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Research Article

A cross-sectional study to determine knowledge, attitude and practice of sanitation in rural areas of Tamil Nadu, India

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ABSTRACT

Background: This is a study attempted to assess the present situation of water and sanitation facilities, attitude and practices of the individuals living in 8 villages (4 each) of Cuddalore district and Villupuram district, Tamil Nadu, India. Government should initiate measures to create awareness among rural population about the importance of proper sanitation among household. The aim of the study was to determine knowledge, attitude and practice of sanitation in rural areas of Tamil Nadu, India.
Methods: This is a cross-sectional study carried out to understand the knowledge and practices followed for purifying drinking water, hand washing facilities and practice, presence and condition of toilet in house and waste disposal in 8 rural villages in 2 districts of Tamil Nadu, India.
Results: On an average, there is 1 toilet among 13 people in surveyed areas. Total of 78% of respondents do not treat the water and 92% of the individuals were consuming water from municipal tap. Un-availability of toilet was 70% among study population; 40% of them stated financial reasons for absence of toilets. The practice of hand washing before handling of food is seen among 53% participants and 80% washed their hands after eating the food; 68% of the participants washed their hands after defecation. Average toilet cleanliness score is 2.88/5.
Conclusions: Government and other social programs should be developed to educate and to create awareness about water treatment methods, need of proper sanitation and hand washing practices among rural population. The current message spread by Government programs are not reaching the masses, therefore further effort to penetrate periphery is required.

Keywords: Sanitation, Hygiene, Hand washing

INTRODUCTION

Sanitation and hygiene has always been an integral part of health care delivery system. Most of the communicable and non-communicable diseases are directly or indirectly linked with poor sanitation. Poor hygiene multiplies the spread of disease by manifold; a recent example of Ebola outbreak where safe funeral practices plays a vital role in culminating the virus and disease. In other words poor sanitation and hygiene are like nuclear bomb which needs a trigger of a novel pathogen to initiate a medical calamity.

Sanitation has two important components: water seal latrines and sewage disposal system, while essential component for hygiene are hand washing and systematic solid waste disposal. Historically we were at epitome of sanitation practices during Mohenjo-daro and Harrapa civilization, but with the increase in population, economic disparity and poor planning, current status is

questionable.[1] The economic loss due to inadequate sanitation in India was estimated to be 2.44 trillion rupees.[2]

As per census 2011, only 81% and 31% of household have toilets in house and 71% and 35% of households have piped water supply in urban and rural areas respectively.[3,4] Government of India has been concerned with the problem and is taking necessary measures in promoting total sanitation campaign and recently launched Swachh Bharat Mission. But still the condition can be very well depicted by above data, which denotes there is gap between knowledge, attitude and practice to adopt and utilize facilities to attain a target of 100% sanitation (open air defecation free India).

Currently available literature on sanitation projects poor sanitation and gaps in knowledge and behavior of people in Northern states of India, while there is hardly any source to highlight the mindset and practice of south Indian population.[5,6] Therefore this study is planned to determine knowledge, attitude and practice about sanitation in rural areas of Tamil Nadu.

METHODS

A cross-sectional study was planned infield practice area of primary health centers of Community Medicine department. A pre-tested research instrument was developed to fulfil the study objectives. Drinking water purification, hand washing facilities and practice, presence and condition of toilet in house and waste disposal were the key areas of focus in the study. Convenience samples of 88 houses from 8 villages {4 from Vandipalayam area (Cuddalore district) and 4 from Konangipalayam area (Villupuram district)} were surveyed. The two districts are approximately 50 kilometers distant from each other. Interns and Medical Officers were trained by authors to collect data, which includes interview of respondents and physical verification of hygiene and sanitation. The household were interviewed to evaluate their knowledge and attitude about sanitation and hygiene further the house was inspected to determine the water quality, practice of storage of water, hand washing facility, presence and hygiene of toilets and practice of waste disposal. Toilet hygiene was scored subjectively 0-5, 0 being very poor and 5 being very well. The data was collected in January 2016 and was compiled and analyzed to yield meaningful information.

RESULTS

A total of 88 families from 8 villages, from the rural areas of Cuddalore and Villupuram were enrolled in the study conducted. The highest number of participants belonged to the age group of 45-60 (n=27/88, 30.7%). The percentage distribution of females are higher compared to males participated in the study i.e. 67% females (n=59/88) and 33% males (n=29/88) respectively. The demographic characteristics of participants included in the study are; 70% of them belonged to the nuclear family (n=62/88), 37.5% were illiterate (n=33/88) and 58% unskilled labourer (n=51/88). In the survey conducted among 88 families, more than 70% of houses does not have toilet (n=62/88) and for 92% of families (n=81/88) their primary source of drinking water is through municipality tap water (Table 1). Therefore, on an average, the availability ratio of toilet is: 1 toilet among 13 people in surveyed areas.

Table 1: Demographic details of study population.

Demographic characteristics		Frequency (n=88)	Percentage
Age group (respondent)	18-30	16	18.2
	30-45	23	26.1
	45-60	27	30.7
	>60	22	25.0
Gender (respondent)	Male	29	33.0
	Female	59	67.0
Family type	Nuclear	62	70.5
	Extended	24	27.3
	Joint	2	2.3
Occupation (respondent)	Unemployed	18	20.5
	Unskilled	51	58.0
	Skilled	14	15.9
	Professional	5	5.7
Education of most literate person	Illiterate	33	37.5
	Below high school	25	28.4
	Above high school	30	34.1
Number of Toilets	0	62	70.5
	1	25	27.3
	2	1	2.3
Source of drinking water	Municipal tap	81	92.0
	Bore hole	7	8.0

On an average there is 1 toilet among 13 people in surveyed areas.

Among 88 families participated in the study, 72% of them are not aware that the quality of water affects health and 94% believe that the water they drink is safe. Therefore 78.4% of them don't treat water before drinking. But the most difficult scenario is more than half of study population i.e. 53% are unaware that diarrhea, fever and other illness can be transmitted through water and the role of water treatment in household especially through boiling. About 91% of overall families are satisfied with the quality of water they use (Table 2).

Approximately, 53% practice hand washing before food and among them 42% of the families practice hand washing with the attitude that hand washing keeps the hand clean. A total of 62% have knowledge about the need of hand washing before food, and 88% after food

but in practice only 53% follow hand washing before food while 80% after food consumption. Knowledge about the need of hand washing after defecation is seen among 61% families and 68% of them practice the same. The above data depicts that there is gap between knowledge and practice regarding hand washing. A total of 56% of families are not able to afford to build a toilet and 70% of them indiscriminately throw solid waste (Table 2).

Table 2: Knowledge about sanitation and hygiene.

Demographic characteristics	Questionnaire	Frequency (n=88)	Percentage
Quality of water affects health	No	64	72.7
	Yes	24	27.3
Opinion- water you receive is safe	No	5	5.7
	Yes	83	94.3
How do you treat water	No treatment	69	78.4
	Boiling	19	21.6
Reason for not treating water	Already clean	48	54.5
	Expensive methods	14	15.9
	Not knowing	7	8.0
	NA	19	21.6
Knowledge about illness due to drinking water	Diarrhea	15	17.0
	Fever	22	25.0
	Illness	4	4.5
	Don't know	47	53.4
Satisfied with water quality	No	8	9.1
	Yes	80	90.9
Daily water needs fulfilled	No	2	2.3
	Yes	86	97.7
Reason for hand washing	Don't know	29	33.0
	Feels clean	37	42.0
	Prevents infection	22	25.0
Knowledge hand washing before food	No	33	37.5
	Yes	55	62.5
Knowledge hand washing after food	No	10	11.4
	Yes	78	88.6
Knowledge hand washing after defecation	No	34	38.6
	Yes	54	61.4
Practice hand washing before food	No	41	46.6
	Yes	47	53.4
Practice hand washing after food	No	18	20.5
	Yes	70	79.5
Practice hand washing after defecation	No	28	31.8
	Yes	60	68.2
Reason for not having toilet	Unaffordable	50	56.81
	No space	11	12.5
	Under construction	1	1.1
	NA	26	29.5
Reason for not using toilet	Like to go out	25	28.4
	Not working	1	1.1
	No money	36	40.9
	NA	26	29.5
Solid waste disposal	Community dustbin	26	29.5
	Indiscriminate throwing	62	70.5

Table 3: Sanitation facilities in household.

Sanitation facilities	Questionnaire	Frequency (n=88)	Percentage
Inspection water storage	Clean container	63	71.6
	Unclean container	25	28.4
Inspection smell	Odourless	74	84.1
	Chlorine	5	5.7
	Pungent	9	10.2
Inspection water quality	Clear	66	75.0
	Suspended particulate matter	20	22.7
	Turbid	2	2.3
Inspection hand washing facility: water source	Running tap water	19	21.6
	Mug arrangement	50	56.8
	No arrangement	19	21.6
Inspection hand washing facility: drainage	Present with proper drainage	7	8.0
	Improper drainage	49	55.7
	Absent	32	36.4
Soap	Present	35	39.8
	Absent	53	60.2
Inspection toilet	Present	26	29.5
	Absent	62	70.5
Inspection Number of functional toilet	Yes	25	28.4
	No	1	1.1
	Absent	62	70.5
Inspection toilet type	Flush	6	6.8
	Flush pour	20	22.7
	Not applicable	62	70.5
Cleanliness score*	2	8	9.1
	3	13	14.8
	4	5	5.7
	Not applicable	62	70.5
Inspection sewage disposal	Septic Tank	21	23.9
	Soakage pit	1	1.1
	Open drain	4	4.5
	Not applicable	62	70.5
Dust bin at home	Covered	4	4.5
	Uncovered	23	26.1
	Absent	61	69.3
Municipal bin	Covered	1	1.1
	Uncovered	33	37.5
	Absent	54	61.4
Surrounding area	Clean	21	23.9
	Pilferage	67	76.1
Vector breeding	Present	71	80.7
	Absent	17	19.3

*Average cleanliness score is 2.88.

Regarding Sanitation facilities in household, 71% of families store water in clean container, 84% of them receive odourless water and 75% of them receive clear water. Inspecting the hand washing facility, 78% had water arrangement but proper drainage is present in only 8% of families and usage of soap for hand washing among only 40% of families. In inspecting the number of toilets, 28% of them are only functional toilets. Inspecting the disposal of household waste, 4% families are using covered dustbin in their homes and 61% do not have even the municipality dust bin. Pilferage from municipal bins is reported 76% and the rate of vector breeding is 81% (Table 3).

DISCUSSION

This study was conducted among 88 families from 8 villages, from the rural areas of Cuddalore and

Villupuram districts. Water is the elixir of our life. Good, clear, clean, odourless, easy accessible drinking water is the need for everyone in spite of religious differences, ethnicity, and socio-economic status. Awareness about storage of water in clean containers, boiling them before use to prevent the spread food borne infections such as fever, diarrhea other illness should be educated to them because in the current study, 78% of the respondents were not using any method to treat the water and 94% felt that water is already clean so there is no need to treat it. Also the solid waste is disposed by indiscriminate throwing which can contaminate the drinking water especially they are the cause of epidemic during flood times as 92% of the individuals were consuming water from tube municipal tap well run by government. Suthar S, 2011 showed that the potable water samples from 78% of the town/villages showed E. coli contamination.[7]

In case of availability of toilet, 70% of our study population lack toilet in their houses because 40% of them had no money to build toilet, whereas 28% wanted to go out of the houses for defecation. According to recent survey conducted to Indian Government, 49% follow open air defecation and rest use toilets. The situation needs to be addressed as high priority and it also shows that a deeper penetration by Government agencies should be done to reach every household.

Accessing the practice of hand washing, only 53% of the participants washed their hands before handling of the food and after eating the food 80% washed their hands. Total of 68% of the participants washed their hands after defecation.

CONCLUSION

This is a small study attempted to assess the present situation of water and sanitation facilities, attitude and practices of the individuals living in 8 villages of Cuddalore district and Villupuram district. Government should initiate measures to create awareness among rural population about the importance of proper sanitation in household. The message spread by Government programs are not reaching the masses, therefore further effort to penetrate periphery is required.

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