

# Survey on Water, Sanitation and Hygiene Practices in Educational Institutions of Jammu District

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## Abstract

**Background:** Quality of education is not just referring to as imparting good knowledge but it also includes availability of potable water and sanitary services. Clean and continuous availability of water and right sanitation practices in schools are prerequisites to school children's entitlement to a basic education. **Aim:** Therefore, in the current survey study, the main objective was to assess the water supply, sanitation and hygiene practices in schools and colleges of Jammu District. **Method:** A simple random sampling technique was used to gather 100 school/college students studying in the Jammu region of the Jammu district of Jammu & Kashmir (UT), India. Data were retrieved using a self-constructed questionnaire assessing sanitation & hygiene practices using Google form format and E-based method. **Result:** The findings of the study revealed that the major water drinking facility in the educational institutions was in the form of water cooler (46%) and tap water (34%). There was no satisfactory provision of toilets for the student with disability and regarding menstrual we observed that only 67% of colleges and 51% of schools provides dustbins for disposal of menstrual hygiene wastes. It was also observed that 27% of institutions provide soap in a private space for girls due to which 75% miss classes and suffered from UTI. **Conclusion:** We concluded that majority of school and colleges of Jammu district provides separate washrooms for girls and boys but only half of the number of school and colleges provides hand wash/soap at hand washing place and also found that there is less menstrual hygiene. Therefore there is an urgent need to provide proper water supply, sanitary services in educational institutions to support the Sustainable Development Goal 6 for proper development of the nation.

**Keywords:** Sanitation, Menstrual Hygiene, Disability, Sustainable Development.

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## 1. INTRODUCTION

An educational institution is defined as the place which provides a uniform learning environment, where people of diverse age groups receive education. Childcare, preschool, elementary school, high secondary schools, colleges and universities are such examples of educational institutions. School is the crucial part in child's life. Along with knowledge, children learn healthy behaviours in schools. The school teaches pupils how to interact with others in the society. It also teaches students on how to become responsible citizen. For the proper growth and development of the nation, every child of each nation has made the fundamental right to quality education (Osher *et al.*, 2014).

Quality of education is not just referring to as imparting good knowledge but it also includes availability of potable water and sanitary services. Clean and continuous availability of water and right sanitation

practices in schools are prerequisites to school children's entitlement to a basic education (Antwi-Agyei *et al.*, 2017). These fundamental services are still unavailable to billions of people, majority in rural areas i.e. they lack access to appropriate water facility, proper hand-washing facility and over 673 million people continue to defecate in the open. Millions of people (majority includes children) die each year due to diseases caused by unsafe water supply, improper sanitation and unhygienic conditions (Clean Water and Sanitation Projects | SDG 6 – UN India). Several studies have found that contaminated water, inadequate sanitary services and insufficient hand washing have all been linked to child illness and death (Caruso *et al.*, 2014). Globally, diarrheal disease caused 11% of child deaths, and many pupils missed school days each year as a result of inadequate WASH services in schools which have negative impact on both child and their parents. Drinking contaminated water has a number of negative

consequences on physical and cognitive functioning, as well as body processes (Sharma & Adhikari, 2022). By 2050, more than half of the world's population will live in water-stressed areas, according to MIT researchers (Water Stress to Affect 52% of World's Population by 2050 (waterfootprint.org)).

Hand hygiene is regarded as a lifesaver and one of the most efficient methods for reducing the spread of germs and preventing infections such as the COVID-19 virus. The pandemic of COVID-19 has underlined the importance of cleanliness, hygiene, and adequate access to safe water in disease prevention and control. But unfortunately, billions of people still do not clean drinking water and adequate sanitation system. Hence this pandemic cannot be prevented unless vulnerable people have access to safe water (Hargreaves *et al.*, 2020). UNICEF is requesting immediate funding and assistance to provide water and sanitary services to homeless and people living in remote areas or slum area (Water, Sanitation and Hygiene (WASH) | UNICEF). As a result, improvements in sanitation system along with health enhancing behaviors are critical for preventing and treating diseases that arise as a result of WASH deficiencies.

In September 2015, all the 193 members of the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development. It is a set of 17 Sustainable Development Goals for people, the environment, and economic development by eliminating poverty hunger, disease and violence by 2030 (Bhanja & Roychowdhury, 2020). SDG's 6 is one of the important goal among 17 SDG's which deals with the provision of pure water and proper sanitation services. As a civil right acknowledged by the United Nations in 2010, potable water and good sanitary services are necessary for existence (UN General Assembly, 2010). This recognition was emphasized five years later in the 2030 Agenda as Sustainable Development Goal 6 (SDG 6), which designed to achieve universal access to and wisely management of water and sanitation for all by 2030 (UN General Assembly, 2015). The fulfillment of Sustainable Development Goals (SDGs), particularly Goal 6 on clean water and sanitation by 2030, has been connected to the provision of adequate WASH services in schools (Water and Sanitation - United Nations Sustainable Development). As J&K UT has poorest water supply and sanitation in both rural as well as urban areas. According to DISE survey 2014-15, several schools lacks proper bathrooms for girls and boys results in various diseases and infections among students (<https://scroll.in/article/736411/jammu-kashmir-is-struggling-with-poor-sanitation-and-sanitation-funds>). All these situations are challenging for the sustainable development in the region of J&K. Therefore present study was designed to support the Sustainable Development Goal 6 and its targets by qualitatively assessing the water supply and sanitary services among educational institutions of Jammu district.

### Objectives of the Study

The main objective of the study was:

- i. To assess the water supply, sanitation and hygiene practices in schools and colleges of Jammu District.
- ii. To determine the problems faced by students due to improper sanitation in schools and colleges of Jammu District.
- iii. To incorporate suggestions to improve sanitation & hygiene practices in the educational institutions.

### Significance of the study

Appropriate sanitary services not only help to promote health but also contribute in social and economic development. Proper sanitation and hygienic practices in educational institutions improve/increases student's enrollment & attendance, reduces illness, increases learning, provides safety to girls and provide clean water to the students. On the other hand poor sanitation puts students at risk that can impact their overall development, learning & health. Many water-borne pathogens and infections are spread via contaminated water and contributed to various health issues like stomach infections, diarrhea, dysentery, cholera, UTI, typhoid, worm infections, malaria, skin infections, respiratory infections etc. which has lethal impact on student's life.

No doubt some parts of the world have improved access to sanitation but some disadvantages/poor and rural areas lack pure water supply and proper sanitation practices which need to be improved. People are facing water crises and improper sanitation in various parts of J&K UT which need to be eradicated for sustainable development. Improvements in Sanitary services in every part of the country are very necessary to achieve the Sustainable Development Goal 4 by 2030. Therefore the present study was undertaken to check the water supply, sanitation & hygienic practices in school/colleges of Jammu district by randomly selecting students and asked about their school/college sanitation to promote healthy sanitation practices through educational programs to achieve SDG 6.

## 2. REVIEW OF RELATED LITERATURE

Sharma & Adhikari (2022) investigated the Effect of School Water, Sanitation, and Hygiene on Health primary level students. The study used a causal-comparative research design in two sets of schools, one with better WASH facilities and the other without. Each group comprises of two schools, for a total of four schools in this study. A total of 768 respondents were chosen, 384 from each improved and non-improved WASH facility. Quantitative research method was used in the study. The data was analyzed by using chi square and multivariate logistic regression. The findings of the study revealed that majority of students from unimproved schools got sick. Furthermore 59% of

students aged 15 to 19 years old and 51% of students aged 10 to 14 years old got sick. In comparison to males, the majority of female respondents were sick.

Mushota, Mathur & Pathak (2021) studied the effectiveness of a school-based educational WASH intervention in boosting students' awareness of diarrhoea prevention and management. Between July and December 2018, 1,781 students in grades 8 through 12 took part in a pre-post intervention study. The intervention included an educational training session using a WASH training module. The findings of the study revealed that the prior knowledge of higher secondary school students about how to treat diarrhea, take zinc tablets, and recognize the symptoms of severe pediatric diarrhea increased after the educational intervention.

Ganguly & Satpatil (2019) determined the elements that influence hygienic performance among primary school students, as well as to examine the teachers' attitudes towards sanitation and hygiene. The study was conducted on 90 students from 15 schools by using cross-sectional based multistage purposive sampling approach. The findings revealed that the number of toilets in the elementary schools is insufficient, and there is unavailability of different toilets facilities for pupils and staff. Poor hygiene was there due to a dearth of understanding and attention of water management and hand washing habits.

Sarkingobir *et al.*, (2019) accessed the water and sanitary services available in primary schools in Nigeria. A total of 300 schools were visited and inspected by using structured questionnaire, interview and convenience sample technique. A descriptive survey was used. The findings of the study revealed that the water, toilet, and hygiene facilities are in poor supply, and sanitation is a concern.

Tsige, Kummie & Dejene (2019) checked the state of school sanitary service and also studied the factors affecting it. The data was collected from all public schools (48) in the area using cross-sectional study design. Data was collected using both quantitative and qualitative methods. The findings of the study revealed that schools do not have access to basic sanitation services and were typically unsafe. As a result, a concerted effort among all stakeholders is required to protect the school environment.

Sekhon & Minhas (2014) determined the prevalence of personal hygiene among pupils in the government schools in an urban area of North India. The sample of about 684 pupils was taken in the study. The

findings of the study revealed that population had a generally good quality of hygiene but there is need to provide health education to the pupils who are discovered to be deficient in this area to improve their total health.

Sekhon & Minhas (2014) assessed the personal hygiene among pupils in the rural schools of North India. Total 350 pupils were taken in the study. The findings of the study revealed that all of the children always, or at least most of the time, washed their hands after using the toilet or latrine, and the majority of the children used soap and water to wash their hands. But the efforts are needed to improve the personal hygiene of all school children by providing health education.

Jasper *et al.*, (2012) reviewed the health and educational outcomes of water and sanitation in schools. The review of different articles showed that greater water availability and access to water facilities leads to an increase in water intake. Inadequate sanitation facilities cause an increase in absenteeism from schools in developing nations during menses. Finally, increasing access to proper sanitation facilities in schools has been linked to a reduction in diarrheal and gastrointestinal disorders.

### 3. METHODOLOGY

#### 3.1. Target population

The sample for the study was consisted of 100 school/college students studying in the Jammu region of the Jammu district of J&K (UT) of India.

#### 3.2. Tool Used

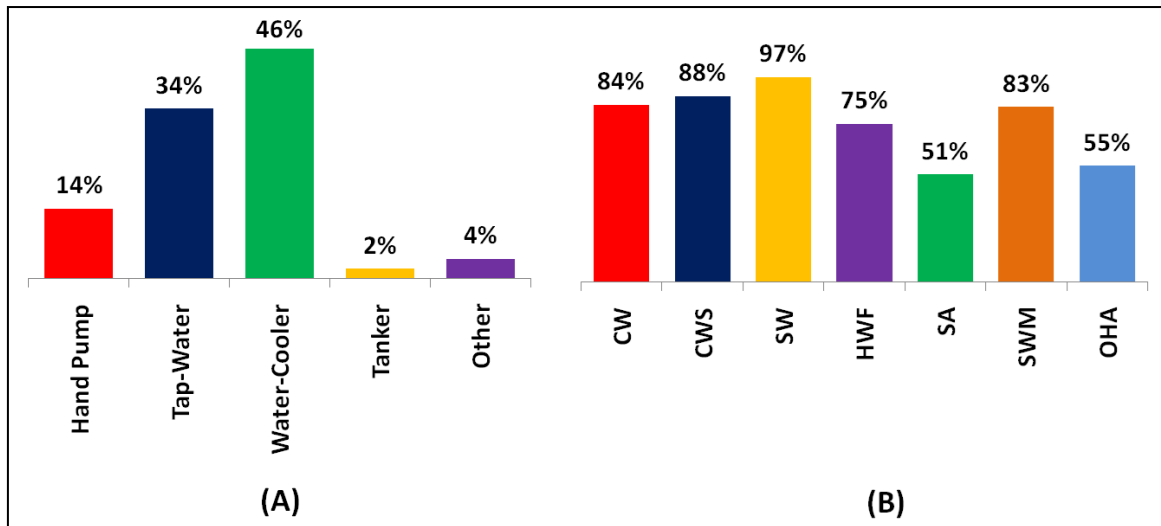
The survey method of qualitative research has been used for the study. For the collection of data, a self-constructed questionnaire assessing sanitation & hygiene practices was used. Questionnaire was prepared in Google form format and E-based method was utilized for the sharing of the questionnaire with the participants.

#### 3.3. Sampling Method

The sample was collected by using simple random sampling technique from different schools and colleges of Jammu district.

### 4. RESULT

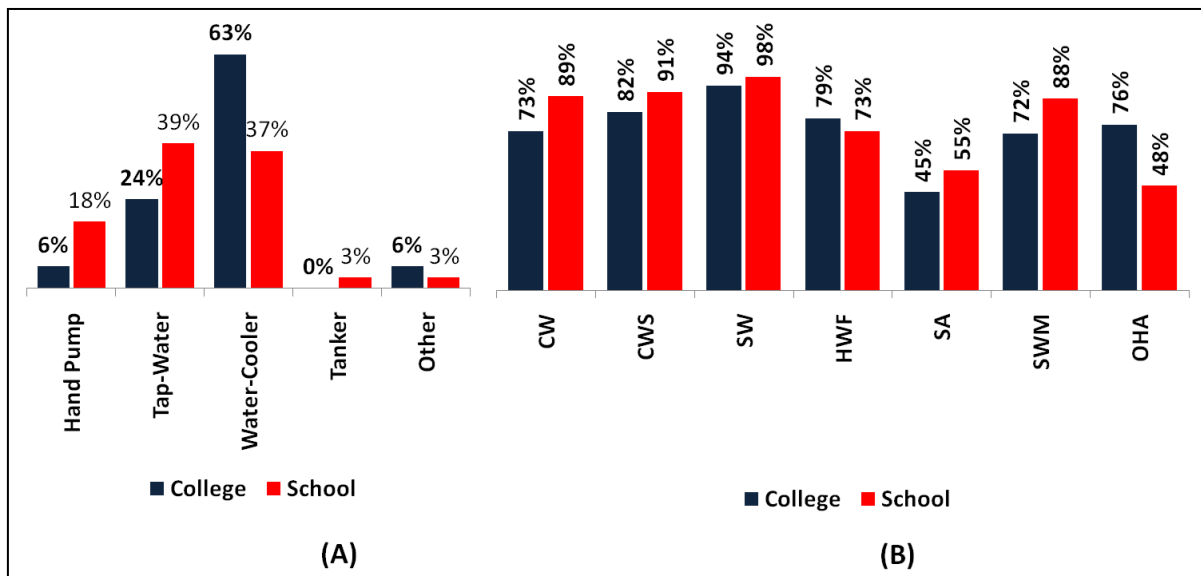
Educational institutions in the Jammu district were found to provide various drinking water facilities, including hand pumps (14%), tankers (2%), tap water (34%), water coolers (46%), and other sources (4%) (Figure 1A). Among these, 84% of the water was chlorinated, and 88% of the water supply was continuously available to students (Figure 1B).



**Figure 1: (A): Drinking water facilities in Educational Institutions. (B): CW: Chlorinated Water, CWS: Continuous Water Supply, SW: Separate Washroom, HWF: Hand wash facility, SA: Soap Availability, SWM: Solid Waste Management, OHA: Organized Health related Activities**

A subgroup analysis based on schools and colleges revealed variations in the types of drinking water facilities provided (Figure 2A). Additionally, differences were observed in the chlorination status and the continuity of water supply between schools and

colleges (Figure 2B). These findings underscore the need for uniform standards in water quality and availability across educational institutions to ensure students' health and well-being.



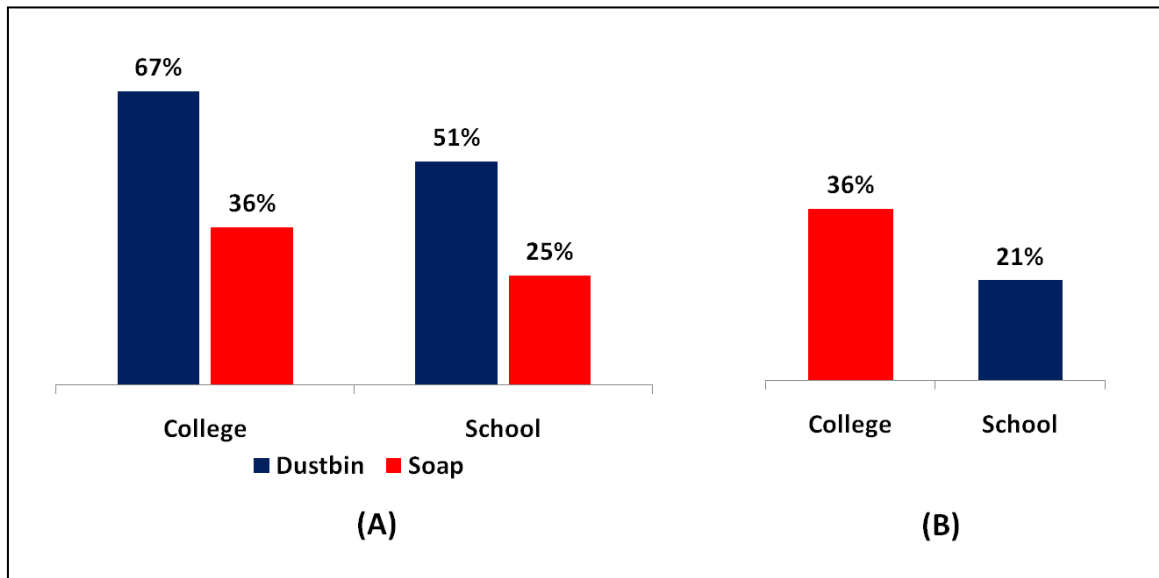
**Figure 2: (A): Drinking water facilities in various schools and colleges of Jammu district. (B): CW: Chlorinated Water, CWS: Continuous Water Supply, SW: Separate Washroom, HWF: Hand wash facility, SA: Soap Availability, SWM: Solid Waste Management, OHA: Organized Health related Activities**

Menstrual hygiene continues to be a significant challenge for girls in educational institutions, particularly regarding the proper disposal of menstrual waste. While 97% of institutions provide separate washrooms for girls and boys, only 56% offer dustbins for menstrual waste disposal. A noticeable disparity was observed between schools and colleges (Figure 3A). 67% of colleges and 51% of schools provided dustbins for this purpose. Furthermore, only 27% of institutions provided soap in private spaces for girls to manage menstrual

hygiene. This inadequate support has significant consequences, with 75% of girls reporting missing classes and experiencing urinary tract infections (UTIs). When comparing colleges and schools, only 36% of colleges and 25% of schools offered soap in private spaces for girls, leading to 82% of college students and 72% of school students missing classes and suffering from UTIs. Although handwashing facilities were available in 75% of institutions, only 51% provided soap or hand wash at these stations (Figure 2). These findings

highlight the urgent need for improved menstrual hygiene management in educational settings to address these critical health and educational challenges. It was observed that 83% of educational institutions manage solid waste effectively, and 55% of institutions organize hygiene-related activities to promote health among students. Additionally, variations were identified across

different variables, such as the management of solid waste and the organization of hygiene-related activities to promote student health (Figure 4). These findings emphasize the need for consistent and comprehensive efforts to ensure proper waste management and health promotion activities across all educational institutions.



**Figure 3: (A): Facilities regarding menstruation hygiene. (B): Provision of proper toilet for students with disability**

Concerning the disabled persons, whom need special care in the institution, we also observed very less educational institutes provide proper toilets for students with disability 27%. Disabled persons need special care in the institution, we also observed very less percentage i.e., only 36% of colleges Vs 21% schools provides proper toilets for students with disability (Figure 3B).

To assess the use and perception of sanitizers among students, it was observed that 83% of students reported experiencing a sensation of inhaling chemicals with regular sanitizer use (Figure 2). Furthermore, 72% of students believed that excessive use of sanitizers is not safe for health. Additionally, 96% of students agreed that improper sanitation and hygiene practices could significantly contribute to the spread of COVID-19.

### 5. DISCUSSION

Quality of education is not just referring to as imparting good knowledge but it also includes access to fundamental services like clean water and adequate sanitary. Improvements in sanitation system along with health enhancing behaviors are critical for preventing and treating diseases that arise as a result of WASH deficiencies. UNICEF is requesting immediate funding and assistance to provide water and sanitary services to homeless and people living in remote areas or slum area (Water, Sanitation and Hygiene (WASH) | UNICEF). In the current survey study, the main objective was to assess the water supply, sanitation and hygiene practices in

school and colleges of Jammu District. In the current study we have observed that the highest utilization of water was from the water cooler (46%). After sub group analysis based on the criteria of school and colleges we have found that college uses 63% of water from the water cooler system as compared to 37% by school. We also observed that school uses water mostly was from tap water (39%) (Figure 2A). It was observed that 84% of educational institution provides chlorinated water and 88% provides continuous water supply to the students. But if we consider frequency of provision of chlorinated water and continuous availability of water in schools and colleges, we observed the difference between the two institution (Figure 2B). Menstrual hygiene is the most important aspect of girl life which needs to be considered by the educational institution. It was observed that the use of dustbins for disposal of sanitary pads was found 67% which was found more than schools (51%) where as provision of soap at private place for girls by school was only 25% and by college was 36% (Figure 3A). These estimates are not satisfactory for the proper development of the students, society and the nation. Due to improper menstrual hygiene practices can lead to UTIs which forces the students to miss the regular classes. Nowadays inclusive education is very important, that's why it is very important for the educational institutions to keep in mind the needs of special children or disabled students i.e. provision of proper/separate toilets for disabled students. It was observed that very less percentage of educational institutions i.e. only 21%

schools and 36% of colleges provides proper toilets for disabled students. This is the reason why CWSN drop out because students with disability have reduced mobility, weak legs, vision problems etc. and they need additional assistance with toileting. That's why institutions need to provide disabled friendly toilets or accessible toilets which are specially designed to better accommodate people with physical disabilities (Figure 3B).

## 6. CONCLUSION & RECOMMENDATIONS

We concluded that majority of school and colleges of Jammu district provides separate washrooms for girls and boys but only half of the number of school and colleges provides hand wash/soap at hand washing place and also found that there is less menstrual hygiene. Therefore there is an urgent need to advance sanitary and hygiene services in educational institutions to support Sustainable Development Goal 6 for the development of the nation. The following are the recommendations of the study:

- There should be improved access to drinking water facilities in the educational institutes.
- There should be provision of disabled friendly toilets in the school and colleges.
- There should be menstrual hygienic facilities available in the educational institutions.
- School and colleges should organize school health programmes and provide improved sanitation and health services to the students.

## 7. Delimitations of the study

The main limiting factor of our study was the reduced number of participants (n=100) and the participants were only confined to school and colleges. Also, the study was only restricted to the Jammu region only. The questionnaire was designed based on our research objectives. Therefore, larger study is needed to find out the highly significant data which could provide a significant data for the future changes.

### Abbreviation

**CW:** Chlorinated Water  
**TW:** Tap Water  
**MWD:** Menstrual Waste Disposal  
**HW:** Handwashing  
**SDG:** Sustainable Development Goal  
**UTI:** Urinary Tract Infection  
**SR:** Sample Respondents  
**WASH:** Water, Sanitation, and Hygiene  
**SWF:** Separate Washroom Facilities  
**MHP:** Menstrual Hygiene Practices  
**EQ:** E-Questionnaire

### Declaration

**Ethics Statement:** NA

**Conflict of Interest:** The authors declare that there are no conflicts of interest regarding the publication of this review.

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**Contribution Statement:** ACP conceptualized and designed the study. ACP and AS drafted the manuscript, including tables and figures. AS reviewed and edited the manuscript. Both authors collaboratively finalized the manuscript for submission.

**Access to Data:** All data that support the findings of this research are included in the manuscript.

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