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Status of Sanitation in the Rural Areas of a Health Unit District, Tamil Nadu, India

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ABSTRACT

Background: Sanitation is the key to better health. Even towards the end of the millennium development goal era, provision of sanitation still continues to be a challenge especially in rural areas.

Objectives: The present study was undertaken to describe the availability and utility of sanitary latrines in study population and to assess knowledge / practice of households about use of latrines.

Materials and Methods: This cross-sectional study was carried out in Cheyyar taluk of Tamil Nadu which comprised of three blocks. Stratified random sampling technique was followed to draw samples from all villages in the three blocks. From each stratum, 20% of the villages were selected. In each village, 10% of the households were again selected at random, with individual household being the sampling unit.

Results: Availability of in-house toilets in the study area was only 22% with 73% utilization among them. With regard to community toilets, the availability and utility was grossly inadequate. Knowledge about importance of toilet use was more among households with toilets when compared to their counterparts. The knowledge about government giving subsidy to construct toilets was also lacking.

Conclusion: The efforts to improve sanitation needs to be sustainable with stress on IEC and community participation.

Key words: Availability, utility, sanitary latrine, rural areas

INTRODUCTION

Sanitation is a human right and a key component of primary prevention to ensure better health[1]. Since its inception, WHO has recognized sanitation as vital to global health and development. The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) monitors the progress towards targets under Millennium Development Goals which was to reduce the proportion of the population without sustainable access to basic sanitation to half by 2015. The final report in 2015 states that despite failing to meet the target, use of improved sanitation facilities rose from 54 per cent to 68 per cent globally. South-eastern Asia also achieved a significant increase of 24 percentage points, but narrowly missed the target [2].

While India is now in the front ranks of fast-growing emerging economies, it is also one of the countries wherein a lot of efforts are still required to eliminate the practice of open defecation (Department of drinking water and sanitation, Government of India. 2010)[3]. In rural areas, open defecation though reduced in scale, continues to be a socially and culturally accepted traditional behavior at large.

The statistics given by the different agencies of the government is also alarming. The ministry of drinking water claims 53 percent has toilet facilities in rural areas, whereas the Joint Monitoring Pro-

gramme and census 2011 data keep the figure at 33% and 30%, respectively [4]. In Tamil Nadu, the ministry claims 24.47 % do not have toilet facility while the census 2011reports 76.1%. This stresses the need for a more accurate monitoring system.

Therefore, the need of the hour is to identify the existing system of environmental sanitation and to prioritize the strategies according to the need of the country. These priorities are particularly important because of issue of water constraints, environment-related health problems, rapid population growth, inequitable distribution of water resources, issues related to administrative problems, urbanization and industrialization, migration of population, and rapid economic growth[5]

The baseline survey on water and sanitation carried out in the entire country by the ministry of drinking water and sanitation in 2012[6] showed paucity of information reported from Tiruvanamalai district. A small proportion of this district being the field practice area of the institution, and based on the observations made during the field visit to the villages, the present study was carried out in the rural areas of Cheyyar health unit district to study the current status of sanitation with the objectives to describe the availability and utility of sanitary latrines in the study population and to assess knowledge and practice of the households about use of household latrines.

MATERIALS AND METHODS

This cross-sectional study was carried out in one of the health unit districts (Cheyyar) of Tamil Nadu state, India. The study was carried out in 2013 for a period of four months(February to May). The health unit district is divided into 3 talukas (a taluka is a subdivision of a district- a group of several villages organized for revenue purposes in India) namely Arani, Cheyyar and vandavasi. The study was conducted in one (Cheyyar) taluk (population of 288004 distributed in 374 villages) which comprised of three blocks-vembakkam, Anakkavur and Cheyyar, with vembakkam having 153 Villages, Cheyyar having 117 villages and Anakkavur having 104 villages.

Stratified random sampling technique was used to draw samples from all the villages in the three blocks. Villages were stratified on the basis of number of households in each village into ten strata. From each stratum, 20% of villages were selected randomly by simple random sampling and a total of 74 villages were selected. This resulted in selection of 31 villages from vembakkam, 22 villages from Anakkavur and 21 villages from Cheyyar. In each village, 10% of the households were again selected at random by simple random sampling method with the individual household being the sampling unit. A total of 1515 households were identified finally. Data collection was done both by direct observatory method, check list and also by using a pre tested questionnaire. In each village, a prior consent was taken from the village leaders after having a preliminary meeting with them and explaining them the purpose of the study.

The sanitary status was assessed using a check list consisting of questions on presence/absence and use of toilets, use of public toilets and the knowledge/ practice aspects were assessed using a structured questionnaire. Health education regarding sanitation was given to the villagers at the end of the study .Data entry and analysis was done using the statistical package for social sciences (SPSS) version 19 software. Descriptive statistics was used to present data on availability of toilets andunivariate analysis was used to find association between toilet availability and knowledge.

RESULTS

Of the 74 villages selected for the purpose of our study, 31 villages were from vembakkam, 22 villages were from Anakkavur and 21 villages were from Cheyyar. The study unit comprised of 1515 households from 74 villages.

Of the 1515 houses surveyed, 705(46.5%) of the houses were terraced, 538(35.5%) were tiled and 272(18%) were thatched. Most 1227(81%) of the houses were on the streets (within the main village) and 102(6.7%) which comprised mainly of the lower caste were staying in the outskirts of the villages. The average family size was 4.36.The literacy status (as per census 2011 definition) comprised of 64.7% literates. The proportion of illiterates was higher when compared to the state Tamil Nadu (19.7%) as per Census 2011[7].

The use of cell phones was 49 % with a mean mobile bill expenditure of Rupees 258.37 per month per person. This was similar to the census 2011 data[8] which revealed 53.2% use of mobile phones.

Table 1: Availability of public toilets in Cheyyar taluk

Name of Block	n	Villages with community toilets	Actually used	Not used
Vembakkam	**31**	14 (45)	3 (9.7)	6 (19.3)
Anakkavur	**22**	8 (36.4)	2 (9)	2 (9)
Cheyyar	**21**	8 (38)	1 (4.8)	5 (23.8)
Total	74	30 (40.5)	6 (20)	13 (43.4)

Availability of public facilities: Community toilets

Community toilets are being constructed in the rural areas for the benefit of only women and child-

ren at the rate of one toilet per village. Each unit had 10 toilets seats with adequate electricity, ventilation, privacy and water facility. Only 30 (40.5%) of the 74 villages surveyed had community toilet facility (Table 1). of these, 13(43.4%) were not used/or were locked either because of no electricity, water or unknown reasons (funds not received).A little of only 6 (20%) toilets were put to actual use on regular basis and 11(36.6%) were used to wash clothes. Another important reason for not using the community toilets was the accessibility factor, where in the toilets were constructed at the periphery of the villages due to lack of space within the village.

Of the 74 villages, there was neither a community toilet nor a toilet in any of the households in one particular village. Similarly, in another village where the houses were constructed utilizing the funds of one of the renowned NGOs, not a single house had a proper toilet facility. It was only a partially constructed enclosure with no toilet infrastructure. The reason cited for this was paucity of funds by the villagers

Availability and utility of private toilets:

The availability of toilet facility in the 74 villages, of the 1515 houses surveyed was 333(22%). It was significantly more in terraced houses 200 (28.4%) when compared to 30 (11%) of thatched houses ($p<0.0001$).

Only 16 (15.7%) houses in the outskirts had toilet facility in relation those situated within the village 317(22.4%). This could probably be that people living in outskirts are more comfortable with outdoor defecation but the difference was not statistically significant ($p>0.05$).

The presence of toilet facility in the households increased proportionally with increase in literacy status (statistically significant, $p<0.0001$)

There was not much difference in the toilet facility between cell phone users and non-cell phone users though 49% of the households used cell phones. Regarding availability of water in the 74 villages, all were provided with overhead tanks, with street supplies and adequate tap points. A majority 95.3% of households in all the three blocks availed water from the overhead tank in the villages. Most 1016 (70.4 %) of them fetched water from the street taps, 240 (16.6%) directly from the tap below overhead tank and only 188(13%) had individual taps in their houses. But, only 79(23.7%) of those who had toilets (333 households) had water connection at the seat of the toilet which was interrupted supply and majority 254(76.3%) had to carry buckets to the toilets.

Table 2: Availability of household toilets in Cheyyar taluk

Name of Block	Household	Availability of household Toilets	Actually used	Presence of outdoor defecation
Vembakkam	**582**	147 (25.3)	111 (75.5)	471 (80.9)
Anakkavur	**574**	123 (21.4)	98 (79.7)	476 (82.9)
Cheyyar	**359**	63 (17.5)	34 (54)	325 (90.5)
Total	1515	333 (22)	243 (73)	1272 (84)

Table 3: Availability of basic facilities in toilets

Particulars	Total	Vembakkam Block (%)	Anakkavur Block (%)	Cheyyar Block (%)
No. of households	1515	582	574	359
Water supply to toilet:				
Using buckets	254 (76.3)	120 (81.6)	88 (71.5)	46 (73)
At the seat of toilet	79 (23.7)	27 (18.4)	35 (28.5)	17 (27)
Presence of Privacy	273 (82)	114 (77.6)	102 (82.9)	57 (90.5)
Toilets having electrical connection	244 (73.3)	106 (72.1)	99 (80.5)	39 (61.9)
Toilets having ventilation	233 (70)	104 (70.7)	90 (73.2)	39 (61.9)

Table 4: Knowledge of the households with regard to sanitation in study area

Particulars Asked	Information Elicited (%)		Toilet		OR	P value
			Available	Not Available		
Can diseases be transmitted through open air defecation	Yes	1109 (73.2)	301 (27.1)	808 (72.9)	4.331	< 0.0001
	No	406 (26.8)	32 (7.9)	374 (92.1)		
Is Outdoor defecation safe	Yes	715 (47.3)	59 (8.3)	656 (91.7)	0.172	< 0.0001
	No	800 (52.7)	274 (34.3)	526 (65.7)		
Is toilet a basic amenity in the house	Yes	610 (40.3)	273 (44.8)	337 (55.2)	11.38	< 0.0001
	No	905 (59.7)	60 (6.6)	845 (93.4)		
Can use of toilets prevent infection	Yes	1054 (69.7)	297 (28.2)	757 (71.8)	4.6	< 0.0001
	No	461 (30.3)	36 (7.8)	425 (92.2)		
Knowledge about government subsidy for constructing toilets	Present	374 (24.7)	114 (30.5)	260 (69.5)	1.842	< 0.0001
	Absent	1141 (75.3)	219 (19.2)	922 (80.8)		

Of the 333 toilets, majority (73%) of the toilets were actually used and around one third (27%) were not used (Table 2). The use of toilets was least in Cheyyar block. A high prevalence (84%) of outdoor defecation has been noted. When asked for the reasons for not using, majority expressed that they were comfortable with outdoor defecation, were not used to the concept of toilets etc.

About 284 (85.8%) of the toilets were connected to septic tanks, three were under construction and yet to be connected. The most common mode of cleaning toilets was by using the commonly available cleansing agents 85 (25.5%) and another 85 (25.5%) used only water for cleaning. With regard to the frequency of cleaning, only 83 (24.9%) of them cleaned it every day, 111 (33.3%) twice a week 97 (29.1%) of them did it weekly once, and 42 (12.6%) occasionally.

Of the 333 toilets, 273 (82%) had privacy, 244 (73.3%) had electricity and 233 (70%) had adequate ventilation.

The reasons for not having toilet facility in the households, as stated by 78 % of the study population, were elicited. The most common reason given was "not affordable" by 42.6 % of the households followed by "not necessary" by 8.3 %, no place by 5.2 %. There were also reasons like don't want, no one having, old house, no water facility, no one uses. About 2.6% gave a positive reply that they will construct in future or are in the process of constructing.

Knowledge and practice of households about toilets

On assessing knowledge regarding importance of toilets by finding out if diseases could be transmitted through open air defecation, if outdoor defecation was safe, if use of toilets can prevent infection, majority of the households had positive knowledge. Univariate analysis showed, this was significantly associated with the availability of toilets in their respective households (Table 4).

Only 610 (40.3%) were considered toilet as a basic amenity in the house. The reasons cited were privacy, safety, difficulty to go out, basic necessity and hygienic. Among these, significantly ($p<0.05$) more number of houses within the village and significantly ($p<0.0001$) more number 321 (45.5%) of terraced houses felt it as a basic amenity. One of the reasons given for this was: they felt construction of a toilet in the house was not religiously and culturally acceptable to them. Only 54 (16.2%) of those who had a toilet in the house recommended others to construct a toilet in their house.

All the information elicited with regard to knowledge and practice of sanitation in the households was significantly influenced by literacy status ($p<0.0001$).

When knowledge about the government giving subsidy to construct toilets was asked, only 30.5 % of households who had a toilet were aware about it. Among them, only 57 (50.8%) availed it. The reasons given for not availing were no government person came, don't know procedure, do not know whom to approach and government did not respond.

DISCUSSION

Our study revealed that the availability of private toilet facility in the 74 villages was only 22% and majority 73% of them were using it appropriately with 85.8% of the toilets connected to septic tank. But, the report of Ministry of drinking water and sanitation[6] in Tamilnadu claimed that 24.47 % did not have toilet facility while the census 2011[8] reported it as 76.1 %.The national family health survey 4(2015-16) states that the proportion of households with improved sanitation facilities rose from 29.1% in NFHS-3 to 48.4%[9]. Our results were similar to study by Harshalet al[10] in rural areas of Pune, Maharashtra (2012) which found 65.55% did not have toilet facility. On the contrary, a study by Bannerjee et al (2013)[11] in a village in Andhra Pradesh and Anuradha et al (2017)[12] in a village in rural Tamilnadu found56.7% and 62.5% had sanitary latrines in their houses respectively.

With regard to availability of water, our results are in contrast to census 2011[8] which revealed 47% have the source of water within the premises, 36% still have to fetch water located within 500 meters. More number of households (28%) had individual taps in their premises as shown by the National family health survey – III (2005-06)[13]. Our findings are similar to the study by Kirti Deshpande et al (2007)[14]in a village in Ujjain district (Madhya Pradesh)-84% did not have access to water within household premises and 55% had access to water source at a distance of more than 50 meters. Harshal et al[10] in his study in rural areas of Pune, Maharashtra(2012) noted that all the households had piped water supply with 43.33% having tap facility inside the house and 56.67% outside the house .

Similar to our findings, in a study conducted by J. Geetha[15]in Tiruchirappalli, Tamil Nadu, the prevalence of open air defecation was 90%. Shefound the most quoted (69%) reasons for not constructing toilets is non availability of funds and few (15%) had attributed to no space in their houses and rest due to cultural barriers.

Another study by Bhardwaj et al (2013) in a village of district Pune among 282 subjects concludes that,

in spite of presence of community latrines, 67% of the population resorted to open air defecation. Inadequate water was the major reason for underutilization (48.6%) of community latrines followed by lack of awareness about the availability of these.[16]

A community based cross sectional study among 65 rural households of Huballi showed 44.6% had an independent toilet in their house though 73.85% opined that open air defecation is bad. Reasons for not having a toilet were similar to our study[17].

To summarize, though majority of the people had positive knowledge about the beneficial effects of toilet use to some extent, still the availability of toilets in the study area was only 22 %.And, among those who had toilets majority made effective use it. The positive attitude towards toilet use increased with literacy status and was also associated significantly with the type of house they lived in, that is more among people living in terraced houses when compared to those in thatched indirectly reflecting the role of socio economic status. The community toilet initiative being constructed to promote the availability of toilets in rural areas was not constructed in all the villages. Its effective use also was grossly inadequate in the villages where it was already constructed. The knowledge about the government giving subsidy to construct toilets was also lacking. This reinforces the priority of the concerned departments to address these issues. Also, due to wide disparities in the reporting systems, a uniform assessment system needs to be established to monitor the progress towards the MDG goal.

CONCLUSION

Constant efforts are already in place by the government to achieve the target of universal sanitation.The vision of Swachh Bharat to accelerate sanitation coverage in rural areas by 2nd October 2019 is a big step in this direction. Due to varied status reports of toilet use across the country, large community based studies should be undertaken not only to assess the situation but also to get insight into the influence of religious, cultural, regional and other social factors on toilet use. Another main obstacle to tackle, is the negative perceptions of the people which require ongoing and intensive IEC campaigns. Also, eliminating open defecation will go a long way in improving the general quality of life in rural areas.

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