Environment Pollution and Climate Change

Tsige et al., Environ Pollut Climate Change 2019, 2:4
DOI: 10.4172/2573-458X.1000168

Research Article Open Access

Status of School Sanitation Service and Factors Affecting School Water, Sanitation and Hygiene Services: A School-Based Cross-Sectional Study

Tsige W[1]*, Kummie A[2] and Dejene T[3]

[1]The Netherland Development Organization (SNV), Ethiopia
[2]School of Public Health, College of Medicine & Health Sciences, Addis Ababa University, Ethiopia
[3]Department of Public Health, Debrebrhan University, Ethiopia

Abstract

Background: Provision of safe water and sanitation facilities in schools is an opportunity towards living in a healthy learning environment. However, many schools in developing countries lack adequate water and sanitation services. Therefore, this study intended to assess the status of school sanitation service and describe the reasons affecting school Water, Sanitation and Hygiene services in Kimbibit Woreda.

Methods: A Cross-sectional study design, involving all public schools (48) found in the area were employed in North Shewa Zone Kimbibit Woreda. Both quantitative and qualitative methods were used to collect data. Data was entered, cleaned using EPI INFO version 3.5.3 and exported to SPSS version 20 statistical package for further analysis. Descriptive statistics were used to present the findings.

Results: School population ratio to single latrine seat was found 60:1. Latrine ratio for female students was lower than males. Predominantly about 34 (70.8%) of schools were utilized a simple pit latrine. The proportion of separate latrine for male and female students were 29.2%, and only 16 (33.3%) were kept as hygienic. The hand washing facilities near to the latrine were very low, which was 9 (6.3%), and none of this facilities have had water supply and ash or soap for hand washing. A very few 8 (16.7%) latrines were found to be safe to be utilized by the respondents. Eleven (22.9%) of the school latrines were kept clean as much as possible. In 16.7% of school, health education program was provided to students abruptly. Only 18 (37.5%) schools had school WASH club and even these club were not well functional. On the other hand, the level to which water is utilized in the school depends on the accessibility of the water source within the school and the ease with which the water can be fetched from the source. The main water sources were accessible from protected spring water 18 (37.5%) and Borehole or shallow well 18 (37.5%).

Conclusion and recommendation: The overall findings revealed that the public schools lacked basic facilities and services of water, hygiene and sanitation and are generally unsafe. Therefore, a coordinated effort need among different stakeholders to safeguard school environment.

Keywords: Schools; Latrine; Wash; Sanitation facilities; Water supply

Introduction

Water and sanitation are great concern in the world, for instance, many of the word school age children have attended the school without water and toilet; surprisingly 40% of the world school-age children have worm infections, predisposing to cognitive and development problems and approximately 5000 children have died every day due to water, sanitation and hygiene related diseases [1].

Water and sanitation are among the priority of the world, providing schools with appropriate water and sanitation facilities has been declared as one of the component of the target of the goal 6, post 2015 (MDG) [2]. The government of Ethiopia included water and sanitation in its developmental agenda, the National hygiene and Sanitation Strategy aims at 100% adopting of improved sanitation and hygiene by community and schools [3]. Poor sanitation leads to 700,000 premature deaths annually [4]. Disease related to poor sanitation and water availability because many illnesses and even die 2.2 million died because of diarrheal disease [5]. Disease related to water, sanitation and hygiene are a huge burden in Ethiopia; It is estimated that 88 percent of diarrheal disease is caused by unsafe water supply, inadequate sanitation and hygiene [6]. Many schools in Ethiopia lack adequate water and sanitation services, with associated potential detrimental effects on health and school attendance [7].

Across the country, women and children waste several hours every day fetching water. For girls, the job of transport water, combined with little of sanitary facilities in schools, often stands in the way of their education [8]. It is estimated that in Ethiopia only 33% of schools have improved sanitation facilities for students and teachers and only 31% have access to water [9].

Factors related to water, hygiene and sanitation affect children right to education in many ways, in an atmosphere of poor health children are unable to fulfill their education potential for example 400 million school aged children a year are infected by intestinal worms, which research shows sap their learning abilities [10]. School particularly those in rural area, often completely lack drinking water and sanitation and hand washing facilities alternatively, where such facilities do exist they are

***Corresponding author:** Wondwosen Tsige, MPH, (WASH Capacity Building Advisor) the Netherland Development Organization (SNV), Bahirdar, Ethiopia, E-mail: wendetsige@gmail.com

Received December 06, 2018; **Accepted** January 02, 2019; **Published** January 09, 2019

Citation: Tsige W, Kummie A, Dejene T (2019) Status of School Sanitation Service and Factors Affecting School Water, Sanitation and Hygiene Services: A School-Based Cross-Sectional Study. Environ Pollut Climate Change 2: 168. DOI: 10.4172/2573-458X.1000168

often inadequate in both quality and quantity, school with poor water sanitation and hygiene condition, and intense level of person to person contact are high risk environment for children and staff, and exacerbate children particularly susceptible to environmental hazards [5,11].

Situations vary from unsuitable and insufficient sanitary facilities to the total lack of latrines and safe water for drinking and hygiene. This is true in the situation of Ethiopia that 30% of schools do not have any latrine facilities and water supply [12]. This situation contributes to nonattendance and the high drop-out rates of girls. Absenteeism is one of the causes of poor academic performance and girls are more possible to be frequently absent from school due to poor, or lack of, hygienic facilities in schools [13].

According to the national wash inventory data in Ethiopia schools with access to safe water supply is 31%. And when we see the regional data in Oromia Region it is estimated to 25% [9].

Lack of safe water, basic sanitation and hygiene may account for as much as 88% of the disease burden due to diarrhea [14]. Sanitation provision in Ethiopia is grossly deficient, as in most cities in sub-Saharan Africa. Most public schools in Ethiopia do not have access to a hygienic toilet; large amounts of faecal waste are discharged into the environment without adequate treatment; this is likely to have major impacts on infectious disease burden and quality of life.

As a matter of fact, the existing sanitation condition for many of schools in Ethiopia is very bad, most school latrines are filthy and unclean, and the poor condition is contributing to a high level of disease prevalence creating poor learning environment and especially impacting on girl's education. There are two major causes to these problems. Firstly, about 30% of schools in Ethiopia do not have any water supply or toilet facilities for sanitation and hygiene at all, and schools with toilets do not have hand washing facilities, they may not have sufficient water for hand washing. Secondly toilets are not managed properly and many school toilets are filthy and unusable and school children often resort to open defecation [15]. According to the national WASH inventory 2012 schools that are access to improved latrine in Oromia region was 29%. Therefore, the aim is to assess the status of school sanitation service and factors distressing school Water supply, Sanitation and Hygiene services.

Methods and Materials

The study took place in Kimbibit woreda, which is located 78 km away from Addis Ababa in the northern part of the country. It has an estimated population of 90,904.There were four health centres and 29 health posts; and three private clinics. According to the Woreda health office report, the latrine coverage of the woreda was estimated to be 59%.

Cross-sectional, school-based study design was employed from May to June 2014. The source populations were all governmental primary and junior Schools' directors; excluding high school in qimbibit woreda.

To determine the sample size, all primary and junior schools (48), except high school were considered. In Kimbibit, there were 50 governmental schools with a total number of 18,000 students and 576 teachers. Of these, 48 primary and junior schools were selected. The primary and junior schools directors or representatives were take part as respondents.

Data were collected in May 2014, using a standardized questionnaire, focus group discussions (FGD) and observations. From primary and junior public schools, forty eight directors were considered to participate in self-administered questionnaire. In each public school, the director was targeted, but in situations where the director was not available after two or three visits, the vice director was questioned.

The questionnaire comprised with the characteristics of schools population, school sanitation profile (Sanitation facilities, type of toilet facility, sanitation facilities condition and source of water).

The data collection tool was first prepared in English. It was translated to local language Oromiffa, and back to English again in order to maintain the validity of instrument. Six data collectors and two supervisor who were worker in public health center were recruited. A one day intensive training was given for data collectors and supervisors before the pretest had been undertaken. The supervisor and principal investigator had closely followed the day-to-day data collection process and ensure completeness and consistency daily.

Additionally, three focus group discussion (FGD) sessions (comprising 20 students and 4 office officials) were conducted to complement the findings from the surveys. The purposive sampling method was adopted to choose the discussants for the focus group discussions. This was done to ensure fair representation of all stakeholders in the discussions. Consent was sought to tape-record the session and later transcribe the recording to enrich the qualitative analysis. Observation of the existing toilet facilities was done. Items observed were cleanliness of the toilet, the nature of the toilet bases, number of hollows, as well as the general design of the toilet facility, from the superstructure to the excreta storage.

The prime purpose of these focus group discussions was to complement the data that was generated by quantitative survey, elaborate issues that may not be clearly reflected in the survey findings and also to identify the information, knowledge and opinion of the participants on school sanitation, adequate water supply and services. The discussion was moderated by the principal investigator and one other experienced professional in FGD as assistance. The purpose, of the discussion was explained to the participants and verbal consent obtained. All selected individuals have agreed to participate in discussions. Tape-recorded as well as hand in hand notes were taken both by the principal investigator and assistant during focus group discussion.

The statistical analysis was done using Epi Info Version 3.5.3 for data entry, clean and then exported to SPSS software version 20.0 for further analysis. After the data entry, it was edited and cleaned before analysis. Descriptive summaries such as frequency, and percentage were utilized to explain the study variables.

Ethical clearance was obtained from Debrebirhan University College of health science; Institutional Review Board. Supportive letter was taken to each Woredas' School. Informed verbal consent was obtained from each respondent in the school.

Results

Forty eight primary and junior school directors or representatives with a response rate of one hundred percent were participated.

According to this survey, there were total of 13,688 students in the selected schools. Of these students, 6856 (50.1%) were males and 6832 (49.9%) were female students. A total of 506 teachers were working in both primary and junior schools. Of these, 252 (49.8%) were male and 254 (50.2%) were female teachers. Sixteen (33.3%) of schools were primary level (1-4) while 32 (66.7%) of them were junior schools (1-8).

Regarding to sanitation facilities, 34 (70.8%) of either primary or junior school in the area were found to have pit latrine. On the other

hand, there are 226 seat/stances and a latrine to population ratio was 1:60.6, the latrine to population for teacher was 1:7.2 and 1:84 for students (Table 1) about 29.2 % of the schools had separate latrine for male and female students and only 16 (33.3%) were kept as hygienic.

Nine (6.3 %) of school had hand washing facility near the latrine and none of this facility have had water supply and ash or soap for hand washing. About 8 (16.7%) of the latrine were found to be safe to use by the students. Eleven (22.9 %) of the school latrines were kept clean as much as possible. About in 16.7% of school, health education programs were provided to students abruptly to mitigate the problem. Only 18 (37.5%) schools had school WASH club and even these club were not well functional. On the other hand, the level to which water is utilized in the school depends on the accessibility of the water source within the school and the ease with which the water can be fetched from the source. In this study, the main water sources were found from protected spring water 18 (37.5%) and Borehole or shallow well 18 (37.5%). None of the water supply was tested its quality Table 2.

Discussion

This study attempted to assess the status of school WASH. In addition, the study tried to describe reasons affecting school WASH.

The male to female ratio in this school was 1:1 this was slightly different from a survey 0.81:1.01 done by the central statistics agency [16]. The ministry of education and health have set policies, on the schools to be comfortable learning environments providing at least toilet and first aid facilities; but as to the assessment those facilities in kimbibit woreda were inadequate. The student to latrine ratio was 84:1, the total population to latrine ratio was (60:1). And this is lower than the recommended (50:1) [17].

In this finding, most school had simple pit latrine (70.8%), improved pit latrine (25%) and 4.2% had not have any type of latrine, which is somewhat higher than the national coverage 30% [14]. This might be due to the fact that there was a persistent health education programs carried out in the schools. A studies conducted in Burkina Faso revealed that approximately 49% of rural primary school have improved or traditional latrines, and other study in Togo on school sanitation indicating that only 30% of the primary school had latrine [15]. The study in Vietnam indicates that 72.7% of the rural schools had latrines although at 21.3% of schools (with or lacking latrines), the children defecated in forest, gardens, fields, and along streams and rivers. Also, it was well-known that teachers and school cleaners did not strongly manage student defecation practice this was due to, student lack detail knowledge and hygiene behavior [12].

Variables	Frequency (n)	Percent (%)
No of students		
Male	6856	50.1
Female	6832	49.9
No of teachers		
Male	252	49.8
Female	254	50.2
School level		
Primary (1-4)	16	33.3
Junior (1-8)	32	66.7
Sanitation facilities		
VIP latrine	12	25
Pit latrine	34	70.8
No latrine	2	4.2

Table 1: Characteristics of schools population, Kimbibit, May 2014.

Variables	Frequency (n)	Percent (%)
Availability of separate latrine for boy and girl students		
Yes	14	29.2
No	34	70.8
Hygiene condition of the latrine		
Hygienic	16	33.3
Not hygienic	32	66.7
Availability of hand washing facility close to school latrine		
Yes	9	6.3
no	39	93.7
Safety of the latrine		
Yes	8	16.7
No	40	83.3
Condition of sanitation facilities		
Student just defecate anywhere	18	37.5
The seat is kept clean	11	22.9
The seat is never cleaned	19	39.6
Health education given to students		
Yes	8	16.7
No	40	83.3
Availability of school WASH Club		
Yes	18	37.5
No	30	62.5
Type of water sources		
Protected water spring	18	37.5
Borehole or shallow well	18	37.5
Un protected spring	12	25

Table 2: The status of School sanitation facilities, water supply; Kimbibit, May 2014.

A study conducted in Nigeria showed that only 25% had functioning latrine [18]. And other study in this country indicates 38.5% of school do not use the latrine at all because they are unpleasant or unsafe [19]. In the study area, the condition of the sanitation facilities were far from expected, which were not suitable for use. Nearly forty percent of the facilities were not safe, and hygienic enough. A 14 years old FGD participant girl said that:

"we are not happy to use the latrine because of the hygiene of the latrine the floor is full of urine and excreta and even there is no place to stand in the latrine room and due to this most student prefer to defecate in the bush and openly near the school."

According to this finding, only twenty nine percent of schools had separate latrine for boys, girls and teachers. A study done in Nigeria primary school indicates out of 25 primary schools 17 (68%) have separate latrine for male and female students and 2(8%) were without latrine [20]. Children and mainly girls are without their right to education because their schools lack individual and well-mannered sanitation facilities [21]. Girls need safe and sound, hygienic, separate and personal sanitation facilities in their schools [9]. Lacking in of sanitation facilities causes girls to dropout of schools, due to the shame of sharing toilets with boys particularly when they reach puberty. A study done in Bangladesh a school sanitation program increase girls enrollment by 11% [22]. Absenteeism is one of the causes of poor academic performance [23]. The seat stand/stance is large and not appropriate for them and students are afraid to use it and the latrine was also do not ensured privacy of users. Only twenty nine percent of the respondents were agreed that their privacy was ensured. A 15 years FGD participant said that:

"Only one of the latrine rooms contained doors and that was also open from the ground and the wall of the latrine also had a hole and

some students can easily look at us and due to this we are afraid to use the latrine."

A cross-sectional study conducted in Zimbabwe and Vietnam indicates that students did not utilize the toilet appropriately. Urine was marked all over the floor and excreta were not appropriately disposed of. The main barriers for latrine use incorporated insufficient number of latrines, inadequate accessibility to latrines, not have of regular water supply in latrines and lack of latrine maintenance by school administration. Programs promoting latrine use for children were not conducted in any schools and were not recognized as a chosen social custom in such settings. Children supposed accessible school latrines as unpleasant and expressed a desire to have basic, well-designed, hygienic, and bright school latrines with isolation [24,25]. This was conforming to this findings and substantial proportions of schools students just defecate on top and urinate anywhere. From FGD 15 years boys said:

"their latrine are not kept as clean due to poor awareness of students and weak follow up from teachers side and there is no responsible person was assigned to follow the cleanliness of the latrine."

A study done in South Africa indicates that a number of schools in urban 75% had proper hand washing facilities, but there was no soap existing. But the water supply and sanitation facilities were insufficient in rural schools with no hand washing facilities. Another study conducted in Malawi indicate that out of eleven school only two school have hand washing facilities none of schools has soap for hand washing. In the study area, ninety four percent of the schools lack hand washing facility close to school latrine, which has huge gap. This is might be mainly associated with the economic development of the country and low awareness on the importance of the facilities. Study done in China indicates that diarrhea reduction of 48% with hand washing with soap [26-29]. A 40 years old FGD participant; education expert said that:

"Complementary facilities are not provided to school due to shortage of budget and trained profession in the area of WASH."

Teachers had a big role in promote healthy learning environment. A study done in Kenya discovered that teachers engage pupils frequently on discussion about health. In these schools, the number of children who washes hands frequently increased from six percent to over 80 percent in a period of ten month. Protected spring water and borehole water sources were used as main source of drinking water supply for schools, which is lower than the national data and this might be due to the national data include all school across the country. The study in Nigeria only 35% of school had water supply in school compound and another large sample study in Burkina Faso indicated 33% of rural school had a potable water [8,26,28].

Limitation

The short coming of this study was the cross-sectional nature of the study, which is unable to correctly demonstrate the way of relationship or association.

Conclusion

The findings revealed that there were inadequate sanitary facilities such as latrine, water supply, and hand washing. Furthermore, the existed facilities were poor in quality, lack cleanliness, design of latrine was not appropriate and unable to ensure individual privacy. Therefore, the ministry of education should introduce WASH project in primary and junior schools that will enhance WASH, promoting hygiene education to enhance awareness on hand washing practice, prevention of water and waste related communicable disease.

Declarations

Conflict of Interests: The authors declared that there are no competing interests.

Acknowledgement

Debrebirhan University, School of Public Health should be acknowledged for supporting financially to carry out this research. We are also acknowledging the respondents who participated in this study.

References

1. Rose G (2008) Global issue in water, sanitation and health: Workshop summery. National Academies Press.
2. https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=893&menu=1561
3. National hygiene and sanitation strategy to enable 100 % adoptions of improved hygiene and sanitation (2005) Federal democratic people of Ethiopia ministry of health.
4. Sanitation (2013) The World Bank.
5. Focusing on effective school health safe water and sanitation (FERESH) (2013) UNICEF.
6. https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/1360
7. Bartram J, Cairncross S (2010) Hygiene, sanitation and water: Forgotten foundations of health. PLoS Med 7: e1000367.
8. Federal democratic republic Ethiopia, ministry of health (2012) Community-led total sanitation and hygiene.
9. National WASH inventory progress and M&E MIS report (2012) MOEW.
10. Water, sanitation and hygiene in schools (2012) UNICEF.
11. Bartram J, Jasper C1, Le TT (2012) water and sanitation in school in school: A systematic review of the health and educational outcomes. Int J Environ Res Public Health 9: 2772-2787.
12. A manual of school water hygiene and sanitation design in primary school (2012) Ministry of health.
13. Snel M (2003) School sanitation and hygiene education. Well Factsheet.
14. www.ehproject.org
15. A manual on School sanitation and hygiene technical guidelines series-No.5 (1998) United Nation Children's Fund.
16. Alyssa V, Bizu G, Nigusu A, Abera K, Yemane B, Michelle AW (2010) Knowledge, attitudes, and practices (KAP) of hygiene among School children in Angolela, Ethiopia. J Prev Med Hyg 51: 73-79.
17. Water, sanitation and hygiene (2013) UNICEF.
18. https://sanitationupdates.blog/2009/01/22/tanzania-poor-water-supply-sanitation-disrupt-school-attendances/
19. Balafama A, Alex H, wadiuto N, Alkani A (2011) An Evaluation of the health status of the school environment in public primary schools in bonny local government area, rivers state. Dep Paediatr Child Health Univ P H Teach Hosp 11: 84-85.
20. https://www.ircwash.org/sites/default/files/Snel-2004-School.pdf
21. Sandy C, Caroline H, Sophie B, Kristof B, Val C, et al. (2013) Water, sanitation and hygiene for the prevention of diarrhea. Int J Epidemiol 39: i193-i205.
22. Jerry E, Sibiya, Jabulani Ray G (2013) Knowledge,attitude and practices (KAP) survey on water, sanitation and hygiene in selected schools in Vhembe district, Limpopo, South Africa. Int J Environ Res Public Health 10: 2283.
23. Dube B, January J (2012) Factors leading to poor water sanitation hygiene among primary school going children in Chitungwiza. J Public Health Afr 3: 25.

24. Ethiopia demographic and health survey (2011) Ethiopia central statistical agency and ICF international.

25. Environmental sanitation schools and some public places in rural Vietnam (2007) Vietnamese administration of preventive medicine, UNICEF, WSRC.

26. Balafama A, Alex H, Nwadiuto AA (2006) An evaluation of the health status of the school environment in public primary schools in bonny local government area, rivers state. 11: 83-88.

27. Moses k (2012) Assessment of water, sanitation and hygiene (wash) in Malawi primary schools. Academia.

28. Okeafar I, Ayerite A, Birabe H, Chukwuma C (2010) Assessment of WASH education in primary schools in obi-akpor local government area in portal Harcour, river state.

29. ASA (2012) Assessment of sanitation facilities in primary schools within ilorin, Nigeria. J Appl Sci Environ Sanit 7: 29-33.