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(RESEARCH ARTICLE)

Basic Water, Sanitation and Hygiene (WASH) practices among school adolescents of rural area, Indore: A comparative study

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Abstract

Background: Young teens are more vulnerable to a variety of infections, particularly teenage girls if they don't take care of their hygiene. The reason of conducting studies in schools is as they spend more than one third of their lifetime in school. School environment, supply of potable water, etc. impact on healthy development.

Material and methods: This is a cross-sectional study carried out in the field of RHTC practice at Indore Medical College from February to April 2019. A structured pro- forma that included questions about basic sanitation, water and hygiene practices, is used to gather data from teenagers studying in public and private schools. 200 students from public schools and 200 private schools in Grades 6 to 10 were selected by Quota Sampling to compare WASH practices among themselves.

Results: The majority of teenagers in private schools have good levels of personal hygiene 58.3% compared to public schools 41.7%. Standards of personal hygiene increased with age. The majority of 95% of teenagers used drinking water sources in the private sector as opposed to adolescents in public schools. In the study, 73% of private schools had separate washrooms for girls and boys, compared with 89.5% of public schools. Nearly all washrooms in private schools were clean, compared with 40% in public schools. Bins were available in 67% of adolescents in private schools, compared with 34% of adolescents in public schools. Handwashing practices were found to be satisfactory among teens at both schools.

Conclusion: Following the launch of the Swatch Bharat Abhiyan, overall WASH practices are enhanced. Practices among teenagers in private schools were found to be satisfactory, but improvements were also observed in public schools. Most of the time, teenagers miss school for lack of core WASH practices.

Key words: Basic Services; Water; Sanitation; Hygiene Practices; Government school

1. Introduction

Adolescence is one of the most rapidly developing stages of human development. The mostly personality of the individual and the environment affects the changes that occur in adolescence. Younger teenagers are especially vulnerable when their abilities are still under development. Changes in adolescence have health implications not only in adolescence, but throughout life. [1]

About 1.2 billion people, or 18 per cent, or 1 in 6 of the world's population, are adolescents between the ages of 10 and 19. More than 3,000 teenagers die each day for avoidable or treatable reasons. Half of all mental health issues in

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adulthood start at age 14. Most teens are at school. Globally, over 90% of children of primary school age and over 80% of children in lower middle school age are enrolled in school where they spent 1/3rd of most of their time. They are particularly exposed to avoidable infectious diseases at school. WHO and UNESCO are launching a new initiative "Making each school a health promoting school". This will enable 2.3 billion school-aged children to contribute to WHO's 13th overall work programme to reach "1 billion healthier lives" by 2023. [2]

The School Water, Sanitation and Hygiene Education (WASH) Strategy is being developed by the WHO-UNICEF Joint Monitoring Programme to reach the Millennium Development Goals. WASH in schools not only fosters hygiene, but also improves access to quality education. The strategy contributes to respect for the rights of children to health, education and participation in access to primary education, reduction of child mortality, improvement of water and sanitation, and promotion of gender equality.

According to a World Health Organisation report, 2.2 billion people still lack access to safe drinking water. Over half of the world's population lacks access to safe sanitary facilities. Three billion people lack access to soap-based handwashing facilities. Yet 673 million people are exposed to open defecation. Over 700 children under the age of 5 die every day from diarrheal diseases because of a lack of appropriate WASH services. [3]

The goal of SDG 6 is to ensure universal access to clean water, sanitation and hygiene for all by 2030. It also seeks to end open defecation, with particular attention to the needs of women and girls and people in vulnerable situations. Basic services of drinking water is considered as water from an improved source and is available, basic service for Improved sanitation facilities as separate for and usable (available, functional and private) toilet for girls and boys and basic service for hygiene as hand-washing facilities with water and soap available at school. These basic parameters have been used in various investigations under the Joint Surveillance Programme as a joint mission of WHO, UNICEF.

In India, almost all urban households (91%) and rural households (89%) have access to an improved source of drinking water, about half of Indian households (48%) use improved toilet facilities, which are non-shared facilities still 39% population practice open field defecation. [4]

When schools are transformed into enabling environments with access to water, sanitation and healthcare, more girls are likely to remain in school. During menstruation girls do not attend school because of the lack of proper facilities that lead them behind in schools and even dropping out of school. For people aged 10-14, health risks are related to water, hygiene and sanitation. Studies have shown that a quarter of all girls in school in India have taken menstrual days off. One of the main reasons was the lack of gender-sensitive toilets, dirty toilets in schools. Twenty-two percent of schools in India did not have proper restrooms for girls. [5]

According to DISE, 51% of schools have a designated hand washing area, but only 37% of schools have hand washing facilities near the washroom. Only 60 per cent of girls have access to separate washrooms at most schools. Although 93 per cent of schools have a drinking water facility, only 82 per cent have an improved drinking water facility, while it is operational in only 79 per cent of schools. [6]

The Government launched Swachh Bharat Mission (Gramin) on 2nd October, 2014 to accelerate efforts to achieve universal sanitation coverage, improve cleanliness and eliminate open defecation in India by 2nd October 2019. [7]

The health coverage of rural households in India rose from 1 per cent in 1981 to 11 per cent in 1991, 22 per cent in 2001 and 32.7 per cent in 2011. Almost 30% of households lacked toilets and 32% defecated outdoors. [8]

In this context, this study was conducted to compare levels of personal hygiene among teens in private and public schools. Also to know the state of basic water, sanitation and hygiene practices among these schools in the rural area of Indore district.

Objectives

- To know status of water, sanitation and hygiene practices (WASH) among private and Government schools.
- To compare personal hygiene practices among children attending private and public schools.

2. Methodology

2.1. Study design

It is a cross sectional study.

2.2. Study setting

Two Government schools & two Private schools

2.3. Target population

School going adolescents between age group 10-19 year.

2.4. Sampling technique and sample size

Four schools, which are two private and two public schools, were randomly selected from the rural practice area of a tertiary healthcare hospital. Twenty students from each class I,e 6th to 10th standard were selected by Quota Sampling, a type of non-probability sampling technique [9] So by using this method, 200 students from two private school and 200 students from two Government schools which was making sample of total 400 students were enrolled in this study.

2.5. Inclusion criteria

All students who were willing to participate

2.6. Exclusion criteria

Students who are seriously ill, or having chronic disease are excluded from the study

2.7. Study tools

Structured Questionnaire introduced to students by face interview which included the questions on personal hygiene, hand-washing practices, drinking water facility, and sanitation facility available in both home as well as school. Early adolescents were children aged 10-13 years, middle adolescents were 14-16 years and late adolescents were 17-19 years.

2.8. Methods of data collection

General examination of the students was conducted by interns of the Community Medicine Department in which their oral cavity, hair, ear, eyes, nails etc. were observed in levels of personal hygiene. Structured Performa was used for data collection. Personal hygiene was evaluated via a scoring system. Data was collected on the following 16 points like clean clothing, trimming g of nails, dental hygiene, brushing of teeth twice a day, bath with soap, hand washing practices, etc. Overall minimum and maximum scores were calculated to be 0 and 16 respectively. A rating of 0 to 6 indicates poor hygiene, a rating of 7 to 12 indicates fair hygiene, whereas a rating greater than 13 indicates good hygiene. The students' vitals were assessed and then a systemic review was done.Ethical consideration

Data was collected from students after taking verbal consent from school principals. Permission from Institutional Ethical Committee was taken before conducting this research.

2.9. Data analysis

Data was entered in MS excel sheet and was analyzed by using SPSS-20 software.

3. Results

Table 1 summarizes the total of 400 adolescent participants in this study. 200 students, including students from the private sector and 200 from government schools. Half of these (49.2%) were male and the remaining half (50.8%) were female students. Their age ranged between 10 and 19 years, with the average age being 12.8 years. Among these students, half were early adolescents, 17-year-olds (54.2%), 143 (35.8%) middle adolescents and 40 (10%) late adolescents, respectively.

Table 1 Distribution of Students according to their demographic characters (n=400)

Age group	**Frequency**	**Percentage**
Early adolescents (10-13yr.)	217	54.2
Middle adolescents (14-16 yr.)	143	35.8
Late adolescents (>16-19 yr.)	40	10
Gender		
Male	197	49.2
Female	203	50.8
Type of school		
Private	200	50
Government	200	50
Total	400	100

Table 2 Distribution of students according to level of personal hygiene

Age	**Poor (0-6score)**	**Fair (7-12 score)**	**Good (> 13 score)**	**Total (N=400)**	**Chi-square; p-value**
Early adolescents	09 (4.1)	98 (45.2)	110 (50.7)	217	0.054
Middle adolescents	14 (9.8)	52 (36.4)	77 (53.8)	143	
Late adolescents	01 (2.5)	22 (55)	17 (42.5)	40	p= 9.319
Gender					0.289
Male	09 (4.6)	81 (41.1)	107 (54.3)	197	
Female	15 (7.4)	91 (44.8)	97 (47.8)	203	p= 2.482

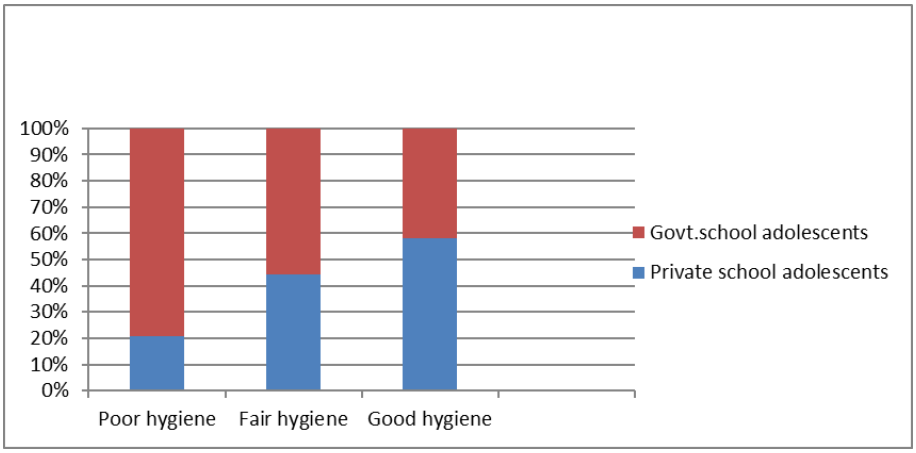

Figure 1 Comparison of personal hygiene between private & Govt. school adolescents

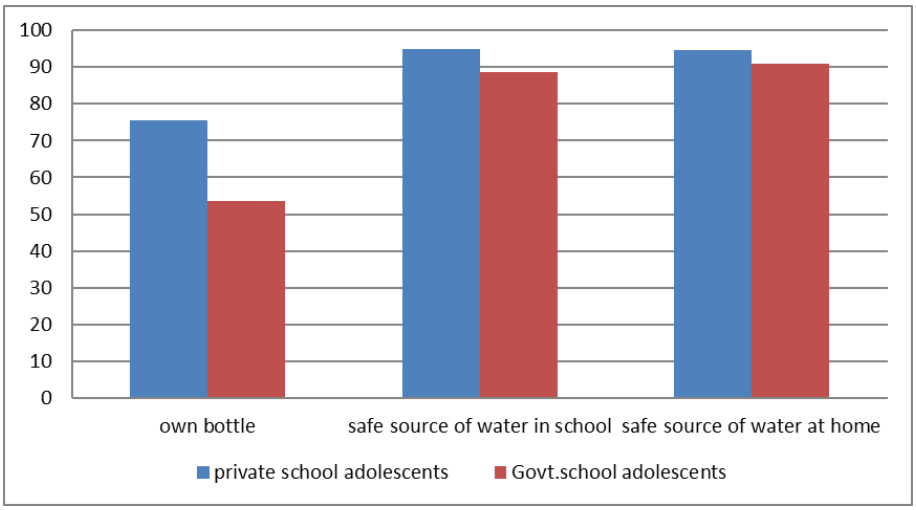

Figure 2 Comparison of Drinking water status in private and Government school

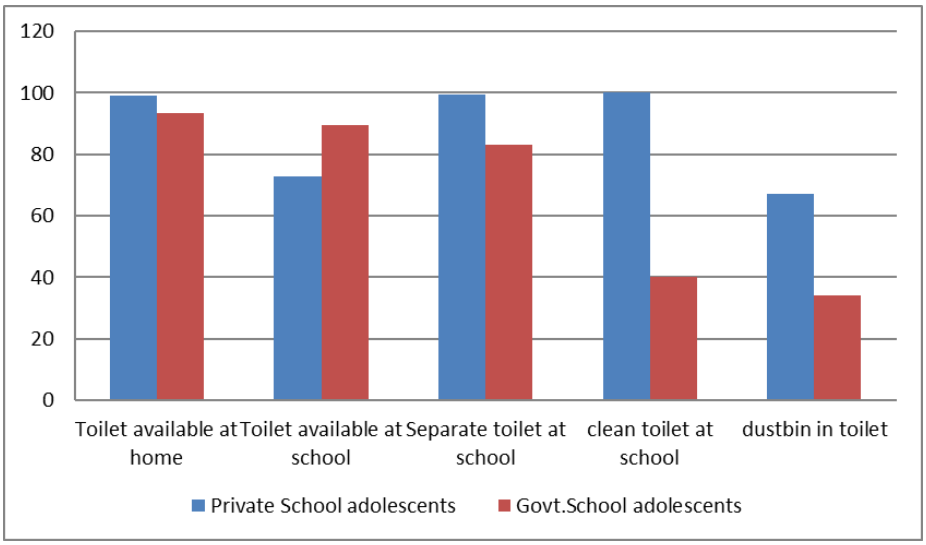

Figure 3 Toilet & sanitation facility available to school adolescents

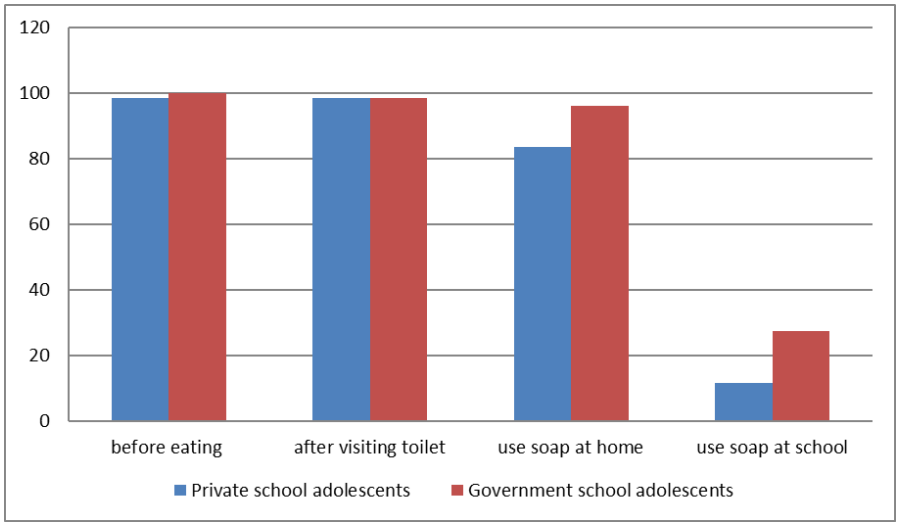

Figure 4 Comparison of Hand hygiene practices between adolescents from Private & Government School

Table 3 Water, Sanitation and Hand hygiene practices among adolescents of Private and Government schools

WASH practice	Basic services	Adolescents from Private school (N=200) (%)	Adolescents from Government school (N= 200) (%)	Total (N=400) (%)	Chi-square; P value (*)
Drinking water facility	Own bottle				
	Present	151(75.5)	107 (53.5)	258(64.5)	21.138;
	Absent	49 (24.5)	93 (46.5)	142(35.5)	0.000*
	Safe source at school				
	Present	190 (95)	177 (88.5)	367 (91.8)	5.58;
	Absent	10 (5)	23 (11.5)	33 (8.2)	0.018*
	Safe source at Home				
	Present	189 (94.5)	182 (91)	371 (92.8)	1.82;
	Absent	11 (5.5)	18 (9)	29 (7.2)	0.17
Sanitation facility	Toilet facility available at home				
	Present	198 (99)	187 (93.5)	385 (96.3)	8.38;
	Absent	02 (1)	13 (6.5)	15 (3.7)	0.004*
	Toilet available at school				
	Present	146 (73)	179 (89.5)	325 (81.3)	21.95;
	Absent	54 (27)	21 (10.5)	75 (18.7)	0.000*
	Separate toilet at school				
	Present	199 (99.5)	166 (83)	365 (91.3)	34.09;
	Absent	01 (0.5)	34 (17)	35 (8.7)	0.000*
	Condition of toilet				

	Clean	200 (100)	80 (40)	280 (70)	171.4;
	Dirty	0 (0)	120 (80)	120 (30)	0.000
	Dustbin available in toilet (MHM)				
	Available	134 (67)	68 (34)	202 (50.5)	43.56
	Not available	66 (33)	132 (66)	198 (49.5)	0.000*
Hand Hygiene practices	Hand-wash before eating				
	Present	197 (98.5)	200 (100)	397 (99.3)	3.02;
	Absent	03 (1.5)	0 (0)	3 (0.7)	0.221
	After visiting toilet				
	Present	197 (98.5)	197 (98.5)	394 (98.5)	1.2;
	Absent	03 (1.5)	03 (1.5)	6 (1.5)	0.549
	Use of soap at home				
	Yes	167 (83.5)	192 (96)	359 (90)	17.30;
	No	33 (16.5)	08 (4)	41 (10)	0.000*
	Use of soap at school				
	Yes	177 (88.5)	145 (72.5)	322 (80.5)	16.76;
	No	23 (11.5)	55 (27.5)	78 (19.5)	0.000*

In Table 2, the level of personal hygiene is indicated according to gender and age. In this table, it can be seen that as age progresses the level of hygiene also increases and it has shown significant association while gender has no effect on level of personal hygiene.

As per Fig.1, it shows a comparison of personal hygiene between private & government school adolescents – Level of personal hygiene is better among adolescents from private school (58.3%) as compared to adolescents from government school.

Figure 2 compares the status of drinking water available to students of private and government students. Most students in private schools appear to carry bottles of water from their homes for drinking water. The majority of private schools (95%) had a safe source of drinking water, compared with 88.5% in public schools. It has been seen that 99.5% private schools were having separate and clean toilet facility for girls as well as boys as compared to government schools. Even there were separate dustbins facilities available in 67 % of private schools as compared to government schools as shown in Fig.3.

Comparison of hand hygiene practices in private and government school is shown in fig.4. Hand washing before eating was 100% followed, after visiting toilet (98%), as well as at home(96%) was seen to be higher among adolescents of Government schools only use of soap was 27% which is still better as compare to private school.

Table 4 shows- More than 2/3rd of the adolescents from private schools were carrying their own water bottle as compare to half of adolescents from Government school were carrying water bottles which was found to be highly significant ($p< 0.000$). The water source of 95% of private schools was found to be safe, compared to 88.5% of public schools and showed a level of significance $p < 0.018$. The source of water at home was found to be safe for nearly 95% of adolescents in private schools and 91% of students in public schools. Overall, potable water facilities are significantly associated with the type of school (i.e., private and government) as $p < .05$, except for safe sources at home.When inquired about availability of toilet facility at home, 99% adolescents from private schools were having toilets at their homes while 93% adolescents from Government school have toilets at their home ($p<0.004$). Toilets were available to majority of adolescents from Government school i.e. 90% as compare to 73% of adolescents from private schools (p

<0.000). Separate toilet facility was available to 99.5% adolescents from private schools as compare to 83% adolescents from Government schools which was found to be highly significant (p <0.000). Condition all of the toilets from private schools (100%) were found to be satisfactory as compare to Government school as 60% of toilets were found to dirty (p < 0.0000).

Among private schools, 67% of schools were having dustbins for maintenance of menstrual hygiene or disposal while in 66% government school's dustbins were not there (p <0.000).

Hand washing practices before eating food, after visiting toilet was found to be similar and satisfactory among adolescents of both private as well as government schools. At home, use of soap was better among adolescents of government school (96%) than private (83.5%) (p<0.000) While majority of the adolescents i.e. 88.5% from private and 72.5% from government schools was using soap for hand-wash at school. (p<0.000)

4. Discussion

The personal hygiene of adolescents in school is an important issue with a significant impact on the health and well-being of children. The physical environment and cleanliness of the school make an important contribution. As per Global baseline report of UNICEF and World Health Organization, in 2016, globally 69 % of schools had basic drinking water services while 19 % (570 million) children lacked drinking water services. One in four primary schools and one in six secondary schools had no drinking water. 66% of schools had basic sanitation and 23% (620 million) of children did not have access to basic sanitation. One in five primary schools and one in eight secondary schools had no sanitation services. Student toilet ratio often exceeded national guidelines. 53% of schools had basic hygiene service, i.e. hand washing facility with water and soap. 36 % had no hygiene services (900 million children) [10]

Prevalence of water borne diseases was 12.2% rural area of Chennai. [11]

In this study, we have found that the personal hygiene is advancing with advancement of age. This is due to self-image and development of understanding about importance of hygiene. Private schools adolescents are having most of the time all amenities in place so thereby have good levels personal hygiene 58.3% as compare to Government schools. In this study, WASH facilities was found to be better in private schools as compare to Government schools.

The 95% source of water from a private school proved safe, compared to 88.5% of government schools and showed a level of significance p < 0.018. It was found that 99.5% of private schools had separate, clean toilets for girls and boys, compared with 83% in public schools.

Even separate bins were available in 67 percent of private schools, compared to 34 percent in public schools.

Hand washing before eating was followed at 100%, after visiting the washroom (98%), and at home (96%) was considered higher among adolescents in government schools. Soap usage was 27% among teenagers in public schools, which is even better than private school. Published by Majra et al. , 90% of schools have adequate consumption points, 10% of schools have hand-washing facilities, only 60% have appropriate latrines. [12]

According to a WaterAid India study, which included 453 schools in 34 states, drinking water was not safe in 15 per cent of schools. Functional toilets were found in 95% of the schools in assessment across nine states, with 76% of the schools having separate toilets for male and female students. In 39% of schools, toilets were found to be locked. On speaking to students, two-thirds stated that all toilets in their schools were clean, 31% reported foul smelling toilets, and 81% noted the lack of dustbins in or near the toilet facility. 31% of the schools assessed were deficient in hand washing facilities outside the toilet. 34% of the schools had no running water for hand washing and a little over half did not have soap near toilet facilities. [13]

5. Conclusion

Following the launch of the Swatch Bharat Abhiyan, overall WASH practices are enhanced. Practices among teenagers in private schools were found to be satisfactory, but improvements were also observed in public schools. Most of the time, teenagers miss school for lack of core WASH practices. Further studies would be required on large scale across the nation to find out gaps if any.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There is no any conflict of interest.

Statement of ethical approval

This study was conducted after approval from Institutional Ethical Committee.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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