

Reporting of the core indicators on drinking water and sanitation from urban slums of Jammu: A cross-sectional study

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ABSTRACT

Introduction: Water, sanitation, and hygiene (WASH) play an important role in decreasing the morbidity and mortality associated with poor WASH practices. Poor knowledge and awareness lead to an increase in communicable diseases. **Objective:** To assess and report the core indicators on sanitation and drinking water from urban slums using standardized WHO and UNICEF questionnaires. **Materials and Methodology:** The present observational cross-sectional study was conducted for 2 months i.e., from September 2019 to October 2019 in urban slums of Trikuta Nagar, a field practice area of Department of Community Medicine, GMC Jammu. Information was gathered from the head of the household as well as from other household members. About 50% of the population were selected randomly by lottery method i.e., 450 and consist of 112 households. However, at the time of the study, only 100 households were assessed because of the nonavailability of household members and some houses were locked at the time of the interview. **Results:** The study revealed that nearly 62% of families were of a joint type and most of the families were headed by male members. Around 82.5% of the slum members used water for drinking from improved source but only 21.5% of the household members used adequate water treatment method i.e., boiling. Besides, about 49.5% of the household members used improved sanitation facilities. **Conclusion:** Local administration needs to accelerate the process of supplying piped water connections to the underserved to improve their drinking water sources and also increase access to basic sanitation services at the household level.

Keywords: Millennium development goals, urban slum, water, sanitation, and hygiene

Introduction

Slums are the high-risk vulnerable populations that are overcrowded, congested, and living in an unhygienic environment. They are living with inadequate sanitary and drinking water facilities, which have an impact on people's health. Due to the lack of these drinking and sanitary facilities, many illnesses including diarrhea affect many people. Although one of the targets of Millennium Development Goals (MDG) related to sustainable

access to safe drinking water was met, the sanitation target is yet to be achieved. Globally, it was estimated that 663 million people are still not able to use safe drinking water facilities and 2.4 billion people lack sanitary facilities.^[1] It was also estimated that the lack of these basic facilities claims the lives of more than 1.2 million under-five children every year due to diarrhea and other illnesses.^[2]

At present, the United Nations Sustainable Development Goals target SDG-6 is to ensure sanitation and availability of water.^[3] Adequate, accessibility, and availability form the three core components of water, sanitation, and hygiene (WASH) practices. A large number of health outcomes are associated with inadequate WASH practices due to the diseases associated

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with fecal pathogens.^[4] Due to the inadequate WASH provision, 58% of the 842,000 annual diarrheal deaths occurred in 2012 as reported by the WHO report 2014.

Material and Methods

The community-based cross-sectional study was conducted in the slum households in the Trikuta Nagar area in Jammu district, which is a field practice area of the Department of Community Medicine, GMC Jammu, Jammu, and Kashmir, after taking the institutional ethical clearance. The Trikuta Nagar consists of sectors 1 to 9 and an extension with a population of 16000 (census 2011) and 14 scattered urban slums are under the center and the urban slum population consists of 900 (survey). Around 50% of the population was selected randomly by lottery method i.e., 450 and in 112 households. However, at the time of the study, only 100 households were assessed because of the nonavailability of household members and some households were locked at the time of the interview. Except for the absence of the household members/locked households, there were no other exclusion criteria in this study. After taking clearance, all the staff members as well as *Anganwadi* workers of Urban Health Training Center, Trikuta Nagar were sensitized about the objective of the study and were asked to inform the urban slum population during the Urban Health and Nutrition Days (UHND's) and through *Anganwadi* workers so that adequate cooperation of the families can be met as most of them belong to labor class. The household members were then interviewed after obtaining informed consent from them. The WHO and UNICEF's standardized questionnaire for WASH practices were used to collect information about the WASH practices.^[5] The questionnaire included core questions on drinking water and sanitation for households. Data were entered in Microsoft Excel and analyzed in the form of numbers and percentages.

Results

Our study revealed that nearly 62% of families were of a joint type and most of the families were headed by male members. About 56% of the head of the households were skilled, 20% were unskilled, and some were businessman and 40% were literate [Table 1]. The study revealed that 82.5% of the slum members used water for drinking from an improved source [Table 2]. However, only 21.5% of the household members used adequate water treatment method i.e., boiling.

The majority of the adult women (61%) spent more than 20 min to fetch water for a household on one trip. About 80% of the households did not use any method for adequate water treatment while the rest 20% of households used boiling as the preferred method for water treatment [Table 3].

In the case of sanitation facilities, 49.5% of the household members used improved sanitation facilities like ventilated improved pit latrines (8% of households) [Table 4] and pit latrines with slab (26% of households). About 34.48% of the households dispose of children's feces into the toilet/latrine.

Table 1: Demographic characteristics of the households

| Variables | n (%) |
|--------------------------------|----------|
| Head of the household | |
| Male | 88 (88%) |
| Female | 12 (12%) |
| Family type | |
| Joint | 62 (62%) |
| Nuclear | 38 (38%) |
| Education (Head of Household) | |
| Literate | 40 (40%) |
| Illiterate | 60 (60%) |
| Occupation (Head of Household) | |
| Skilled | 56 (56%) |
| Semi-Skilled | 20 (20%) |
| Unskilled | 7 (7%) |
| Business | 17 (17%) |
| Professional | - |

Table 2: Indicators of drinking water and sanitation

| Indicators | Percentage |
|---|-----------------------------|
| Use of improved drinking water sources | |
| No. of household members using improved sources of drinking water/Total no. of household members in households surveyed. | $330/400 \times 100=82.5\%$ |
| Use of an adequate water treatment method | |
| No. of household members who treat their water using an adequate water treatment method/Total number of Household members surveyed | $86/400 \times 100=21.5\%$ |
| Use of improved sanitation facility | |
| No. of household members using improved sanitation facilities/Total number of Household members in household surveyed | $198/400 \times 100=49.5\%$ |
| Sanitary disposal of children's feces | |
| No. of children under the age of 3 years whose (last) stools were disposed of safely/Total number of children under the age of 3 years surveyed | $30/58 \times 100=51.72\%$ |

Discussion

Adequate sanitation, proper hygiene education, and global access to safe drinking water can reduce illness and death thereby leading to improved health. The supply of drinking water along with the provision of safe drinking water and sanitation facilities is one of the important elements of primary healthcare. It helps in the prevention of various diseases. Hence, improvement in safe drinking water and sanitation facilities helps in achieving stronger primary healthcare which is further essential to achieve health-related sustainable development goals and universal health coverage.

Inadequate WASH leads to adverse health impacts which tend to be exacerbated in the urban population, particularly the slum population.^[6] The indicator of improved drinking water

Table 3: Survey questions about drinking water (n=100 households)

| Questions | n (%) |
|--|----------|
| The main source of drinking water for members of an urban slum household | |
| Tube well/borehole | 60 (60%) |
| Piped water to yard/plot | 12 (12%) |
| Piped water into dwelling | 8 (8%) |
| Tanker-truck | 20 (20%) |
| How long does it take to go there, get water, and come back? | |
| 1-10 min | 19 (19%) |
| 11-20 min | 6 (6%) |
| 21-30 min | 26 (26%) |
| >30 min | 6 (6%) |
| Water on-premises | 39 (39%) |
| Do not know | 6 (6%) |
| Who usually goes to this source to fetch the water for the household? | |
| Adult woman | 61 (61%) |
| Adult man | 38 (38%) |
| Female child (under 15 years) | 1 (1%) |
| Male child (under 15 years) | - |
| Do not know | - |
| Do you treat water in any way to make it safer to drink? | |
| Yes | 20 (20%) |
| No | 80 (80%) |
| Do not know | - |
| What do you do to the water to make it safer to drink? | |
| Boil | 20 (20%) |

Table 4: Survey questions about sanitation

| Questions | n (%) |
|--|-------------|
| What kind of toilet facility do members of the household usually use? | |
| Flush/pour flush to: | |
| Piped sewer system | 2 (2%) |
| Pit latrine | 6 (6%) |
| Ventilated improved pit latrine (VIP) | 8 (8%) |
| Pit latrine with slab | 26 (26%) |
| Pit latrine without slab/open pit | 42 (42%) |
| Bucket | 6 (6%) |
| No facilities/brush/field | 10 (10%) |
| Share the toilet facility with other households | 90 (90%) |
| What was done to dispose of the child's feces (under 3 years)- N (58 Households) | |
| Child used toilet/latrine | 10 (17.24%) |
| Put/rinsed into toilet or latrine | 20 (34.48%) |
| Put/rinsed into drain or ditch | 6 (10.34%) |
| Thrown into garbage | 8 (13.79%) |
| Left it in the open | 14 (24.13%) |
| others | - |

is good (82.5%) and comparable to other studies as well.^[7] However, the piped water connection was lesser as compared to the national figures.^[8] Besides, due to better or improved drinking water sources, so there was a decreased burden of water-borne

diseases, especially among children.^[9] A study by WHO reported that approximately 88% of diarrheal diseases occur due to unsafe drinking water. In our study, only 20% of the households boiled the drinking water to make it safe as compared to the other studies where 90% of the households had the habit of boiling the drinking water.^[10]

About 61% of the adult women from the present study usually fetch water from water sources for drinking as well as for other purposes like cooking and this observation was also reported in other studies as well.^[11,12] About 39% of the households had water sources near their premises but the majority of the adult women had to spend more than 20 min to fetch water for a household in one trip (26%). In another study done in Andhra Pradesh, over 90% of the households stored water mainly in the utensils with covered lid for safe drinking.^[13] The best methods for water disinfection at the household level are chlorination and candle filtration which improves water quality.^[14] Due to a lack of awareness and knowledge about the water purification methods, only 20% thought that purification of water is important to make it safe for drinking.

About 49.5% of the household members used improved sanitation facility and 90% shared the toilet facility with other households. The sharing percentage of toilets was more in our study as compared to other studies.^[15] The child feces are to be safely managed so that the sanitation service chain becomes effective.^[16] To achieve the MDG, local bodies and government had setup community toilets to reduce the open defecation cases. Besides, to reduce diarrheal disease prevalence, attention particularly needs is paid to the women who are living in living settlements like slums.^[17]

Conclusion

In today's era, when there are a vast knowledge and awareness among people regarding the use of safe drinking water and sanitation practices, urban slum populations still suffer from the basic access of water facilities in their respective areas. There is huge suffering in terms of physical, mental, and social aspects in even getting a piped water supply and clean sanitary facilities. People need to be made aware of treating water before drinking so that the burden of diseases could be curtailed. Importance of safe drinking water and sanitation is the need of the hour. Thus, local administration should accelerate the process of supplying piped water connections to the underserved so that they also could progress towards living a quality life which is a fundamental right of every individual and is within our reach.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and

due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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