Original Research Article

Water, sanitation and hygiene practices in rural area of Goa: a cross-sectional study

Abstract

Introduction: Access to water, sanitation and hygiene is a major challenge in developing nations and more among rural population. In India, Swachh Bharat Mission was launched with the objective to provide sanitation facilities and eliminate open defecation.

Objective: To assess the existing facilities and practices related to drinking water, sanitation and hygiene among household members in the rural population of Goa

Materials and methods: A cross-sectional study was conducted in the field practice area of Rural Health and Training Centre, Mandur, Goa. Individuals aged ≥ 18 years were interviewed from 100 households by house to house visits using semi-structured questionnaire.

Results: Out of 100 households, 87 (87.0%) were having piped water supply into dwelling, 5 (5.0%) were using public tap and 8 (8.0%) were using water from well. Majority of the households, i.e., 94 (94.0%) were using sanitary latrine for defecation, 1 (1.0%) had community toilet and 5 (5.0%) were practicing open field defecation. Closed container was used by 89(89.0%) of

the households for storing drinking water and 96 (96.0%) were using soap and water for hand washing.

Conclusion: This study revealed that overall water and sanitation practices among the study population were satisfactory. Measures need to be taken to abolish some of the bad practices such as open defecation and drainage of waste water in the open which was seen in few participants.

Keywords: Sanitation, swachh bharat mission, open defecation, hygiene

Introduction

'Swachh Bharat Mission' was launched in India on 2nd October 2014 to accelerate the efforts to achieve universal sanitation coverage and to put focus on sanitation. It was launched by Ministry of Drinking Water and Sanitation with two Sub-Missions, the Swachh Bharat Mission (Gramin) and the Swachh Bharat Mission (Urban). The main objective of Swachh Bharat Mission (Gramin) was to improve general quality of life in the rural areas by promoting cleanliness, hygiene and eliminating open defecation by 2nd October 2019[1].

According to National Family Health Survey - 4[2], 89.3% of the households in rural area and 91.1% of households in urban area had an improved drinking water source. Use of improved sanitation facilities was seen to be remarkably less in rural areas (36.7%) as compared to urban areas (70.3%).

In Goa as per NFHS-4[3], 93.7% of the households in rural area and 97.8% of households in urban area had an improved drinking water source. Use of sanitation facilities was slightly less in urban area (76.8%) as compared to rural area of Goa (80.8%).

Access to water, sanitation and hygiene is a major challenge in developing

nations and more among rural population. Limited access to safe drinking water and poor sanitation can lead to under nutrition, water borne diseases including diarrhea and dysentery, vector borne diseases and neglected tropical diseases such as soil transmitted helminthiasis, schistosomiasis etc. Lack of access to suitable sanitation facilities is also a major cause of risks and anxiety, especially for women and girls. For all these reasons, sanitation that prevents disease and ensures privacy and dignity has been recognized as a basic human right[4]. In view of realization of human rights to water and sanitation for all; Sustainable Development Goal 6 target was set which ensure availability and sustainable management of water and sanitation for all[5].

For effective reduction of effects from poor water and sanitation practices there is a need for understanding the present scenario of rural population regarding water, sanitation and hygiene. The present study thus was conducted to assess the existing facilities and practices related to drinking water, sanitation and hygiene among household members in the rural population of Goa.

Objective

To assess the existing facilities and practices related to drinking water, sanitation and hygiene among household members in the rural population of Goa.

Materials and methods

- **Study design:** Cross-sectional study

- **Study area:** Mandur village which is a rural area under field practice area of Preventive and Social Medicine, Goa Medical College

- **Study participants:**

✓ Included those aged ≥ 18 years living in a study area

✓ One member from each household was enrolled in the study

- **Study period:** One year **(**April 2018 – May 2018)

- **Sample size and sampling method:**

$$N = (z\alpha)^2 pq/d^2$$

Where, z = 1.98, p (prevalence) = 85.3% [6], d (allowable error) = 7%

Sample size calculated using above formula was 98.3. This was then rounded up to include 100 households from Mandur village

- **Sampling method:** Simple random sampling method

- **Ethical approval:**

✓ Ethical approval was obtained from Institutional Ethics Committee of Goa Medical College

✓ Written informed consent was obtained from the study participants

- **Data collection methods**:

✓ Data was collected by administering semi-structured questionnaire

✓ Questionnaire included sociodemographic details, existing water facilities, water treatment and storage practices, existing sanitation facilities and sanitary practices

- **Data analysis:**

✓ Data was analyzed using SPSS version 22

✓ Descriptive statistics was used to describe data

Results

A total of 100 household members were interviewed in this study by house to house visits. Out of which, 17 (17.0%) were males and 83 (83.0%) were females. Mean age of the study participants was 51.48 ± 15.38.

Table 1: Sociodemographic characteristics of study participants

Variable	Male n = 17 (17.0%)	Female n= 83 (83.0%)	Total n = 100 (100.0 %)
Age in years			
≤ 40	5 (5.0%)	22 (22.0%)	27 (27.0%)
>40	12 (12.0%)	61 (61.0%)	73 (73.0%)
Marital status			
Single	3 (3.0%)	8 (8.0%)	11 (11.0%)
Married	12 (12.0%)	62 (62.0%)	74 (74.0%)
Widow	2 (2.0%)	13 (13.0%)	15 (15.0%)
Type of family			
Joint	3 (3.0%)	13 (13.0%)	16 (16.0%)
Nuclear	14 (14.0%)	60 (60.0%)	74 (74.0%)
Three generation	0 (0.0%)	10 (10.0%)	10 (10.0%)
Total number of family members			

1 - 2	5 (5.0%)	16 (16.0%)	21 (21.0%)
3 - 4	5 (5.0%)	31 (31.0%)	36 (36.0%)
≥ 5	7 (7.0%)	36 (36.0%)	43 (43.0%)
Education			
Literate	17 (17.0%)	70 (70.0%)	87 (87.0%)
Illiterate	0 (0.0%)	13 (13.0%)	13 (13.0%)
Socio-economic status			
Above poverty line	5 (5.0%)	59 (59.0%)	64 (64.0%)
Below poverty line	12 (12.0%)	24 (24.0%)	36 (36.0%)

Table 1 shows sociodemographic details of the study participants. Majority of the study participants 73 (73.0%) were more than 40 years of age. Majority of them were belonging to nuclear family and were married; i.e., 74 (74.0%) each. Most of them 43 (43.0%) had more than 5 family members in the house followed by 36 (36.0%) with 3 – 4 family members. Majority of them were literate 87 (87.0%) and above poverty line 64 (64.0%).

Table 2: Existing water and sanitation facilities as reported by the study participants

Variables	**Frequency** **n = 100 (100.0%)**
Source of drinking water	
Piped water into dwelling	87 (87.0%)
Public tap/ stand pipe	5 (5.0%)
Tube well/ borehole	8 (8.0%)
Water supplier in your community	

Government/public	94 (94.0%)
Private	6 (6.0%)
Kind of toilet/latrine facility used	
Household	94 (94.0%)
Community	1 (1.0%)
Open field defecation	5 (5.0%)

Table 2 shows existing water sanitation facilities as reported by the study participants. It was observed that majority of the households had piped water into dwelling (87.0%) and in 94.0% of the households it was by government/public supplier. Majority of the households (94.0%) had household latrine facility and 5 (5.0%) were involved in open field defecation.

Table 3: Water and sanitation practices among the study participants

Variable	**Frequency** **n = 100 (100.0%)**
Where do you store drinking water?	
Open container	11 (11.0%)
Closed container	89 (89.0%)
How often do you clean storage container?	
When it is dirty	15 (15.0%)
Every day	52 (52.0%)
Every alternate day	5 (5.0%)
Every week	25 (25.0%)
Every month	3 (3.0%)
What do you usually do to the water to make it safer to drink?	
Nothing	7 (6.4%)

Boil	88 (80.7%)
Add bleach/ chlorine	4 (3.7%)
Strain it through a cloth	4 (3.7%)
Use water filter	6 (5.5%)
Where is the waste water discharged?	
Open drainage	19 (19.0%)
Closed drainage	61 (61.0%)
Community drainage	7 (7.0%)
To the field	9 (9.0%)
No fixed pattern	4 (4.0%)
Material used for hand wash	
Water & soap	96 (96.0%)
Water only	4 (4.0%)

Table 3 shows water and sanitation practices among the study participants. It was seen that majority of the participants were having good sanitary practices; i.e., 89 (89.0%) were storing water in a closed container, 88 (80.7%) were drinking water after boiling and 96 (96.0%) were using water & soap for handwashing.

Discussion

In the present study it was observed that majority of the study participants used piped water for drinking purpose and most of them had water supply into their dwellings (87.0%) with majority (94%) being using Government water supply. This study also suggests that almost all participants had access to water within household premises from water sources. This finding is similar to a study done by Pachori et al[7] in rural area of Salem district where 100% of the houses had access to water facility.

In the present study, majority of the participants, i.e., 94% had household latrine facilities and in 88% of the population it was sanitary latrine. This was higher than reported in studies done in other parts of India[7,8] suggesting that we are towards achievement of Swachh Bharat vision by 2019.

In the present study, 5% of the population was practicing open defecation. This suggests that we still have not achieved open defecation free target. However, studies done in various States of India reported higher proportion of use of open defecation ranging from 33.2% to 64.1%[9,6].

Most of the study participants were following good practices regarding water, sanitation and hygiene. It was seen that 89% of the participants were storing water in a closed container, 93.6% were doing water purification before drinking, 68% were discharging waste water in a closed drainage & community drainage and 96% were using water and soap for hand washing. This may be due to higher literacy rate (87.0%) and high socioeconomic status (64.0%) of the study participants.

A study done by Mohd et al[10] in urban setting of Bangalore found that 55.6% were drinking water without any treatment and 48.7% were using soap and water for hand washing.

Conclusion

Measures need to be taken to abolish some of the harmful practices such as open defecation and drainage of waste water in the open which was seen in few participants. Health education and behavior change communication thus play an important role.

Overall availability of water, sanitation and hygiene was good in the study population and we are towards achieving the vision of Swachh Bharat Mission by 2019.

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