



Indicators of improved sanitation and hygiene in India: Rights and responsibilities of a good citizen

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Abstract

Sanitation on the environment in regions where a large proportion of the population is not served with adequate water supply and sanitation, sewage flows directly into streams, rivers, lakes and wetlands, affecting coastal and marine ecosystems, fouling the environment and exposing millions of children to disease. Improved sanitation reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

Keywords: sanitation, hygiene and health

Introduction

Sanitation is the means of promoting hygiene through the prevention of human contact with hazards of wastes especially feces, by proper treatment and disposal of the waste, often mixed into wastewater. These hazards may be physical, microbiological, biological or chemical agents of disease. Wastes that can cause health problems include human and animal excreta, solid wastes, domestic wastewater, industrial wastes, and agricultural wastes. Hygienic means of prevention may involve engineering solutions, simple technologies, or even simply by behavior changes in personal hygiene practices, such as hand washing with soap. Providing sanitation to people requires a systems approach, rather than only focusing on the toilet or wastewater treatment plant itself. The experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal is called the Sanitation chain and all need to be thoroughly considered. Joshi *et al* (2014) [2] found that to improved drinking water, sanitation and hygiene is one of the prime concerns around the globe. Average age of participants was 36 years. 83% of the participants perceived gastrointestinal tract infection as the most important health problem. 75% of the participants did not use any method for drinking water treatment. 45% of the participants consumed water from privately-owned tube well/ bore well. Water shortage lasted two days or more at a stretch with severe scarcity occurring twice a year. Females aged 15 years and above were largely responsible for fetching water from water source. 45% of the participants had toilets within their households. 53% of drinking water samples collected from storage containers showed positive bacteriological contamination. There is an urgent need to develop family centered educational programs that would enhance awareness about water treatment methods that are cost effective and easily accessible Garn *et al* (2017) [1] Studies assessing the impacts of school-based water, sanitation, and hygiene (WASH) interventions have revealed inconsistent improvements in pupils' health and educational outcomes.

We compared achievement of the targets and criteria between beneficiary and matched control schools, and compared achievement within beneficiary schools at baseline and at follow-up visits. We assessed the "as-treated" associations between WASH target achievement and pupil diarrhea, respiratory symptoms, and absence. Between 44% and 81% of beneficiary schools achieved each target. Although adherence was inconsistent across schools, beneficiary schools, on average, met more WASH targets than matched control schools, and beneficiary schools also met more WASH targets at follow-up than at baseline. Very few of the targets were individually associated with health and absenteeism outcomes. Increasing achievement of multiple WASH targets together was associated with a lower odds of pupils having diarrhea and having respiratory symptoms, but was not associated with roll-call absence or pupil-reported absence. These results indicate that a comprehensive WASH intervention and a focus on increasing adherence may help maximize the health effects of school WASH programs, but that WASH alone might not be sufficient to decrease pupils' absenteeism.

Objectives

- Role of public in making the mission of our Prime Minister of Swachh Bharat Abhiyan succeeded by 2019.

Methodology

This study was conducted in Kanpur district of Uttar Pradesh. A list of different localities was obtained from the Zones. From the list 30 localities were selected randomly. A list of respondents was prepared from the selected localities. From this list total 400 sample size, 100 males, 100 females, 100 children and 100 senior citizens were selected randomly for the study purpose. Dependent and independent variables such as age, sex, education, caste, religion, occupation, income, family type, sustainable, impact, society, adoption, awareness, sanitation, hygiene, knowledge, practices,

disease, cause, community etc. The statistical tools applied were percentage, rank and correlation coefficient.

Results

Table 1: Distribution of respondents according to the impact of Swachh Bharat Abhiyan

Swachh Bharat Abhiyan practices	Male		Female		Children		Senior citizen		Total
	Yes	No	Yes	No	Yes	No	Yes	No	
Household level									
Prevents infection	100.0	-	100.0	-	50.0	50.0	100.0	-	350 (87.5)
Keeping allergies at bay	80.0	20.0	20.0	80.0	-	100.0	80.0	20.0	180 (45.0)
Keeps away pests, mosquitoes, flies etc.	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
A stress free zone	100.0	-	40.0	60.0	-	100.0	100.0	-	240 (60.0)
Healthy kids	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Community level									
Increases property value	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Safety	100.0	-	100.0	-	10.0	90.0	100.0	-	310 (77.5)
Wear and tear	50.0	50.0	40.0	60.0	-	100.0	55.0	45.0	145 (36.2)
Storm water runoff	40.0	60.0	10.0	90.0	-	100.0	55.0	45.0	105 (26.2)
Healthier home	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Purer environment	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Safer product	50.0	50.0	20.0	80.0	-	100.0	55.0	45.0	125 (31.2)
Better air quality	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Less expensive	-	100.0	-	100.0	-	100.0	-	100.0	-
Fewer antibacterial	50.0	50.0	40.0	60.0	10.0	90.0	100.0	-	200 (50.0)
More knowledge of ingredients	60.0	40.0	10.0	90.0	-	100.0	55.0	45.0	125 (31.2)
Society Level									
Air pollution free	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Clean water availability	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Improves quality of life	100.0	-	100.0	-	50.0	50.0	100.0	-	350 (87.5)
Reducing health problems	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Less depression	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Human growth and development	80.0	20.0	40.0	60.0	-	100.0	100.0	-	220 (55.0)
Security of girls	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Education individual group hike	50.0	50.0	10.0	90.0	-	100.0	55.0	45.0	115 (28.7)
Own business, corporate	10.0	90.0	-	100.0	-	100.0	55.0	45.0	65 (16.2)
National leader	10.0	90.0	20.0	80.0	-	100.0	70.0	30.0	100 (25.0)
School Level									
School republication	100.0	-	100.0	-	50.0	50.0	100.0	-	350 (87.5)
Motivation of higher levels of efficiency children	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Positive thinking	100.0	-	100.0	-	80.0	20.0	100.0	-	380 (95.0)
Comfortable working environment	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Improves hygiene and reducing illness	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Improves attendance	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Good citizenship	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Work place/Institution									
Clean work environment	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Improves work efficiency	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Improves happiness	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Reducing work sick days	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Encouraging hard work and collective work	100.0	-	40.0	60.0	-	100.0	55.0	45.0	195 (48.7)
Customer satisfaction	100.0	-	50.0	50.0	-	100.0	100.0	-	250 (62.5)
Clean, dry floors to prevent slips and falls	50.0	50.0	20.0	80.0	-	100.0	30.0	70.0	100 (25.0)
Disinfectants prevent the spread of germs and illness	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Proper air filtration	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Improves lighting efficiency	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Use of green cleaning products	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)
Proper disposal of waste products	100.0	-	100.0	-	-	100.0	100.0	-	300 (75.0)

Impact of Swachh Bharat Abhiyan practices at household level. 100.0 per cent of all the respondents in all categories were doing practices to keep away pests, mosquitoes flies and make kids healthy at household level, followed by 100.0 per cent males, females, senior citizens, 50.0 per cent children and 87.5 per cent of the overall respondents were taking measures to prevent infections, while 80.0 per cent males, senior citizens, 20.0 per cent females and 45.0 per cent of the overall respondents were keeping allergies at bay in the study area. 100.0 per cent males and senior citizens, 40.0 per cent females and 60.0 per cent of the overall respondents were making a stress free zone.

Swachh Bharat Abhiyan at community level shows that 100 per cent of respondents in all the categories were impacted by healthier home, purer environment and better air quality, while 100.0 per cent males, females, senior citizens and 75.0 per cent of the overall respondents were having increased property value whereas, 100.0 per cent of the males, females, senior citizens, 10.0 per cent children and 77.5 per cent of the overall respondents felt that Swachh Bharat Abhiyan is safe for human life. 50.0 per cent males, 40.0 per cent females, 55.0 per cent senior citizens and 36.2 per cent of the total respondents were taking care of wear and tear in the community, while 40.0 per cent males, 10.0 per cent females, 55.0 per cent senior citizens and 26.2 per cent of the overall respondents were impacted by storm water runoff in community level. 50.0 per cent of the males, 20.0 per cent of the females, 55.0 per cent of the senior citizens and 31.2 per cent of the overall respondents were impacted by safer products while, 50.0 per cent males, 40.0 per cent females, 10.0 per cent children, 100.0 per cent senior citizens and 50.0 per cent of the overall respondents were impacted by fewer antibacterial in the study area, while 60.0 per cent males, 10.0 per cent females, 55.0 per cent senior citizens and 31.2 per cent of the overall respondents had more knowledge of ingredients at community level.

Impact of Swachh Bharat Abhiyan in society level shows that 100.0 per cent of the respondents in all categories were influenced by air pollution, clean water, reducing health problems and less depression by the mission of our Prime Minister due to Swachh Bharat Abhiyan, while 100.0 per cent males, females, senior citizens, 50.0 per cent children and 87.5 per cent of the overall respondents felt changed quality of life, while 80.0 per cent of the males, 40.0 per cent of the females, 100.0 per cent of the senior citizens and 55.0 per cent of the overall respondents were having human growth and development at the society level. 100.0 per cent

males, females, senior citizens and 75.0 per cent of the overall respondents felt the impact on security of girls, while 50.0 per cent males, 10.0 per cent females, 55.0 per cent senior citizens and 28.7 per cent of the overall respondents were impacted from education as individual group hike, while 10.0 per cent males, 55.0 per cent senior citizens and 16.2 per cent of the total respondents were having their own business and corporate, while 10.0 per cent males, 20.0 per cent females, 70.0 per cent senior citizens and 25.0 per cent of the total respondents were national leaders in society level in the study area.

Swachh Bharat Abhiyan at school level 100.0 per cent of respondents in all categories had comfortable working environment, improve hygiene and reducing illness, improved attendance and as a good citizen in school level in the study area, while 100.0 per cent males, females, senior citizens and 80.0 per cent children and 95.0 per cent of the overall respondents were having positive thinking, while 10.0 per cent males, females, senior citizens, 50.0 per cent children and 87.5 per cent of the overall respondents were impacted by school republication in school level Swachh Bharat Abhiyan while, 100.0 of the males, females, senior citizens and 75.0 per cent of the overall respondents were motivated by higher levels of efficiency of children in the study area.

Impact of Swachh Bharat Abhiyan practices in the work place or institutions was found that 100.0 per cent of the males, females, senior citizens and 75.0 per cent of the overall respondents were impacted by clean working environment, increased work efficiency, improved happiness, reducing work sick days, disinfectants prevent the spread germs and illness, proper air filtration, improved lighting efficiency, use of green cleaning products and proper disposal of waste products in work place in the study area, while 100.0 per cent males, 40.0 per cent females, 55.0 per cent senior citizens and 48.7 per cent of the total respondents were impacted by encouraging hard work and collective work. 100.0 per cent males and senior citizen, 50.0 per cent females and 62.5 per cent of the overall respondents were impacted on customer satisfaction, while 50.0 per cent males, 20.0 per cent females, 30.0 per cent senior citizens and 25.0 per cent of the total respondents were doing cleaning, keeping floors dry to prevent slips and falls in the working place. Different viral diseases impacted on family, community, society group, peers, work places more, therefore it is necessary to adopt better health and hygiene practices for killing these diseases.

Table 2: Distribution of respondents according to their knowledge about indicators to improve sanitation and hygiene and Swachh Bharat Abhiyan to succeed in India

Improved indicator	Male		Female		Children		Senior citizen		Total
	Yes	No	Yes	No	Yes	No	Yes	No	
Coverage of toilets	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Coverage of connections to sewerage	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Collection efficiency of sewerage network	80.0	20.0	20.0	80.	-	100.0	80.0	20.0	180 (45.0)
Cost recovery in waste water management	70.0	30.0	20.0	80.0	-	100.0	80.0	20.0	170 (12.5)
Quality of waste water treatment	100.0	-	100.0	-	10.0	90.0	100.0	-	310 (77.5)
Extent of reuse and recycling of waste water	80.0	20.0	25.0	75.0	-	100.0	100.0	-	205 (51.2)
Efficiency of collection of sewerage related changes	70.0	30.0	35.0	65.0	-	100.0	40.0	60.0	145 (36.2)
Efficiency in redressal of customer complaints	100.0	-	100.0	-	-	100.0	100.0	-	300.0
Length of sewer system	80.0	20.0	20.0	80.0	-	100.0	80.0	20.0	180 (45.0)
Volume of waste water collected	100.0	-	100.0	-	100.0	100.0	100.0	-	300 (75.0)
Volume of water treated to primary level	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Volume of water treated to secondary level	80.0	20.0	70.0	30.0	-	100.0	70.0	30.0	220 (55.0)

Blockage in sewer system	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Use of dustbins in all public areas	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Dustbins kept at proper distance on the road area	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Waste containers kept in every area	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Rules pasted on walls and hoardings	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Necessary daily cleaning	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Use of public toilets	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)
Avoid spitting on road side	100.0	-	100.0	-	100.0	-	100.0	-	400 (100.0)

Indicators to improved sanitation and hygiene and Swachh Bharat Abhiyan to succeed in India. Cent per cent of the respondents in all categories agreed with coverage of toilets, coverage of connections to sewerage, volume of water treated to primary level, blocking in sewer system, use of dustbins in all public areas, dustbins kept at proper distance on the road area, waste containers kept in every area, rules paste on walls and hoardings, necessary daily cleaning, use of public toilets and avoid spitting on road sides respectively, while 80.0 per cent males and senior citizens, 20.0 per cent females and 45.0 per cent of the overall respondents agreed with collection efficiency of sewerage network to improve hygiene practices and 70.0 per cent of the males, 20.0 per cent of the females, 80.0 per cent of the senior citizens and 42.5 per cent of the total respondents agreed with cost recovery in waste water management to improve sanitation and hygiene and for Swachh Bharat Abhiyan to succeed in India. 100.0 per cent males, females and senior citizens, 10.0 per cent children and 77.5 per cent of the overall respondents agreed with quality of waste water treatment, while 80.0 per cent of the males, 25.0 per cent females, 100.0 per cent senior citizens and 51.2 per cent of the total respondents agreed with extent of reuse and recycling of waste water as health indicators, while 70.0 per cent males, 35.0 per cent females, 40.0 per cent senior citizens and 36.2 per cent of the overall respondents agreed with efficiency of collection of sewerage related changes for improved sanitation and hygiene. 100.0 males, females, senior citizens and 75.0 per cent of the overall respondents agreed with volume of waste water collected, while 80.0 per cent males, 70.0 per cent females and senior citizens and 55.0 per cent of the overall respondents agreed with volume of water treated to secondary level towards improved sanitation and hygiene in India.

Conclusion

The cleanliness of our country is one of the most concerning issues. The roads are always filthy and the rivers which are religiously pious and pure have been rendered poisonous. It is the duty of Municipal Corporation to maintain the cleanliness of the cities but it is also our social responsibility too. It is true that we need to be the change that we want to see around us. There are a million approaches to this problem, but here are a few indicators which can help us embark on the journey towards a Swachh Bharat. Open toilet is a major problem in India. Mr. Narendra Modi is the first prime minister who gave more attention to construction and use of toilets, sanitation and hygiene, coverage of toilets in remote areas which are the basic needs of Indian people. The government has since moved with electricity, claiming to have constructed around 80 lakhs countryside toilets across India under Modi's ambitions Swachh Bharat Abhiyan. Government should provide sewer line connections in every house and recycle waste water and use them. Government should set waste water treatment plants

in each and every house of the society by which they get neat and clean water. Set up water purifying treatment plants on roads, bus stops, railway stations, malls, parks by which they provide purify to people. It is the duty of municipal corporation works to keep our society neat and clean. Municipal corporations should set up helpline number for customer's complaint through which people can register their complaints of their problems. The municipal corporation should solve customer problems on priority basis. Government should install dustbins on roads, parks and markets and paste rules on these dustbins. Government should take great initiatives for making Swachh Bharat. Every institutional body must conduct workshops to educate society about the importance of environment in modern world. Children and even elders must be taught how to keep their surroundings clean and also how to maintain proper hygiene and its importance. Tree plantation should be encouraged as growing trees have countless benefits. These are some of the steps to make a cleaner India.

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