



Study on Access to Improved Source of Drinking Water in Rural Households of a Block in District Rohtak, Haryana

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ABSTRACT

Background: Access to improved source of drinking water in adequate quantity is one of the major challenges in India. Factors such as poor availability and distance between water source and home may lead households to depend on less safe sources leading to water related infections.

Objective: To study access to improved source of drinking water in rural households in the study area

Material and methods: This cross sectional study was undertaken among 250 randomly selected households in a rural block, for a period of two months. The response from a single person preferably head of the family regarding access to improved source of drinking water, washing hands before water collection and drawing, water purification practices and other details were collected.

Results: The major source of water for the households was groundwater through hand pumps. Out of 250 households, 40 % did not have access to water within the household premises. Sixty two percent of households had water scarcity problem especially in summer months. Only 46 percent of the respondents reported washing hands before drawing water. Nearly 30 % of the respondents knew that boiling water helps to purify water.

Conclusion: For most of the households, groundwater is the major source of water. In the present study, practices by villagers were favourable for contamination.

Key words: Improved source of drinking water, rural households, water purification

INTRODUCTION

The use of improved sources of drinking-water is high globally, with 87% of the world population and 84% of the people in developing regions getting their drinking-water from such sources.¹ More than 90 percent of the population in India have access to improved sources of drinking water.² Among the eight classified sources of water, tap water, well and hand pump constitute a major proportion, an aggregate of approximately 88.0 percent for India.³ In spite of such an improvement in having people with access to improved

sources of water, in 2015, 663 million people still lack access to improved drinking water sources.⁴

Access to improved source of drinking water in adequate quantity is one of the major challenges in India. Factors such as poor availability and distance between water source and home may lead households to depend on less safe sources leading to water related infections. Majority of population of India resides in rural area (68.85%).⁵ Meeting the drinking water needs of such a large population can be a daunting task. The non-uniformity in level of awareness, socio-economic development,

education, poverty, practices and rituals and water availability add to the complexity of the task.⁶

There is also a need of research at the community level which can strengthen the veracity of data available on the same and thus this study was carried out to assess the access to improved source of drinking water in rural area

MATERIALS AND METHODS

This cross sectional study was undertaken in 250 randomly selected households (without replacement, using lottery method of simple random sampling) from a list of 9667 households in rural area of block Chiri in district Rohtak. The sample size was obtained using the standard formula $4pq/L^2$, where p is the percentage of population with exposure, in our study it's the percentage of population with access to other improved source of water in the rural area mentioned.

The value q is 1-p and L is the standard error. (32 % being the percentage of people with access to Tap water from treated source in India, sample size calculated was 212 with 20% error).⁷ Responses were sought from a total of 250 households taking into the account of no response rate among those households selected. The study was done in the months of November and December 2012. The questionnaire included questions on location of water source, time consumed in collection, household member responsible for water collection, washing hands before water collection and drawing, water purification practices and access to improved source of drinking water. The responses from a single person from each households were included in the study preferably the head of the households. The data was analysed using simple percentage and proportions.

Definitions: An improved drinking water source is one that, by the nature of its construction, adequately protects the source from outside contamination, particularly faecal matter.⁴

Within Premises: If the source of water was located within the premises where the household lived.
Near the Premises: If the source was located within a range of 500 meters from the premises in case of rural areas.
Away: If the source was located beyond 500 meters from the premises.³

RESULTS

The major source of water for the households was groundwater through hand pumps. Out of 250 households, 40 % did not have access to water within the household premises. Sixty two percent of households had water scarcity problem especial-

ly in summer months. Only 46 percent of the respondents reported washing hands before drawing water. Only 30% of the subjects used ladle to draw water from storage pots. Nearly 30 % of the respondents knew that boiling water helps to purify water

Table 1: Source of drinking water for the households (n=250)

Source of water	Source of drinking water (%)	Source of water for other purposes (%)
Piped water	25 (10)	15 (6)
Public tap	150 (60)	55 (22)
Tube well / bore well	45 (18)	55 (22)
Tanker- truck	15 (6)	25 (10)
Surface water (river, dam, lake, pond, stream, canal, irrigation channels)	15 (6)	100 (40)

Table 2: Time taken to collect water from the source (n=250)

Indicator	Frequency (%)
How long does it take to fetch water	
Within the premises	50 (20)
< 10 min	125 (50)
≥ 10 min	75 (30)
Who will go to fetch water	
Adult women	130 (52)
Adult men	30 (12)
Female child	65 (26)
Male child	25 (10)

Table 3: Treatment practices at home to make water safe (n=250)

Treatment at home to make it safe	Frequency (%)
Boil	25 (10)
Add chlorine	5 (2)
Strain it through a cloth	65 (26)
Use a water filter	15 (6)
Let it stand and settle	65 (26)
No treatment	75 (30)

DISCUSSION

Our study showed that public tap as the major source of water available in the study area, which is generally considered safe, but all the sources in that rural area were communal. Studies have shown that safe drinking water supplied to the developing communities from communal sources becomes contaminated during the processes of fetching water in containers over the distance between home and supply source, as well as storing and using it at home^{8,9,10,11} In the present study, practices by villagers were favourable to contamination, and the measures to purify water known to villagers was filtration and boiling.

Nearly one third (30%) of the subjects in our study had to spend more than 10 minutes to fetch water and adult women were the ones who used to go to fetch water for their home. More than 50 percent of the households, practiced no treatment for water before consumption. In only 26 percent of the households, ladle was being used to draw water.

For the rural areas of India, among the eight classified sources, tap water, well and hand pump constitute a major proportion of main sources of drinking water in the rural areas, approximately 87.7 percent for rural India, as per Census 2011, is dependent on these sources. As per census 2011 data on sources of drinking water, 63.60% of rural households have access to piped water supply. This finding is very much similar to the findings from our study.³

In a update published by World Health Organization, only 16 percent of rural households in India has piped water source which is very much similar to the finding from our study.⁴ Average waiting time (in minutes) in a day for household members at the principal source of drinking water at outside the premises for the state of Haryana is 17 minutes and 15 minutes for all India.

Our study too found that 30 % of the households spent more than 10 minutes to collect water from the source. Only 6.6% of the rural households of Haryana had treated water 'by any method' before drinking, which is contrast to the finding from our study as our study showed 44% of the households treated water before drinking. The difference might be due to the fact that the area of study is being served by a tertiary health care institute with regular dissemination of information related to health in those villages.¹²

The study identified that the problem of availability of adequate quantity of water is of highest concern for villagers. The possible reason for ignorance towards quality may be lack of knowledge about waterborne diseases.

CONCLUSION

For most of the households groundwater is the major source of water. In the present study, practices

by villagers were favorable for contamination. This indicates that there is lack of awareness regarding drinking water safety, which needs to be addressed for better health outcomes of the community as a whole.

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