



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2017; 3(9): 178-182  
www.allresearchjournal.com  
Received: 29-07-2017  
Accepted: 30-08-2017

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## A comparative study of government and private schools for the facilities related to water hygiene

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### Abstract

Hygiene and sanitation are two integral components of overall cleanliness. Children are more vulnerable but highly receptive segment of the population. Therefore, schools can play an equally important role to that of family in bringing about behavioral changes and promoting better health with the tool of knowledge. A focus on school sanitation stems from the fact that children have a right to basic facilities such as school toilets, safe drinking water, clean surroundings, friendly environment and knowledge and information on water hygiene. Therefore, the present study is planned, "A comparative study of government and private schools for the facilities related to water hygiene." In the present study, 32 schools were selected from rural Bikaner (Rajasthan), which comprised of 16 governments and 16 private schools. A self-administered observation schedule was prepared for the study. To find out the statistical interpretation of the observation for water related cleanliness (Water hygiene) in government and private schools. The t-test result shows on the bases of various parameters, t-statistic for water hygiene (-11.43), is less than the t-tabular (-1.65). Thus on all the parameters we reject the null hypothesis. Based on mean and test values, we can say that in all scenarios, private schools were found to be better than government schools in terms of maintenance of water hygiene.

**Keywords:** water hygiene, water- related cleanliness, government school, private school

### Introduction

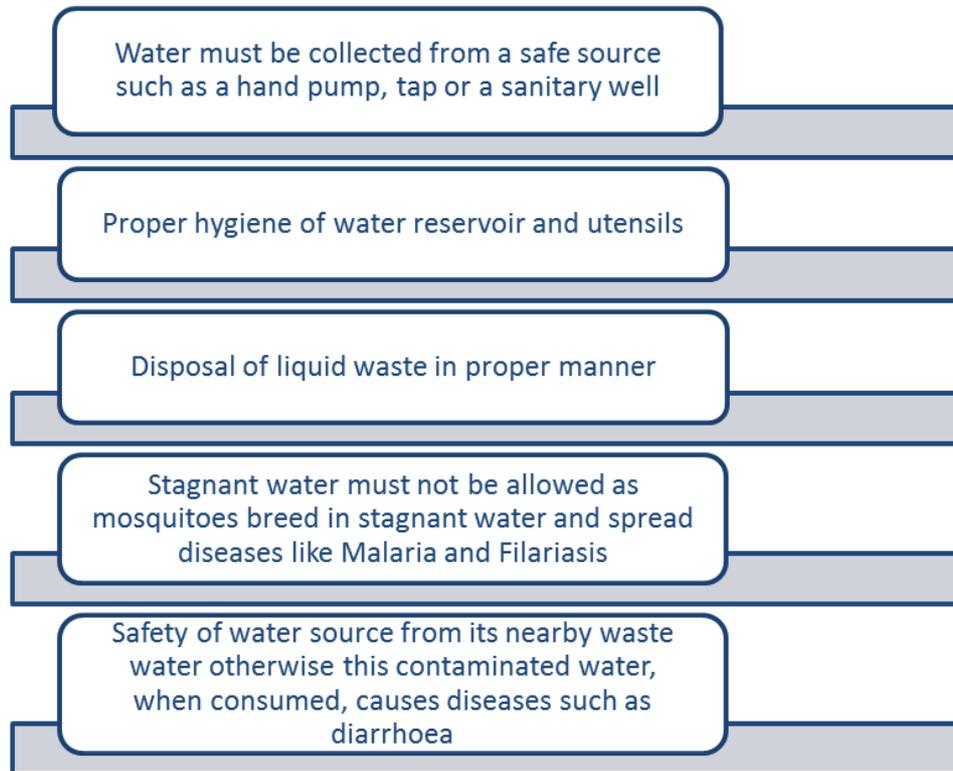
Children spend long hours in schools as a part of their daily routines. The school environment will therefore to a great extent determine the children's health and well-being by providing access to a healthy or an unhealthy environment. UNICEF has recognized drinking water facility and toilet facility as prime concerns of sanitation and hygiene. Not only the availability of water and mere construction of toilet is important rather these should be maintained in a clean and usable condition with the help of knowledge and practice of hygienic behaviour thereby ensuring children's well-being. But, in practice, at present the sanitary conditions in most schools are woefully inadequate and grave. Though, with massive efforts drinking water facility has increased from nearly 0.9 million (approximately 83%) in 2005-06 to 1.30 million (93%) in 2010-11. Likewise drinking water facilities in rural schools increased from nearly 0.7 million schools (82%) in 2005-06 to nearly 0.85 million schools (93%) in 2009-10. In all, 181 million children in schools have access to drinking water facilities. (DISE, NUEPA, New Delhi, 2012).

One of the main objective of maintaining hygiene and sanitation is to safeguard from water borne diseases like such as diarrhea, dysentery, hepatitis, cholera, typhoid, polio and certain types of worm infestation etc. The water resources are the primary source of infection because such infection is transmitted rather rapidly. It becomes more important when we are going to address the problem of water deprived area of the state and nation. Water from open sources like open wells, lakes, ponds, rivers etc. is unsafe as it is prone to contamination by animals and human beings. Contaminated water transmits water borne diseases. Therefore, potable water and its maintenance require that considerations shown in Figure 1.1 must be adhered strictly.

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**Fig 1:** Potable water and its maintenance

The above mentioned steps, if followed religiously and diligently can result in safe collection and usage of water from the well-maintained resources. Moreover, the usage of clean utensils and reservoirs also provides with cleaner environment around the house in general.

**Rationale of the Study**

1. Children are the most vulnerable to environmental health hazards and are subsequently also the worst affected. But then focus of the present study is made upon school children because they are eager to learn at the early stages of life, they have important roles in household chores, they can become agent of change and they are ready for initiatives guided in the schools by the school teachers and their peer groups.
2. Schools will partly determine children’s health and well-being by providing a healthy or unhealthy environment and by developing useful life skills on health and hygiene.
3. As per facts and figures explained above it can be assumed that lot of efforts have been made to install these facilities in school by government and non-government agencies. Now the two aspects need to be addressed and accessed which work in complementary manner. First what is the present situation of their maintenance and what is level of knowledge and corresponding practice among children to use these facilities for their maximum output.
4. So whether the said enormously progress of the recent years made in India and consequently in Rajasthan percolates to end points which our villages are still uncertain, regarding the issues of hygiene and sanitation facilities erection, their maintenance and knowledge of children about them and actual adoption of knowledge in practice. Western Rajasthan has traditionally been considered as orthodox area poor in women education

level and most importantly this area has been water deprived since time immortal due to its geo climatic condition.

5. Therefore, the present study is planned. A comparative study of government school and private schools for the facilities related to water hygiene.

**Objective of the Study**

To observe the selected government and private schools for the facilities related to water hygiene.

**Methodology**

**1. Locale of the study:** The study was conducted in Bikaner, Rajasthan.

**2. Selection of the sample:** In present study, multistage sampling was used for selection of Bikaner four directions, then village then schools. The distance of nearest village and farthest village were calculated based on the present study. Therefore, in the final selection of village, of every 10 villages from each direction, four villages are selected through purposive sampling for a final sample of 16 private schools as well as 16 government school.

**3. Tools of data collection:** To find out the facilities related to water related cleanliness among government and private schools of rural Bikaner. A self-administered, an observation schedule was prepared and grading system was applied for schools i.e., 100% for good condition, 70% for average condition and 50% for poor condition. In the observation schedule following points were observed.

**Water supply facilities and drinking water facilities in the schools**

- Drinking water arrangements.
- Collection method of drinking water.

- Filter arrangements in schools.
- Taps for drinking water.
- Cleanliness of water pots from inside.
- Utensils used for drinking water.
- Covered water pots.
- Cleanliness of drinking water area.
- Presence of mosquitos in drinking water area.

**Table 1.1:** Interpretation of an observation schedule

S. No.	Categories of scores	Level of facilities
1.	Good	10
2.	Average	7
3.	Poor	5

**4. Collection of data/field procedure**

Data were collected from the 16 government and 16 private schools by observation method. The observation was done during pre-planned personal visits and with prior appointments

**5. Data management**

After collecting the data from 16 governments and 16 private schools by observation method, the scoring was done. The data were transferred on work tables and tally sheets were prepared. The data collected were classified, tabulated and interpreted after subjecting the same to appropriate statistical analysis.

**Results and Discussion**

To observe the selected government and private schools for the facilities related to water hygiene. This objective was fulfilled using the observation method and data were collected from the 16 government and 16 private schools. The main aim was to see how much facilities regarding the water related hygiene have been maintained in the schools so that students can be benefitted. Without facilities, students cannot use them in the practice and thus are devoid of the good water related hygiene conditions. There were various factors observed for both the schools based on their water related hygiene. The observation was divided into good, average and poor. The results for government and private schools are shown in the following tables. Initially the results of government and private schools were observed on the bases of given parameters. Then the hypothesis was tested regarding significant difference between the two groups of schools. Water-related Cleanliness (Water Hygiene) Observation in government schools in rural Bikaner.

**Table 1.2:** Water hygiene observation in government schools (N=16)

Water hygiene	Poor (%)	Average (%)	Good (%)
Overall	65.27	25.00	9.72
Drinking water arrangements	62.5	31.25	6.25
Collection method of drinking water	81.25	6.25	12.5
Filter arrangements in schools	81.25	12.5	6.25
Taps for drinking water	75.00	12.5	12.5
Cleanliness of water pots from inside	62.5	31.25	6.25
Utensils used for drinking water	75.00	12.5	12.5
Covered water pots	56.25	31.25	12.5
Cleanliness of drinking water area	56.25	37.5	6.25
Presence of mosquitoes in drinking water area	37.5	50	12.5

Table 1.2 shows the percentage of government schools observed under various categories for water hygiene. Overall, government schools are not in good condition regarding to potable water and its maintenance and provision of safe drinking water to the students. Only 9.72% of the observed schools were found to be good, while 25% were considered average just for the fact that they were trying to get good water facilities and there were some initiatives taken from their side. But apart from these, the schools were in really bad shape for the potable water and its maintenance. Various individual factors were observed during the process and their observation results are shown below.

- Facilities of drinking water – It was observed from the above data that on average, 62.50% of government schools are considered poor i.e., having inadequate provision of drinking water, while 31.25% are viewed as average schools where such facilities exist but are not up to the mark. Only in 6.25% schools, these facilities were present in good condition as per the observer.
- Facility for the collection of drinking water – On the basis of this criterion, it was observed that 81.25% of schools are listed in poor category due to the absence of these means. Only 6.25% of schools have these means but not in effective condition. In 12.5% of schools, these facilities are present in good conditions.
- Presence of water filter – It was observed that the 81.25% of schools are without any water filter with 12.5% having the water purifiers that do not work properly and in only 6.25% water filter arrangements are in good condition. Wherever the filter was installed, it was working in good condition and was being used properly.
- Taps for the drinking water – Here also the results show the same picture, 75.00% of schools do not have any provision of taps for drinking water, whereas in 12.5% of government schools although these are present but not in good condition. Schools having taps in good conditions are only 12.5%, where taps were working properly without any leakage.
- Glasses (Utensils) to drink water – It was observed that on an average, 75% of schools are not providing this facility. A total of 12.5% of schools, although providing glasses but not in adequate numbers and in a clean state. Remaining 12.5% schools are having glasses for drinking water that are in good condition and glasses are in required numbers for maintaining the cleanliness of the glasses.
- Cleanliness of pots of drinking water – A total of 62.5% of schools are observed to be not cleaning the drinking water utensils. It was found that 31.5% of schools are doing it, but not properly or not on a regular basis. Only 6.25% of schools kept a regular watch on the cleanliness of pots.
- Condition of drinking water pots and to cover – A total of 56.25% of schools found to be suffering from unhygienic conditions of water pots. Around 31.25% of schools although having somewhat better conditions, but not as good as required to be. Good condition of utensils of drinking water was found in 12.5% of schools. They were properly covered by a lid.
- Cleanliness of surroundings of drinking water – Around 56.25% of schools have miserable conditions. Places

near drinking water are not clean. A total of 37.5% of schools have better scenario than this. Only 6.25% of schools have the drinking water area completely clean and dry with no place for mosquito breeding.

- Mosquitos’ hovering around the drinking water – In around 37.5% of schools, the condition was observed but in 50% of schools conditions were not so wretched. Only 12.5% of schools have the drinking water area clean and no mosquitos around drinking water area were found.

**Water Hygiene Observation in private schools**

**Table 1.3:** Water hygiene observation in private schools (N=16)

Water hygiene	Poor (%)	Average (%)	Good (%)
Overall	11.80	49.30	38.88
Drinking water arrangements	6.25	62.5	31.25
Collection method of drinking water	18.75	62.5	18.75
Filter arrangements in schools	12.5	68.75	18.75
Taps for drinking water	6.25	31.25	62.5
Cleanliness of water pots from inside	12.5	31.25	56.25
Utensils used for drinking water	12.5	68.75	18.75
Covered water pots	12.5	43.75	43.75
Cleanliness of drinking water area	18.75	50	31.25
Presence of mosquitos in drinking water area	6.25	25	68.75

Table 1.3 gives an overall evaluation of the water hygiene in private schools. The scenario looks good here compared to government schools and as small as only 11.8% of the schools were found to be in poor condition in this respect. Remaining 49.30% were either average or 38.88% were good. This makes up for a huge difference between the two groups. The various factors are explained below.

- Facilities of drinking water – Around 62.5% of schools have these facilities, but not up to the mark. It is found that around 31.25% of schools have good facilities for drinking water. Only 6.25% of schools do not have these facilities.
- Facility for the collection of drinking water – On the basis of this criterion, we observe that 62.5% of schools are listed in average category due to poor condition of these means. Only around 18.75% of schools have these means in proper condition and the remaining 18.75% of schools do not have facility for the collection of drinking water.
- Presence of water filter – We observe that the 68.75%

of schools have a water filter, but it does not work properly. Remaining 18.75% are having the water purifier working properly. Only 12.5% of schools do not have a water filter.

- Taps for the drinking water – Here the results show that in 31.25% of private schools although tap are present, but are not in good condition. Around 62.5% of schools have taps for drinking water in good condition.
- Providing glasses to drink water – We observe that on an average 68.75% of schools provided glasses, but not in adequate numbers and clean. Remaining 18.75% schools are having glasses for drinking water that were in good condition and numbers. Only 12.5% of schools do not provide glasses to drink water.
- Cleanliness of pots of drinking water – It was found that 31.25% of schools are not cleaning it properly and on a regular basis. Around 12.5% are in poor condition, whereas 56.25% of schools have proper cleanliness of pots of drinking water.
- Condition of drinking water pots and to cover them – Around 12.25% of schools found to be suffering from unhygienic conditions of water pots. Around 43.75% of schools although having somewhat better conditions, but not as good as required. Good condition of utensils of drinking water found to be in 43.75% of schools. They were properly covered with a lid.
- Cleanliness of surroundings of drinking water – Around 18.75% of schools have miserable conditions. Places near drinking water are not clean. Around 50% of schools are having better scenario than this. In these schools, areas near the drinking water pots and taps are clean but not properly. It was found that 31.25% of schools have clean surroundings of drinking water.
- Mosquitoes hovering around the drinking water – In 25% of schools, conditions are not so wretched and 68.75% of schools have no such conditions. Only 6.25% have such conditions.

Given the tables and the various values for the water related hygiene related issues in the two groups of schools, based on the observation, the performance of private schools are found to be better than government schools. For statistical purpose similar hypothesis is also tested for which the results are shown in Table

1.4. The null hypothesis is as follows: on observation by investigator).

**Table 1.4:** Overall comparisons of schools on the basis of observation

Observation of the schools	Government school		Private school		t-test statistic	Significance level
	Mean	S.D.	Mean	S.D.		
Water-related cleanliness	31.92	1.63	42.29	3.48	-11.43	S

Note: S: significant; S.D.: Standard deviation.

Table 1.4 suggests the statistical interpretation of the observation for water related cleanliness (Water hygiene) in government and private schools. The t-test result shows on the bases of various parameters, t-statistic for water hygiene (-11.43), is less than the t-tabular (-1.65). Thus on all the parameters we reject the null hypothesis. Based on mean and test values, we can say that in all scenarios, private schools were found to be better than government schools in terms of maintenance of water hygiene. Comparing it to

the other studies, we found that the results were better in Bikaner district regarding water hygiene. Steiner-Asiedu *et al.* 2011 found that the facilities available were better at the public school compared to private school. The pupils had good knowledge of hand-washing practice, but inadequate provision and inaccessibility of hand-washing facilities at school and homes did not allow them to practice the hand-washing knowledge they had acquired. Hand-washing practices in both public and private schools were poorly

performed, but better in public schools due to the intervention of the SHEP programme that is not being implemented in private schools. Dreibelbis *et al.* (2013) <sup>[1]</sup> observed the promotion and provision of low-cost and effective technologies for better water, hygiene and sanitation facilities. Their study discussed various diseases caused by using improper water and sanitation facilities. A study by Joshi and Amadi (2013) <sup>[2]</sup> reviewed the existing water, hygiene and sanitation methods and practices. This study discussed the various technologies required for the betterment of water, hygiene and sanitation. This study also discussed various water facilities, safe water requirements, sanitation facilities and importance of sanitation, hygiene requirements and a healthy lifestyle. The major result shows the improper water and sanitation facilities. A total of 75% absenteeism occurred because of illness mainly due to gastro-intestinal infections and respiratory infections. Waggoner (2011) <sup>[4]</sup> examined the correlation between improving the quality of drinking water sources and sanitation facilities, and the likelihood that a child will be stunted, unwell and/or underweight. Results suggest that there is a strong negative correlation between having optimal sanitation facilities and a decrease in the likelihood of a child being chronically malnourished, compared to having unimproved sanitation facilities.

### Conclusions

This study has shown a need to improve practices regarding water hygiene because the government and private school students have good knowledge about hygiene and sanitation but they have not good practices due to lack of resources. Such as the water problem in rural area and water source or sanitation service, use of these services, water storage and treatment practices, availability of soap. A change in awareness or knowledge can lead, through the complex system, to the changes in behavior ultimately.

### Recommendations

- The strength of the government schools is way too much then the private schools but the awareness campaigns run by them are not up to the mark accordingly. They need to be more rigorous and widespread.
- The huge strength of students also calls for a greater number of facilities. Facilities related to water and sanitation needs to be more appropriate considering the greater number. Toilets and sanitation need to be more frequently cleaned. Also, more number of facilities should be made available so as to fulfill the needs of everyone.
- Hygiene and sanitation would no doubt lead to positive health impacts. Therefore, improvement in them would help in achieving better health standards for the country.

Although just knowledge about the practices or even following them is not enough until the proper facilities are also provided. Health impacts can be achieved only if the practices are properly taught about and adopted.

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