

Original Research Article

Determinants of open-air defecation in rural Chidambaram, Tamil Nadu

Swarnapriya Vasudevan, Srinivasan Nallasamy*, Arjun Loganathan

Department of Community Medicine, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu, India

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***Correspondence:**

Dr. Srinivasan Nallasamy,

E-mail: vasancdm@gmail.com

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ABSTRACT

Background: Open defecation refers to the practice whereby people go out in fields, bushes, forests, open bodies of water, or other open spaces rather than using toilet to defecate. This practice contributes to the emergence of infectious diseases which forms a threat to health of people. This study attempts to find the prevalence of open-air defecation (OAD) and to explore factors influencing the practice.

Methods: The present study was a community based cross-sectional study taken up in the C. Manampadi village covering 153 households. A semi structured questionnaire along with the Swachh Bharat Mission (Gramin) questionnaire was used to collect data.

Results: Our study results show that 35.3% of the households had no toilet facility in their houses and were practicing open air defecation. There was a significant association between open air defecation and variables like literacy level of head of the family, community and water adequacy.

Conclusions: This study highlights that the study population practices OAD not due to economic insufficiency but due to social constraints.

Keywords: Open air defecation, Sanitation, Swachh Bharat Mission, Toilet

INTRODUCTION

Open defecation refers to the practice whereby people go out in fields, bushes, forests, open bodies of water, or other open spaces rather than using toilet to defecate. Safe sanitation is essential for health, from preventing infection to improving and maintaining mental and social well-being.¹

The lack of safe sanitation systems contributes to the emergence and spread of antimicrobial resistance by increasing the risk of infectious diseases and thereby use of antibiotics to tackle preventable infections.²

Inadequate sanitation systems exist in many parts of the world. Many people worldwide practice open defecation and many more do not have services that prevent fecal waste from contaminating the environment.¹

About 892 million people, or 12 percent of the global population, practiced open defecation in 2016. Seventy-six percent (678 million) of the 892 million people practicing open defecation in the world live in just seven countries. Open defecation can pollute the environment and cause health problems.³

For much of India, toilets are all about an issue of sanitation, health, privacy and dignity, and gender rights.

According to a UNICEF fact sheet, India with 626 million people who practice open air defecation has more than twice the number of the next 18 countries combined. This accounts for 90 per cent of the 692 million people in South Asia who practice open air defecation. 59 per cent of the 1.1 billion people in the world who practice open air defecation live in India. India reports the highest number of child deaths due to diarrhea in the world. Open defecation also increases risk of polio infection. Among some other threats caused due to open defecation include, risk to women's dignity, diminishing productivity, lower life expectancy of those who live in such areas.⁴

The principal acute adverse health effect of open-air defecation (OAD) is infectious excreta-related intestinal disease, of which diarrhoea diseases (DD) are the most common. DD were the third cause of death in children under five years of age (U5) in 2015 in low-income and lower-middle-income countries (LICs and LMICs), resulting in 499,000 deaths (8.6% of all U5-deaths), and a disability-adjusted life year (DALY) loss of 45.1 million years (8.5% of total U5-DALY losses).⁵

Poor sanitation also cripples national development: workers produce less, live shorter lives, save and invest less, and are less able to send their children to school. Open defecation still remains the predominant norm and poses one of the biggest threats to the health of the people particularly in rural areas. The habit of indiscriminate fouling of the surroundings with human excrement is generations-old and rooted firmly in the cultural behavior of the village people. Awareness campaigns, media exposure, and pressure from school-age children, is some of the drivers of increased awareness towards behavior change. Basis for a successful latrine promotion program required knowledge of the local area and people, selection of appropriate messages and technology, and community involvement.⁶

Team Swachh Bharat supports the Government of India's Swachh Bharat Mission (SBM) to improve sanitation for all by 2019. Indian Government to which UNICEF is a partner took challenge to eliminate the practice of open defecation by 2019. SBM disseminates information, generate awareness and bring behavioral changes among people.⁴ This study aims to study the prevalence of open air defecation and determinants causing OAD in a rural village in Tamil Nadu.

METHODS

Study design and period

The study was a community based cross-sectional study conducted during the period July 2019 to December 2019.

Study area and population

The study was conducted in C. Manampadi village, rural field practice area of Department of Community

Medicine, Rajah Muthiah medical college, Chidambaram., India. The population in this study was all the households residing in this village selected by convenient sampling. Written informed consent was taken from the study subjects.

Inclusion criteria

Inclusion criteria was households with respondent above 18 years of age.

Exclusion criteria

Households who were not willing to participate in the study and those who were not present at their residences during the study were excluded.

Data collection and analysis

Ethical approval was obtained from Institutional Ethics Committee before commencement of the study. 153 households were approached the elder most adult person available at the time of visit was taken as respondent. socio demography factor, economic, social, environmental and physiological factors for open defecation were collected using a Semi Structured questionnaire along with the SBM questionnaire. Participants were well informed about the study to enhance maximum participation. The collected data was entered in Excel and analysed by SPSS v.23. The statistical test used was Pearson's chi square test.

RESULTS

A total of 153 households were surveyed in C. Manampadi village. Around 36.6% of the head of the families in the households studied up to primary education and 49% were employed in semi-skilled occupations. Majority (99.3%) were Hindus and 72.5% belong to MBC community. 79.7% were living as nuclear family with majority (61.4%) having family size of 4-6 members (Table 1).

For 62.7% of the households borewell was the primary source of water supply (Figure 1). 79.1% of the households felt that water supply was not adequate and 92.8% felt that toilet facility as an important necessity (Figure 2). 48.4% felt that having toilet inside their house was uncomfortable (Figure 3).

Our study results show that 35.3% of the households had no toilet facility in their houses and were practicing open air defecation, whereas 29.4% of households had OAD in spite of having toilet facility in their houses and only 35.3% having toilet in houses and were not practicing open air defecation (Figure 4). 55.6% of the households were approached by government officials for construction of a toilet (Figure 5).

Table 1: Socio-demographic profile of study participants (n=153).

Variable	Category	Freq	%
Education	Illiterate	44	28.8
	Literate	27	17.6
	Primary	56	36.6
	Middle	18	11.8
	Graduate	8	5.2
Religion	Hindu	152	99.3
	Christian	1	0.7
Occupation	Unskilled	58	37.9
	Semi-skilled	75	49
	Skilled	20	13.1
Community	OC	2	1.3
	BC	1	0.7
	MBC	111	72.5
	SC	31	25.5
Type of family	Nuclear	122	79.7
	Joint	28	18.3
	Extended	3	2.0
Family size	1-3	38	24.8
	4-6	94	61.4
	7-9	17	11.1
	10-12	4	2.7
Poverty line	BPL	30	19.6
	APL	123	80.4
Annual expenditure	<50000	37	24.2
	50000-1 lakhs	98	64.1
	1- 2 lakhs	12	7.8
	>2 lakhs	6	3.9
Priority for annual expenditure	Food	122	79.7
	Clothing	8	5.2
	Family Festival	0	0
	Education	13	8.5
	Medicine	6	3.9
	Addiction	4	2.6
Decision making for the family	Head	124	81.0
	Wife	21	13.7
	Son	6	3.9
	Daughter	2	1.3

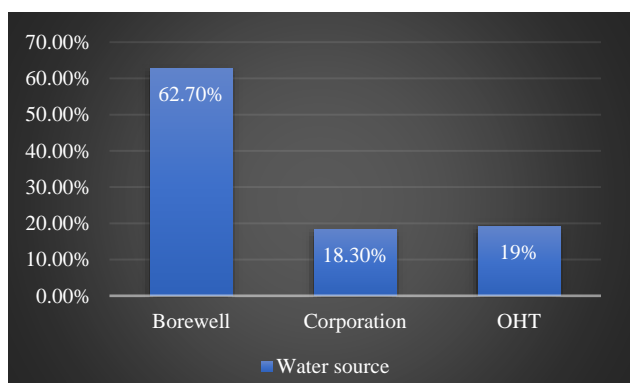


Figure 1: Distribution of study subjects by their water source.

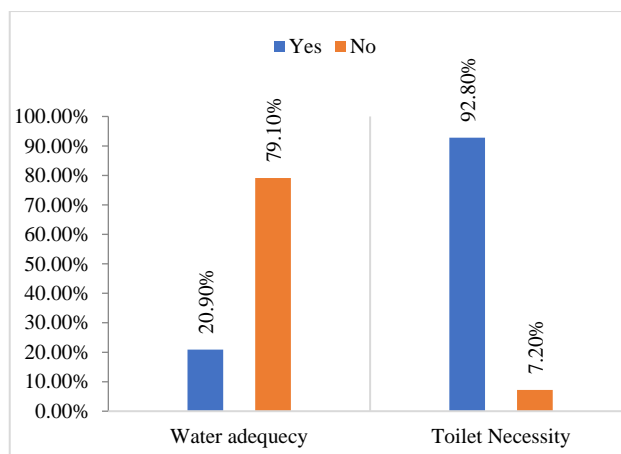


Figure 2: Distribution of study subject by water adequacy and opinion on need for toilet.

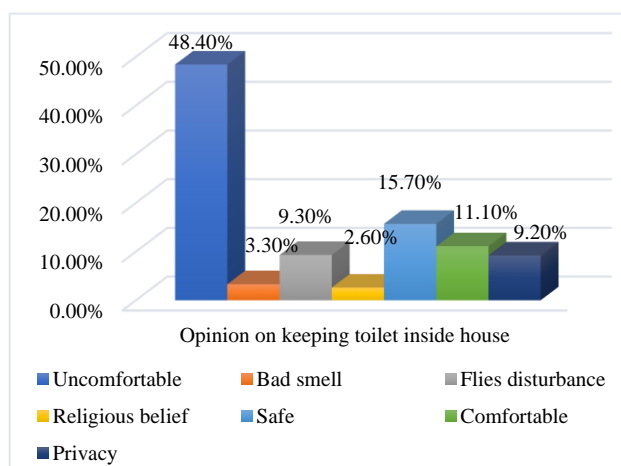


Figure 3: Distribution of study subjects according to their opinion on keeping toilet inside house.

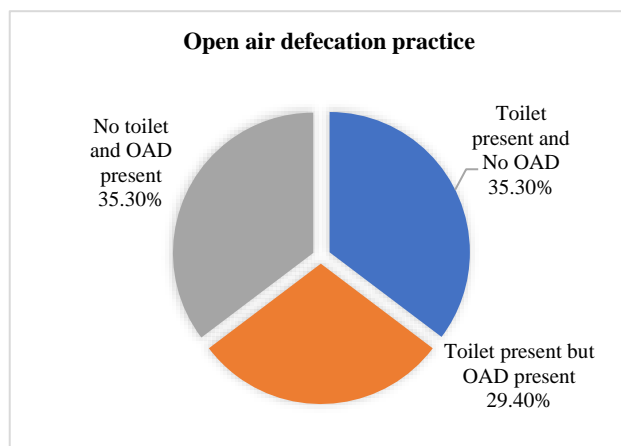


Figure 4: Distribution of study subjects according to open air defecation practice.

There was a significant association between open air defecation and variables like literacy level of head of the family, community and water adequacy (Table 2).

Table 2: Association between various factors and open-air defecation.

Variable	Open air defecation				Chi-square	P value	
	Absent	Present	Total	Percent			
Illiterate	Illiterate	22	22	44	28.8	10.157	0.038
	Literate	10	17	27	17.6		
	Primary	18	38	56	36.6		
	Middle	4	14	18	11.8		
	Graduate	0	8	8	5.2		
Community	SC	25	14	39	25.5	19.835	0.000
	MBC	28	83	111	72.5		
	Others	01	02	02	02		
Annual income	<50000	17	25	42	27.5	3.050	0.692
	50000-1.5 lakh	28	57	85	55.6		
	1.5 -2.5 lakhs	6	11	17	11.1		
	2.5-3.5 lakhs	1	4	5	3.3		
	3.5-4.5 lakhs	0	1	1	0.7		
	>4.5 lakhs	2	1	3	2.0		
Type of family	Nuclear	47	75	122	79.7	5.578	0.061
	Joint	5	23	28	18.3		
	Extended	2	1	3	2.0		
Adequate water	Yes	16	16	32	20.9	3.832	0.05
	No	83	38	121	79.1		

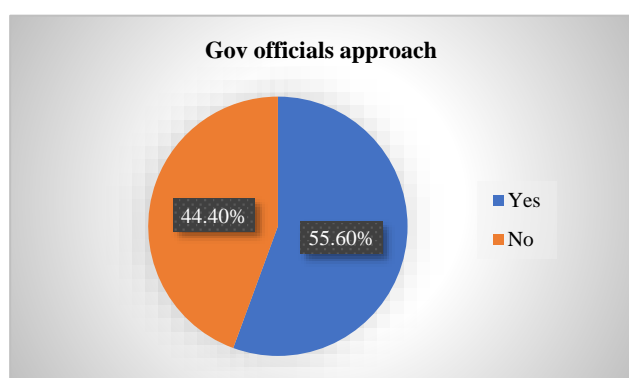


Figure 5: Distribution of study subjects according to approach of government officials for toilet construction.

DISCUSSION

In our study 153 households were surveyed for assessing the practice of OAD. In the present study, the prevalence of open defecation is very high 64.7%. This finding is lower than the national figure in rural India (76%) and also to a study conducted in Tamil Nadu, India where prevalence of open defecation was 78.8%.^{6,7}

In this study a significant association was found between literacy of head of the family, community and water adequacy and OAD (p<0.05). However in similar studies significant association was found between open air defecation and sex, educational status, occupational status and socio-economic status.^{8,9}

In spite of having toilet at home high percent of the households (29.4%) were practicing defecation in open air. This is higher than the results from another study done in a village in Andhra Pradesh where it was 19.3%.¹⁰

In our study 38% of the study households has practiced open air defecation due to the inadequacy of water supply. This finding is similar to the study done by Chakkarwar et al where 40% do not use toilet due to inadequacy of water.¹¹

It was also found that through most (92.8%) of them realise that toilet is necessary. They were feeling it uncomfortable (48%) to keep the toilet inside their house. This kind of a social attitude need to be addressed though the health awareness programs instead of a coercive tactics to construct toilets with regard to the economic factors influencing OAD from the study results, it is observed that around 55.6% of the households were having annual income between 50000-1.5 lakh. But OAD is present in around 57 households. Moreover 79% of them stated that priority towards food for their annual expenditure which shows that there is no or little priority for spending money for their sanitation facility.

CONCLUSION

Hence, our study results indicate that the study population practices OAD not due to economic insufficiency but due to social constraints. Apart from this, the availability of water determines the construction and use of toilets among the community.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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