

Impact of Swachh Bharat Abhiyan on Residents of Cochin Corporation

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Abstract

Context: Environmental sanitation is a major public health issue in India. Sustainable Development Goal 6 envisages the accessibility of safe water and sanitation throughout the world. Swachh Bharat Abhiyan (SBA), a national cleanliness campaign established by the Government of India in 2014, has six main objectives. It has crossed the half-way point of its intended implementation course. **Aims:** This study aims to assess the impact of SBA on the sanitation of Cochin Corporation and to identify factors associated with awareness and practice of SBA. **Settings and Design:** A cross-sectional study among residents of Cochin Corporation. **Materials and Methods:** Semi-structured questionnaire was used to measure awareness, practice, and impact of SBA. Three divisions were selected purposively. A score was assigned for knowledge and impact assessment questions and was classified into three categories. **Statistical Analysis Used:** Descriptive statistics using frequencies and percentages were done. Chi-square test was used to test differences between proportions. **Results:** Thirty percent had no awareness regarding SBA and 42% had minimal awareness regarding the program and its objectives. Only 24% responded that SBA had a good impact on the overall sanitation of the community. The impact of SBA was significantly associated with socioeconomic status. The study revealed the major sanitary concern of the community to be the disposal of solid waste. **Conclusion:** The SBA did not have a significant impact on Cochin population due to existing good sanitation. Solid waste disposal is still a concern of the community. As far as, Kerala is concerned, it appears that the primary focus of SBA should be on Municipal Solid Waste Management.

Keywords: Cochin, impact, sanitation, solid waste management, Swachh Bharat Abhiyan

INTRODUCTION

Sanitation is the sine qua non of good health. Yet, one-third of the world population lack improved sanitation facilities. Sustainable Development Goal 6 is developed to address this issue. East Asia and Pacific regions generate around 270 million tons of waste per year, the highest fraction of which is organic waste.^[1] The composition of this huge amount of waste is influenced by multiple factors, such as economy, cultural norms, geography of the area, energy sources used, and climate. As economy grows, consumption of inorganic materials (such as plastics, paper, and aluminum) increases, while the organic fraction of waste decreases.^[2] The complexity of the composition and quantity of this waste makes it difficult to treat and manage it. This causes severe problems in the ecosystem and individual health. The accumulation of this waste causes unsanitary conditions.

A major issue adding on to the burden of unsanitary conditions all over the world is urbanization. More than half of the

population live in urban areas, and this number is expected to increase to around 5 billion by 2030.^[3] As urbanization increase, the quantity and quality of the waste generated will be increasing. The rate at which the waste is increasing surpasses the rate of urbanization. According to recent reports, 1.3 billion tons of solid waste is generated per year globally (1.2 kg/person/day) and this is likely to increase to 2.2 billion tons/year (1.42 kg/person/day) by 2025.^[4] With an overall generation of 48,134 MT/day in Kerala, the amount of waste managed unscientifically is a large amount.^[5,6]

As India is following the world pattern of urbanization, the lack of sanitation is one of the biggest troubles faced by the

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country. Poor sanitation has significant health effects, and untreated sewage from urban areas is the single biggest source of water pollution in India. This indicates both the scale of the challenge ahead of the Indian cities and the huge costs incurred from not addressing them.^[7] Even though Kerala is a state with good sanitation practices, the communicable diseases, including waterborne diseases which have unsanitary practices and improper waste disposal as an underlying cause have high incidence in the state.

Many attempts have been made at a national level in India since independence focusing on improving sanitary practices of the nation. The Comprehensive Rural Sanitation Programme of 1986, Total Sanitation campaign of 1999, and Nirmal Bharat Abhiyan of 2012 are some of them. Most of these programs failed to achieve its objectives after the initial enthusiasm. “The Swachh Bharat Abhiyan” (SBA) was launched in 2014 by the Prime minister. Like most previous programs on sanitation, this was launched on October 2nd, the birth anniversary of Mahatma Gandhi. Unlike its precursors, SBA received much more nationwide visibility, participation and popularity due to the personal involvement of the Prime Minister.

SBA had six main objectives with the primary being the elimination of open-air defecation and is planned to be in force till October 2, 2019. The SBA has crossed the half-way point of its intended implementation course.

This study was conducted to assess the impact of SBA on the sanitation of Cochin Corporation and to identify the factors associated with awareness and practice of SBA among residents of Cochin Corporation.

MATERIALS AND METHODS

The Cochin Corporation has a population of 596,473 with a population density of 6287/km². Kochi urban agglomeration is part of the Greater Cochin region and the largest urban agglomeration in Kerala, India. The city is divided into 74 administrative divisions.

A community-based cross-sectional study was conducted among the residents of Cochin Corporation, Kerala in July 2017. From a study done by Swain and Pathela^[8] in two districts of India showing the awareness about SBA as 24%, with 20% allowable error and 95% confidence interval, the minimum calculated sample size was 317. A total of 321 respondents were interviewed.

A Semi-structured questionnaire which consisted of a sociodemographic part and a part measuring the awareness, practice, and impact of SBA was used to collect data. Three divisions near the urban field practice area of the institution were selected purposefully to include localities from low and high socioeconomic status. Two divisions included a high proportion of people from low socioeconomic status, and the third division consisted largely of people from higher socioeconomic status. A street was chosen randomly from the center of the division and investigators visited consecutive

houses in each of the divisions. One adult member from each family was interviewed using the semi-structured questionnaire. The questionnaire was administered by face-to-face interview to the senior member present at the time of the study.

Data were tabulated using MS Excel, and statistical analysis was done using IBM SPSS Statistics 20.0 version (Armonk, NY: IBM Corp) descriptive statistics using frequencies and percentages were done. Chi-square test was used to test the differences between proportions, and a $P < 0.05$ was taken as statistically significant. Each question was scored as 0 and 1. They were then divided into good, minimal, and no for awareness and practice based on how many questions they answered correctly. Ethical clearance was obtained from the institutional ethical committee prior to the conduction of the study.

RESULTS

The sociodemographic profile of the study participants was as follows.

Eighty-five percent households were above the poverty line according to the point poverty index.

Eighty percent of participants were educated to high school and above. Sixty-one percent of the families had only four or less members.

Among the respondents, when the level of awareness of SBA was measured, 30% had no awareness regarding SBA and 42% had minimal awareness regarding the program and its objectives. The impact of SBA, when measured, showed that among those who were aware of the campaign only 24% responded as having good impact on the overall sanitation of the community. Sixty-six percent and 10% were found to have no and minimal impact, respectively.

The univariate analysis of factors associated with the awareness of SBA is given in Table 1. Age, gender, religion, and occupation were found to be significantly associated. The analysis of the impact of SBA with associated variables showed that only socioeconomic status had a statistically significant association with the improved sanitation post-SBA [Table 2]. The study showed that the main sanitary concern of the community was the disposal of solid waste [Table 3].

DISCUSSION

In our study, it was found that about 30.2% of the respondents were aware about SBA while a study done by Swain and Pathela in Uttar Pradesh (UP) and Madhya Pradesh (MP), only 24% of the study population were aware about it. Even though the level of awareness about SBA was not very high in Cochin as compared to UP and MP, 89% were aware of the consequences of insanitary waste disposal as compared to the 44% in UP and MP.^[8]

In our study, just one child had the habit of open-air defecation. In stark contrast, 46% in UP, MP and 33.1% in Tamil Nadu

Table 1: Association of awareness of Swachh Bharat Abhiyan with sociodemographic variables

Variables	SBA awareness			P
	Good awareness (%)	Minimal awareness (%)	No awareness (%)	
Age				
≤50	53 (30.3)	81 (46.3)	41 (23.4)	0.015
>50	37 (25.3)	53 (36.3)	56 (38.4)	
Gender				
Male	40 (32.8)	55 (45.1)	27 (22.1)	0.041
Female	50 (25.1)	79 (39.7)	70 (35.2)	
Religion				
Hindu	45 (34.4)	43 (32.8)	43 (32.8)	0.027
Christian	32 (26.7)	59 (49.2)	29 (24.2)	
Muslim	13 (18.6)	32 (45.7)	25 (35.7)	
Education				
Up to high school	41 (28.5)	66 (45.8)	37 (25.7)	0.243
Higher secondary and above	49 (27.7)	68 (38.4)	60 (33.9)	
Occupation				
Professional and skilled	41 (37.3)	48 (43.6)	21 (19.1)	0.006
Home maker	30 (20.8)	58 (40.3)	56 (38.9)	
Unemployed and others	19 (28.4)	28 (41.8)	20 (29.9)	
Number of family members				
<4	55 (28.2)	75 (38.5)	65 (33.3)	0.237
>4	35 (27.8)	59 (46.8)	32 (25.4)	

SBA: Swachh Bharat Abhiyan

Table 2: Association of the impact of Swachh Bharat Abhiyan with sociodemographic variables

Variables	SBA impact			P
	Good impact	Minimal impact	No impact	
Age				
<50	13 (9.7)	33 (24.6)	88 (65.7)	0.917
>50	9 (10)	20 (22.2)	61 (67.8)	
Gender				
Male	8 (8.4)	22 (23.2)	65 (68.4)	0.804
Female	14 (10.9)	31 (24)	84 (65.1)	
Religion				
Hindu	12 (13.6)	22 (25)	54 (61.4)	0.565
Christian	7 (7.7)	20 (22)	64 (70.3)	
Muslim	3 (6.7)	11 (24.4)	31 (68.9)	
Education				
Up to high school	8 (7.5)	24 (22.4)	75 (70.1)	0.434
Higher secondary and above	14 (12)	29 (24.8)	74 (63.2)	
Occupation				
Professional and skilled	6 (6.7)	23 (55.8)	60 (67.4)	0.147
Home maker	14 (15.9)	20 (22.7)	54 (61.4)	
Unemployed and others	2 (4.3)	10 (21.3)	35 (74.5)	
Number of family members				
<4	13 (10)	31 (23.8)	86 (66.2)	0.990
>4	9 (9.6)	22 (23.4)	63 (67)	
Socioeconomic status				
APL	19 (9.8)	39 (20.2)	135 (69.9)	0.009
BPL	3 (9.7)	14 (45.2)	14 (45.2)	

SBA: Swachh Bharat Abhiyan, APL: Above Poverty Line, BPL: Below Poverty Line

were practicing open defecation. The low level of awareness about SBA did not have an adverse impact in the community, as they already followed good sanitation practices.^[9,10]

The current study showed that 100% of respondents washed their hands before their meals, and 99% washed their hands with soap after defecation. A study by Swain P *et al.*,^[8] 89% of the respondents washed their hands before their meals, and 92% washed their hands after defecation.^[6] The above author also showed that 43% of the people took bath on a daily basis while our study revealed a much higher figure that is 99.4%.

The current study shows solid waste management as a problem among 32.7% of the respondents and majority (71%) have not received any training regarding the proper disposal of waste and segregation. Most of the studies on SBA did not emphasize on the solid waste management, as that was not the primary objective of SBA.^[8,11]

The awareness about SBA was found to be significantly associated with age, gender, religion, and occupation. None of the sociodemographic factors had a significant association with the sanitation practices. In the Tamil Nadu study done by Dutta *et al.*, a significant association was found between lower socioeconomic status and open-air defecation. However, in our study, no such association was found.

CONCLUSION

This study showed that the SBA did not have any significant impact on the population of Cochin since the practices of open-air defecation and manual scavenging were nonexistent even before the launch of the program. Domestic solid waste

Table 3: Solid waste management problems

Solid waste management	Frequency (%)
Method of household waste disposal	
Corporation system	299 (93.2)
Self-disposal	21 (6.5)
Others	1 (0.3)
“Waste disposal - a problem”	
As perceived by the respondents	
Yes	105 (32.7)
No	216 (67.3)
Problems associated with waste disposal	
No allotted space	24 (22.8)
No municipal workers for collection	41 (39)
Others (drainage overflow/glass waste not collected/nonaffordability)	40 (38.2)
Whether respondents have received training regarding proper waste disposal	
Yes	92 (28.7)
No	229 (71.3)

disposal is still a major concern of the community. However, the SBA had only minimal impact as the primary focus of the program was not on solid waste management. As far as Kerala is concerned, it appears that the primary focus of SBA should be on modern and scientific municipal solid waste management.

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Conflicts of interest

There are no conflicts of interest.

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