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Original Research Article

A cross sectional study on assessment of epidemiological factors associated with open field defecation in a tribal community

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ABSTRACT

Background: Almost 2.5 billion people don't have the access to clean toilet globally. In 2011 sanitation coverage globally was 64%. While open defecation is declining across the globe, 15% (one billion) of the global population still defecate outdoors. OFD practices are associated with transmission of variety of infectious diseases. This study was conducted to understand the nature of defecation practices with respect to hygiene in a tribal community.
Methods: It was a cross sectional study conducted among patients attending out-patient department of a rural health training center from a nearby tribal area, Thane district, Maharashtra which is a field practice area of rural health training centre of Seth GSMC and KEM Hospital, Mumbai.
Results: Majority of the subjects practiced open field defecation (67%), followed by 18% subjects used household latrines and 15% used community based latrines. Majority of the study participants practiced open field defecation in agriculture fields (81%), while 44% preferred nearby water source as a site for defecation.
Conclusions: The sanitary condition in the study area was poor. Rural areas with better literacy seems to have lower open field defecation prevalence and higher percentages of sanitary latrine usage.

Keywords: Open field defecation, Infectious diseases, Sanitation, Personal hygiene, Swacch Bharat Abhiyan

INTRODUCTION

World Health Organization says that the open defecation is the "riskiest sanitation practice of all." The diseases associated with poor sanitation account for 10% of the global burden of disease. These conditions are often correlated with poverty and infancy. At any given time close to half of the have a diseases associated with poor sanitation, hygiene, and water are among the majority among urban populations of Africa, Asia, and Latin America.[1]

According to the WHO statistics, 3.8 million under five children die from diarrhea and acute respiratory tract infections each year. Use of unsafe water, inadequate sanitation and poor hygiene are correlated with 88% of acute gastrointestinal diseases. Clean water and hand-washing are recommended as the most cost effective preventive measures for diarrheal diseases. Various studies have highlighted the role of simple act of hand-washing and basic hygiene behavior in prevention of various communicable diseases. However, these simple sanitation measures are still not being practiced widely, especially among children and women.[2] Faeces are known to be the most dangerous to health, since one gram of fresh faeces from an infected person can transmit around 106 viral pathogens, 106–108 bacterial pathogens, 104 protozoan cysts or oocysts, and 10–104 helminth eggs.[1]

Across the world, about 2.5 billion people don't have the access to clean toilet. Global sanitation coverage in 2011 was 64%. Though prevalence of open defecation is declining across the globe, 15% of the global population still practices it. India and other developing countries adds to majority of populations practicing open defecation. Nearly all (92%) of these Indians live in rural areas.[3,4]

In this context, matter of public health concern in that 50% of the "global total", who do not have access to toilets live in India, and hence are forced to defecate in the open. However, just providing toilets won't address the issue. Concerns like provision of water supply, its maintenance are of paramount importance.

The present study was conducted to assess the factors influencing open field defecation practices and reasons for its preference in rural areas, and hence to give recommendations based on the findings of the study.

METHODS

It was a cross sectional study conducted among patients attending out-patient department of a rural health training center from a nearby tribal area which is a field practice area of rural health training centre located in Thane district, of a Seth GSMC and KEM Hospital, Mumbai.

The present study was conducted over the period of one month, during January 2018 to February 2018, among 282 patients or their relatives attending the RHTC who were the resident of same field practice area.

People more than 18 years of age group, resident of nearby rural area catered by rural health training center of a tertiary healthcare institute, and people who consented to participate in the present study were included in the study. While the patients suffering from any severe medical conditions, children (<18 years), attending out-patient department but are not resident of nearby locality and those who refused to participate in the study were excluded from the study.

The participants were interviewed after approval by institutional ethical committee, using pre-validated standard case record form. Details regarding their socio-demographic profiles, personal, family and environmental history were collected. The collected data was entered using MS Excel software and analysed using SPSS version 21.0.

Descriptive statistics were used to calculate the prevalence, demographic characteristics. Chi-square test was used to compare two categorical variables. Observations with $p<0.005$ was considered to be significant.

RESULTS

The present study was conducted among 282 person residing in a tribal area which is a field practice area of RHTC affiliated with a medical college, attending outpatient department. The present study was carried out to find out prevalence and epidemiological factors associated with open field defecation practices in that area,

In the present study, out of all the study population, proportion of male participants (79%) outnumbered proportion of female participants (21%). We analysed them according to their age group, majority of participants were belonged to >50 years of age. We also inquired about their literacy status, majority from them were illiterate (48.6%). 73% of the subjects were farmers by occupation followed by laborers. 68% subjects had monthly family income less than 5000 INR (Table 1).

Table 1: Distribution of study participants by their demographic characteristics.

Demographic variables		Frequency N (%)	*Significance (P value)
Age distribution (years)	<30	28 (9.9)	--
	31-50	63 (22.3)	
	>51	191 (67.8)	
Gender distribution	Males	223 (79)	<0.001
	Females	59 (21)	
Literacy status	Illiterate	137 (48.6)	0.289 (Literate vs Illiterate)
	Primary	47 (16.7)	
	Secondary	61 (21.6)	
	High school	29 (10.3)	
	Graduate	8 (2.8)	
Per capita income	<3000	192 (68)	<0.001
	3000-5000	65 (23)	
	>5000	25 (9)	
Occupation	Farmers	206 (71.63)	0.02
	Others	76 (26.95)	

*Variables compared with OFD using Chi-square test

Table 2: Distribution of study participants by their attitudes towards various sanitation practices.

Demographic variables		Frequency N (%)
Method of excreta disposal	Household sanitary latrine	51 (18.1)
	Community latrine	42 (14.9)
	Open air defecation	189 (67.07)
Places for excreta disposal	Agricultural fields	81 (28.72)
	Near water source	44 (15.6)
	Near bushes/trees	33 (11.7)
	Open air	31 (10.99)
Reasons for not using sanitary latrines	Inadequate water	112 (39.72)
	Poverty	92 (32.64)
	OFD feels better	53 (18.79)
	Did not feel the need	25 (8.87)
Awareness regarding health hazards of OFD	Aware	138 (49)
	Unaware	144 (51)
Use of footwear during defecation	Yes	14 (5)
	No	268 (95)

As per objective of this study, we assessed various epidemiological factors associated with defecation practices prevalent in the community. Majority of the subjects practiced open field defecation (67%), followed by 18% subjects used household latrines and 15% used community based latrines. Majority of the study participants practiced open field defecation in agriculture fields (81%), while 44% preferred nearby water source as a site for defecation (Table 2) (Figure 1).

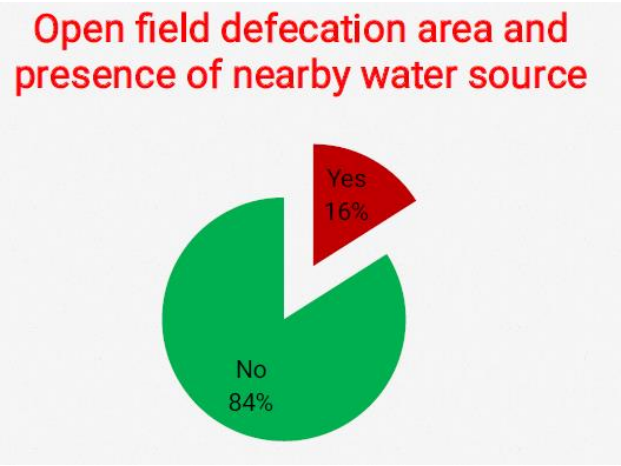

Figure 1: OFD near water source.

In order to know various reasons for not utilizing sanitary latrine services by the people, we found that 40% subjects were reluctant because of inadequacy of water, while 32% said that because of poverty they did not afforded it. 19% subjects felt better with open field defecation (Table 2).

As a part of health education, we assessed their knowledge regarding possible harms due to OFD. 49% subjects were aware about possible health hazards due to open field defecation practices while 51% were not sure about it. Out of those who were aware about harms of OFD, 98 subjects had fear of getting communicable diseases while 41 subjects perceived it as unhygienic practice (Table 2).

DISCUSSION

The present study was conducted in a tribal community with an objective to assess the epidemiological factors associated with open field defecation in a community in an area affiliated to a medical college in Maharashtra.

In our study number of male participants outnumbered proportion of female participants. Majority of them were above the age of 50 years and illiterate. Majority of the participants were farmers with per capita income less than 3000 INR per month.

Almost 67% of the study subjects practiced OFD as a preferred method of excreta disposal in our study. According to J. Hammer et al, pointed out that prevalence of OFD in rural India is 78.1% and in rural Maharashtra is 81.8%. Only 18% study participants in our study had a private sanitary latrine available at home. Hammer et al, observed that according to DLHS data, 32.5% population of rural Maharashtra has access to sanitary latrines.[5] However Anuradha et al, conducted study among rural area of Tamil Nadu, India.[6] They observed that 76% of their study population was literate and 62.5% of the study participants had sanitary latrines at their homes and 33% practiced open field defecation in their study.

Among those who chose OFD as a preferred method, went to agricultural fields for defecation followed by fields near water sources and near trees/bushes, in order to maintain privacy. Routray et al in their study observed that most of the OFD were practiced in field near bushes.[3]

When we asked them the reasons for not using latrines, the most common reason was inadequate water supply followed by unaffordability to build a sanitary latrine and OFD as a preferred method of choice as it feels better.

We also assessed their knowledge regarding health hazards due to OFD, we found that 49% of the study subjects were found aware about health hazards of OFD, while only 5% study subjects were found to use footwear during defecation. Which is known to be a risk factor for spreading of gastrointestinal diseases.

The present study identifies greater prevalence of OFD in the community which proves to be a public health concern along with risk factors such as preference for water source as a place for defecation, and not using footwear and not washing hands after defecation with soap and water, which might transmit pathogens.

CONCLUSION

The present study concludes that majority of the families did not have personal toilets, nor they preferred to use it. The sanitary condition in the study area was poor. Rural areas with better literacy seems to have lower open field defecation prevalence and higher percentages of sanitary latrine usage. So, literacy status appears to be inversely related with practice of open air defecation. The awareness among the community regarding waste disposal and sanitation was not adequate. Inadequate water supply stands out to be the most common reason for under utilization of sanitary latrines. Other risk factors of public health concern were: not using footwear, no hand washing with soap and water after defecation before taking food.

Behavior change communication may help to impart knowledge regarding sanitary practices in the community and to inculcate healthy behavior among the residents of the community.

Limitations

As the present study was a pilot project so the results of this study cannot be generalised to the population

Recommendations

IEC activities, sensitization of people regarding various schemes Interventional study.

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

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