Original Article

Assessment of Water and Sanitation Facilities in Government Schools of Bhopal - A Cross-Sectional Study

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Abstract

Background: It is essential that everyone have access to clean drinking water and sanitary facilities and a human right. Inadequate water and sanitation can lead to a number of health problems including stunted growth, diarrhoeal illness and even death among children. Water and sanitation related disease remain one of the most significant child health problems worldwide Many schools in developing and developed countries lack adequate water and sanitation services with associated potential detrimental effects on health and school attendance. This study was carried out to assess the water and sanitation facilities in government schools of Bhopal after the launch of Swacch Bharat, Swacch Vidyalaya mission. **Material and Methods:** This study was a School based Observational Study carried out over a period of 6 months in 196 Government Schools of Bhopal. A complete list of all Government schools of Bhopal was obtained and 196 schools were selected randomly. Information was collected about school strength, availability and type of toilet facilities, availability of drinking water, designated hand washing space, presence of soap and water, availability of dustbins, Menstrual Hygiene Management facilities etc. Thus, information was gathered and examined. The statistical techniques of proportion and percentage were applied. **Results:** Out of 196 school surveyed, 78 (39.85%) were primary school, 86(43.9%) were middle school and 32(16.3%) were high/higher secondary schools. Enrolment level in a single school ranges from 31 to 1600 with an average of 241 students. The majority of school surveyed (90.82%) indicate that they have toilet facilities available. Separate toilet for girls was present in 82.80%of schools. Student toilet ratio deviated from the recommended ratio of 40:1 in more than 50% of the schools, 101 schools for girl's toilet & 88 schools for boy's toilet. The student toilet ratio ranges from 11:1 to 350:1 for boys &13:1 to 375:1 for girls. 73.78% of the toilets were found to be dirty. In 79.08% schools, hand washing practice was observed whereas in 20.9% schools, hand washing was not done. Designated place for hand washing was observed in 77.6% schools. The most common place for hand washing were near the toilets reported by 41% schools that have hand washing facilities followed by near the classroom (25.3%). Only 60.2% school had soap available at handwashing facility. 70% schools had adequate water inside the toilet for washing and flushing of toilet while 30% don't have. 63.64% schools had disposal facilities for soiled sanitary materials. 70.9% have doors and door locks for safety and privacy purpose. **Conclusion:** Considering the fact that the present study was conducted in a capital city where schools have a better condition compared to rural set up. A good number of schools in this urban area were found to be falling short of several essential requirements regarding sanitation facilities which needs to be rectified. Thus, it is necessary to provide a healthy school atmosphere for the students in order to harness their potential as the most effective community advocates for hygienic habits.

Keywords: Bhopal, Government schools, Menstrual hygiene, Sanitation, Toilet facilities.

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Introduction

It is a basic necessity and a human right for everyone to have access to clean drinking water and proper sanitation. There were still 663 million people without access to clean drinking water worldwide in 2015. 2.4 billion people do not have access to better sanitation facilities, and 946 million continue to defecate in the open.[1] According to data from NFHS-4, 33.7% of Indian households had latrines, while 84.7% of the country's MP population had access to an upgraded source of drinking water. This was 96.8% and 66.6% in urban areas and in rural, it was even less – 79.5% and 19.4 %.[2] Even though the advantages of better hygiene are widely known, the MDGs did not include them in their targets. Hand washing with soap is the most important hygiene behavior that is thought to be beneficial to health in all contexts. The health, safety, and dignity of women depend heavily on having access to basic facilities for managing menstrual hygiene. The availability of soap and water at a specific location has been demonstrated to be a reliable proxy indicator, notwithstanding the difficulty of tracking hand washing behavior. According to data from more than 50 nations, most people do not currently

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wash their hands with soap. There are differences in access between various populations and environments, such as between urban and rural locations.[1] Children who suffer constant water related illness are at a disadvantage in school, as poor health directly reduces cognitive potential and indirectly undermines schooling through absentees, attention deficit and early drop out. Additionally, lack of adequate Menstrual Hygiene Management facilities for girls at school discourages them from attending full time, affecting their academic performance perpetuating inequality.[3] WASH intervention reduce morbidity and mortality caused by diarrhoeal illness and has been associated with decreased risk of Trachoma, Ascariasis infection and ARI. Findings from meta-analysis by Fewtrell and Colford using hand washing and hygiene promotion data reveal that hand washing and hygiene promotion alone contribute to 44% and 42% reduction in morbidity due to diarrhoea implying that hand washing at critical times can prove vital.[4] Since school-age children account for a large portion of the burden of soil-transmitted helminth morbidity and experience over 2.8 billion bouts of diarrhea yearly, the issue of inadequate water and sanitation is particularly significant to them. There are other health issues that can result from inadequate water and sanitation, such as stunted growth, diarrheal sickness, and even mortality.[5] With the launch of Swach Bharat Abhiyaan the Prime Minsiter reiterated our social responsibility as citizens to help fulfil Gandhiji's vision of clean India. Swacch Bharat, Swacch Vidyalaya is a national campaign driving Clean India – Clean Schools with special focus on to ensure that every student in India has a set of functioning and well maintained water, sanitation, and hygiene facilities.[6] Bhopal lacks the basic, disaggregated data on school water and sanitation facilities. Thus, the purpose of this study was to determine the present condition of school water and sanitation is concerned after initiation of Swacchbharat, Swacch vidhyalaya abhiyaan.

Materials and Methods

Study site: This cross sectional study was conducted in Bhopal, M.P.

Sampling: A list of all government schools of Bhopal was obtained. There are total 422 government schools in Bhopal with 322 primary and middle schools, 41 high schools and 59 higher secondary schools. The schools were arranged alphabetically and then distributed as per their constituency. Bhopal is divided into 7 constituencies. A total of 211 schools (50% of total schools) were selected randomly, 30 schools from each constituency using random number table. But only 196 schools were actually surveyed because in remaining 15 schools, either permission was not given or the school premises were closed at the time of visit.

Study Duration: The study was conducted over a period of 6 months. Informed consent was obtained from the principals of schools.

Data was collected with the help of interns who received training in gathering study data. Data for the study was obtained primarily from semi structured questionnaire which consisted of two parts, the first part focused on basic school information such as type of school, girls/boys, strength of students. The second part focussed on information obtained from physical observation of facilities related to water and sanitation of the respective schools. Data thus collected were compiled and analysed using MS Excel. Percentage and proportion were used as statistical methods.

Results

This was a school based cross-sectional descriptive study involving 196 government schools of Bhopal, Madhya Pradesh, India. Out of 196 school surveyed, 78 (39.85%) were primary schools,86 (43.9%) were middle schools and 32(16.3%) were high/higher secondary school. Ten schools were boys only school, 26 schools were only for girls whereas 160 schools were co-educational. Enrolment level in a single school ranges from 31 to 1600 with an average of 241 students.

The observations regarding overall sanitation facilities, hand hygiene and Menstrual Hygiene Management (MHM) facilities for adolescent girls are depicted in table 1, 2 and 3 respectively.

The study found that despite availability of toilet facilities in schools, they are not adequate for the number of enrolled students. Student toilet ratio deviated from the recommended ratio of 40:1 in more than 50% of the schools, 101 (54.3%) schools for girl's toilet & 88 (51.7%) schools for boy's toilet. The student toilet ratio ranges from 11:1 to 350:1 for boys &13:1 to 375:1 for girls. In 29.1% schools, the doors did not lock or close properly. Despite making headway in providing separate toilet facilities for boys & girls, more is needed to improve privacy by ensuring that toilet facilities everywhere have secure doors. 73.78% of the toilets were found to be dirty, cleanliness of toilets was assessed by parameter using urinal smell, presence of flies, pool of water on floor, presence of stool on the pan or squatting plate.

The most common place for hand washing was near the toilets reported by 41% schools that had hand washing facilities followed by near the classroom at 25.3%. Other places for hand washing includes near the kitchen. In addition, many schools that have hand washing facilities are faced with the challenge of not having soap. Only 55.1% schools had soap available at hand washing facility.

Table 1: Sanitation facilities in Government school of Bhopal

S.NO	Sanitation Faciliteis (n = 196)	Present (%)	Absent (%)
1.	Availability of Toilets	178 (90.82)	18 (9.18)
2.	Separate Toilets for Girls	154 (82.80)	32 (17.20)
3.	Separate Toilets for Teachers	169 (85.7)	28 (14.3)
4.	Availability of Buckets & Mugs in Toilet	124 (63.3)	72 (36.7)
5.	Clean Toilets	59(30.1)	137(69.9)
6.	Doors Lock & Close Properly	139 (70.9)	57 (29.1)
7.	Overhead Tanks	123 (62.70)	73 (37.3)
8.	Air Vent in toilets	143 (72.95)	53(27.05)

Table 2: Availability of Hand Washing Facility in Government schools of Bhopal

S.no	Variable (n = 196)	Yes (%)	No (%)
1.	Proper Place For Hand Washing	152 (77.6)	44(22.4)
2.	Practice of Hand Washing Done	155 (79.08)	41 (20.9)
3.	Availability of Soap For Hand Washing	108 (55.10)	88 (44.90)

Table 3: MHM Facilities for Adolescent Girls

S.no	Faciliities (n = 186)	Present (%)	Absent (%)
1.	Dustbin Inside/Near Toilet For Sanitary Pad Disposal	118 (63.64)	68 (36.36)
2.	Adequate Water For Washing And Flushing	130 (70.0)	56 (30.0)
3.	Adequate & Private Space For Changing	97 (52.1)	89 (47.84)
4.	Availability of Soap For Hand Washing	108 (55.10)	88 (44.90)

Discussion

School children spend good amount of time of their daily life at school. The school environment constitutes a major influencing factor as far as their health is concerned. This study gives an insight into the situation analysis and priority issues of these factors in schools in an urban set up in India. To improve the sanitation and cleanliness in schools Indian government started Swacch Bharat, Swacch Vidyalaya Abhiyaan for 100% coverage of school with toilets including separate toilet for girls by August 2015.[6] But in reality we are far from this target till now. In our study we found that 90.82% schools had available toilets with only 80.2 % of school had separate toilets for girls. In an another small study done by Joseph N et.al which included 30 schools reported toilets in every school, whereas 17% school didn't had separate toilets for girl.[7] As per Swacch Vidyalaya Abhiyaan every school should have student to toilet ration of 40:1 for both boys and girls for maintaining adequate hygiene and sanitation. In this study only 45.70% school had this ratio for girls and 48.24% for boys which was far away from target. This might be because these facts were not considered during construction of the school buildings and numbers of toilets were not increased with the increase in number of admissions. Menstrual hygiene management for adolescent girls is another important aspect of Swacch Vidyalaya Abhiyaan which include availability of soap, adequate and private space for changing, adequate water for cloth washing and disposal facilities for menstrual waste, including an incinerator and dust bins. We found only 50 -70 % of school fulfilling this criteria. This is an important area where school authorities need to focus considering the fact that lack of privacy leads to drop outs. To improve these facilities Indian government has recently launched national guidelines for menstrual hygiene management. In our study we also monitored practice of hand washing. We found only 77 % of schools had designated place for hand washing whereas only 55% of schools had soap available for hand washing. In another survey by DISE (District Information System for Education) showed 51% schools had designated place for hand washing whereas availability of soap was present in 60 % schools.[8,9]

Conclusion

Many of the schools' current water and sanitation infrastructure is inadequate. A good number of schools in this urban area were found to be falling short of several essential requirements regarding sanitation and water facilities. Therefore, in order to tap the potential of the school children as the most persuasive advocates of good sanitation practices in the community, it is required to provide them with adequate water and sanitation facilities. As per SwacchVidyalayaAbhiyaan every school should have student to toilet ration of 40:1 for both boys and girls, which is not being followed in most of the surveyed schools. This should be considered immediately. Government should make provision for the construction of more secure toilet facilities to reduce the student toilet ratio to the recommended ratio of 40:1. There should be promotion of increased public investment in school hand washing facilities, special needs for girls in schools such as MHM, disposal bins, and secure toilet facilities. Schools should promote increased WASH promotional activities in schools and surrounding communities leaded by pupils, teachers, and local theatre or drama groups to increase the awareness about water and sanitation.School administration and concerned authorities needs to introspect and rectify the various loop holes identified in this study for the betterment of water and sanitation facilities in schools for the benefit of students.

The strength of our study are1) This is one of few studies including 196 schools whereas previous studies only had included 30-50 schools.2) Following the launch of nation-wide Swacch Bharat, Swacch Vidhyalaya Abhiyaan, we tried to access the effectiveness of this program through our study. 3) We included all three component of the program including toilet facilities, hand hygiene and menstrual hygiene management facilities.

This study also had certain limitations: As we surveyed only government schools the data regarding private schools is not presented. This data represent conditions of schools in an urban area whereas situation in rural schools might be different. We also didn't assess the behavioural change communication activities related to WASH (water sanitation and hygiene) in schools.

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Conflicts of interest

There are no conflicts of interest.

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