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Original Research Article

Practice of environmental sanitation and hygiene in the light of "Swacha Bharat Abhiyan": a study among female residents of rural Punjab, India

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ABSTRACT

Background: India has achieved the status of open defecation free (ODF) in 2019 October but women involvement in the actual process of implementation of the programme is very minimal. Objective of the study was to assess the awareness level & practice of environmental sanitation and hygiene and also to find out the association with demographic variables.
Methods: Present study was conducted in a rural community of Punjab, India in June 2019 among 400 females. Data was collected in a predesigned structured questionnaire and was analyzed using descriptive and analytic statistics.
Results: Most common source of drinking water among the participants was community RO point (54.5%) and method of SWD among the community was dumping (80%). Four out of five participants had the opinion that their village is unclean and improper solid waste disposal (37.3%) was the main reason. 95% of the participants had not participated in any community cleanliness activity also. Participants having higher educational status (p=0.0001), lower & middle class family (p=0.001) and member of small family (p=0.009) had heard significantly more about "Swacha Bharat Abhiyan".
Conclusions: Policies need to be formulated that enable women to participate in the sanitation interventions. Special focus should be given young, educated women from middle and lower socio economic status so that they become the role model of the society.

Keywords: Drinking water, Environmental sanitation, Hygiene, Swacha Bharat Abhiyan, Solid & liquid waste disposal

INTRODUCTION

Safe sanitation means promotion of safe disposal of human excreta, right use of toilet and avoiding open defecation as well as management of solid and liquid waste. WHO observed that one gram of faeces can contain 10,000,000 viruses, 1,000,000 bacteria, 1,000 parasite cysts and 100 parasite eggs.[1] The U.S. Public Health Service identified 22 human diseases that are linked to improper solid and liquid waste management.[2] India generates solid waste of about 1.2 lakh tonnes per day and unfortunately the waste management system in the country is very scratchy.[3]

Safe disposal of these wastes can lead to health benefit, economic benefit as well as aesthetic benefits also.

The rural sanitation programme in India was introduced in the year 1954 as a part of the First Five Year Plan of the Government of India. Later on name has been changed in the form of Central rural sanitation programme (CRSP-1986), Total sanitation campaign (TSC-1999), Nirmal Bharat Abhiyan (NBA-2012) and finally Swacha Bharat Mission (SBM-2014) under the Ministry of Drinking water and sanitation.[1]

India has achieved the status of Open defecation free (ODF) in 2019 October and it was a major achievement for many states (<30% in 2014) comparing the status with the time of launching of Swacha Bharat Mission. But Punjab had achieved the level of >75% ODF in 2014.[4] Sikh religion had a major impact on personal hygiene so without much government effort people were practicing habit of sanitary latrine.[5] In respect of solid and liquid waste management 167 urban local bodies (ULB) are performing collection, segregation, transportation and disposal of waste where as for rural area no documented evidence is available.[6]

Community sanitation is the essential issue for environmental sustainability, as climate and environment are dependent on people. People knowingly or unknowingly are neglecting to keep fit and healthy, and they even do not know the effect of hand washing. Besides these, most of the rural people do not know how to manage wastewater that creates an unhealthy and muddy wetland around the community. Similarly, people do not know how to maintain the kitchen waste; they not only throw these wastes on the roadside without using dustbin or recycle bin, but they also spit in the public places without applying their civic sense.[7]

One of the objectives of SBA is to create significant positive impact on gender but it has been observed that women involvement in the actual process of implementation of the programme is very minimal.[1]

Since implementation of the SBM-G is focused on community engagement, it is very important for the women of the community to be well aware about the SBM activities occurring. Women as a mother had a big role to improve the healthy habits among children who will be future citizens of India.

There is paucity of studies specially focusing on the women/ mothers in the southern part of Punjab about their practice of environmental sanitation and hygiene also their awareness about the SBM-G. So present study was designed with the objective to assess the practice of environmental sanitation and hygiene among the women of rural area of Bathinda, Punjab in daily life activities, to document the awareness of women about SBM-G related activities conducted in their village, to find out the association of hygienic and healthy sanitation practice with selected, demographic variable of interest.

METHODS

Study design and setting

A community based cross sectional study was carried in June 2019 in Bucho kalan village of Nathana block under Bathinda district of southern Punjab. According to 2011 census the village is having 1236 households and 7854 population. Among this female is having 3726.Out of these adult female (>18 yrs) population was 1230.[8]

Study population

All female aged 18 years and more and residing permanently were included in the study

Inclusion and exclusion criteria

Residents of at least two years duration and had given written informed consent for participation were included in the study. Participants who were not available at home for two consecutive visits were excluded from the study.

Sample size and sampling

"A study on environmental sanitation, sanitary habit and personal hygiene among the Baigas of Samnapur Bloc of Dindori district, Madhya Pradesh" had found that 56% of the participants had clean sanitation around the residence.[9] Considering prevalence rate of sanitation practice (P) 56%, margin of error (d) 0.01% and confidence limit 90%, sample size came out to be 395. Total number of participants included in the final study was 400.

Sampling was done in two stages. First Household was selected using systematic random sampling from the household registry of the village. Then every third household was visited till the sample size was reached. If the selected household doesn't have any eligible participant then the next household was included. If one household is having more than one eligible participant than only one was selected using lottery method. Only one member was selected from each household because it will give the representation of the practice related to environmental sanitation and hygiene of that particular family

Study tool and technique

Study was conducted for one-week duration as a community responsibility of the Adesh Institute of Medical Science & Research, Bathinda under "Swacha Bharat Summer Internship" programme 2019. Participants were interviewed by using a pre-designed, pre-tested semi structured interview schedule (questionnaire). Schedule was developed after rigorous review of literature and in consultations with the subject experts of the institute. Questionnaire was first developed in English and then translated into local language. Questionnaire had three parts: Part I was meant to obtain

demographic details of the participants and part II contained questions related to practice of environmental sanitation and hygiene and part III contains question pertaining to "Swacha Bharat Abhiyan". Pretesting of the questionnaire was done on 5% of the sample size population outside the study area and final questionnaire was modified based on the findings of pretesting. Domains for environmental sanitation related questions were: Source of drinking water, solid waste disposal, habit of toilet use, hand washing practice etc. "Swacha Bharat Abhiyan" related questions was awareness about it, source of information; activities conducted and participated under this programme. Small family was defined in the study having members of four or less whereas large family is having family members of five or more.

Data analysis

Data were entered into a Microsoft excel worksheet (Microsoft, Redwoods, WA, USA) and were analyzed using SPSS software (Statistical Package for the Social Sciences Inc, Chicago, IL, USA), version 21.0. Demographic characteristics of the participants were reported using descriptive statistics. Significance of association was analyzed using "Chi square" test. P value less than 0.05 was considered as statistically significant.

RESULTS

Total number of participants in the study was 400. Demographic characteristics of the participant's shows that there was not much difference between age wise grouping of the participants (18-40 yrs: 50.3% vs >40 yrs: 49.7%). Educational status of the participants shows that majority had primary school education (38.3%) followed by secondary & higher secondary (28.5%). 20.8% was illiterate whereas 12.5% had gone graduation and above.

Socio economic status according to modified BG Prasad classification 201910 shows that majority of the participants was middle class (27.5%) and upper middle class (24.8%) followed by lower middle class (19.8%) and upper class (16.0%). According to type of family 41.8% belongs from nuclear family and 30.3% of the participants had small family (up to 4 members).

Table 1 shows that self reported practice pattern of the community in respect of source of drinking water, hygiene and solid waste disposal. Most common source of drinking water among the participants was community RO point (54.5%) followed by Ground water (24.8%). More than half of the participants were using dustbin at home for collection of the solid waste but segregation of waste was only 26%. Commonest method of solid waste disposal among the community was dumping (80%) and majority of the participants (85.3%) was disposing plastic waste also along with general garbage.

Nearly 15% of participants practiced burning of the plastic waste as a method of disposal. Less than half of the participants had practiced the safe disposal of infant faces where as those who were practicing unsafe methods of infant faces disposal majority (70.4%) of them were throwing it in the open drain.

Table 1: Description of the practices related to drinking water, solid waste disposal & hygiene among the participants (n=400).

Variable	Frequency	Percentage
Most common source of drinking water		
Reverse osmosis (RO) point	218	54.5
Ground water	99	24.8
Tap water	83	20.8
Solid waste disposal		
Collection of solid waste in dustbin at home		
Yes	220	55.0
No	180	45.0
Segregation of waste at source (dry and wet waste)		
Yes	104	26.0
No	296	74.0
Method of disposal		
Dumping	320	80.0
Burning	6	1.5
Combined burning & dumping	39	9.8
Collection by Panchayat	35	8.8
Disposal of plastic waste		
Disposed with general waste	341	85.3
Burning	59	14.8
Safe disposal of infant faces (n= 359)		
Yes	156	43.5
No	203	56.5
If no, method of disposal (n=203)		
Throwing in the drain	143	70.4
Throwing in garbage	60	29.6
Hand hygiene		
Hand washing after defecation		
Yes	400	100.0
No	0	0.0
Hand washing after cleaning children faces		
Yes	388	97.0
No	12	3.0
Hand washing before eating food		
Yes	316	79.0
No	84	21.0
Hand washing before handling food		
Yes	293	73.3
No	107	26.7

Everyone in the community practiced hand washing after defecation and 97% practiced hand washing after cleaning infant faces. But the practice of hand washing before eating food was 79% only similarly hand washing before handing food was also 73.3%.

Table 2: Environmental condition of the house and community of the participants (n=400).

Variable	Frequency	Percentage
Drainage system of the community		
Open	361	90.3
Closed	39	9.7
Maintenance of Drainage cleanliness		
Yes	95	23.8
No	305	76.2
House surrounding		
Clean	128	32.0
Untidy	272	68.0
Bathroom		
Separate	287	71.8
Common	113	28.2
Latrine		
Sanitary	400	100.0
Open defecation		
Present	0	0.0
Ownership of Latrine		
Own	394	98.5
Shared	6	1.5
Is there toilet in the school in your locality where your children are studying		
Yes	370	92.5
No	30	7.5
If yes, Is it separate for boys & girls		
Yes	346	86.5
No	54	13.5
Do you think your village is clean		
Yes	78	19.5
No	322	80.5
If No, what are the reasons (n=322)		
Improper solid waste management	120	37.3
Poor awareness about cleanliness	88	27.3
Drainage system is poor	68	21.1

Table 2 shows the environmental condition and related practices of the community. Nine out of 10 participants had told that the drainage system in their houses and nearby area is open and less than 25% told that cleanliness of the drain is maintained regularly. 32% of the participants had the opinion that their house surrounding is untidy. There is no case of open field defecation (OFD) in the community and all the participants are using sanitary latrine and more than 98% of them had own latrine. More than 90% of the participants had told that school in their community where children are reading had toilet and 86% told that toilet is separate for boys and girls. Nearly 30% of the participants don't have own separate bathrooms. Four out of five participants had the opinion that their village is not clean and major reasons cited by them were: improper solid waste disposal (37.3%) followed by poor awareness about cleanliness (27.3%).

Table 3: "Swacha Bharat Abhiyan" related activity (n=400).

Variable	Frequency	Percentage
Have you heard of "Swacha bharat abhiyan" related activity		
Yes	256	64.0
No	144	36.0
If yes, source of information* (n=256)		
Television	165	64.5
Newspaper	67	26.2
Radio	23	9.0
Others	10	3.9
Is there any toilet constructed under the programme during last 3 years in your village		
Yes	41	10.25
No	277	69.25
Don't know	82	20.5
Is the drains cleaned by government authority regularly in your community		
Yes	133	33.25
No	267	66.75
Is there any cleanliness related awareness activity conducted in your village during last one year		
Yes	41	10.25
No	359	89.75
Have you seen any banner/ poster/ wall painting in your community related with cleanliness		
Yes	108	27.0
No	292	73.0
Have you participated any cleanliness related activity during last one year		
Yes	22	5.5
No	378	94.5

**Multiple answers were allowed*

Table 3 shows that 64% of the participants had heard about Swacha Bharat Abhiyan" and major source of their information was television (64.5%) followed by newspaper (26.2%) and radio (9.0%). Only 10% of the participants had the opinion that there was construction of toilet in their community during last 3 years. Two third of the participants told that the drains are not cleaned regularly by the government authority. Majority had the opinion that they had not seen any awareness activity related with cleanliness or any poster/banner in their community under "Swacha bharat Abhiyan". Nearly 95% of the participants had not participated in any community cleanliness activity also.

Table 4: Association between demographic variables with practice of safe drinking water source & environmental sanitation.

Variable	Most common source of drinking water			Chi square value	P value
	RO water	Ground water	Tap water		
Age in years					
<40	138 (68.7)	37 (18.4)	26 (12.9)	33.31	0.0001
≥40	80 (40.2)	62 (31.2)	57 (2.6)		
Educational status					
Up to primary school	125 (53.0)	62 (26.3)	49 (20.8)	0.787	0.675
Secondary school and above	93 (56.7)	37(22.6)	34 (20.7)		
Socio economic status					
Upper & upper middle class	149 (54.6)	68 (24.9)	56 (20.5)	0.33	0.984
Middle & lower class	69(54.3)	31(24.4)	27(21.3)		
Type of family					
Nuclear family	98 (58.7)	44 (26.3)	25 (15.0)	5.83	0.05
Joint family	120 (51.5)	55(23.6)	58 (24.9)		
Size of family					
Small family	84 (69.4)	27 (22.3)	10 (8.3)	20.53	0.001
Large family	134 (48.0)	72 (25.8)	73 (26.2)		
	Solid waste collection				
	Dustbin		**No dustbin**		
Age in years					
<40	186 (92.5)		15 (7.5)	230.0	0.001
≥ 40	34 (17.1)		165 (82.9)		
Educational status					
Up to primary School	79 (35.5)		157 (66.5)	107.7	0.001
Secondary school and above	141 (86.0)		23 (14.0)		
Socio economic status					
Upper & upper middle class	88 (54.0)		75 (46.0)	0.114	0.736
Middle & lower class	132 (55.7)		105 (44.3)		
Type of family					
Nuclear family	92 (55.1)		75(44.9)	0.001	0.976
Joint family	128 (54.9)		105 (45.1)		
Size of family					
Small family	64 (52.9)		57 (47.1)	0.311	0.577
Large family	156 (55.9)		123 (44.1)		
	Segregation of waste at source				
	Yes		**No**		
Age in years					
<40	82 (40.8)		119 (59.2)	45.9	0.001
≥40	22 (11.1)		177 (88.9)		
Educational status					
Up to primary School	39 (16.5)		197 (83.5)	26.8	0.001
Secondary school and above	65 (39.6)		99 (60.4)		
Socio economic status					
Upper & upper middle class	29 (17.8)		134 (82.2)	9.63	0.002
Middle & lower class	75 (31.6)		162 (68.4)		
Type of family					
Nuclear family	45 (26.9)		122 (73.1)	0.133	0.715
Joint family	59 (25.3)		174 (74.7)		

Continued.

Variable	Segregation of waste at source		Chi square value	P value
	Yes	No		
Size of family				
Small family	35 (28.9)	86 (71.1)	0.772	0.380
Large family	69 (24.7)	210 (75.3)		
	Safe disposal of infant faces			
	Yes	**No**		
Age in years				
<40	98 (51.8)	91 (48.2)	11.45	0.001
≥ 40	58 (34.1)	112 (65.9)		
Educational status				
Up to primary School	77 (37.2)	130 (62.8)	7.78	0.005
Secondary school and above	79 (52.0)	73 (48.0)		
Socio economic status				
Upper & upper middle class	125 (79.11)	33 (20.89)	146.0	0.0001
Middle & lower class	31 (15.4)	170 (84.6)		
Type of family				
Nuclear family	81 (54.0)	69 (46.0)	11.66	0.006
Joint family	75 (35.9)	134 (64.1)		
Size of family				
Small family	53 (48.2)	57 (51.8)	1.442	0.229
Large family	103 (41.4)	146 (5.6)		
	Regular cleaning of the drains in community by government authority			
	Yes	**No**		
Age in years				
<40	72 (35.8)	129 (64.2)	1.2032	.272
≥ 40	61 (30.7)	138 (69.3)		
Educational status				
Up to primary School	65 (27.5)	171 (72.5)	8.448	0.003
Secondary school and above	68 (41.5)	96 (58.5)		
Socio economic status				
Upper & upper middle class	66 (40.5)	97 (59.5)	6.498	0.010
Middle & lower class	67 (28.3)	170 (71.7)		
Type of family				
Nuclear family	73 (43.7)	94 (56.3)	14.14	0.0001
Joint family	60 (25.8)	173 (74.2)		
Size of family				
Small family	60 (49.6)	61 (50.4)	20.86	0.0001
Large family	73 (26.2)	206 (73.8)		

Table 5: Association between demographic variables and Swacha Bharat Abhiyan related activity.

Variable			Chi square value	P value
	Heard of "Swacha Bharat Abhiyan"?			
	Yes	**No**		
Age in years				
<40	123 (61.2)	78 (38.8)	1.31	0.240
≥40	133 (66.8)	66 (33.2)		
Educational status				
Up to primary School	104 (44.1)	132 (55.9)	99.25	0.0001
Secondary school and above	152 (92.7)	12 (7.3)		

Continued.

Variable	Heard of "Swacha Bharat Abhiyan"?		Chi square value	P value
	Yes	No		
Socio economic status				
Upper & upper middle class	81 (49.7)	82 (50.3)	24.44	0.001
Middle & lower class	175 (73.8)	62 (26.2)		
Type of family				
Nuclear family	100 (59.9)	67 (40.1)	2.112	0.146
Joint family	156(67.0)	77 (33.0)		
Size of family				
Small family	66 (54.5)	55 (45.5)	6.73	0.009
Large family	190(68.1)	89 (31.9)		
	Awareness activity conducted in your village related to Swacha Bharat Abhiyan			
	Yes	**No**		
Age in years				
<40	30 (14.9)	109 (54.2)	11.02	0.004
≥40	11 (5.5)	131 (65.8)		
Educational status				
Up to primary School	11 (4.7)	225 (95.3)	19.45	0.0001
Secondary school and above	30(18.3)	134 (81.7)		
Socio economic status				
Upper & upper middle class	18 (11.0)	145 (89.0)	0.188	0.664
Middle & lower class	23 (9.7)	214(90.3)		
Type of family				
Nuclear family	23(13.8)	144 (86.2)	3.86	0.049
Joint family	18 (7.7)	215 (92.3)		
Size of family				
Small family	6 (5.0)	115 (95.0)	5.27	0.0215
Large family	35 (12.5)	244 (87.5)		
	Participated in any cleanliness related activity in the community			
	Yes	**No**		
Age in years				
<40	17 (8.5)	184 (91.5)	6.42	0.011
≥40	5 (2.6)	188 (97.4)		
Educational status				
Up to primary School	10 (4.3)	220(95.7)	1.61	0.206
Secondary school and above	12(7.3)	152 (92.7)		
Socio economic status				
Upper & upper middle class	0 (0.0)	163 (100.0)	16.44	0.0001
Middle & lower class	22 (9.5)	209 |(90.5)		
Type of family				
Nuclear family	5 (3.0)	162 (97.0)	3.687	0.05
Joint family	17 (7.5)	210 (92.5)		
Size of family				
Small family	0 (0.0)	121 (100.0)	10.32	0.001
Large family	22 (8.1)	251		

Continued.

Variable	Have you seen any poster/banner related with cleanliness in your community		Chi square value	P value
	Yes	NO		
Age in years				
<40	64 (31.8)	137 (68.2)	4.803	0.028
≥40	44 (22.1)	155 (77.9)		
Educational status				
Up to primary School	38 (16.1)	198 (83.9)	34.68	0.0001
Secondary school and above	70(42.7)	94 (57.3)		
Socio economic status				
Upper & upper middle class	52 (31.9)	111(68.1)	3.35	0.067
Middle & lower class	56 (23.6)	181 (76.4)		
Type of family				
Nuclear family	63 (37.7)	104 (62.3)	16.73	0.001
Joint family	45(19.3)	188 (80.7)		
Size of family				
Small family	40 (33.1)	81 (66.9)	3.23	0.072
Large family	68(24.4)	211 (75.6)		

Table 4 shows the association of demographic variables with practice of safe drinking water and environmental sanitation. RO water as a source of drinking water was significantly more in younger age group compared to middle age and elderly (p=0.0001). Similarly, small family also had significantly more consumption of RO water compared to large family (p=0.0001). Education, Socio economic status, and type of family had no significant relation while choosing a source of drinking water between RO, ground water and tap water.

Young age (p=0.001) and higher educational status (p=0.001) participants were using significantly more number of dustbins for collecting garbage in their houses compared to others.

In case of segregation of waste at the source were practiced significantly more among younger age group (p=0.001), higher education status (p=0.001) & lower & middle class (p=0.002) participants.

Similarly, young age participants (p=0.001), higher educational status (p=0.005), participants from nuclear family (p=0.006) and those who belongs from higher socio economic status (p=0.0001) were practicing safe disposal of infant faces. Participants from higher educational status (p=0.003), belongs from upper and middle class (p=0.010), nuclear family (p=0.001) as well as small family (p=0.001) had the opinion that the drains of their community is regularly cleaned by government authority.

Table 5 shows the association between demographic variables and "Swacha bharat Abhiyan" related activity. Participants having higher educational status (p=0.0001), belonging from lower & middle class (p=0.001) and member of small family (p=0.009) had heard significant more about "Swacha Bharat Abhiyan" compared to others.

Younger age participants (p=0.004), higher educated (p=0.0001) and belongs from nuclear (p=0.049) but large family (p=0.0215) had observed significantly more awareness activity in their community related with "Swacha Bharat Abhiyan".

Similarly, young age participants (p=0.028), higher educational status (p=0.0001) and members of nuclear family (p=0.001) also had the opinion that they had observed more banner/poster etc in their community compared to others.

But in case of participation in any cleanliness activity of the community under "Swatch Bharat Abhiyan" only young age group participants (p=0.011), lower- & middle-class population (p=0.0001) and participants from large family (p=0.001) had significantly more contribution compared to others.

DISCUSSION

Mahatma Gandhi said "Sanitation is more important than independence". He made cleanliness and sanitation an integral part of Gandhian way of living. Sanitation and drinking water in India have always been the central issue. However, it continues to be inadequate despite of the longstanding efforts by the various levels of the government and communities to improve the coverage.[11] "Swacha Bharat Abhiyan program is considered India's biggest drive to improve sanitation, hygiene and cleanliness in the country". On a practical level, cleanliness is related to hygiene and diseases prevention.

When we talk about hygiene and diseases then it is necessary to add drinking water and sanitation with it. Without proper sanitation we can't keep our surroundings clean and prevent ourselves from diseases.[11] In present study most common source of drinking water among the participants were RO water and young age and members of small family were consuming it more. According to the report of Comptroller and auditor general (CAG) report of 2018 July in India nearly 18% of rural habitations get less than 40 liters water per person per day under the National Rural Drinking Water Programme.[12] According to the report of Punjab pollution control board ground water of Punjab is contaminated with different heavy metals so government of Punjab had start community RO point for safe drinking water in the villages of different districts with minimum price.[13,14] According to Jal Jeevan Mission 71.4% of the households in Bathinda district of Punjab had tap connection till March 2020.[15]

So it is earliest responsibility of the authority to replace the household consuming ground water as drinking water with tape water or RO water so the health hazards of heavy metal contamination will be reduced and this can be achieved by Jal Jeevan Mission. A study conducted among rural population of Udupi district in Karnataka also had found that only 25% participants had safe practices for drinking water.[16]

Present study finding of practice of hand washing at different critical points during last 24hours shows similar finding with a UNECF study conducted in four stats of India during 2017except washing of hand after cleaning children bottom.[17] This may be because of the fact that study setting was different (UNCEF study was conducted in four Empowered action group states where usually the hygiene and sanitation is poor). Hand washing with soap at five critical times – after defecation, after cleaning a child's bottom, before feeding infants/ children, before eating and before food preparation, are estimated to reduce diarrheal diseases by 47% and respiratory infections by 23%.[17] Relatively poor performance in hand washing before eating (79%) and handling food (73%) in the present study can be improved by using socially and culturally acceptable Behavior change communication (BCC) strategy developed by local health authorities and Panchayat.

Present study shows the picture of solid and liquid waste disposal in the village is gloomy like many others villages of India. Improper collections, segregation and unscientific method of solid waste disposal are rampant in the community and it is same with many studies conducted in different parts of the country.[16,18] Nature of waste generated in rural areas of India is very different as compared to the urban areas. Solid waste generated in rural areas is predominantly organic and biodegradable. Appropriate technologies that are socially acceptable and environmentally safe may be considered. Collection, segregation and safe disposal of household garbage, decentralized systems like household composting and biogas plants shall be permitted. For collection of solid waste different colour coded beans can be used for segregation as source. Activities related to maximum reuse of organic solid waste as manure can be adopted.[1,19] Similarly one of objectives of SBM (G) that is behavior change of the masses by using participatory method should also be prioritize. Women and girls are most affected by the lack of access to proper sanitation so their involvement starting from decision making to implementation of the process of SBM (G) will improve the scenario of the village. Similarly increasing the educational status and socio-economic status also improve the healthy practice of solid and liquid waste disposal in the community.

Drainage system of the village comes under liquid waste management. Liquid waste contains both black water (waste water containing fecal matter) and gray water (kitchen and bathroom waste water).[19] Most of the village had no scientific liquid waste management system (e.g.: open drain, infrequent cleaning etc) that is similar to a many common villages of India.[11,20] Under the SBM urban area had the provision of underground sewage system but in rural area method of liquid waste management should be developed according the resources available in the community. Since there is plenty of land in the villages' methods like: reuse of waste water for agriculture purpose, low cost cover drainage system or soakage pit can be constructed. Gray water can be used for growing vegetables/ flowers in the kitchen garden area.[21] Success and implementation of different innovative ideas can be possible only by active participation of the women/girls of the community because it has been found that most of the cleaning activities in the household are mainly responsibility of the females.

Punjab had reached the open defecation free (ODF) status same like India in 2019 October and according to the report of SBM (G) only 170 household did not had the proper sanitary latrine facility when the SBM (G) was launched in 2014.In the present study village most of the latrine was constructed during 2016-17, 2017-18 financial year and only 6 latrines were constructed in 2018-19 financial year.[4] Ignorance of these activities under SBM (G) among the female/girls of the villages shows there is lack of involvement of women in the decision making process of the community but they are the primary users and manager of water and sanitation in the household. Many development programmes acknowledge the need for women participation for their success. Studied have found that the effectiveness of the water and sanitation projects was strongly associated with women's participation in decisions about water supplies, transparency and management of sanitation interventions.[22]

Improper solid and liquid waste disposal had given the village surrounding of the houses an untidy appearance and as a whole the village becomes dirty which has been

highlighted by the participants. In spite of these very few participants had heard about "Swacha Bharat Abhiyan" though the programme is running in India from 2014. Only higher education and lower & middle socio economic status participants had more awareness about the programme similarly they had more active participation in it. Over all the village had very few IEC/BCC activity related with SBM (G). Behavior change has been one of the key differentiator of "Swachh Bharat Mission (Gramin)" and therefore emphasis should be placed on Behavior Change Communication (BCC). The suggested approach would be to adopt Community Approaches to Sanitation (CAS) focusing heavily on triggering entire communities and on achieving collective behavioural change. An army of 'foot soldiers' or 'Swachhagrahis', earlier known as 'Swachhata Doots' could be developed and engaged for creating awareness in the community. Reputed Civil Society Organizations (CSOs), Self-Help Groups (SHG), NGOs, may be involved in IEC/BCC/triggering, capacity building, monitoring and if found appropriate, in implementation. Similarly social audit can also be conducted to assess the progress of the programme.[1]

Present study finding of more awareness and involvement of young participants in "Swacha Bharat Abhiyan" related activity has opened a window of inclusion of innovative technologies like use of social media for crating and communicating awareness among them.

Our study is conducted only in a village so it cannot be the true representation of the picture of women/ girls of the whole state. Present study we considered only quantitative approach which may not be sufficient sometime to find out the deep rooted sanitation and hygiene related problem of the village. So we require qualitative approaches also.

CONCLUSION

One of the objectives of Swacha Bharat Mission (Garmin) is bringing about an improvement in the general quality of life in rural areas. India has achieved the status of ODF but overall improvement of the village cannot be achieved without effective management of solid and liquid waste. The fundamental role of government as well as every citizen is important. Though governments and implementers emphasize women's involvement in sanitation programmes, but women involvement in practical is limited. Policies need to be formulated that enable women to participate in the sanitation interventions. Special focus should be given young, educated women/girls from middle and lower socio economic status so that they become the role model of the society.

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