

# ASSESSMENT OF WATER SANITATION AND HYGIENE (WASH) PRACTICES AMONG HOUSEHOLDS OF RURAL VISAKHAPATNAM, ANDHRA PRADESH, INDIA

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## Abstract

**Background:** World Health Organisation (WHO) estimates that globally 1.5 million children die from diarrheal diseases each year, of which 88% of these deaths are due to inadequate sanitation, hygiene and drinking water. WASH is the collective term for Water, Sanitation and Hygiene. Globally, 663 million people are still without access to clean drinking water, 8 out of 10 people live in rural areas. Globally, India has the largest number of people still defecating in the open with more than 564 million. Improving drinking water condition and sanitation facilities remains a major concern globally. The objectives of the study were to assess the water, sanitation and hygiene practices among households of rural field practice area of department of Community Medicine, Andhra Medical College, Visakhapatnam. **Materials and Methods:** A community based cross-sectional study was done among 200 households in rural field practice area in a period of three months from May 2016 to July 2016. A pretested semi-structured questionnaire was administered for collecting data regarding WASH practices among households. Data collected was entered and analyzed using Microsoft Excel 2010 and expressed in percentages. **Result:** A total of 969 members were present in the 200 households, of which 44.9% (435) were males and 55.1% (534) were females. 9.5% (19) of the households were practicing open defecation. 56% (112) of the households were having stagnant water around their houses. **Conclusion:** The present study revealed 9.5% of open defecation among rural households. There is a need to improve for water and sanitation conditions. Community health education campaigns in promoting healthy lifestyles and positive health seeking behavior should be done to achieve open defecation free (ODF) in the rural community.

## INTRODUCTION

WASH is the collective term for Water, Sanitation and Hygiene. Globally in 2015, 663 million people are still without access to clean drinking water, 8 out of 10 people live in rural areas.<sup>[1]</sup> World Health Organisation (WHO) estimates that globally 1.5 million children die from diarrhoeal diseases each year, of which 88% of these deaths are due to inadequate sanitation, hygiene and drinking water and most amongst children less than five years of age.<sup>[2,3]</sup> One in seven people, or 946 million people, practice open defecation (OD). Of those who do, 9 out of 10 live in rural areas.

Five countries, India, Indonesia, Nigeria, Ethiopia, Pakistan, account for 75% of open defecation with India contributing more than 564 million. Growing evidence suggests a link between child linear growth and household WASH practices and estimates 50% of child undernutrition may be attributable to poor WASH practices.<sup>[4,5]</sup> Improving drinking water condition and sanitation facilities remains a major concern globally. With this background this study was conducted to assess the water, sanitation and hygiene practices and to identify the WASH practices associated with morbidity among households of rural field practice area of department

of Community Medicine, Andhra Medical College, Visakhapatnam.

## MATERIALS AND METHODS

**Type of Study:** Observational cross-sectional study.

**Study Setting:** Rural field practice area of Andhra Medical College, Visakhapatnam.

**Period of Study:** 3 months from May to July 2016.

**Study Population**

Households having under-5 children in RHTC area.

**Study Sample**

The study sample was calculated using data from UNICEF India (6) (2008) during a Survey by water, sanitation and hygiene (WASH) in India which estimated that with regards to sanitation that most of the India's population (69%) did not use improved sanitation. Applying Z2PQ/L2 where Z=1.96 with 95% Confidence limits, p=69%, q=31%, L=10% allowable error. Calculated sample was 180, which was further added with 10%. Final calculated sample to be included in the study were 200 households.

**Data Collection**

RHTC Simhachalam consists of 10 sub-centres, out of which 2 were randomly selected which include Adavivaram-I and Adavivaram-II. From each selected sub-centre, 100 households were included

by convenient sampling method making it a total of 200 households in the present study.

**Study tools:** A pre-designed, pre-tested and semi structured study questionnaire was used to collect the data regarding demographic characteristics, WASH practices. The mother of the child in the household was identified as the respondent.

**Consent:** After taking IEC clearance from the institution, study subjects were informed about the study objectives and informed consent was obtained prior to inclusion into the study.

**Inclusion Criteria**

Households having under-5 children and who has given informed consent were included in the study.

**Exclusion Criteria**

Households not having under-5 children and those who didn't not given informed consent were excluded from the study.

**Data Entry & Analysis**

Collected data was entered and analysed using Microsoft Excel 2010 and results were expressed in percentages and the statistical significance between variables were found at  $p < 0.05$ .

## RESULTS

Among study population, majority (55%) were females & 45% were males and majority (95%) belong to Hindu by religion.

**Table 1: Demographic Profile of the Households.**

Category		No.	Percentage
Gender	Male	435	45%
	Female	534	55%
Religion	Hindu	190	95%
	Muslim	6	3%
	Christian	4	2%
Type of family	Nuclear	121	60.5%
	Joint	16	8%
	Three generation	63	31.5%
Socio Economic Status	BPL	169	84.5%
	APL	31	15.5%
APL-Above Poverty Line, BPL-Below Poverty Line			

**Table 2: Water practices: Primary source of drinking water among households**

Source	No.	Percentage
Municipal connection	121	60.5%
Tanker delivery	33	16.5%
Open dug well	10	5.0%
Tube well or bore well	25	12.5%
Canned water	11	5.5%
Total	200	100%

Out of 200 households, 121 (60.5%) were using Municipal water supply for drinking purpose.

**Table 3: Water practices: Practice of water purification for drinking water among households**

Practice	No.	Percentage
Boiling	37	18.5%
Filtering	20	10.0%
Straining	6	3.0%
Chlorination	41	20.5%
No purification	96	48.0%
Total	200	100%

Majority of the households, 96 (48%) were not using any type of water purification for drinking purpose.

**Table 4: Toilet facility in the household**

Owned Toilet	No.	Percentage			
Yes	172	86%			
No	28	14%	Shared	9	4.5%
Total	200	100%	Open Defecation	19	9.5%

About 9.5% of the households were practicing open defecation in our study.

**Table 5: Household usage of Toilet facility**

Type of toilet facility	No.	Percentage
Improved	142	78.5%
Unimproved	39	21.5 %
Total	181	100%

About 21.5% of the households were using unimproved toilet facility

**Table 6: Practice of Open defecation (OD) among Under-5 children in the households**

Child OD	No.	Percentage			
Yes	42	21%	Buried	2	1%
No	158	79%	Disposed safely	9	4.5%
Total	200	100%	Left free	31	15.5%

In our study Open defecation practice by children was 21% and majority of the faeces were left free (15.5%).

**Table 7: Method of disposal of waste in relation to stagnant water near household**

Waste disposal	Stagnant water		Total (%)
	Yes (%)	No (%)	
Indiscriminate throwing	23 (74.2)	8 (25.8)	31 (15.5%)
Open dump	10 (55.6)	8 (44.4)	18 (9%)
Regular collection	79 (52.3)	72 (47.7)	151 (75.5%)
Total	112 (56%)	88 (44%)	200 (100%)

About 56 % of the households were having stagnant or sewage water near their household & nearly 16% practice indiscriminate throwing of household waste.

**Table 8: Hygiene practices among household in relation to occurrence of diseases in the past 3 months**

Practice		Disease		Total (%)	p
		Yes (%)	No (%)		
Hand wash with soap after latrine	Yes	41 (24.6)	126 (75.4)	167 (83.5%)	0.036 s
	No	14 (42.4)	19 (57.6)	33 (16.5%)	
Water storage and handling	Hygienic	30 (20.4)	117 (79.6)	147 (73.5%)	< 0.001 s
	Unhygienic	24 (45.3)	29 (54.7)	53 (26.5%)	

s- significant

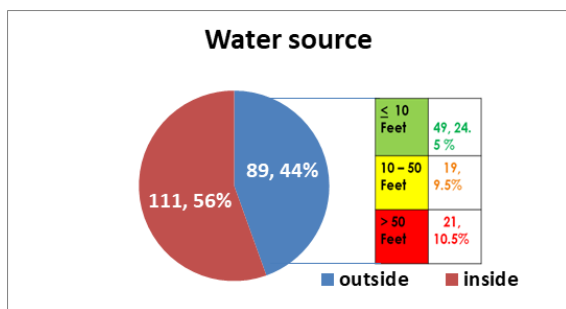
About 16.5% of the households were not practicing hand wash with soap after using Latrine, and it was statistically significant to occurrence of diseases  $p < 0.05$ .

About 26.5% of the households were storing and handling water (dipping glass held in hand) in unhygienic manner and there was statistically significant association to occurrence of diseases  $p < 0.05$ .

**Table 9: WASH practices among households in relation to occurrence of diseases in past 3 months**

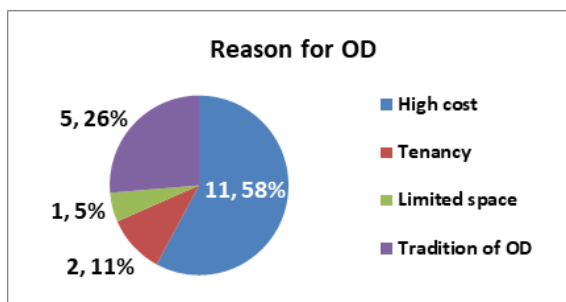
Practice		Disease		Total (%)	p
		Yes (%)	No (%)		
Open defecation	Yes	7 (36.8)	12 (63.2)	19 (9.5%)	0.31 ns
	No	47 (26)	134 (74)	181 (90.5%)	
Purification of water	Yes	33 (31.7)	71 (68.3)	104 (52%)	0.117 ns
	No	21 (21.9)	75 (78.1)	96 (48%)	
Improper waste disposal	Yes	17 (34.7)	32 (65.3)	49 (24.5%)	0.163 ns
	No	37 (24.5)	114 (75.5)	151 (75.5%)	
Sewage near household	Yes	38 (33.9)	74 (66.1)	112 (56%)	0.035 s
	No	18 (20.5)	70 (79.5)	88 (44%)	
Child OD	Yes	18 (42.9)	24 (57.1)	42 (21%)	0.009 s
	No	36 (22.8)	122 (77.2)	158 (79%)	

s- significant, ns- not significant



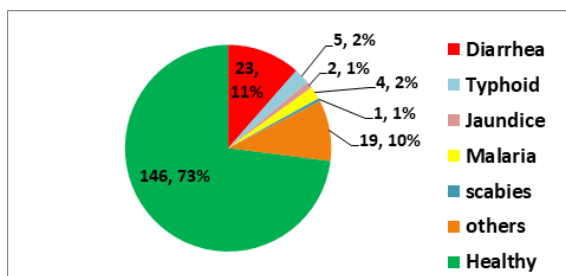
**Figure 1: Drinking water source among households**

About 55.55% of the households had drinking water source inside their house and 10.5% of the households were having the water source more than 50 feet distance from their household.



**Figure 2: Reason for Open Defecation among households.**

Majority of the households who were practicing Open defecation were of opine that Toilet facility is of High cost (58%) followed by their tradition of OD (26%).



**Figure 3: Morbidity profile of diseases in the past 3 months among households**

Out of 200 households 54 (27%) of them were suffering with diseases in the past 3 months period of which diarrhoea was the most common.

## DISCUSSION

A total of 200 households participated in the study of which 435(45%) were males and 534(55%) were females. Majority (60.5%) of the households were using municipal water supply as a primary source of drinking. In our study, about 48% of the households were not practicing any type of water purification method for drinking water. It is similar to the studies done by Kuberan A et al,<sup>[7]</sup> (45%) and Mohd R et al (55.6%).<sup>[8]</sup> Where as it is higher in other studies

done by Maumita De et al,<sup>[9]</sup> in Kolkata showed 64.67% and M. Bhattacharya et al,<sup>[10]</sup> study in Madhya Pradesh revealed 72% households were not practicing any type of water purification method.

About 14% of the households were not having latrine facility in our study, similar results were obtained in a study done in Kolkata by Maumita De et al. (9) i.e 16.67%. Where in other studies done by M. Bhattacharya et al. (10) (Madhya Pradesh); Boisson et al,<sup>[11]</sup> (orissa); Preeti PS et al. (12) (West Bengal) and Reshma et al,<sup>[13]</sup> (Udupi) revealed 62.2%, 34%, 10.5% and 2.3% respectively. In our study, majority of the households were practicing hand wash with soap after using latrine and about 16.5% of the households were not practicing hand wash with soap after using Latrine, and there was a statistically significant ( $p=0.036$ ) association found in occurrence of diseases. Similar practicing of hand wash was observed in the the studies done by Maumita De et al,<sup>[9]</sup> Reshma et al,<sup>[13]</sup> Hazarika J et al,<sup>[14]</sup> Mohd R et al,<sup>[8]</sup> and M. Bhattacharya et al,<sup>[10]</sup> were 74.67%, 70%, 60.5%, 48.7% and 54% respectively.

In the present study, about 9.5% of the households were practicing open defecation, of which majority (58%) opine that toilet facility is of high cost followed by tradition of OD (26%). In our study Open defecation practice by children was 21% and majority of the faeces were left free (15.5%) and statistically significant ( $p=0.009$ ) association was found with the occurrence of diseases. There were about 16.5% of households practicing unsafe disposal of child faeces in this study, this was similar to a study done by Maumita De et al,<sup>[9]</sup> (21.33%), whereas it was higher in a study done in West Bengal by Preeti PS et al,<sup>[12]</sup> which showed 72.4%.

In our study, about 26.5% of the households were practicing unhygienic water storage and handling and there was statistically significant ( $p<0.001$ ) association to the occurrence of diseases, it is similar to study done by M. Bhattacharya et al,<sup>[10]</sup> which revealed 38.8%. Majority (56 %) of the households were having stagnant or sewage water near their household and there was statistically significant ( $p=0.035$ ) association was found with the occurrence of diseases. In the present study, about 11% of the households were suffering with diarrhoea in the past 3 months; this was similar to the reports by NFHS-4 (India) and NFHS-4 (Andhra Pradesh) i.e 9.6% and 6.9% respectively.<sup>[15,16]</sup> Other studies conducted by Rah JH et al,<sup>[17]</sup> in rural India and M. Bhattacharya et al,<sup>[10]</sup> in Madhya Pradesh showed 15% and 21.2% respectively.

## CONCLUSION

We have to increase the number of households with latrines along with the usage to meet the goal to eliminate open defecation (OD) by 2019, the year that marks the 150th anniversary of the birth of

Mahatma Gandhi, who wanted to make sanitation a priority for India more than a century ago. UNICEF fosters community-based approaches for sanitation, to empower communities to end open defecation themselves. Communities are encouraged to carry out an analysis of existing defecation patterns and threats, and to use local resources to build low-cost household toilets and ultimately eliminate the practice of open defecation. This approach is often referred to as Community Approaches Total Sanitation (CATS) and has been particularly successful in Cambodia and Zambia to prevent the incidence of water and sanitation related diseases like diarrhea, dysentery, hepatitis and worm infestation. Health education on Hygienic practices in handling stored drinking water and use of soap and water for hand washing must be imparted through Social and Behavior Change Communication (SBCC) promoting healthy lifestyles and positive health-seeking behaviour in the community.

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