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Original Research Article

Socio demographic determinants of open defecation in rural parts of Bhopal city

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ABSTRACT

Background: Open defecation (OD) is still prevalent in many parts of India in spite of launching Swachh Bharat Mission (SBM) by central government. So, this programme is extended to achieve the target of open defecation free (ODF) India. To determine the prevalence of open defection and associated socio-demographic factors.
Methods: A total 1000 study participants were included for study in the rural field practice area of medical college which was carried out for the duration of one year. A pre-designed, pre-tested questionnaire was chosen as a tool for data collection. Binary logistic regression analysis was applied to show the association between OD and socio-demographic factors using statistical package for the social sciences (SPSS) 23 version.
Results: The prevalence of OD was 27.7% and factors such as age, education, occupation, **s**ocio economic status (SES), marital status and type of family were found significantly associated with it.
Conclusions: OD is more commonly prevalent (27.7%) in rural area in present study. This practice is associated with various socio demographic factors and age, education, occupation, SES, marital status and type of family were found significant predictors for OD.

Keywords: Open defecation, Socio economic status, Swachh Bharat Mission

INTRODUCTION

Health is the fundamental element of all human beings, irrespective of age, sex, economic status, working area, education and family background. It is the most valuable thing which needs to be focused at first priority everywhere throughout the world. To achieve this, safe sanitation practices are utmost essential to prevent the onset and spread of so many communicable diseases.

There are many cultural and behavioral barriers to accomplish sanitation standards, especially in developing countries. In our country, one such malpractice is usually seen since very long decades; that is defecation in open areas of fields known as open defecation (OD). Basically, it 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.[1] Various Studies have shown that a large proportion of rural population go to field for defecation.[1-3]

According to the United Nations International Children's Emergency Fund (UNICEF), India with 626 million people who practice open air defecation. This accounts for 90 per cent in South Asia who practices OD.[4]

Therefore, Government of India launched a five-year programme named "Swachh Bharat Mission" (SBM) in 2014 with a target to make India "open defecation free" by 2019.[5] Under this mission, all efforts concentrated on

constructing sanitary latrines in every household throughout the country.

India was declared an open defecation free (ODF) country at the conclusion of SBM on 02 October 2019. But, statistics from NFHS – 5 survey tells that India is much far away from achieving the ODF. This conflicting evidence from two government bodies can be explained that SBM informs us about the access of toilets, while NFHS-5 tells the fraction of households that actually use the toilets.[6]

Therefore, in this context, the department of drinking water and sanitation (DDWS) under the ministry of Jal Shakti, launched the second phase of SBM (SBM II) on May 2020 with the objective to achieve ODF plus status for India i.e. sustaining India's ODF status as well as going beyond OD and tackling the impending challenges of solid and liquid waste management.[7]

The guidelines for SBM II distinctly mention that this programme will work towards ensuring that everyone will use the toilet to declare a village/community ODF. OD had not been eliminated in any of the districts surveyed in north India and in Madhya Pradesh, 25% were estimated to be defecated in open fields where major chunk of population live in rural areas.[8]

So, OD remains the predominant norm and poses one of the biggest threats to the health of the people particularly in rural areas.

There is a need to understand various socio-demographic factors responsible for OD on the very ground level. That's why the present study was conducted to find out the prevalence of OD and associated socio-demographic factors in rural areas of Bhopal city.

Objectives

Objectives of the study were: to determine the prevalence of open defecation in rural parts of Bhopal, and to determine the association of various socio-demographic factors with open defecation.

METHODS

The present study was a community based cross-sectional study taken up in the rural field practice area of department of community medicine, Chirayu Medical College and Hospital, Bhopal between September 2018 to August 2019. This area is located within a radius of 25 km from the college having a population of 36,000 from which the 1000 sample size of subjects was chosen at random for study purpose.

After obtaining approval from institutional ethical committee, data collection was started by trained medical social workers under the supervision of two faculty members. Rural field practice area comprising total of five blocks, out of which two blocks were randomly selected by lottery method. Total five villages collectively made these two blocks. So, in each selected village, every fifth household were visited by systemic random sampling and from each household, only one responsible adult member was thoroughly interrogated about open defecation practices and related socio-demographic factors like age, gender, education, occupation, socio economic status (SES), type of family and marital status.

SES was calculated using modified B. J. Prasad classification and study participants were categorized into upper, middle and lower class for study purpose.

The tool of data collection was pre-tested, pre-designed questionnaire consisting of both kinds of close ended and open-ended questions. All data was entered and compiled in Microsoft excel and analyzed using statistical package for the social sciences (SPSS) 23 version accordingly.

RESULTS

In present study, total 1000 study participants were studied, out of which 27.7% practicing open defecation (Figure 1).

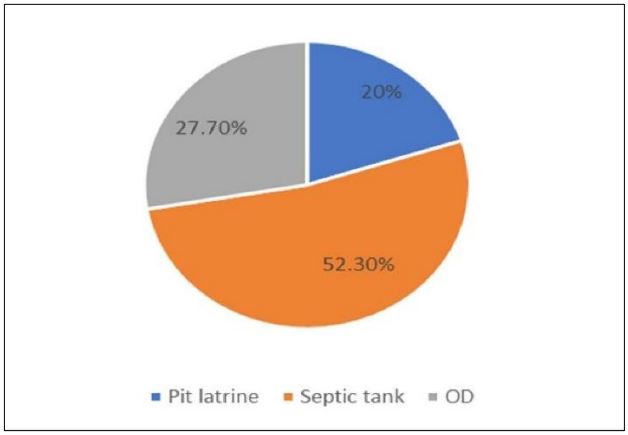

Figure 1: Distribution of study participants according to defecation practices (n=1000).

On analysing various socio demographic factors, majority of study participants (45.8%) were from middle age group (31-50 years) practicing open defecation. This finding was highly statistically significant (p=0.00001) (Table 1).

Maximum 57.4% males go for open defection whereas only 42.6% females opt for it. It was not statistically significant found.

Subjects having primary education standards (51.2%) have more tendencies for open defecation while only 1% subjects having higher education use this practice. In the same streamline, 54.1% subjects from labour class use open defecation. Both of these findings were found statistically significant respectively (p=0.0001, 0.004). Majority of study participants (58.5%) belonging middle

SES opt for OD and was proved a very highly statistically significant finding (p=0.0001).

By further analysing other factors like marital status and type of family with OD practice, both of them were also significant findings with p value 0.01 and 0.001 respectively (Table 1). Table 2 describes binary logistic regression analysis of those factors which shows significant predictors for open defecation in univariate analysis.

In the age group between 31 to 50 year and >50 year age groups doing less OD practices as compared to <30-year age group with odds ratio 0.54 and 0.39 respectively which is statistically significant with p value 0.003 and 0.001 respectively. More literate study participants are very less likely to do OD practice as compared with illiterate subjects. It also found statistically significant.

On regression analysis of occupation variable, farmer group is taken as reference group and it was found that labour class, businessmen and service class are having more probability of practicing OD with odds ratio 1.8, 2.6, and 3.0 respectively. This finding was statistically significant.

Majority of study participants belonging middle SES has 3.4 times high probability of practicing OD as compared to the reference group i.e. upper SES which was found highly statistically significant (p=0.0001) whereas participants of lower SES having double probability of practicing OD (p=0.001).

Unmarried study participants are 3 times higher chances of practicing OD in contrast with married subjects. It is found statistically significant (p=0.002). Participants living in Joint family are less likely practicing OD as compared with subjects possessing nuclear family (p=0.0001).

Table 1: Association of socio-demographic determinants of study participants with OD (N=1000).

Variables		OD Yes N (%)	OD No N (%)	Total N (%)	P value
Age (years)	<30	99 (35.8)	137 (19)	236	0.0001
	31-50	127 (45.8)	362 (50)	489	
	>50	51 (18.4)	275 (31)	275	
Sex	Male	159 (57.4)	442 (61.1)	601	0.281
	Female	118 (42.6)	281(38.9)	399	
Education	Illiterate	77 (27.8)	40 (5.5)	117	0.0001
	Primary	142 (51.2)	342 (47.3)	484	
	Middle	35 (12.6)	253 (35)	288	
	Higher secondary	20 (7.2)	84 (11.6)	104	
	Graduate	03 (1.08)	04 (0.5)	07	
Occupation	Farmer	38 (13.7)	157 (21.8)	195	0.004
	Labour	150 (54.1)	357 (49.4)	507	
	Service	09 (3.2)	13 (1.8)	22	
	Student	04 (1.4)	10 (1.38)	14	
	Housewife	45 (16.2)	141(19.5)	186	
	Businessmen	31(11.2)	45(6.2)	76	
SES	Upper	68 (24.5)	347 (18)	415	0.0001
	Middle	162(58.5)	253 (35)	415	
	Lower	47 (17)	123 (17)	170	
Marital status	Married	242 (87.3)	662 (91.6)	904	0.01
	Unmarried	23 (8.3)	21(2.9)	44	
	Others	12 (4.3)	40 (5.5)	52	
Type of family	Nuclear	151(54.5)	247 (34.1)	398	0.001
	Joint	126 (45.5)	476 (65.9)	602	
Total		277	723	1000	

Table 2: Bivariate logistic regression analysis of socio-demographic factors with OD (N=1000).

Variables		OD Yes N (%)	Unadjusted OR (95%CI)	P value	Adjusted OR (95% CI)	P value
Age group (in years)	0 to 30	99 (35.8)	Reference			
	31 to 50	127 (45.9)	0.48	0.0001	0.540	0.003
	>50	51(18.4)	0.31	0.0001	0.395	0.001

Continued.

Variables		OD Yes N (%)	Unadjusted OR (95%CI)	P value	Adjusted OR (95% CI)	P value
Education	Illiterate	77 (27.8)	Reference			
	Primary	142 (51.2)	0.21	0.0001	0.145	0.000
	Middle	35 (12.6)	0.07	0.0001	0.054	0.000
	High school	20 (7.2)	0.12	0.0001	0.050	0.000
	Graduate	3 (1.08)	0.38	0.23	0.086	0.005
Occupation	Farmer	38 (13.7)	Reference			
	Labour	150 (54.1)	1.73	0.0072	1.808	0.018
	Service	9 (3.2)	2.86	0.0253	3.099	0.033
	Student	4 (1.4)	1.65	0.416	.571	0.474
	Housewife	45 (16.2)	1.31	0.266	1.727	0.068
	Business and other	31 (11.9)	2.84	0.0004	2.635	0.010
SES	Upper	68 (24.5)	Reference			
	Middle	162 (58.5)	3.26	0.0001	3.471	0.000
	Lower	47 (16.9)	1.94	0.002	2.028	0.005
Marital status	Married	242 (87.3)	Reference			
	Unmarried	23 (8.3)	2.99	0.0004	3.845	0.002
	Others	12 (4.3)	0.82	0.558	0.972	0.942
Type of family	Nuclear	151 (54.5)	Reference			
	Joint	126 (45.5)	0.433	0.0001	0.514	0.0001

DISCUSSION

The present study was conducted to find out the prevalence of OD and tried to explore socio-demographic factors affecting it. The prevalence of open defecation was found 27.7% which is almost similar with other studies done by Panda et al (23.2%), Vasudevan et al, Kumar et al (35%) and Anuradha et al (33%).[9-12] This finding is much higher with a study done by Ajmer (6.67%).[13] On the contrary, few studies reported much higher prevalence as compared to our study like Bhardwaj et al (67%), Geetha (90%), Shankar et al (78%), Banerjee et al (74.6%), Rakesh et al (78.8%) and Yogananth et al (54.8%).[14-19] It may be due to difference in the level of awareness among study participants. Another reason may be because of having migrate population more in number in study setting.

In our study, on univariate analysis, certain factors like age, education, occupation, SES, marital status and type of family were shown significant association with OD practice and applying binary logistic regression analysis, all of these factors remain significant predicators for OD. These results are almost same with the study conducted by Shankar et al (2013).[16]

In this study, significant association was found between SES and OD. It is quite similar with various studies done by Panda et al, Anuradha et al, Banerjee et al, Bedi et al.[9,12,13,17] Although middle SES participants got access sanitary latrines, but could not use on long way due to either ill-maintenance or lack of sufficient water.

Kumar et al (TN) observed that females were more practising OD as compared with males in this study.[18] This finding contrasts with our study.

It was also found that OD was more commonly found among labour class and illiterate study participants in his study and showed significant association of gender, education and occupation with OD.[18] These results were similar with present study. Illiterate participants had no idea as well as motivation regarding maintaining better sanitation standards. Even these people also strongly believe in old traditional practices. So, they follow their ancestors.

In present study, labour class was found more practicing OD as contrast with farmer group. This finding opposes with the study done by Rani et al.[2] It may be due to more migratory population not having permanent dwellings. These migratory people also have no enough knowledge about SBM run by government.

CONCLUSION

OD is more commonly prevalent (27.7%) **i**n rural area in present study. This practice is associated with various socio demographic factors and age, education, occupation, SES, marital status and type of family were found significant predictors for OD.

Recommendations

There is a drastic need to create awareness among public about sanitation standards. Health education should be

imparted at ground level regarding various hazards of open defecation. There should be transparency of real situation of sanitation status everywhere so that allocation of resources can be distributed effectively. More efforts should be focused about usage of toilet rather than toilet construction.

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