

## Impacts of Swachh Bharat Mission on awareness and health of rural population in Kanpur Nagar, Uttar Pradesh

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### Abstract

**Introduction:** Swachhata, that is cleanliness is the state of being clean and the habit of achieving and maintaining that state. Cleanliness may imply a moral quality and may be regarded as contributing to other ideals such as health and aesthetics. Swachh Bharat Abhiyan (Clean India mission) was launched on 2<sup>nd</sup> October 2014.

**Study Period:** The period of the study was one year from December, 2017 to Dec. 2018).

**Study Design:** Cross sectional community survey based study.

**Materials and Methods:** Multi stage random sampling method has been used for selection of ODF (Open defecation free) and non ODF villages. Selection of House hold subjects for study, Probability proportionate sampling (PPS) method was adopted 400 respondents were selected from 4 villages (179 from 2 ODF and 221 from 2 non ODF villages).

**Results:** Majority of the subjects were below 45 years of age (approximately 92% cases). Female participants were 53.3% and remaining were males. Joint family system was found dominant in subjects (53.3%). Most of the subjects 79.3% were Hindus and rest were Muslims. Majority of study subjects belonged to OBC, S.C. and S.T. category (70.3%). Awareness about SBM among Respondents residing in Open Defecation Free (ODF) villages was found 83.2% and 74.2% among Respondents residing in Non Open Defecation Free Villages There was significant difference between children having diarrhoea in ODF and non ODF villages. Logistic regression analysis shows that open defecation is a risk factor for diarrhea. The odds ratio is 1.92.

**Keywords:** SBM (G), Health impacts, ODF (Open defecation free) villages,

### Introduction

Swachhata, that is cleanliness is the state of being clean and the habit of achieving and maintaining that state. Cleanliness may imply a moral quality, as indicated by the aphorism "cleanliness is next to godliness", and may be regarded as contributing to other ideals such as health and beauty. As observed by Jacob Burckhardt, "cleanliness is indispensable to our modern Nation of social perfection." Without proper sanitation we can't keep our surroundings clean and prevent ourselves from diseases.<sup>1</sup> Swachh Bharat Abhiyan (Clean India mission) was launched by our Hon. Prime Minister Shri Narendra Modi on 2<sup>nd</sup> October 2014, with Mahatma Gandhi as the inspiration, to create a clean India of his dream by 2019, on his 150th birth anniversary.<sup>2</sup>

### Study Period

The period of the study was one year from December, 2017 to Dec. 2018)

### Study Design

Cross sectional community survey based study.

### Materials and Methods

Multi stage random sampling method has been used. In the first stage 10 villages were selected from ODF declared villages 10 non villages from the Non-ODF villages. Two from each list of 10 ODF and 10 Non ODF were selected using simple random sampling. Selection of House hold subjects for study, Probability proportionate sampling (PPS) method was adopted (Stage-II). (\*List of ODF declared and

non ODF villages Attached as annexure down loaded from MIS MoDWS).<sup>3</sup>

### Study Sample

As per pilot study, 55 % were aware about SBA and by using formula

$$n \geq 4pq/l^2;$$

$$*p = \text{Prevalence of awareness} = 55;$$

$$q = (100 - 55)$$

$$l (\text{Allowable error}) = 10\% \text{ of prevalence} = 5.5$$

$$n \geq \frac{4 \times 55 \times (100 - 55)}{(5.5)^2} \geq 328$$

\*[Kishore Y Jet al. Int J Community Med Public Health. 2018 Aug;5(8):3399-3405 <http://www.ijcmph.com>][4]

Approximately 20 % more than the minimum sample size required in present study 400 respondents were selected from 4 villages (179 from 2 ODF and 221 from 2 non ODF villages)

### Inclusion Criteria

All those house hold respondents with at least one child aged (0-5years) were included in the study. Respondents, who are willing to participate in study, gave their consent and were available on survey days, were included in the study.

**Exclusion Criteria**

Respondents who were not willing for consent and who were not available at the time of study (during three consecutive survey visits) were excluded from study.

**Ethical Consideration**

Before commencement of study permission to carry out the study was obtained from Institutional ethical clearance committee.

**Tools**

Pre tested pre designed questionnaire per forma was used to carry out survey and data thus obtained was analyzed by using SPSS software.

**Results**

Tabl.1 depicts the demographic profile of the sample. Majority of the subjects were below 45 years of age (approximately 92% cases). 53.3% were female were and remaining 46.7% were males. Joint family system was found dominant in subjects (53.3%). Most of the subjects 79.3% were Hindus and rest were Muslim. Majority of study subjects belonged to OBC, S.C. and S.T. category (70.3%).

Awareness about SBM among Respondents residing in Open Defecation Free (ODF) villages was found 83.2% and 74.2% among Respondents residing in Non Open Defecation Free Villages. The association between knowledge about SBM and Village Category ODF /Non ODF was found statistically significant [ $\chi^2= 4.740$  df = p =0.029]. [Table 2]

Table No. 3.1 and Table No. 3.2 show that the villages in the ODF category had a higher perception score about SBM than those in the non ODF category. This difference has been analyzed statistically. Independent sample t-test was found statistically significant  $t=7.9$  ('p' =0.0001). Therefore ODF villages had a significantly better perception about SBM.

Results of study also show that only 17 (9.5%) children aged <5 years residing in ODF villages and 37 (16.7%) children of Non ODF villages had diarrhea. Overall 54(13.5%). There was significant deference between children having diarrhoea in ODF and non ODF villages. Logistic regression analysis has been applied to find out if open defecation is a risk factor for diarrhea. The odds ratio is 1.92. [Table No.4.1, 4.2]

**Table 1:** Socio demographic profile of respondents residing in study area

Age Group (years)	Frequency	Percent	Caste	Frequency	Percent
15-24	128	32.0	General	118	29.5
25-34	115	28.0	OBC	182	46.5
15-44	126	31.2	SC	86	20.5
≥ 45	31	7.8	ST	14	3.5
Total	400	100.0	Total	400	100.0
Gender			Socio economic status (SES)*		
Male	186	46.8	Upper	22	5.5
Female	214	53.2	Upper middle	34	8.5
Total	400	100.0	Middle	55	38.8
Family type			Lower middle	88	22.0
Nuclear	178	45.5	Lower	101	25.3
Joint	222	55.5	Total	400	100.0
Total	400	100.0	House type		
Religion			pukka	115	29.0
Hindu	317	79.3	Semi pukka	135	31.3
Muslim	83	20.7	Kutchcha	150	39.7
Total	400	100	Total	400	100.0

\*(According to modified BG Prasad)

**Table 2:** Awareness about SBM among ODF and non ODF villages

Do You know About SBM	Village Category		Total
	ODF	Non ODF	
Yes	149 (83.2%)	164(74.2%)	313 (78.3%)
No	30 (16.8%)	57 (25.8%)	87 (21.8%)
Total	179 (100.0%)	221 (100.0%)	400 (100.0%)
$\chi^2= 4.740$ df = p=0.029			

**Table 3.1:** Perception about SBM among study subjects residing in ODF and non OD villages

Perception about SBM	Perception Score	Village category		Total
		ODF	non DOF	
No benefit	1	5 (2.8%)	39(17.6%)	44(11.0%)
Little benefit	2	6 (3.4%)	33(14.9%)	39(9.8%)
Do not know	3	11(6.1%)	32(14.5%)	43(10.8%)
Good	4	67(37.4%)	59 (26.7%)	126 (31.5%)
Very Good	5	90 (50.3%)	58(26.2%)	148 (37.0%)
<b>Total</b>	15	179 (100.0%)	221 (100.0%)	400 (100.0%)

**Table 3.2:** Comparison of perception scores about SBM

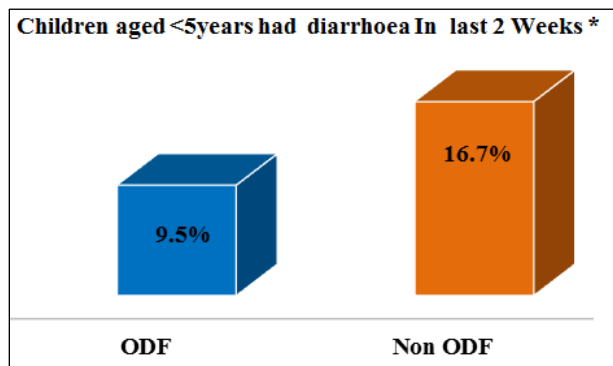
Village Category	N	Perception score Mean ± SD
ODF	179	4.29 ± 0.93
Non ODF	221	3.28 ±1.44
t = 7.9; 'p' value = 0.0001		

**Table 4.1:** Occurrence of diarrhoea in (ODF and non ODF villages)

H/O diarrhoea in children < 5 years in past 2 Weeks *	Village Category		Total
	ODF	non ODF	
Yes	17(9.5%)	37(16.7%)	54(13.5%)
No	162(90.5%)	184 (83.3%)	346(86.5%)
<b>Total</b>	179 (100.0%)	221 (100.0%)	400 (100.0%)
$\chi^2=4.445$ df=1 p=0.035			

**Table 4.2:** Logistic regression analysis-open defecation asa risk factor for diarrhoea

Step 1 <sup>a</sup>	Regression Coefficient	p-Value	Odds Ratio	95% C.I. for odds ratio	
				Lower	Upper
Village Category	-.650	.037	1.92.	1.04.	3.53
Constant	2.254	.000	9.529		



**Fig. 1:**

**Discussion**

The socio- economic status of study sample shows that 14.0% belonged to upper and upper middle class. 38.0 % belong to middle class and rest 48.0 % belongs to lower middle and lower class. The Literacy rate among respondents was found to be 71.0 %. Rest 29% subjects were illiterate. Most of the subjects were Hindus (79.3%) and remaining were Muslims. Majority of study subjects belonged to O.B.C., S.C. and S.T. category (70.3%).[Table.1]

Present study shows that most of the respondents 313(78.3%) were aware about Swachh Bharat Misson (SBM) and only 87 (22.7%) were not aware about SBM.

Kishore YJ et al in an Study to assess knowledge, perception and practices regarding Swachh Bharat Abhiyan among rural people of Nalgonda district, in Telangana state were also found similar results out of 328 participants SBA and 169 (82.84%) of them were aware about objectives of SBA [Table.2].

Our study results shows that only 17 (9.5%) had diarrhoea in children aged (<5 Years) residing in ODF villages and 37 (16.7%) children of Non ODF Villages had diarrhoea. Over all 54 (13.1%) had diarrhoea among children of ODF and Non ODF Villages. There was statistically significant deference among children having diarrhoea in ODF and non ODF Villages [ $\chi^2=4.445$  df =1 p =0.035][Table 3.1&3.2 ].

Logistic regression analysis has been applied to find out if open defecation is a risk factor for diarrhoea. The odds ratio was 1.92, which implies that the chance of diarrhoea is almost twice in Non open defecation free village than ODF villages in absence of proper hygiene and sanitation. Thus the impact of Swachh Bharat Mission of India on health by reducing diarrhoea among infants and children aged (<5 years) Almost similar results were found for State of Uttar Pradesh in a study review of health data in selected ODF and non-ODF districts under the SBM. Ministry of Drinking Water and Sanitation (MoDWS) Government of India NGO’s Bill & Milinda Gates Foundation (BGMF) joint study [5, 6,] and WASH Institute report. Occurrence of

diarrhoea in (10.2% %) ODF and (14.7%)\* Non-ODF areas was observed thereby reduction in Infant Mortality Rate (IMR)<sup>7</sup> This statistically significant difference in occurrence of diarrhoea among children residing in ODF and non ODF villages (p=0.023)[Table.4.1&4.2]

### Conclusion

The study on Awareness and Impact of Swachh Bharat Abhiyan was conducted to assess the impact of the programme on community along with the data trends (preliminary findings) was observed found to be positively supporting the research hypothesis i.e. the children belonging to the ODF areas would have an improved health status (lower prevalence of diarrhoea). SBM (Gramin) is not only toilet construction program but it includes cleanliness, Hygiene and total Sanitation which to be practiced and emphasized at gross root levels.

### Recommendations

Presently, the study was undertaken in the areas which had self-declared themselves as ODF. In future, after 2-3 years of running of the program in the area declared as, ODF will be a better indicator of the effect of SBM

**Conflict of Interest:** None.

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