done near the drainage system, that may eventually leads to contamination of water bodies and renders the water unfit for the consumption. With little more awareness and educational programs and correcting

the abovementioned possible causal factors, these two urban slums could completely eradicate the practice of open defecation.

### Ethical Approvals

The study was approved by the Institutional Ethical Committee

### Conflict of Interest

No conflict of interest

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**Table 1: Knowledge Regarding Open Defecation**

	Frequency	Percentage
<b>A family member heard about the launching of SBA</b>		
I. Yes	57	23.40
II. No	187	76.6
<b>Heard about OD under SBA</b>		
I. Yes	48	19.70
II. No	196	80.3
<b>Use of footwear during defecation</b>		
I. Yes	190	77.90
II. No	54	22.10

**Table 2: Attitude Regarding Open Defecation**

	Not using the sanitary latrine	Using sanitary latrine
<b>The attitude of family members about open defecation</b>		
I. Good	18(7%)	27(11%)
II. Bad	46(19%)	144(59%)
III. Don't know	0	9(4%)
<b>Health hazards of open defecation</b>		
I. Aware	44(18%)	101(41%)
II. Unaware	18(7%)	74(30%)
I. Don't know	2(1%)	5(2%)
<b>Environmental Hazards of Open Defecation</b>		
I. Aware	24(10%)	56(23%)
II. Unaware	40(16)	119(49%)
III. Don't know	0	5(2%)

**Table 3: Status of Practice of toilet in the facility**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Access to the Toilet Facility</b>		
I. Own toilet on-premise	27	11.1
II. Own toilet outside premises	7	2.9
III. Shared toilet on-premises	5	2.0
IV. Shared toilet outside premises	48	19.7
V. Community toilet	60	24.6
VI. No toilet	97	39.3
<b>Use of Sanitary Latrines</b>		
I. Yes	180	73.8
II. No	64	26.2
<b>Using Water in the Toilet</b>		
I. No	224	91.8
II. Yes	20	8.19
<b>Open Defecation Spot</b>		
I. Agricultural field	12	4.9
II. Near water sources	3	1.2
III. Near bushes	0	0
IV. Besides railway track	0	0
V. Beside drainage	207	84.8
VI. Don't want to reveal	22	9.1



**Table 4: Gender Wise Practice of Using Toilet**

	<b>Female head of the family</b>	<b>The male head of the family</b>
<b>Use of sanitary latrine</b>		
Not using	36 (15%)	28 (11%)
Using	112 (46%)	68 (28%)
<b>Access to a toilet facility</b>		
I. Own toilet in premise	12 (5%)	15 (6%)
II. Own toilet outside premises	2 (1%)	5 (2%)
III. Shared toilet in premise	2 (1%)	3 (1%)
IV. Shared toilet outside premises	25 (10%)	23 (9%)
V. Community toilet	42 (17%)	18 (7%)
VI. No toilet	65 (27%)	32 (13%)

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