

CLEAN INDIA CAMPAIGN: AWARENESS, ADOPTION, USAGE AND BARRIERS

Francis Philip Barclay

Assistant Professor, Department of Media and Communication, School of Communication,
Central University of Tamil Nadu, Thiruvarur, India, francis@cutn.ac.in

Shamala R

Assistant Professor, Department of Media and Communication, School of Communication,
Central University of Tamil Nadu, Thiruvarur, India, shamala@cutn.ac.in

Boobalakrishnan N

Assistant Professor, Department of Media and Communication, School of Communication,
Central University of Tamil Nadu, Thiruvarur, India, boobalakrishnan@cutn.ac.in

Nikhil Kumar Gouda

Assistant Professor, Department of Media and Communication, School of Communication,
Central University of Tamil Nadu, Thiruvarur, India, nikhilkumar@cutn.ac.in

Abstract. Sanitation and allied health issues are causes for serious concern in India, especially the ruralscape. Through its flagship programme, Swachh Bharat Mission (Gramin), the Centre aims at addressing a major part of the sanitation issue. Several aspects of this scheme demand scholarly evaluation for successful implementation. Hence, the present study aims to measure the following: perception and awareness about sanitation, the need for toilets and the SBM (G) scheme; access to the scheme; level of adoption; usage; and the barriers that stand between awareness and adoption, using a survey of 412 families. Study results indicated a reach of 70 percent. Open-defecation had been the primary practice for a majority of the families and it was difficult for them to change that social habit. Study results also indicated that activists, mass media and government sources were the main motivators creating awareness about the scheme for toilet construction. Further, there was a positive correlation between Severity-Susceptibility-Benefits and the awareness about the SBA scheme for toilet construction, lending credence to the Health Belief Model.

Keywords. *Clean India Campaign, mass media, media usage, health belief model, awareness, adoption, barriers*

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Introduction

Sanitation and allied health issues are causes for serious concern in India, especially the ruralscape. Through its flagship programme, Swachh Bharat Mission (Gramin), the Central Government of India aims at addressing a major part of the sanitation issue through improving the levels of cleanliness through Solid and Liquid Waste Management activities, constructing toilets—far more than a mere health concern, a social issue threatening the safety of rural women and other vulnerable groups such as children and the old—for making villages Open Defecation Free (ODF). As implementation of this programme was in full swing across India in 2018, there was a need for qualitative and empirical research that could aid effective implementation of the scheme. SBM (Gramin) raises several research questions with regard to implementation and its effectiveness. Several aspects of this scheme demands scholarly intervention and evaluation for successful implementation. Hence, the present study aims to measure the following: perception and level of awareness on sanitation, the need for toilets and the SBM (G) scheme; access to the scheme (the reach of the flagship programme); level of adoption; usage and the barriers that stand between awareness and adoption.

Objectives of the present study are:

- Measure the level of awareness using the HBM: perception-based factors such as susceptibility, severity, benefits, barriers, cue to action and self-efficacy
- Evaluate the reach and access of the scheme
- Measure the rate of adoption
- Examine usage and impact on sanitation and safety
- Identify potential barriers: lack of resources such as water, social practices as a barrier to adaptation, myths and prejudices, among others
- Examine the relationships between the above variables to identify potentials factors that induce adoptions of the scheme or act as barrier that stops adoptions

In this project, a mixed method (qualitative and quantitative approaches) was employed to answer the research questions related to Swachh Bharat Mission (Gramin) that offers financial support for the construction of household latrines. This paper presents and discusses the quantitative part of it, which is the survey. A mixed-method research approach would be best suited for this research, as the combination of quantitative and qualitative inquiries could better answer the research questions raised in this project.

In this section, a brief review is presented pertaining to studies on sanitation and its impact. Poor sanitation may be associated with a number of infectious and nutritional outcomes, and these outcomes also cause a heavy burden of disease globally. It is a matter of grave concern as 88 percent of deaths in diarrhoea occur because of unsafe water, insufficient sanitation and poor hygiene (Pullan et al. 2014). A clean environment can be of benefit to the

larger community in several ways, including promotion of health and well-being and breaking the cycle of disease (Kumar et al. 2011).

A study by Mara et al. (2010) had revealed that improved sanitation has significant impacts not only on health, but on socio economic developments leading substantial disability-adjusted life year (DALY) losses in developing countries. Improved water, sanitation, and hand washing practices with better developmental outcomes include reduced infection, reduced inflammation, and increased social interaction among children in a study reported in recent times from Bangladesh (Luby et al., 2018).

Sound sanitation facilities are capable of decreasing diarrhoea morbidity and mortality and the severity of hookworm infection, studies have said. Further, quality water intake can reduce incidence of dracunculiasis (Esrey et al. 1991). Substantial evidence indicates that water, sanitation, and hygiene interventions improve health. India represents a particular challenge, accounting for roughly a third of the world's population without improved sanitation and two-thirds of the population practicing open defecation (Clasen et al., 2014). A quarter of the 1.5 million who die annually from diarrhoeal diseases are from India (Fischer et al., 2013).

A multifaceted review of the health effects from improved water supply and sanitation found significant reductions in both the severity and prevalence of diarrhea and infectious diseases (Montgomery & Elimelech, 2007; Geetha & Kumar, 2014).

Personal and domestic hygiene practices cannot be improved without improving basic amenities (Nath, 2003). Developing countries are facing sanitation and hygiene issues. Hence, there is a need to incorporate hygiene education, participatory methods, communication techniques and concepts of behavior change into sanitation programmes (Warner, 1998). Fecal pollution of water leads to introduction of a variety of intestinal pathogens that causes water-borne diseases (Rajgire, 2013). Governments supported large-scale campaigns like SBM, to improve coverage of household sanitation, which is often the sole indicator used to measure progress. Ignorance of certain fundamental prerequisites e.g. not creating an environment for Community Led Total Sanitation (CLTS) to succeed, adequate focus on the change of collective behaviour. Behaviour change activities in the form of information, education, and communication (IEC) have taken a back seat to construction of latrines.

A review of past studies on sanitation has indicated that a large-scale campaign to implement sanitation has achieved substantial gains in latrine coverage among the population of Orissa. Nevertheless, gaps in coverage and widespread continuation of open defecation will result in continued exposure to human excreta, reducing the potential for health gains (Barnard et al. 2013). In the study conducted among women in rural India, it was observed that nine percent of the households and most seasonal migrant women workers lacked access to toilets. Also, the study identified that the fear for personal safety, injury or accidents, lack of cleanliness, indignity, shame and embarrassment due to a lack of privacy were significant sources of stress related to open defecation (Hirve et al. 2015). Although around 275 million

people in India gained access to improved sanitation between 1990 and 2011, 615 million still defecated in the open in 2011 (WHO and UNICEF 2013).

Low sanitation coverage could be due to lack of affordable sanitation technology and awareness or motivation (Jha, 2003). Traditional practices may pose a significant challenge to programmes aimed at toilet usage and better sanitation (Banda et al. 2007). Three years after the programme (evaluation of water and sanitation programme in india) initiation, the number of households using piped water and private pit latrines had increased by 10 percent on average, but no changes in hygiene-related behaviour had occurred (Pattanayak et al. 2010).

Swachh Bharat Abhiyan is a special campaign by the BJP government to clean the roads, streets and infrastructure of the country. It is the visionary mission launched by Prime Minister of India, Narendra Modi. It was launched on 2 October, 2014. This campaign is one of India's biggest campaigns, covering around 3 million government employees. This mission is widely popular among the citizens of the country as it directly gives them the responsibility to clean up their own country. The cleanliness campaign is also covering the schools, colleges and universities (Raj & Kajla, 2015). The spending on IEC has fallen since the SBM started, from three percent of total expenditure in 2014-2015 to one percent in 2015-2016 (INSIGHTS, 2018). A study conducted in rural Tamil Nadu reported a significant association between low standard of living and open air defecation practice and advocated for adequate planning and conducting Information Education Communication activities to solve the issues of underutilisation of sanitary latrines (Anuradha et al., 2017).

However, the studies included in these reviews were observational or small-scale trials; most combined household sanitation with water supplies or hygiene (Clasen et al., 2014). Ban et al. (2010) suggest that improving sanitary outcomes requires disseminating information on the public goods nature of their health benefits, as well as on the local government's responsibilities. It also requires public health regulations, along with measures to enable accountability in service provision. Most basic observations indicate that water supply coverage is not as good as the figures show while national sanitation continues to be poor even after almost six decades of efforts to eradicate open defecation (Jha, 2010).

The principal route of diarrheal disease infection is fecal–oral cycle, and breaking this cycle, which depends primarily upon hand-washing and toilet use, saves children's lives. Hygiene and sanitation are considered as the most cost-effective public health interventions to reduce diarrheal morbidity and mortality (Kumar & Vollmer, 2013). Poor sanitation is responsible for the spread of a number of communicable diseases, resulting in lost productivity, reduced quality of life, and impoverishment. Sanitation is one of the most cost-effective ways to improve public health (Bonu, 2009). Khanna et al. (2016) observed that sanitation issues for women and girls are compounded by inequitable gender norms that put them at greater risk of experiencing violence and multiple health vulnerabilities. Reilly (2016) stated that for women and girls in low-income areas, the consequences of inadequate sanitation included fear of harassment, experiences of violence, and psychosocial stress. Jadhav et al. (2016) observed that

net of their socioeconomic status, women who use open defecation are twice as likely to face NPSV (non-partner sexual violence) as women with a household toilet.

Community-based organisations (CBOs) and (NGOs) could play an important role in creating an environment for social mobilisation and for sustainable human development (Parikh et al. 2004). Khanna et al. (2016) highlighted the role of three structural constraints as the key factors influencing toilet construction and use: poverty, inadequate sanitation policy and its implementation and gender-based power dynamics at the household level. The key to providing microbiologically-safe drinking water lies in understanding the various mechanisms by which water gets contaminated, and formulating interventions at critical points to decrease and prevent contamination of drinking water (Gopal et al. 2009).

Most of the toilets constructed by the government were not in use in 2011, and many were not actually constructed in the first place because of corruption or a lack of demand (Gupta et al. 2016). Community-led Total Sanitation (CLTS) has led to millions of pit latrines being built in rural communities across the world. However, pits or tanks filling up is emerging as a challenge to the open defecation free (ODF), and may revert back to open defecation (OD) if digging a new pit is problematic or emptying services are not available or too expensive. Furthermore, fear of pits becoming full can dissuade people from using toilets. Services for emptying are often inadequate and can result in unsafe and indiscriminate dumping of pit content into the environment (Myers, 2016).

Although government agencies are providing the infrastructural support to improve sanitation conditions in the developing countries, there is a need for collateral personal hygiene and sanitary education to achieve improved outcomes (Kuberan et al. 2015). Addressing infrastructural causes of remoteness is key to reducing open defecation. Reducing multi-scalar, socio-spatial inequalities can lead to latrine adoption (Reilly et al. 2017). To improve the prevailing situation, the problem of rural health is to be addressed both at macro (national and state) and micro (district and regional) levels (Patil et al. 2002). Many household latrines in rural India, built with government subsidies and the facilitation and support of non-government organizations (NGO), remain unused (Routray et al. 2015). Lack of interest, money and space are the important reasons for non-construction of household latrines. Awareness regarding the ill effects of open air defecation is also poor. Improved sanitation is important not only for human health, but also for social and economic development of the country (Anuradha et al., 2017). SBM has been implemented since 2014, however its impact and outreach on rural sanitation has not been extensively studied. Our study is an attempt to fill up the gaps and it is based on extensive study based on primary data. Further, the demographic variables could also have an association with the variables that are in focus in the present study.

Inducing widespread behavioural change isn't an impetuous activity but—as several theoretical frameworks have shown—is a process. For instance, the Health Belief Model (HBM) that was developed to understand the failure of the people in adopting disease prevention

strategies throws the spotlight on several perception-based factors such as susceptibility, severity, benefits and barriers, apart from cue to action and self-efficacy (refer Table 1).

HBM suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behaviour or action will predict the likelihood the person will adopt the behaviour.

Table 1. Health Belief Model (HBM)

Factors	Elaboration
Perceived susceptibility	Perception of the risk of acquiring an illness or disease
Perceived severity	Perception of the seriousness of contracting an illness or disease
Perceived benefits	Perception of the effectiveness of actions available to reduce threat of illness or cure
Perceived barriers	Perception of the obstacles to performing a recommended health action
Cue to action	Stimulus needed to trigger the decision-making process to accept a recommended health action
Self-efficacy	Level of confidence in ability to successfully perform a behaviour
(Source: http://sphweb.bumc.bu.edu/otit/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.html)	

HBM borrows from the psychological and behavioral theory with the foundation that the two components of health-related behaviour are the desire to avoid illness or conversely get well if already ill and the belief that a specific health action will prevent or cure the illness. It argues that an individual's course of action, ultimately and more often than not, depends on the person's perceptions of the benefits and barriers related to health behaviour. Based on the review of past studies, the following research questions and hypotheses are proposed:

Research questions and hypotheses

(RQ1): What are the levels of awareness about the Swachh Bharat Scheme for toilet construction among those with and without toilets?

(RQ2): What are their sources of awareness?

(RQ3): What are the Cues to Action (reasons for constructing toilets)?

(RQ4): What is the extent of usage of the toilets constructed?

(RQ5): What are the reasons for not using toilets?

(RQ6): What are the reasons for preferring open-defecation?

(RQ7): What are the reasons for not constructing toilets?

(RQ8): What is the extent of perceived need for a household toilet?

(Ha1): Age, Gender, Education, Occupation, Income and Family Type are associated with the levels of awareness about the Swachh Bharat Scheme for toilet construction

(Ha2): Age, Gender, Education, Occupation, Income and Family Type are associated with the level of Severity-Susceptibility-Benefits

(Ha3): Awareness about SBA is positively associated with the level of Severity-Susceptibility-Benefits

(Ha4): Sources of awareness about SBA are positively associated with the level of Severity-Susceptibility-Benefits among those with toilets

(Ha5): Sources of awareness about SBA are positively associated with the level of Severity-Susceptibility-Benefits among those without toilets

(Ha6): Need for toilets is positively associated with the level of Severity-Susceptibility-Benefits among those without toilets

Research Method

In our project, a convergent parallel mixed-methods design was employed, wherein the qualitative and quantitative (QUAL+QUAN; Morse, 1991) inquiries were concurrently conducted during the same phase of the research process, both of these methods were weighed equally, analysed independently, but results were interpreted together (Creswell & Pablo-Clark, 2011). In this paper that presents and discusses the quantitative part, public awareness about the Swachh Bharat Abhiyan (Gramin) scheme for toilet construction in rural India is measured empirically, along with access to the government scheme, adoption, usage and barriers. A quantitative survey of 412 households was conducted to measure the perceived severity of the diseases spread by open-defecation, the perceived susceptibility to those diseases and the perceived benefits of avoiding open-defecation using the Health Belief Model (HBM). A sample of 412 households was chosen within the hamlets (Thennanjaru, Kalladimedu, Anaikuppam, Moolamangalam, Moolamangalam South Street, and Akkarai Thennanjaru) located in the Anaikuppam panchayat, Thiruvarur, in the Indian state of Tamil Nadu. These apart, the Independent variables chosen for the study were: Village, age, gender, educational qualification, occupation, income and family type.

Find the list of variables presented in Table 2.

Table 2. List of variables

Variable name	Groups
Age of the household member	Below 20 years, 20-30 years, 31-40 years and Above 40 years
Gender of the household member	Male and Female
Education of the household member	Illiterate, Std 10 or below, Plus 2, and Graduate
Occupation of the household member	Student, Housewife, Employed, Unemployed and Retired
Income of the family	No Income, Less than Rs1,000, Rs1,000 to Rs5,000, Rs5,001 to Rs10,000 and More than Rs10,000
Family Type	Nuclear and Joint
SSB	Scale variable: the perceived severity of the diseases spread by open-defecation, the perceived susceptibility to those diseases and the perceived benefits of avoiding open-defecation
Awareness	Unaware, Not sure and Aware
Sources of awareness (among those with toilets)	Government, Contractors, Activists, Media, and Friends or relatives
Cues to Action (reasons for constructing toilets)	Health issues, safety concerns (especially for girls), prestige, peer pressure, government persuasion, activist persuasion, and contractors persuasion
Toilet usage (among those with toilets)	Do not use, Sometimes, and Always
Reasons for not using toilets (among those with toilets)	Close to the kitchen, unhygienic, uncomfortable, septic tank issue and water problem
Reasons for preferring open-defecation (among those with toilets)	Used to it, social interaction, peer pressure, comfort, and hygienic
Sources of awareness (among those without toilets)	Government, Contractors, Activists, Media, and Friends or relatives
Reasons for not constructing toilets (among those without toilets)	Lack of money, don't know about government scheme, uselessness, those with toilets do not use them, social reasons, 'I don't think the government will build for me' and lack of trust from contractors
Need for toilet	High need, moderate need, and Low need

In the present study, the focus is on the adoption of the SBA (G) scheme that grants Rs12,000 to build individual household latrines (IHHL).

Though the financial implication in construction of toilets is taken care of under the SBM (G) and Mahatma Gandhi National Rural Employment Guarantee Scheme, the challenge lies in generating demand among the rural households for construction and use of toilets. As recognised by the implementers of the scheme, behavioral change from open-defecation to usage of toilets is a major challenge that needs to be addressed.

Sampling. According to the Census 2011, Thiruvarur is one of the rural districts of Tamil Nadu with about 80 (79.6) percent of its total populace (12,64,277) being ruralites.

It comprises eight taluks that have 10 blocks (Thiruvarur District Administration, Tamil Nadu, 2018). A multi-stage cluster sampling procedure was employed to select respondents in this district by choosing Annaikupam village in the Nannilam block. Of the total Annaikupam population of 4,120, as many as 393 respondents are chosen for the study: 149 respondents from the households where toilets were constructed under the scheme in the last year (2018) and 244 others from households that do not have toilets.

Data sourced. As per the latest records (2017-18), a total of 8,342 SBM (G) project works were taken up in the Nannilam block during that year. Of them, 393 toilet projects were taken up in Annaikupam during the year. As many as 149 of those projects were completed in this year, with the percentage of completion being 37.91.

Instrument. Before the field visit was started on August 1, 2018, a questionnaire with 60 questions was proposed. However, after a pilot survey was conducted, the questionnaire for the quantitative analysis was modified and the revised questionnaire has 26 questions.

Data analysis. To identify factors that aid and avoid adoption, the following data analyses will be performed: Correlation between perception-based factors as proposed by the Health Belief Model and rate of adoption; Anova of reach, access and adoption; Correlation between the prevalence of barriers and adoption; and relationship between demographic variables and awareness, adoption and usage.

Data Analysis

Descriptive statistics

Of the total 412 families sampled within the Anaikuppam panchayat, as many as 92 were from the Thennanjar hamlet. Of them, 76 had already constructed toilets, while 16 of them did not have toilets. Of the 56 families sampled in Kalladimedu hamlet, 32 of them did not have toilets. However, of the eight families sampled in the Anaikuppam hamlet, only seven had constructed toilets. Of the 165 families sampled in Moolamangalm South Street hamlet, 129 of them did not have toilets. In Akkarai Thennanjaru which comes within the Anaikuppam panchayat, of the 81 families sampled, as many as 68 did not have toilets.

Of the total 412 families sampled, as many as 245 (59.46 percent) did not have toilets within the Anaikuppam panchayat. Study results indicated that of the 167 families that had constructed toilets, as many as 26 (15.6 percent) were unaware about the Swachh Bharat scheme for toilet construction, while 117 (70.1 percent) were well aware of the government scheme.

(RQ1): *What are the levels of awareness about the Swachh Bharat Scheme for toilet construction among those with and without toilets?*

(RQ2): *What are their sources of awareness?*

The government scheme for toilet construction has a wide reach among the rural populace with high levels of awareness. However, 20-30 percent of the population are still unaware about the scheme for toilet construction, demanding awareness campaigns to sensitise the people to adopt the government scheme (refer Table 3).

Table 3. Awareness about Swachh Bharat scheme for toilet construction

Households that have toilets (167)	
Percentage of households aware about the scheme	70.1
Unaware or not sure	29.9
Sources	Percentages
Awareness through Government	52.7
Awareness through Contractors	25.7
Awareness through Activists	58.1
Awareness through Media	51.5
Awareness through Friends or relatives	31.1
Households that do not have toilets (245)	
Percentage of households aware or partially aware about the scheme	79.6
Unaware or not sure	20.4
Sources	Percentages
Awareness through Government	51.0
Awareness through Contractors	38.0
Awareness through Activists	79.6
Awareness through Media	49.4
Awareness through Friends or relatives	6.1

Study results indicated that of the 167 families that had constructed toilets, only 88 (52.7 percent) received information about the scheme from the government, 46 (25.7 percent) received information from the contractors, 97 (58.1 percent) from the activists, 86 (51.5 percent) from the media and a meagre 52 (31.1 percent) from the friends or relatives.

Of the 245 households that did not have toilets, as many as 50 (20.4 percent) were unaware about the Swachh Bharat scheme for toilet construction. As many as 178 (72.7 percent) families opined that people would readily adopt the scheme, while 15 (6.1 percent) families thought that people may not adopt the scheme. Over 20 percent of the families surveyed were

not sure about the appeal and adoption of the scheme. Of these 245 families, 125 (51.0 percent) received information about the scheme from the government sources, 93 (38 percent) received information from the contractors, 195 (79.6 percent) from activists, 121 (49.4 percent) from the media and a meagre 15 (6.1 percent) from friends or relatives.

(RQ3): What are the Cues to Action (reasons for constructing toilets)?

Of the 167 families that had constructed toilets, as many as 29 (17.4 percent) constructed a toilet because of health issues. Of them, 39 (23.4 percent) constructed toilets due to safety concerns (especially for girls). In the study, 13 (7.8 percent) constructed toilets as a matter of prestige. Six (3.6 percent) constructed toilets because of peer pressure (neighbours), while 44 (26.3 percent) constructed toilets due to the persuasion of the government officials. Of the total, 35 (21.0 percent) constructed toilets because activists persuaded. However, one (0.6 percent) family constructed toilets because of the persuasion of the contractors.

Table 4. Cues to constructed toilets

Cues	Frequency	Valid Percent	Cumulative Percent
Health issues	29	17.4	17.4
Safety concerns (especially for girls)	39	23.4	40.7
It was a matter of prestige	13	7.8	48.5
Peer pressure (neighbours)	6	3.6	52.1
Government officials persuaded	44	26.3	78.4
Activists persuaded	35	21.0	99.4
Contractors persuaded	1	0.6	100.0
Total	167	100.0	

(RQ4): What is the extent of usage of the toilets constructed?

Of the 167 families with toilets, 22 (13.2 percent) did not use toilets at all, while 32 (19.2 percent) families used the toilets sometimes and 113 (67.7 percent) regularly used the toilets.

Table 5. Usage of Toilets

Toilet Usage	Frequency	Percent	Cumulative Percent
Don't use	22	13.2	13.2
Sometimes	32	19.2	32.3
Always	113	67.7	100.0
Total	167	100.0	

(RQ5): What are the reasons for not using toilets?

Of the 167 families that had constructed toilets, as many as 97 (23.5 percent) had no reasons to adopt open defecation, while 30 (7.3 percent) families did not use toilets due to its proximity to their kitchen. In the study, eight (4.9 percent) did not use toilets because they thought those toilets were unhygienic, 14 (3.4 percent) did not use toilets as they felt uncomfortable. Of the total, five (1.2 percent) did not use toilets due to the issue of emptying septic tanks, while 13 (3.2 percent) did not use the constructed toilets due to water problems.

Table 6. Reasons for not using toilets

Reasons	Frequency	Percent	Cumulative Percent
No reasons	97	58.1	58.1
It is close to the kitchen	30	18.0	76.0
It is unhygienic	8	4.9	82.2
It is uncomfortable	14	8.4	88.6
Emptying the septic tank	5	3.0	91.6
Water problem	13	7.8	99.4
Total	167	100	

(RQ6): What are the reasons for preferring open-defecation?

Of the 167 families that had constructed toilets, as many as 115 (68.9 percent) did not prefer open defecation, while 32 (19.2 percent) continued open defecation as they were used to it. In the study, six (3.6 percent) use open-defecation because of social interaction, five (3.0 percent) were using open-defecation due to peer pressure, eight (4.8 percent) due to comfort. Of the total, one (0.6 percent) adopted open defecation due to water problems.

Table 7. Reasons for using open-defecation

Open-defecation Reasons	Frequency	Percent	Cumulative Percent
No, I don't prefer	115	68.9	68.9
I am used to it	32	19.2	88.0
For social interaction	6	3.6	91.6
Peer pressure	5	3.0	94.6
Comfort	8	4.8	99.4
I believe it is hygienic	1	0.5	100.0
Total	167	100.0	

(RQ7): *What are the reasons for not constructing toilets?*

Of the 245 families that did not have toilets, as many as 175 (71.4 percent) families did not opt for toilet construction due to lack of money, 13 (5.3 percent) did not know about the government scheme. In the study, nine (3.7 percent) families thought it toilets were useless, six (2.4 percent) preferred open-defecation, six (2.4 percent) others were using open-defecation for social reasons. However, 24 (9.8 percent) did not know about the scheme and 12 (4.9 percent) families thought the contractors did not trust them, and hence, did not opt for toilets.

Table 8. Reasons for using open-defecation among those without toilets

Reasons for No Toilet	Frequency	Percent	Cumulative Percent
Lack of money	175	71.4	71.4
I don't know about government scheme	13	5.3	76.7
I think it is useless	9	3.7	80.4
Those with toilet do not use it	6	2.4	82.9
Social reasons	6	2.4	85.3
I don't think the government will build for me	24	9.8	95.1
Contractors do not trust us	12	4.9	100.0
Total	245	100	

(RQ8): *What is the extent of perceived need for a household toilet?*

Study results indicated that of the 245 families, as many as 200 (81.6 percent) felt a high need for toilets, while 38 (15.5 percent) were low, and the others moderate.

Table 9. Need for toilets

Need for Toilet	Frequency	Percent	Cumulative Percent
High need	200	81.6	81.6
Moderate need	7	2.9	84.5
Low need	38	15.5	100.0
Total	245	100.0	

(H_a1): Age, Gender, Education, Occupation, Income and Family Type are associated with the levels of awareness about the Swachh Bharat Scheme for toilet construction

To test relationships between the independent variables and the level of awareness about the scheme, Chi-Square tests were run and the results are presented in Table 10.

Table 10. Chi-Square Test results: Awareness

Government scheme		Unaware	Not sure	Aware	Total
Age	Below 20 years	1	3	22	26
	20 to 30 years	4	8	25	37
	31 to 40 years	10	7	37	54
	Above 40 years	11	6	33	50
Gender	Male	13	9	51	73
	Female	13	15	66	94
Education	Illiterate	10	10	35	55
	Std 10 or below	11	12	51	74
	Plus 2	3	1	20	24
	Graduate	2	1	11	14
Occupation	Student	1	5	20	26
	Housewife	7	8	34	49
	Employed	16	8	54	78
	Unemployed	1	2	9	12
	Retired	1	1	0	2
Income	No income	1	1	1	3
	Less than Rs 1000	1	3	17	21
	Rs 1001 to Rs 5000	6	12	63	81
	Rs5001 to Rs 10000	13	5	20	38
	More than 10000	5	3	16	24
Family	Nuclear	23	21	97	141
	Joint	3	3	20	26
Total		182	168	762	1169

Study results indicated that a majority of those surveyed were aware of the government scheme for toilet construction. Only the variable Income was associated with the level of awareness about the Swachh Bharat scheme: those with higher income were lesser aware about the scheme. Among those below 20 years, one (0.59 percent) was not aware about the government scheme, while three (1.79 percent) were not sure and 22 (13.17 percent) were well aware. Among the 20-30 years old, four (2.39 percent) were not aware about the government scheme, while eight (4.79 percent) were not sure and 25 (14.97 percent) well aware. Among the

31-40 years old, 10 (5.98 percent) were not aware about the government scheme, while seven (4.19 percent) were not sure and 37 (22.15 percent) well aware. Among 40 years old, 11 (6.58 percent) were not aware about the government scheme, while six (3.59 percent) were not sure and 33 (19.76 percent) were well aware. Among the males, 13 (7.78 percent) were not aware about the government scheme, while nine (5.38 percent) were not sure and 51 (30.53 percent) were well aware. Among the females, 13 (7.78 percent) were not aware , while 15 (8.98 percent) were not sure and 66 (39.52percent) were well aware .

Among the illiterates, 10 (5.98 percent) were not aware about the government scheme, while 10 (5.98 percent) others not sure and 35 (20.95 percent) were well aware. Among the Std 10 or below, 11 (6.58 percent) were not aware about the government scheme, while 12 (7.18 percent) not sure and 51 (30.53 percent) were well aware. Among the Plus 2, 3 (1.79 percent) were not aware about the government scheme, while one (0.59 percent) was not sure and 20 (11.97 percent) were well aware. Among the graduates, two (1.19 percent) were not aware about the government scheme, while one (0.59 percent) were not sure and 11 (6.58 percent) were well aware. Among the students, one (0.59 percent) was not aware about the government scheme, while five (2.99 percent) were not sure and 20 (11.92 percent) were well aware. In Housewife, seven (4.19 percent) were not aware about the government scheme, while eight (4.79 percent) were not sure and 34 (20.35 percent) were well aware. In Employed, 16 (9.58 percent) were not aware about the government scheme, while eight (4.79 percent) were not sure and 54 (32.33 percent) were well aware. In the unemployed group, one (0.59 percent) was not aware about the government scheme, while two (1.19 percent) were not sure and nine (5.38 percent) were well aware. In the retired group, one 1.19 percent) was not aware about the government scheme, while one (1.19 percent) was not sure and none of them were aware.

In the No-income group, one (0.59 percent) was not aware about the government scheme, while one (0.59 percent) was not sure and one (0.59 percent) were well aware. Among the less than Rs 1000, one (0.59 percent) was not aware about the government scheme, while three (1.79 percent) were not sure 17 (10.17 percent) were well aware. Among those with an income of Rs 1001 to Rs 5000, six (3.59 percent) were not aware about the government scheme, while 12 (7.18 percent) were not sure and 63 (37.7 percent) were well aware. Among the Rs 5001 to Rs 10000, 13 (7.78 percent) were not aware about the government scheme, while five (2.99 percent) were not sure and 20 (11.97 percent) were well aware.

Among those with a monthly income of more than Rs 10000, five (2.99 percent) are not aware about the government scheme, while 3 (1.79 percent) were not sure and 16 (9.58 percent) well aware. Among the Nuclear families, 23 (13.77 percent) were not aware about the government scheme, while 21 (12.57 percent) were not sure and 97 (58.08 percent) were well aware. Among the Joint, three (1.79 percent) were not aware about the government scheme, while three (1.79 percent) were not sure and 20 (11.97percent) were well aware about the scheme.

(H_{a2}): Age, Gender, Education, Occupation, Income and Family Type are associated with the level of Severity-Susceptibility-Benefits

To test the relationship between Age and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run and the results are presented in Table 11. Anova results indicated that there was a statistically significant difference among the average Susceptibility-severity-benefits scores among the Age groups ($F(3, 408) = 4.664$; $N = 412$; $p < .0005$) in the Anaikuppam panchayat in Thiruvavur. Those belonging to the Age group of 31 to 40 years had the families who had the largest average score for susceptibility-severity-benefits, while those below 20 years scored the lowest.

To test the relationship between Gender and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run and the results are presented in Table 11. Anova results indicated that there was no statistically significant difference among the average Susceptibility-severity-benefits scores of the gender ($F(1, 410) = 1.004$; $N = 412$; $p > .05$) in villages that comes within Anaikuppam panchayat in Thiruvavur. Females, however, scored more with regard to the susceptibility-severity-benefits.

To test the relationship between Education and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run. Anova results indicated that there was no statistically-significant difference among the average Susceptibility-severity-benefits scores of Education ($F(3, 408) = 0.625$; $N = 412$; $p = 0.599$).

To test the relationship between occupation and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run. Anova results indicated that there was no statistically-significant difference among the average Susceptibility-severity-benefits scores of the different Education groups ($F(4, 407) = 0.496$; $N = 412$; $p > .05$). To test the relationship between Income and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run. Anova results indicated that there was no statistically significant difference among the average Susceptibility-severity-benefits scores of the income ($F(4, 407) = 3.498$; $N = 412$; $p > .05$) in villages that comes within the Anaikuppam panchayat.

To test the relationship between Family and the level of perceived Severity (of the diseases caused due to open-defecation), Susceptibility (to the diseases caused due to open-defecation) and Benefits (of avoiding open-defecation), a one-way Anova was run. Anova results indicated that there was a statistically significant difference among the average Susceptibility-severity-benefits scores of the different Family types ($F(1, 410) = 32.765$; $N = 412$; p

<.0005). Nuclear families had the highest average score (15.4179) for susceptibility-severity-benefits, while the joint families scored the lowest (13.7692).

Table 11. One-way Anova test results for Susceptibility-severity-benefits

Variables	Groups	N	Mean	Std. Deviation	Std. Error	Anova sig.
Age	Below 20 years	67	15.9254	2.00237	0.24463	0.003
	20 to 30 years	96	14.6979	2.3935	0.24429	
	31 to 40 years	138	15.2754	1.9955	0.16987	
	Above 40 years	111	14.9459	2.31532	0.21976	
Gender	Male	193	15.0415	2.23801	0.1611	0.317
	Female	219	15.2603	2.18855	0.14789	
Education	Illiterate	109	15.0367	2.63497	0.25238	0.599
	Std 10 or below	206	15.2816	2.05257	0.14301	
	Plus 2	56	15.1786	1.97353	0.26372	
	Graduate	41	14.8293	2.0845	0.32554	
Occupation	Student	82	15.1585	2.51155	0.27735	0.739
	Housewife	125	15.216	2.27746	0.2037	
	Employed	187	15.1872	2.00865	0.14689	
	Unemployed	16	14.4375	2.529	0.63225	
	Retired	2	14.5	0.70711	0.5	
Income	None	5	13.4	1.51658	0.67823	0.008
	Less than Rs 1000	40	14.2	2.63312	0.41633	
	Rs 1001 to Rs 5000	215	15.4093	2.3302	0.15892	
	Rs5001 to Rs 10000	123	15.1463	1.8002	0.16232	
	More than 10000	29	14.9655	1.95453	0.36295	
Family Type	Nuclear	347	15.4179	2.05587	0.11037	0.000
	Joint	65	13.7692	2.49856	0.30991	

(H_{a3}): Awareness about SBA is positively associated with the level of Severity-Susceptibility-Benefits

Table 12. Table of Correlation: Severity-Susceptibility-Benefits vs. SBA awareness

Correlations		Awareness about SBA
SevSusBen	Pearson Correlation	.165*
	Sig. (2-tailed)	0.033

A Pearson's product-moment correlation test was run to determine the relationship between Severity-Susceptibility-Benefits and the awareness about the SBA scheme for toilet

construction and the results are presented in Table 12. There is a positive correlation between them, which was statistically significant ($r = .165$; $N = 167$, $p < 0.05$).

Hence, the hypothesis that (H_{a25}) Awareness about SBA is associated with the level of Severity-Susceptibility-Benefits is accepted. It can be inferred that those who thought that they were more susceptible to diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation were more likely to be aware of the SBA scheme for toilet construction.

(H_{a4}): Sources of awareness about SBA are positively associated with the level of Severity-Susceptibility-Benefits among those with toilets

A Pearson's product-moment correlation test was run to determine the relationship between Severity-Susceptibility-Benefits and the sources of awareness about the SBA scheme for toilet construction and the results are presented in Table 13. There is a positive correlation between Severity-Susceptibility-Benefits and awareness through Contractors ($r = .178$; $N = 167$, $p = 0.021$) and through activists ($r = .206$; $N = 167$, $p = 0.008$). It can be inferred that activists played a major role in creating a need for toilets by raising awareness about the ills of open-defecation.

Table 13. Table of Correlation: Severity-Susceptibility-Benefits vs. Sources (with toilets)

Correlations		Through Government	Through Contractors	Through Activists	Through Media	Through Friends or Relatives
SevSusBen	Pearson Corr.	0.002	.178*	.206**	0.086	0.087
	Sig. (2-tailed)	0.979	0.021	0.008	0.268	0.261
Through Government	Pearson Corr.	1	0.092	-0.027	-0.152	0.041
	Sig. (2-tailed)		0.239	0.728	0.050	0.595
Through Contractors	Pearson Corr.		1	.278**	0.078	0.048
	Sig. (2-tailed)			0.000	0.315	0.541
Through Activists	Pearson Corr.			1	.244**	0.099
	Sig. (2-tailed)				0.001	0.201
Through Media	Pearson Corr.				1	.239**
	Sig. (2-tailed)					0.002

(H_{a5}): Sources of awareness about SBA are positively associated with the level of Severity-Susceptibility-Benefits among those without toilets

A Pearson's product-moment correlation test was run to determine the relationship between Severity-Susceptibility-Benefits and the sources of awareness about the SBA scheme for toilet construction and the results are presented in Table 14.

There is a positive correlation between Severity-Susceptibility-Benefits and awareness through Activists ($r = .384$; $N = 167$, $p < 0.0005$) and through the Media ($r = .166$; $N = 167$, $p = 0.009$). It can be inferred that activists played a major role in creating a need for toilets by raising awareness among those without toilets, too.

Table 14. Correlation: Severity-Susceptibility-Benefits vs. Sources (without toilets)

Correlations		Govt	Contractors	Activists	Media	Friends or Relatives
SevSusBen	Pearson Correlation	-0.008	0.070	.384**	.166**	-0.003
	Sig. (2-tailed)	0.903	0.272	0.000	0.009	0.964
Govt	Pearson Correlation	1	.228**	-0.111	.200**	0.012
	Sig. (2-tailed)		0.000	0.082	0.002	0.854
Contractors	Pearson Correlation		1	.229**	.321**	0.116
	Sig. (2-tailed)			0.000	0.000	0.070
Activists	Pearson Correlation			1	.156*	.129*
	Sig. (2-tailed)				0.015	0.043
Media	Pearson Correlation				1	0.088
	Sig. (2-tailed)					0.168

(H_{a6}): Need for toilets is positively associated with the level of Severity-Susceptibility-Benefits among those without toilets

Table 15. Table of Correlation: Severity-Susceptibility-Benefits vs. Need for Toilets

Correlations		Need for Toilets
SevSusBen	Pearson Correlation	.412**
	Sig. (2-tailed)	0.000

A Pearson's product-moment correlation test was run to determine the relationship between Severity-Susceptibility-Benefits and the need for toilet construction and the results are presented in Table 15. There is a positive correlation between Severity-Susceptibility-Benefits and the need for toilets ($r = .412$; $N = 245$, $p < 0.0005$). Hence, the hypothesis that (H_{a27}) Need for toilets is positively associated with the level of Severity-Susceptibility-Benefits among those

without toilets is accepted. It can be inferred that those who thought that they were more susceptible to diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation felt more the need for toilets.

Discussion

Of the total 412 families sampled within the Anaikuppam panchayat, as many as 245 (59.46 percent) did not have toilets. A section of those who had constructed toilets under the SBA scheme were not using the toilets and preferred open-defecation, mainly because they were used to it. However, that section was a minority as a majority of them used the constructed toilets regularly. Study results indicated that of the 167 families that had constructed toilets, as many as 26 (15.6 percent) were unaware about the Swachh Bharat scheme for toilet construction, while 117 (70.1 percent) were well aware of the government scheme.

From the study results, it can be inferred that the government scheme for toilet construction has a wide reach among the rural populace with high levels of awareness. However, about 30 percent of the population are still unaware about the scheme for toilet construction, demanding awareness campaigns to sensitise the people to adopt the government scheme. Further, study results have shown that the activist, mass media and government sources were the main motivators creating awareness about the scheme for toilet construction. Though the private contractors were at play, they were not the main source of information to the people in the villages. Study results indicated that of the 167 families that had constructed toilets, 58.1 percent had received information about the scheme through activists. Activists that connect the people in need of toilets with the government agencies and contractors have played a major role in creating awareness about the need for toilets and also the government scheme for their construction. Study results indicate that communication among peers about toilet construction was poor and plans are needed to initiate public discussions on toilets.

Of the 167 families that had constructed toilets, as many as 29 (17.4 percent) constructed a toilet because of health issues, 39 (23.4 percent) constructed toilets due to safety concerns (especially for girls) and 44 (26.3 percent) constructed toilets due to the persuasion of the government officials. These three were the main sources of awareness about the scheme. However, of the 167 families that had constructed toilets, as many as 22 (13.2 percent) did not use the toilets at all, while 32 (19.2 percent) families sometimes used the toilets.

Proximity to their kitchen was cited as the main reason. Another main reason for avoiding toilets and preferring open-defecation was that they were accustomed to the latter and it was hard for them to change their habits.

Study results also indicated that of the 245 families that did not have toilets, as many as 50 (20.4 percent) were unaware about the Swachh Bharat scheme for toilet construction, while 53 (21.6 percent) were well aware of the government scheme. However, a majority of those who did not have toilets were unsure about the government scheme for toilet construction.

Unlike those who had constructed toilets, among those who have failed to do so, there was low levels of awareness about the scheme through government sources, who are the main motivators among those who have constructed toilets. However, of the 245 families that were surveyed and did not have toilets, 93 (38 percent) had received information from the contractors, 195 (79.6 percent) received information about the scheme from activists, and 121 (49.4 percent) received information about the scheme from the media.

Of the 245 families that were surveyed and did not have toilets, only 15 (6.1 percent) received information about the scheme from the friends or relatives.

Of the 245 families that did not have toilets, as many as 175 (71.4 percent) families did not opt for toilet construction due to lack of money, the most cited reason. This, despite that as many as 200 (81.6 percent) families felt a high need for toilets, while 38 (15.5 percent) were low. A majority of those surveyed were aware of the government scheme for toilet construction. Only the variable Income was associated with the level of awareness about the Swachh Bharat scheme: those with higher income were lesser aware about the scheme.

A majority of the respondents perceived that they gained awareness about the scheme through government sources. Joint families, those with an annual income of over Rs10,000, those unemployed, housewives, those with an educational qualification of Standard 10 or below and those belonging to the Age group of 20-30 years were those who had lesser awareness about the scheme through government sources.

Similarly, only the variable Education was associated with the level of Awareness about the Swachh Bharat Scheme through contractors and only the variable Education was associated with the level of awareness about the scheme through activists. There was no statistically significant association between the independent variables and the level of awareness about the scheme through media and level of awareness about the scheme through friends or relatives. Test results have shown that only the variables Age and Education were associated with the level of Awareness about the Swachh Bharat Scheme through government among those without toilets. Only the variables Village, Education, Income and Family were associated with the level of Awareness about the Swachh Bharat Scheme through contractors among those without toilets. Contractors were a major source of awareness in Thennanjaru, those belonging to the education groups of Plus 2, and those earning less than Rs 1000 a month.

Variables Income and Family were associated with the level of Awareness about the Swachh Bharat Scheme through activists among those without toilets. Activists were a main source of awareness in all villages surveyed barring Kalladimedu, all income groups barring those earning over Rs10,000 a month and those in joint families. Family was associated with the level of Awareness about the Swachh Bharat Scheme through media among those without toilets. Test results have shown that only the variable Education was associated with the level of Awareness about the Swachh Bharat Scheme through friends or relatives among those without toilets. Friends and relatives were not the main source of awareness about the scheme. Occupation was associated with the cues to action (for toilet construction).

Government officials were the main reason for toilet construction in Thennanjaru and Anaikuppam hamlets, while activists inspired the families in Kalladimedu and Moolamangalam South Street hamlets. Safety concerns (especially for girls) were the main reason for toilet construction among those from 20 to 40 years, while health issues were the primary reason for those below 20 years. While for the women safety was a driving factor, for the men, the government was the main source of inspiration. Similarly, for the students, housewives and those unemployed, safety of girls was the prime motivating factor, while for the employed, the government was the main trigger. Overall, safety of girls and the government were the main motivating factors for toilet construction in these villages.

Only the variable Education was associated with the usage of toilets constructed through the scheme. A majority of those who had constructed toilets reported that they use them regularly, barring those without income. Of the 55 illiterates sampled, 26 reported that they use the toilet regularly, while 11 do not use the toilets and 18 use them sometimes.

Among the 74 with an educational qualification of Std 10 or below, 56 use them regularly, while 8 said that they do not use the toilets and 10 use them sometimes. Of the 24 respondents with an educational qualification of plus 2, 19 reported that they use the toilets constructed on a regular-basis, while one said the toilet is not used and four, sometimes. Of the 14 graduates surveyed, 12 said they use the toilets regularly.

In Thennanjaru hamlet, 77 families were sampled, and 16 reported that they do not use them because they are close to the kitchen. In Kalladimadu hamlet, 23 families were sampled, and six reported that water problem was the reason. In Annaikuppam hamlet, eight families were sampled, and three reported that water problem was the reason. In Moolamangalam hamlet, 10 families were sampled, and three cited closeness to the kitchen as the reason.

Of the 36 samples from Moolamangalam South Street hamlet, six reported that its closeness to the kitchen was the reason. In Akkarai Thennanjaru hamlet, 13 families were sampled and two felt toilets were unhygienic. Test results indicated that there was no statistically-significant association between the independent variables and the reasons to choose Open-defecation among those with toilets. People were accustomed to their traditional way of open-defecation and that was cited as the main reason for choosing open-defecation despite constructing toilets at home.

There was a statistically significant difference among the average Susceptibility-severity-benefits scores of the six villages. Those belonging to the Age group of 31 to 40 years had the families who had the largest average score for susceptibility-severity-benefits, while those below 20 years scored the lowest. Similarly, there was a statistically significant difference among the average Susceptibility-severity-benefits scores of the different Family types. Nuclear families had the highest average score (15.4179) for susceptibility-severity-benefits, while the joint families scored the lowest (13.7692). Further, there was a positive correlation between Severity-Susceptibility- Benefits and the awareness about the SBA scheme for toilet construction. It can be inferred that those who thought that they were more susceptible to

diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation were more likely to be aware of the SBA scheme for toilet construction. Also, those who thought that they were more susceptible to diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation felt more the need for toilets. Activists have played a major role in creating a need for toilets by raising awareness among those with and without toilets in these villages.

Conclusion

Quantitative study results have shown that though the reach of Swachh Bharat Abhiyan has been far and wide, it is not complete. As the survey has shown, awareness about the campaign in Anaikuppam panchayat is 70 percent. Campaigns and announcements in media that are popular and can reach rural masses need to be used to spread awareness about the government initiative to build household toilets. Activists and mass media, who have already played roles in creating awareness and helped implement the SBA in this panchayat, can be used to the campaigns. As many as 245 households surveyed in Anaikuppam panchayat did not have toilets and their family members practised open-defecation during odd-hours. As a fallout, the people, especially girls, faced safety risks and were prone to infections due to diseases and insect-bites. Open-defecation had been the primary practice for a majority of the families and it was difficult for them to change that social habit, as expressed in the survey data. That was also a main reason why even those who had constructed toilets through the scheme preferred not to use the toilets regularly and instead open-defecation. A section of the respondents even opined toilets were unhygienic and open-defecation was much better. Another section also associated unhygienic perceptions toward toilets and desisted toilets being close to their kitchen.

Activists, mass media and government sources were the main motivators creating awareness about the scheme for toilet construction. Though the private contractors were at play, they were not the main source of information to the people in the villages.

Study results indicated that of the 167 families that had constructed toilets, about 54 did not use them regularly. Health issues, safety concerns (especially for girls) and the persuasion of the government officials were the main reasons for people constructing toilets.

Unlike those who had constructed toilets, among those who have failed to do so, there was low levels of awareness about the scheme through government sources, who are the main motivators among those who have constructed toilets.

Lack of money (about Rs2,000) demanded by the contractors that the families had to pay before toilet construction was one of the main reasons for not constructing toilets, as many were not able to afford it. Further, there was a positive correlation between Severity-Susceptibility-Benefits and the awareness about the SBA scheme for toilet construction. It can be inferred that those who thought that they were more susceptible to diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation were more likely to be aware of the SBA scheme for toilet construction. Also,

those who thought that they were more susceptible to diseases caused due to open-defecation, and those diseases are more severe and there were benefits of avoiding open-defecation felt more the need for toilets. Activists have played a major role in creating a need for toilets by raising awareness among those with and without toilets in these villages.

This lends credence to the Health Belief Model that awareness about severity of diseases caused due to open-defecation, susceptibility to those diseases and the benefits of avoiding open-defecation is needed for the successful implementation of the SBA campaign.

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Dr. Francis P. Barclay is Assistant Professor in the Department of Media and Communication, School of Communication, Central University of TamilNadu, India. Dr. Barclay is also a journalist, writer, psephologist and media researcher. He has published and contributed chapters to several books, apart from research articles in reputed journals. His research area is media and politics. He has served several English newspapers in India. His works are available at <http://www.francisbarclay.com>.

Dr. Shamala R. is Assistant Professor in the Department of Media and Communication, School of Communication, Central University of Tamil Nadu, India.

Dr. Boobalakrishnan N. is Assistant Professor in the Department of Media and Communication, School of Communication, Central University of Tamil Nadu, India.

Dr. Nikhil Kumar Gouda, Assistant Professor, Department of Media and Communication, Central University of Tamil Nadu has subject specialisation in Health Communication, with more than 15 years of experience in teaching, research and administration in Communication.
