

Water, Sanitation and Hygiene Practices in an Urban Slum of Jorhat District, Assam

Jurimoni Gogoi¹, Airin Buragohain², Deepika Phukan³, Tewe U Kapfo⁴,
Parthajyoti Neog⁵

¹Assistant Professor, Department of Community Medicine,
Nagaland Institute of Medical Sciences & Research (NIMSR), Kohima, Nagaland.

²Assistant Professor, Department of Community Medicine,
Tinsukia Medical College and Hospital (TMCH), Tinsukia.

³Statistician cum Lecturer, Department of Community Medicine,
Jorhat Medical College and Hospital (JMCH), Jorhat.

⁴Assistant Professor, Department of Community Medicine,
Nagaland Institute of Medical Sciences & Research (NIMSR), Kohima, Nagaland.

⁵Associate Professor, Department of Pharmacology,
Nagaland Institute of Medical Sciences & Research (NIMSR), Kohima, Nagaland.

Corresponding Author: Dr. Jurimoni Gogoi

DOI: <https://doi.org/10.52403/ijshr.20260401>

Received: 14/04/2026; Revised: 23/07/2026; Accepted: 28/09/2026

ABSTRACT

Background: Access to safe drinking water, adequate sanitation, and appropriate hygiene practices is essential for preventing communicable diseases and promoting community health. Urban slum populations may experience substantial challenges in accessing and maintaining adequate water, sanitation and hygiene (WASH) facilities. This study assessed WASH practices among households residing in an urban slum of Jorhat District, Assam.

Methods: A community-based cross-sectional study was conducted from July to November 2022 in Pujadubi, an urban slum in Jorhat town, Assam. A total of 64 households were included. The first household was selected randomly, followed by consecutive household visits until the required sample size was reached. The head of each eligible household was interviewed using a pre-designed and pre-tested

questionnaire. Information was collected regarding drinking-water sources and treatment, sanitation facilities and practices, food hygiene, solid-waste disposal, and the biological environment of households. Data were compiled and analysed using Microsoft Excel and presented as frequencies and percentages.

Results: Public taps were the main source of drinking water for 50.0% of households, while 29.7% reported a continuous water supply. Overall, 67.1% of households reported using some form of drinking-water treatment, with candle filters being the most commonly reported method (62.8% among households using treatment). Flush or pour-flush toilets connected to septic tanks were used by 56.3% of households, while 76.6% reported sharing toilet facilities with other households. Regarding disposal of children's stools, 23.4% reported disposal with household garbage and 1.6% reported rinsing stools into drains or ditches.

Indiscriminate solid-waste dumping was reported by 96.9% of households. Mosquito and fly breeding sites were reported in or around 85.9% and 89.1% of households, respectively.

Conclusion: The study identified important gaps in household WASH practices, particularly shared sanitation facilities, inadequate solid-waste disposal, and environmental conditions conducive to vector breeding. Strengthening access to safe water and sanitation services, improving solid-waste management, and promoting appropriate household WASH practices may help address these identified gaps in urban slum settings.

Keywords: Water; Sanitation; Hygiene; Urban Population; Slums; WASH; Assam.

INTRODUCTION

Water sanitation and hygiene practices simply referred to as WASH practices constitute an important aspect of one's living at the individual level as well as the overall health of a society. One of the key components for improving health under sustainable development goals is universal access to safe water and safely managed sanitation services. [1] The United Nations General Assembly in 2010 has identified access to safe water and sanitation to be human rights. [2] To have clean water is synonymous to being able to prevent a number of communicable diseases like cholera, Typhoid, Hepatitis A, Hepatitis E etc. [3] Worldwide, around 844 million people do not have an access to an improved source of drinking water. In India, as per the NFHS-4 (2015-16), 10% households do not have an access to an improved source of drinking water, around 52% households do not use an improved sanitation facility and 39% of households practice open defecation. [4] People living in slums and informal settlements, which are characterised by the lack of durable housing, insufficient living space, lack of access to clean drinking water, inadequate sanitation and insecure tenure possess a

comparatively higher disease burden due to the lack of access to safe WASH. [5] As per WHO, approximately 8,29,000 deaths with a mortality rate of 11.7 deaths/100,000 population occur globally on account of unsafe WASH practices with rising mortality in low- and middle-income countries. [6] In India, compared to 50% of all urban households, around 19% of households in urban slums have access to piped water. Globally, over 300 million people have access to intermittent supply of piped water ranging from a few hours a day to a few hours a week. In countries of South-east Asia, people have access to intermittent supply of piped water and receive an average of 7 hours' water supply per day. [7] Through the Swachh Bharat Mission, tremendous improvement has been witnessed in access to safe water, sanitation and hygiene facilities in both rural and urban India. The report of Joint Monitoring Programme (JMP) of 2019 indicated 92% of India had access to safe drinking water and 72% of the households used safely managed sanitation for the year 2017. [8] Although schemes have been implemented, there still remains inequity especially in the urban slums due to high population density, overcrowding, inadequate access to services and poverty. [3] Health related knowledge and understanding of the risk factors encourage people to adopt and sustain adequate WASH practices thus making it beneficial to study the WASH behaviours. The access and adoption of WASH practices is fundamental to human health, wellbeing and socioeconomic development. The advantages of WASH encompass beyond the limits of these objectives, extending to various dimensions of human well-being and development, including climate change mitigation, gender equality, urban services, nutrition, health, and education. [9] Access to safe drinking water still constitute a significant key challenge for people residing in high density localities. Poor sanitation and lack of access to safely managed WASH services, is linked to gastrointestinal diseases that further leads to

stunting, malnourishment, and impaired cognitive development in children.¹¹⁰

¹ Studying the pattern of usage of WASH practices will help us in identifying the at-risk individuals and possible interventions regarding adequate WASH practices that could be applied to prevent communicable diseases. This study was undertaken to assess the water, sanitation and hygiene practices in an urban slum of Jorhat District, Assam.

MATERIALS & METHODS

Study design: A community based cross-sectional study

Study setting: Jorhat town has seven notified slum areas. Out of these seven urban slums, one urban slum namely Pujadubi was selected randomly.

Study duration: From July 2022 to November 2022.

Inclusion criteria: The inclusion criteria included households of the study area with residents residing for a minimum period of six months before data collection.

Exclusion criteria: The exclusion criteria included households with head of household who did not give consent to participation and head of household who could not be contacted after two home visits.

Sample size: Considering the 80% rate of households having access to municipality provided water as their main source of safe drinking water³ as an anticipated proportion at confidence interval of 95% with absolute precision of 10%, the sample size was calculated to be 64.

Data collection procedure: The list of households in the selected slum area was obtained from the ASHA. The first house in the slum was selected by simple random sampling method and thereafter every consecutive house was visited till the desired sample size was obtained. From each house, the head of the household fulfilling the inclusion criteria was included. All the participants were informed about the purpose of study and after obtaining informed consent from the study participants they were interviewed by house-to-house visit. The participation was voluntary. Anonymity and confidentiality of information was ensured in order to encourage participation and truthful response. All the questions were well explained to the participants and data was collected by personal interview in a separate room using a predesigned pretested questionnaire.

The study variables included were socio-demographic factors, drinking water source, availability and treatment, excreta disposal facilities, access, use and practices, food hygiene practices, solid waste disposal practices and biological environment of the households. A modified BG Prasad scale was used to determine the socio-economic status of the household.

Statistical Analysis: Data were compiled in a Microsoft excel sheet and results are represented using simple frequency distribution tables.

RESULT

Table 1: Socio demographic Profile of head of the households

Variables	Number	Percentage (%)
Gender		
Male	41	64.1
Female	23	35.9
Age		
< 40 years	21	32.8
≥ 40 years	43	67.2
Educational status		
Illiterate	17	26.5
Primary school	13	20.3
Middle school	15	23.4
High school	8	12.5

Higher secondary & above	11	17.3
Socio-economic class*		
Upper	3	4.7
Upper middle	9	14.1
Middle	11	17.2
Lower middle	28	43.7
Lower	13	20.3

*Modified BG Prasad socio-economic status scale 2021

The study was conducted among 64 households of an urban slum of Jorhat of which 64.1 % were male headed households. Around 67.2% of households consisted of head of the households who belong to the age group of 40 years and

above. Regarding educational status of head of the households, 26.5% were illiterate and majority of the households (43.7%) belonged to lower middle socio-economic class as per modified BG Prasad scale.

Table 2: Drinking water source, availability and treatment

Variables	Number	Percentage (%)
Drinking water source		
Piped water into dwelling	19	29.7
Piped water into yard/plot	13	20.3
Public Tap	32	50
Availability of drinking water supply		
Continuous	19	29.7
Once a day	6	9.4
More than once a day	39	60.9
Water transportation		
Yes (separate vessels)	45	70.3
No	19	29.7
Water treatment		
Yes	43	67.1
No	21	32.9
Specific water treatment (n=43) *		
Boiling	15	34.9
Candle filter	27	62.8
Chlorine tablet/Bleaching powder	1	2.3
Water storage		
Yes (Overhead tank)	19	29.7
No	45	70.3
Weekly cleaning of water storage site (n=19) #		
Yes	4	21.1
No	15	78.9

*Households not using any sort of water treatment were excluded.

#Households not storing water in an overhead tank were excluded.

Majority of households (50%) reported the source of drinking water from a public tap. Around 29.7% of households reported availability of continuous drinking water supply. Majority of the households (67.1%) reported using some form of water treatment. Among the households using

water treatment, majority (62.8%) reported use of candle filter. In the present study, 29.7% of households reported storage of drinking water in an overhead tank. Among the households storing water in an overhead tank, 21.1% of households reported weekly cleaning of the storage site.

Table 3: Sanitation facilities, access, use and practices of household members

Variables	Number	Percentage (%)
Type of toilet facility		
Flush/Pour flush to piped sewage system	11	17.2
Flush/Pour Flush to septic tank	36	56.3
Pit latrine with slab	17	26.5
Toilet facility shared with other households		
Yes	49	76.6
No	15	23.4
Use of shared toilet facilities by general public (n=49) **		
Yes	41	83.7
No	8	16.3
Method of disposal of children's stool		
Children use toilet	12	18.7
Stool rinsed into toilet	14	21.9
Stool disposed with garbage	15	23.4
Stool rinsed into drains and ditches	1	1.6
No specific method	22	34.4

** Households with private owned toilet facilities were excluded.

Around 56.3% of households reported use of flush/pour flush to septic tank type of toilet facility. Majority of households (76.6%) reported use of a shared toilet facility with other households. Regarding the method of disposal of children's stool, around 18.7% of households reported

children using toilet, 21.9% of households reported rinsing of children's stool into toilet, 23.4% of households disposed children's stool with garbage, 1.6% of households rinsed children's stool into drains and ditches.

Table 4: Food hygiene practices

Variables	Number	Percentage (%)
Frequency of buying ready to eat food from street vendors		
Everyday	11	17.2
Once a week	4	6.3
Once a fortnight	10	15.6
Once a month	3	4.7
Rarely	17	26.5
Never	19	29.7
Frequency of eating breakfast from street vendors		
Everyday	1	1.6
Once a week	9	14.1
Once a fortnight	3	4.7
Once a month	5	7.8
Rarely	18	28.1
Never	28	43.7
Frequency of consuming ice-cream from street vendors		
Everyday	11	17.2
Once a week	2	3.1
Once a fortnight	3	4.7
Once a month	4	6.3
Rarely	18	28.1
Never	26	40.6

Around 17.2% of households reported having ready to eat food and ice-cream from street vendors every day.

Table 5: Solid waste disposal

Solid waste disposal	Number	Percentage (%)
Disposal in designated area for collection by Municipal Vehicle	2	3.1
Indiscriminate Dumping	62	96.9

Majority (96.9%) of households reported indiscriminate dumping of solid waste.

Table 6: Biological environment

Biological environment	Number	Percentage (%)
Domestic animal (poultry, cattle, dog, cat etc.)		
Yes	49	76.6
No	15	23.4
Breeding place of mosquitoes		
Present	55	85.9
Absent	9	14.1
Breeding place of flies		
Present	57	89.1
Absent	7	10.9

Majority of households i.e. 85.9% and 89.1% of households reported breeding sites of mosquitoes and flies in and around their house respectively.

DISCUSSION

In the present study, majority i.e. 50% of households reported the drinking water source was from public tap. Around 29.7% of households received continuous drinking water supply. Majority i.e. 67.1% of households reported using some form of home-based water treatment for purification of drinking water. As specific treatment strategy, majority i.e. 62.8% of households reported use of candle water filters followed by boiling which was 34.9%. The findings are similar to the study conducted by Kanungo S. [3] Over 73.5% of the households reported having access to some form of improved, flush, or pour-flush latrine. A large proportion i.e. 76.6% of households had to share their toilet facility with many other local families. Around 25% of the households reported risky disposal of children's stools in the community. Similar findings were reported in study conducted by Kanungo S. [3]

Regarding the food hygiene practices, around 17.2% of the respondent households reported consuming ready-to-eat food and ice-cream from street vendors on a regular basis. However, over half of the respondent households reported rarely or never eating such foods. The findings are similar to the study conducted by Kanungo S. [3]

In the present study, majority i.e. 96.9% of households preferred dumping the waste indiscriminately outside their house. Similar findings were reported in study conducted by Nirgude SA which reported 66% of families in urban slum preferred indiscriminate dumping of waste. [11]

Majority i.e. 85.9% and 89.1% of respondent households reported the presence of breeding place of mosquitoes and flies respectively leading to inadequate environmental hygiene due to inappropriate waste disposal and unsatisfactory hygiene practices in the community.

CONCLUSION

Safe drinking-water, sanitation and hygiene are vital to human health, well-being and sustainable development. Safe WASH is not only a prerequisite to achieve optimal health, but contributes to livelihood, school attendance, dignity and helps to create strong communities living in healthy environments.

The present study finds that though majority of the households had access to WASH facilities in the urban slum of Jorhat, there are gaps in the WASH practices in the respondent households. These gaps in the WASH practices have persisted in spite of the attention and focus on improving WASH through the Swachh Bharat Abhiyan

activities in the Country. There is a need to raise awareness so that the community takes ownership of these programmes and facilitate in ensuring adequate and appropriate hygiene practices.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: We are grateful to the study participants for their time and help to conduct the study successfully.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

Creative Commons Attribution License 4.0

This is an open-access article published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0).

<https://creativecommons.org/licenses/by/4.0>

REFERENCES

1. Okesanya OJ, Eshun G, Ukoaka BM, Manirambona E, Olabode ON, Adesola RO, et al. Water, sanitation, and hygiene (WASH) practices in Africa: exploring the effects on public health and sustainable development plans. *Trop Med Health*. 2024; 52(1):68. doi:10.1186/s41182-024-00614-3.
2. Brown C, Neves-Silva P, Heller L. The human right to water and sanitation: a new perspective for public policies. *Cien Saude Colet*. 2016;21(3):661-70. doi:10.1590/1413-81232015213.20142015.
3. Kanungo S, Chatterjee P, Saha J, Pan T, Chakrabarty ND, Dutta S. Water, sanitation, and hygiene practices in urban slums of Eastern India. *J Infect Dis*. 2021;224(Suppl 5): S573-83. doi:10.1093/infdis/jiab354.
4. Chattopadhyay A, Sethi V, Nagargoje VP, Saraswat A, Surani N, Agarwal N, et al. WASH practices and its association with nutritional status of adolescent girls in poverty pockets of eastern India. *BMC Womens Health*. 2019; 19(1):89. doi:10.1186/s12905-019-0787-1.
5. Tang T, See L, Wada Y, Hofstra N, Patel A, Setiawati S, et al. Accelerating progress towards universal water sanitation and hygiene (WASH): governance, technology and data for urban settings. *Environ Plan B Urban Anal City Sci*. 2022;49(8):2038-43. doi:10.1177/23998083221128959.
6. Muniyapillai T, Kulothungan K, Vignesh NJ, Dharmaraj RB, George N. Water, sanitation, and hygiene (WASH) practices among households in Perambalur District: a cross-sectional study. *Cureus*. 2022;14(10): e30115. doi:10.7759/cureus.30115.
7. Alarcon Falconi TM, Kulinkina AV, Mohan VR, Francis MR, Kattula D, Sarkar R, et al. Quantifying tap-to-household water quality deterioration in urban communities in Vellore, India: the impact of spatial assumptions. *Int J Hyg Environ Health*. 2017;220(1):29-36. doi: 10.1016/j.ijheh.2016.09.019.
8. Sarkar SK, Bharat GK. Achieving sustainable development goals in water and sanitation sectors in India. *J Water Sanit Hyg Dev*. 2021;11(5):693-705. doi:10.2166/washdev.2021.002.
9. Biswas S, Adhikary M, Alam A, Islam N, Roy R. Disparities in access to water, sanitation, and hygiene (WASH) services and the status of SDG-6 implementation across districts and states in India. *Heliyon*. 2024;10(18): e37646. doi: 10.1016/j.heliyon.2024.e37646.
10. Kundu A, Smith WA, Harvey D, Wuertz S. Drinking water safety: role of hand hygiene, sanitation facility, and water system in semi-urban areas of India. *Am J Trop Med Hyg*. 2018;99(4):889-98. doi:10.4269/ajtmh.16-0819.
11. Nirgude AS, Naik PR, Prasad VG, Nagaraj K. Solid waste disposal practices in an urban slum area of South India. *Indian J Appl Res*. 2014;4(11):1-2.

How to cite this article: Gogoi J, Buragohain A, Phukan D, Kapfo TU, Neog P. Water, sanitation and hygiene practices in an urban slum of Jorhat District, Assam. *Int. J. Sci. Healthc. Res*. 2026; 11(4): 1-7. DOI: [10.52403/ijshr.20260401](https://doi.org/10.52403/ijshr.20260401)
