



**ASSESSMENT OF SCHOOL WATER, SANITATION AND HYGIENE STATUS IN
ADDIS ABABA, ETHIOPIA.**

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University in Partial Fulfillment of the Requirement for the Degree of Master of
Science in Water and Health with a Specialization in Water and Public Health.**

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Addis Ababa, Ethiopia

Thesis Approval Sheet

This is to certify that the thesis presented by **Abayneh Melaku Manaye** entitled “**Assessment of School Water, Sanitation and Hygiene Status in Addis Ababa, Ethiopia.**” is submitted in partial fulfillment of the requirements for the degree of Master of Science in Water and Health with specialization in Water and Public Health to the Graduate Program of Ethiopian Institute of Water Resources, Addis Ababa University complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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List of Acronyms

AAWSA	Addis Ababa Water and Sewerage Authority
EMIS	Electronic Management Information system
ESI	Economics of Sanitation Initiative
JMP	Joint Monitoring Programme
KAP	Knowledge Attitude and Practice
KG	Kindergarten
MoE	Ministry of Education
MoH	Ministry of Health
NHSS	National Hygiene and Sanitation Strategy
PTA	Parent Teacher Association
SDG	Sustainable Development Goal
SPSS	Statistical Package for the Social Sciences
UNICEF	United Nation Children Fund
WaSH	Water Sanitation and Hygiene
WHO	World Health Organization

Contents

Page

Thesis Approval Sheeti

Acknowledgmentsii

List of Acronymsiii

List of Tablesvii

List of Figures.....viii

Abstract.....ix

1. INTRODUCTION..... 1

 1.1 Background of the study 1

 1.3. Significance of the Study 3

 1.4. Research Questions 4

 1.5 Research objectives 4

 1.5.1 General Objective 4

 1.5.2 Specific Objectives 4

 1.6 Scope of the Study..... 4

2. LITERATURE REVIEW 5

 2.1 The status of school water, sanitation and hygiene 5

 2.1.1. The status of school WaSH at global and regional level..... 5

 2.1.2 The status of school water, sanitation and hygiene in schools of Ethiopia 7

3. MATERIALS AND METHODS 11

 3.1 Description of the study Area..... 11

 3.2 Study design and period 12

3.3 Populations	13
3.3.1 Source population	13
3.3.2 Study Population.....	13
3.4 Inclusion and Exclusion Criteria.....	13
3.5 Sampling Techniques	13
3.6 Sample size determination	15
3.7 Data collection methods.....	17
3.8 Study variables	17
3.8.1 Independent variables	17
3.8.2 Dependent variables	18
3.9 Data management.....	18
3.10 Data processing and analysis.....	18
3.11 Data quality control.....	19
3.12 Ethical considerations	19
3.13 Dissemination of the study findings.....	20
3.14 Limitation of the study	20
4. RESULTS	21
4.1 Characteristics of the sampled schools and respondent	21
4.2 Status of school water, sanitation and hygiene services in Addis Ababa	22
4.3 School drinking water, sanitation and hygiene adequacy in Addis Ababa	23
4.4 Drinking water functionality and availability status at schools in Addis Ababa	24
4.5 School sanitation facilities functionality and adequacy in Addis Ababa	27
4.6 School hygiene and hygiene facility status in Addis Ababa	29

4.6.1 Hand washing facility and practices	29
4.6.2 School solid and liquid waste management system in Addis Ababa	31
4.6.3 Menstrual hygiene Management (MHM) in Addis Ababa schools.....	32
4.6.4 Hygiene education in schools.....	33
4.6.5 Food safety and hygiene for mass feeding schools	35
4.7 Results of Chi-square analysis on association of school WaSH with school characteristics.....	36
4.8 Findings of observation and qualitative study.....	40
4.8.1 Observed hand washing behavior of students in schools	40
4.8.2 Results of the logistic regression analysis	42
4.8.3 Interview with WaSH club head/Student representatives	45
4.8.4 Interview with head of school administration.	46
5. DISCUSSION	48
5.1 Drinking water status in schools	48
5.2 Sanitation facility status in schools	50
5.3 Hygiene facility status in schools.....	52
5.4 Observed hand washing behavior of students in school	55
6. CONCLUSION	56
7. RECOMMENDATION	57
REFERENCES.....	59
ANNEXES	62
Questionnaires.....	62

List of Tables

Table 1	The number of students for observation on hand washing practice in Addis Ababa schools, 2020	16
Table 2	Data collection methods.....	17
Table 3	Characteristics of sampled school and participants in Addis Ababa, 2020.....	21
Table 4	The status of WaSH facility services by ownership and level of schools in Addis Ababa, 2020 ...	23
Table 5	WaSH facility to student ratios in schools of Addis Ababa, 2020	24
Table 6	Schools drinking water storage facility, treatment and usage status in Addis Ababa, 2020	26
Table 7	Schools sanitation facility, privacy and functionality status in Addis Ababa, 2020	28
Table 8	Schools hand washing facility, sitting and functionality status in Addis Ababa, 2020.....	30
Table 9	The MHM systems in schools of Addis Ababa, 2020	33
Table 10	Health education status of schools in Addis Ababa, 2020.....	34
Table 11	School mass feeding premises, food handlers safety and hygiene status in Addis Ababa, 2020...	35
Table 12	Association of school characteristics with drinking water facility service level, 2020.....	36
Table 13	Association of school characteristics with latrine cleanness status, 2020	38
Table 14	Association of school characteristics with hand washing facility availability, 2020	39
Table 15	Hand washing practice of students by owner of schools in Addis Ababa, 2020 (n=512).....	41
Table 16	Hand washing practice of students by sex and washing time in Addis Ababa, 2020.....	42
Table 17	Bivariate logistic regression of the schools and students characteristics with hand washing practice in Addis Ababa, 2020.....	43
Table 18	Multivariate logistic regression of the schools and student characteristics with hand washing practice in Addis Ababa 2020.....	44

List of Figures

Figure 1 Conceptual framework on the status of school water, sanitation and hygiene.....	10
Figure 2 Map of Addis Ababa with its Sub-Cities.....	12
Figure 3 Addis Ababa City Administration schools sampling scheme, 2020	14
Figure 4 School water, sanitation and hygiene service level in Addis Ababa, 2020.....	22
Figure 5 The main reasons for non-functional water points in Addis Ababa, 2020.....	25
Figure 6 Water availability per week at schools in Addis Ababa, 2020.....	25
Figure 7 The main reasons school no adequate toilet facility in Addis Ababa, 2020.....	27
Figure 8 The provision of school MHM services by type in Addis Ababa, 2020	32

Abstract

Background: Water supply, sanitation and hygiene are the most important things in the creation of a healthy learning environment for students. Accesses to WaSH are basic human needs and rights of every individual. However, many schools in developing countries lack adequate services. The government of Ethiopia included in its development agenda to reach 100% improved WaSH by the schools in 2020.

Objective: - The major objective of this study was to assess the status of school water, sanitation and hygiene in Addis Ababa, Ethiopia.

Methodology: - Institution based quantitative and qualitative cross-sectional study was carried out in schools of Addis Ababa, from January 20 - March 12, 2020. A multi-stage sampling method was used to select study subjects from inner and peripheral sub-cities. Kirkos from inner and Akaki Kality from peripheral sub-cities were selected by lottery method. Number of schools included in this study were 30% of the schools from two sub-cities i.e. 98 schools. Finally, 98 school directors, 512 students, 12 student health clubs and 12 school administrators were participated in this study. The collected data were entered into EPI Info 7.2.2.6 and analyzed by SPSS 22.0. Frequencies, percentages, ratio were used to describe the status of WaSH and presented in tables, pie and bar charts. The statistical association on status of WaSH facilities analyzed by employing chi-square and for hand washing practices bivariate and multivariate logistic regression was done. The qualitative data were analyzed and described using narrative approaches.

Results: The basic school water, sanitation, and hygiene service levels in Addis Ababa were 64 (65.3%), 76 (70.4%) and 36 (36.7%) respectively. The WaSH facility to student ratio was 1:48 for water points, 1:59 for toilet stance and 1:147 for hand washing facility that is more than two times less recommended values. The facility service and facility ratio had great disparities by the school level, sex and the owners, which is better in KG, male and private school. The non-functionality was 22.5% for water, 8% for toilet and 19.5% of hand washing facility. The functionality, usage of WaSH facilities was better in private schools and female students. Female student more likely performed proper hand washing 2.4 times (AOR: 2.439, 95% CI: (1.656, 3.591)) than male. Among the main challenges that hinder school WaSH facilities were lack of budget, poor operation and maintenance, lack of space, water supply interruption and lack of coordination.

Conclusions: The overall research finding indicates the school lacks adequate WaSH facilities; the service level was un-satisfactory and less quality. There are pupils that did not use the hand washing facility and lack proper practice. This suggests providing water with soap for hand washing is not enough to encourage students. There should be coordination among stakeholders at all levels to create better school environment.

1. INTRODUCTION

1.1 Background of the study

Safe and adequate water supply, sanitation and hygiene in schools are pre-requisites for the right to basic education for school children (Mooijman, 2012). The provision of adequate WaSH facilities in schools has been linked to the achievement of the Sustainable Development Goals (SDG), in particular Goal 6 on universal clean water and sanitation for all by 2030 (United Nations, 2015; JMP, 2017, 2018). The term ‘universal’ implies all settings, including schools, households, work places, healthcare facilities and public places and ‘for all’ implies services that are suitable for girls and boys of all ages, including people with disabilities (JMP, 2018). To achieve this providing schools with all inclusive safe drinking water, improved sanitation, hygiene facilities and hygiene education can encourage the development of healthy behaviors for the student life (Mooijman, 2012).

There is evidence that improvement in WaSH programs in the school has a positive impact on student health, including reductions in diarrheal disease and other hygiene related diseases (McMichael, 2019). Teachers and students that are unable to wash their hands, access clean and safe toilet facilities can expose to health risks and schools pose as a breeding ground for the spread of disease (MoE, 2017).

The effect of poor WaSH services in society is not only limited to health but also to, an economic and welfare dimension. There is evidence all WaSH investments have significant health, economic and development benefits that investing \$1 in WaSH, on average, \$4 returned in increased productivity (Cairn cross and Valdmanis, 2006). WHO (2012) report estimates, poor WaSH results a global economic loss of roughly \$260 billion annually. Economics of Sanitation Initiative desk review by World Bank (2013) indicates that poor sanitation costs more than 13.5 billion Birr/year in Ethiopia, that is more than 2.1% of the national GDP or 170 Birr per person per year (MoH, 2016).

To alleviate those problems, MoH of Ethiopia set their own targets for WaSH in their NHSS to reach 100% improved WaSH by community and school and MoE had taken the responsibility to lead WaSH activities in schools (MoH, 2016; MoE, 2017).

This study focuses on identifying current levels of coverage, WaSH facility status, determine hygiene practices of students and identifying factor distressing school WaSH that can support Addis Ababa education system in mitigating obstacles to healthy school environment.

1.2 Statement of the Problem

Schools are supposed to determine schoolchildren wellbeing by their exposure to a healthy school environment. Globally, only 69 % schools had basic, 12 % limited, and 19 % no drinking water service; 66 % schools had basic sanitation, 12 % limited and 23 % no sanitation service and 53 % had basic hygiene, 11 % limited and 36 % no hygiene service (JMP, 2018).

Poor access to water supply is a prevalent issue in over 850 million people worldwide and of this nearly 570 million children lacked a basic drinking water service at their school, over 2.5 billion people had limited access to improved sanitation, Of these over 620 million children lacked a basic sanitation service at their school and nearly 900 million children worldwide lacked a basic hygiene service at their school (Zurbrügg and Peter, 2008; World Health Statistics, 2009; Joshi and Amadi, 2013).

An estimated 842,000 people die each year due to diarrheal diseases that can be prevented by WaSH interventions, half of global malnutrition and one quarter of stunting in children are due to waterborne diseases which is responsible for 17% of global disability (PMNCH, 2014).

An evaluation by UNICEF (2012) found that in low-income countries only 51% of schools had access to adequate water and only 45% had adequate sanitation. From those regions with the lowest coverage of “improved” sanitation was ranked as sub-Saharan Africa 31%, Southern Asia 33% and Eastern Asia 65% respectively. Even if there is a lack of WaSH facilities in most developing countries, there is great variation where coverage ranges from 100% to just 6% in Ethiopia (JMP, 2018).

According to a JMP (2018) report, in Ethiopia 86% of primary schools have toilets. Of this, only 45% accessible to young children, 21% of primary schools have hand-washing facilities among this only 9% accessible. The national WaSH inventory sheds light in Ethiopia school showed that 62% lack access to water and 30% do not have any latrine facilities (Tsige, Kumme and Dejene, 2018).

Studies done by MoE 2017 showed that, 21% of schools meet the official standard of pupils per latrine, 31.4% of access to an improved water, 16% meet pupils’ access to water for drinking, hygiene and 7% provide soap for hand washing and meet the official standard.

It is estimated 88 % of diarrheal disease and up to 60% of the current disease burden in Ethiopia is caused by unsafe water supply, inadequate sanitation and hygiene (MoE, 2017). Studies have shown that about 75% of all school absences are illness related (Reid, 2003; Lau *et al.*, 2012).

According to statistics of UNICEF “more than 40 percent of diarrhea cases in school children result from transmission in schools rather than homes” (Joint call to action, 2010). Each year, children lose 272 million school days due to diarrhea (Joint call to action, 2010; UNICEF and GIZ, 2013). More than 90% of children with disability in developing countries do not attend school, with inadequate WaSH facilities contributing to their exclusion (Barnes and Maddocks, 2002).

According to JMP (2018), it is estimated that 37 out of 39 million school-age children in Ethiopia lacked a basic hygiene service at their school . Only 33% and 31% of schools had improved sanitation facilities and access to water respectively, which is associated with potential effects on health and school attendance (Tsige, Kumme and Dejene, 2018). In Addis Ababa, especially in this year (2019/2020) all government pre-primary and primary schools started mass feeding program and there are more than 380,000 students are participating in this feeding program.

However, the current WaSH service status, practice of students and factors hinder school WaSH program implementation in the Addis Ababa city are not well known.

Hence, this study was intended to assess service level, adequacy, and functionality status of WaSH facilities, practices of students and factors distressing school WaSH facilities and to forward strategies to improve school WaSH services in Addis Ababa City Administration.

1.3. Significance of the Study

The findings of this study can help for the planning and implementation of sustainable school WaSH programs by identifying the main factors distressing school WaSH services and forward strategies to Education bureau, policy makers and actors for further school improvement efforts and to those donors who would be interested in supporting Addis Ababa education system by mitigating challenges to healthy school environment. In addition, this study can provide essential information on the schools of Addis Ababa for school communities, Ministry of Education, Ministry of Health, Public health researchers and other concerned bodies.

1.4. Research Questions

Considering the statement of the problem, the research strives to answer the following main research questions:-

1. Are there adequate WaSH facilities and services in schools of Addis Ababa?
2. What is the status of student's hygiene practice in schools of Addis Ababa?
3. What are the factors influence schools WaSH in Addis Ababa?

1.5 Research objectives

1.5.1 General Objective

The major objective of this study was to assess the school WaSH status in Addis Ababa, Ethiopia.

1.5.2 Specific Objectives

1. To investigate the adequacy and level of WaSH facilities services in selected schools of Addis Ababa.
2. To examine hygiene practices of students in schools of Addis Ababa.
3. To determine factors those influence the status of school WaSH in Addis Ababa.

1.6. Scope of the Study

Although there are many areas that are researched about school WaSH in different areas, this thesis were limited to assess service level, adequacy, functionality status of WaSH facilities, hygiene practice of students and the main challenges that hinder school WaSH implementation in Addis Ababa.

2. LITERATURE REVIEW

2.1. The status of school water, sanitation and hygiene

2.1.1. The status of school WaSH at global level

Globally in 2016, 69% of schools had an improved source of drinking water with water available, 66 % of schools had improved single-sex sanitation facilities and 12% of schools had improved sanitation facilities that are either not single-sex or not usable at the time of the survey (JMP, 2018).

In addition, 53% of schools had hand washing facilities with water and soap, 11% of schools had hand washing facilities only water and 36% of schools had no hand washing service (JMP, 2018).

A study done in 2270 schools on status of WaSH services in randomly sampled rural regions of six Sub-Saharan African countries, i.e. Ethiopia, Kenya, Mozambique, Rwanda, Uganda and Zambia, showed that 1% of rural schools in Ethiopia, Mozambique and 23% of rural schools in Rwanda had improved water sources, improved sanitation, water and soap for hand washing. Fewer than 23% of rural schools in studied countries met WHO recommended student-to-latrines ratios (Morgan *et al.*, 2017).

A survey of drinking water and toilet facilities in local state schools of United Kingdom showed that 34% of schools' drinking water were available inside the toilet areas and 3% of schools had no drinking-water facilities available at all (Croghan, 2002). The most frequently reported issues were lack of soap 40%, lack of cleanliness of toilets 21%, lack of lockable doors 16% and bad odors 11 %, and 34% of the schools', no specific toilet for disabled. Moreover, 22% toilet to student ratios were too low, 92% of the students were allowed to use the toilets but, 13% of the toilets were locked. About 88% of the schools were cleaned once per day and the toilets lack cleanliness at the end of the day (Croghan, 2002).

The Electronic Management Information System (EMIS) in the Philippines records showed that in 2017, 59% of schools in the country had group hand washing facilities but only 40% were functionally with soap. From school level perspective, 54% of secondary schools had group hand washing facilities, among which 28% were functionally with soap (JMP, 2018) .

Research done in Nicaragua revealed that 43% access to water infrastructure with which varied significantly between low density rural areas 28%, rural villages 58% and urban areas 68% (Jordanova *et al.*, 2015). Of the 197 schools with water infrastructure, 26% reported that the water system was non-functional, i.e. damaged or not functioning properly, 30% had water carried to school from an outside

source and 38% had no access to water. Almost half of schools 64% of schools had improved sanitation facilities on premises, but 28% of schools with sanitation facilities reported that students did not use them. Moreover, 41% of schools did not implement any of the hygiene programs, 81% of schools did not have hand washing facilities and 74% washed their hands without soap. Among schools that practice hand washing, 95% students acquired the soap from parents (Jordanova *et al.*, 2015).

A study done in schools of Lahore, Islamabad by Butt (2014), also showed that 86% student in government school had no soap in toilet for washing hands.

Assessment of water in Malawi, Blantyre state primary schools by Kuwonga and Kalenga (2012) 22% of the primary schools in the city had water supply either tap water or boreholes. None of the schools sampled had soap for hand washing, two schools had hand washing facilities. Similar study in Nepal secondary schools showed that schools from the urban area had proper hand washing facilities but there was no any soap available (Shrestha, Manandhar and Joshi, 2018)

According to Water Aid (2013), the status of water in primary schools in Uganda showed that, from 173 primary schools that were visited only 22.1% of the schools have adequate access to sanitary facilities. In all schools visited, there were no specific latrines constructed for the teachers. The majority 87% of the schools had drinking water sources outside the school compound. All most all school toilets were used for both sexes together and 56.5% school lacked hand-washing facilities. Only 7.1% noted that they had menstrual hygiene facilities, provision of dustbins for solid waste management was not significant.

A study done in the Nairobi Kajiado central district showed that 58% of the latrine had boys' urinals. The overall pupil latrine ratio was 1: 45 girls, 1:71 for boys in schools with urinals , while the ratio for boys in schools without urinals were 1:71 latrine for boys (Annette, 2012).

The same study done in Zimbabwe in Masvingo district schools showed that, open defecation by pupils was reported in 27% schools, 25% of the schools had back-up sanitary pads for emergency ,disposal facilities for sanitary pads in 62% of the schools, anti-pains in 24% and 92% of the girls were given lessons relating to menstrual hygiene (SNV, 2012)

Regarding the source of water, 30% had piped water, 20% were buying from vendors, 15% get from community boreholes, and 5% own borehole and the rest used rain water harvesting. The 55% schools had hand washing points, but half of these schools had no water, only 30% of schools had a functional

hand washing stations (Annette, 2012). Moreover the study also revealed that 45% of school administrators and 85% teacher were not aware about national sanitation standards (Annette, 2012).

An integrated assessment of water, sanitation and hygiene situation in Haitian schools at the time of emergency showed that 40% primary school children and 64% secondary school had no water supply available and children bought bottled water at kiosks. Concerning privacy, 43% schools had no segregation between girls and boys and there were no latrines for disabled persons. Moreover, it was found that 9.5 % schools had a ratio 1:500 latrine, whereas 33% had between 100 and 300 students per latrine. For secondary school students, the major issue was related to lack of water and only 26% hand washing, the absence of lockable doors for toilet and for primary school, 34% was reported that the latrines were child-unfriendly as a result of too high seats and too wide defecation holes exposing fear of falling (Giardina, Prandini and Sorlini, 2013).

A cross-sectional study on 70 primary schools in Tanzania showed that 53% of schools had a reliable water supply, 43% of school had functional hand washing facility, and only 29% had water and 19% soap available at the stations during survey. Besides 50% of the schools met the Tanzania guideline of 1:50 boys and 43% met the guideline of 1:40 for girls (Antwi-Agyei *et al.*, 2017).

A study done in Ghana, Tano district showed that 53% and 83% schools were without toilet facilities and without improved water sources respectively. About 78% of students were washed their hands after visiting a toilet and among these only 30% use soap for hand washing after visiting toilet (Daniel, 2009).

Another study done by Alexander *et al.* (2014) in Kenya, primary schools to assess the resources available for menstruating girls showed that 60% had hand washing water, 13% had washing water in latrines for menstruating girls and only 2% had soap. Moreover, 84% of the latrines were not clean and most school toilets 77% had no lock.

2.1.2 The status of school water, sanitation and hygiene in schools of Ethiopia

The 2015/16 MoE statistics annual report indicated that, nearly 38.4% of primary schools in Ethiopia had a water supply. However, only 80.4% were from protected sources (MoE, 2017). Furthermore, roughly 69%, 19.7% and 13.4% of primary schools reported that water is available within premises for 5-7 days, 2-4 days, and less than 2 days per week respectively. Non-functionality rate of water supply reported was also about 20%.

From coverage of sanitation perspective, about 86% of the primary schools had latrine facilities but only 45.1% were improved latrines. While, 54.9% of them were traditional pit latrines that fail to meet the national standard (MoE, 2017).

A study done in Dessie City Administration showed, school sanitation facilities with an average of 1:64 and only 30% schools have separate latrines for teachers and students. The extent of water supply system is very much limited not conforming to the standard, which is on average 1:114 and there is no hand washing facilities around the latrines in all the schools (Hassen and Abera, 2013).

The availability of hand washing facility at primary schools in 2015/16 indicates that 20.8% of the schools had hand-washing facilities. Of this, 88.9% of them have functional facilities. Besides from schools that had hand washing facilities 29% of primary schools had accompanied with soap and 49.2% were accessible to children with physical disabilities (MoE, 2017).

The study done in Arada sub -city schools showed that 88.1 % did not have hand washing facilities. Among those schools with a hand washing facility, 73.5% had water available; however, 99.9% had no soap. Besides , 38.2% hand washing facilities were never used (Getahun, 2016).

Moreover, about 63% of the secondary schools had water access. Among those who had access to water, 95.2% were protected sources and of this facilities 90.3% were functional (MoE, 2017). With regard to water supply continuity, 58%, 18.6% and 9.8% of secondary schools reported that water is available within the school premises for 5-7 days, 2-4 and less than 2 days per week respectively (MoE, 2017).

The assessment of school water and sanitation facility by Andargachew and Salamon (2013) in collaboration with Save the children showed that, hand washing facilities near latrine not available, 62.5% of the water points accessible with a physical disability, 56% schools had functional water source, 40% have a functional traditional pit latrine and 92% schools had menstrual hygiene education in their school.

In addition, the latrine coverage in secondary schools was about 87.4% and from this 62.1% of the latrines were improved, the latrine stance to student ratio at a national level is estimated 1:109 (MoE, 2017). Besides, 40% of the Secondary Schools have hand-washing facilities. Of this, 84% of them were functional and 17.5% of the hand washing facilities was accompanied with soap or a substitute and 17.5% was accessible to children with different physical disabilities (MoE, 2017).

A study conducted by the federal MoH in partnership with UNICEF revealed that 76% of schools in Ethiopia have latrines; 77% of toilets are traditional pits; 93% are functional of which only 35.5% considered clean at the time of the visit and 4.4% of toilets had hand washing facilities; 14% of schools had adequate water source of which 83.7% functional at the time of the survey (MoH, 2016; MoE, 2017).

According to Getahun (2016) baseline survey on water, sanitation and hygiene situation in Arada Sub-city in selected six primary schools showed that average student-to-drop hole was 1:68. The most common problems observed were 83% of pit latrines were not covered, 55.4% did not have toilet compartments, 41.5% had cracks in the latrine superstructure and 38.8% did not have doors that could be open and close easily. Furthermore, most of the latrines 65.8% had visible excreta on the latrine and 73.9% urine on the latrine floor were observed, 63% anal cleansing waste on the latrine floor, 66% open defecation and the main factors that may contribute to the practice of OD are lack of latrines, the existence of strong offensive smells and lack of privacy latrines.

A research done in 48 governmental primary Schools in North Shewa, Kimbibit Woreda showed that, 6.3% of school had hand washing facilities near the latrine and none of this facility had water supply and soap for hand washing. Only 37.5% schools had school WaSH club and even these club were not well functional (Tsige, Kumme and Dejene, 2018).

The study done in Arbaminch town revealed that 22.3% of primary school children practiced proper hand washing (Besha *et al.*, 2016).

The same study done in Arada subcity in which hand washing behavior observed 47.6% students did not wash their hands after defecation, 50.3% of boys and 45.4% of girls did not wash their hands. Among those students that did wash their hands 28.8% used water. Moreover, the techniques used to wash their hands were 67.5% washed both hands after defecation, 32.5% washed only one hand. There were a slight gender differences in the technique used for hand washing after defecation that 39.2% girls and 31.6% boys wash both hands (Getahun, 2016).

The study conducted in West Shoa Ginci town showed that, 88.1% of students wash hands before eating, 5.9% after visiting toilet and only 4.2% of the school children used soap (Endashaw, 2016).

Observations of students' hand washing before eating revealed that 47.9% not wash their hands, 45.2% wash with water alone. Surprisingly, none of the boy observed wash with soap before eating, when

compared to 12% of girls. Observation of students technique of hand washing before eating were one hand 50.2% and both hands 49.8% (Getahun, 2016).

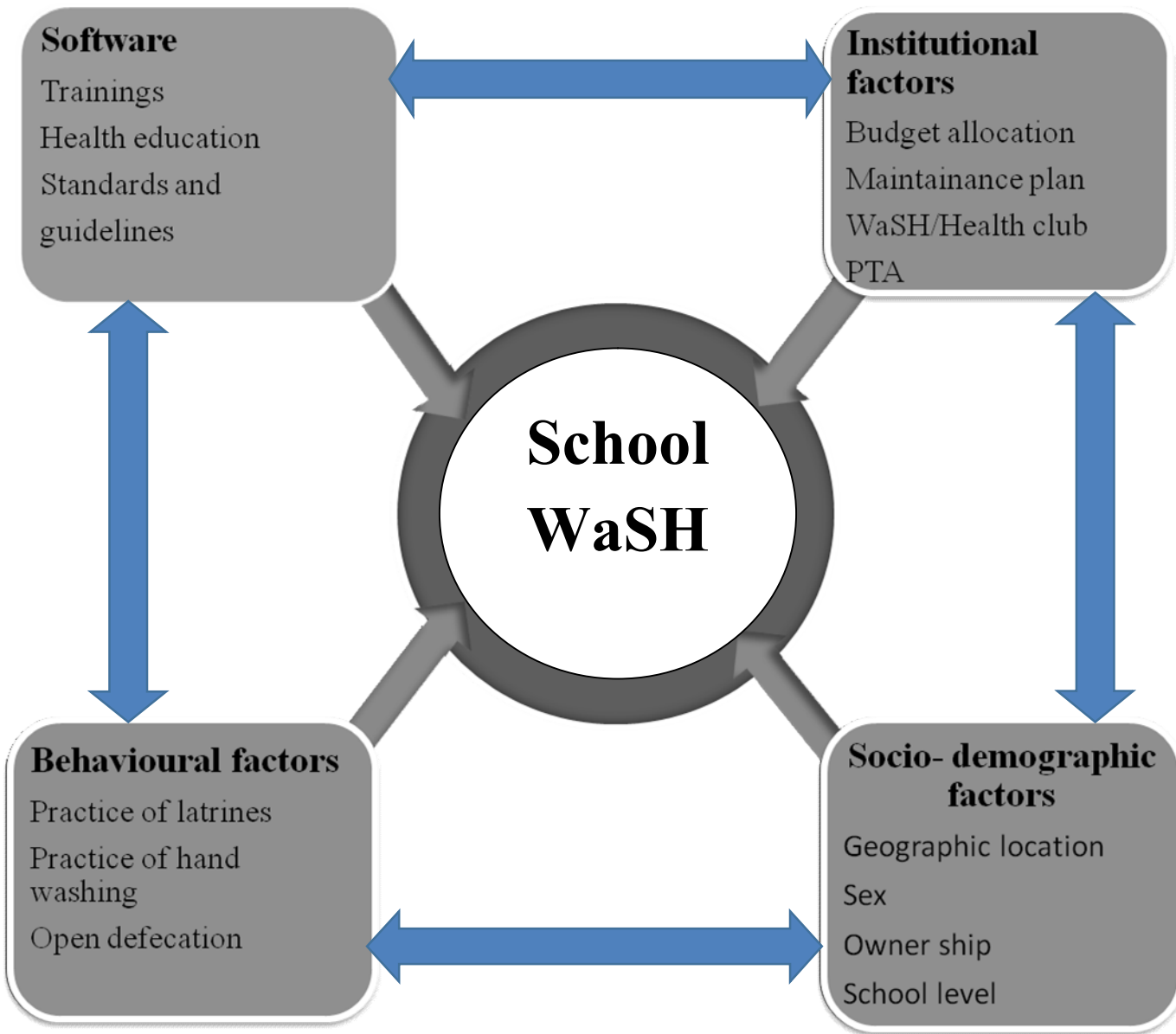


Figure 1 Conceptual framework on the status of school water, sanitation and hygiene

3. MATERIALS AND METHODS

3.1 Description of the study Area

Addis Ababa is the capital city of Ethiopia located in the heart of the country surrounded by Oromia. The city had 10 (ten) sub-cities and 123 (one hundred twenty three) woreda. Recent years the city had seen a strong annual growth rate of 4.37% and Addis Ababa's 2020 population is now estimated at 4,793,699 (US Census Bureau, 2020). Adult literacy in the capital city is the highest among all of the country's cities 93% for males and 80% for females. The city has a lower rate of infant mortality than the nationwide average and over 98% homes in the city have access to clean drinking water (US Census Bureau, 2020).

Currently, Addis Ababa had 2147 schools and of this 795 primary, 219 secondary, and 1133 KG levels. Among these schools, 527 (KG =230, primary = 225, secondary and preparatory = 72) are government while 1620 (KG = 903, primary = 570, secondary and preparatory = 147) are private schools (Addis Ababa Education Bureau, 2018).

The total number of students in these schools were more than 863,357. The samples were taken from two sub-cities, Kirkos sub-city and Akaki Kality sub-city. Kirkos sub-city has 97 schools and more than 52629 students whereas Akaki Kality sub-city has 230 schools and more than 89,958 students (Addis Ababa Education Bureau, 2018).

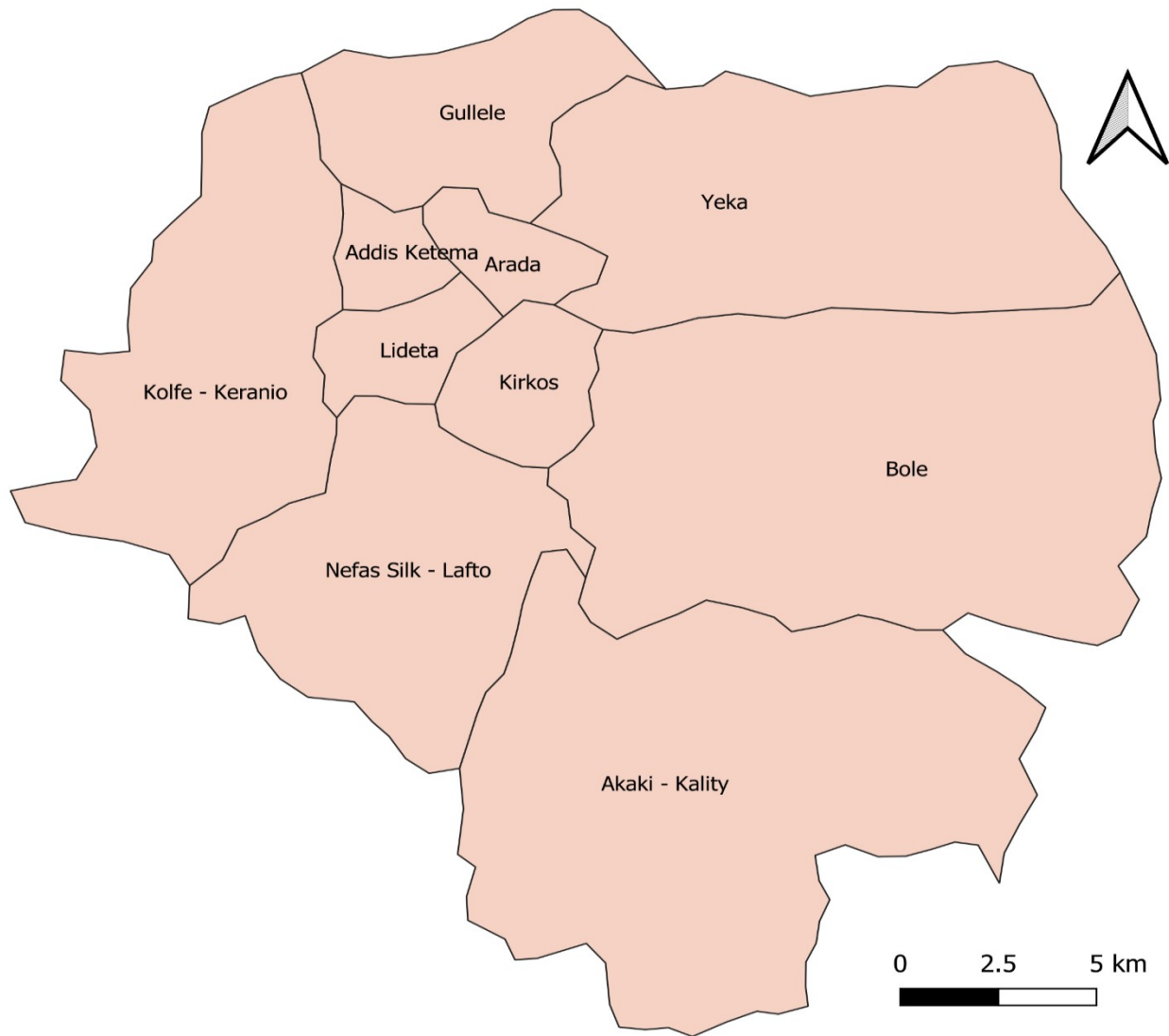


Figure 2 Map of Addis Ababa with its Sub-cities

3.2. Study design and period

Institution based quantitative and qualitative cross-sectional study was conducted on school WaSH status in Addis Ababa City Administration, Ethiopia from January 20- March 12, 2020.

3.3. Populations

3.3.1. Source population

All schools in Addis Ababa City Administration were source population for this study.

3.3.2. Study Population

All schools in Akaki- Kality and Kirkos Sub-city were study population for this study.

3.4. Inclusion and Exclusion Criteria

Inclusion criteria:- All governmental and private schools were included.

Exclusion criteria:- Boarding and distance educating schools and schools hand washing facilities without water with soap were excluded from students hand washing practices study.

3.5. Sampling Techniques

A multi-stage sampling method with simple random sampling was used.

Stage: 1

Firstly, Addis Ababa Sub city Administration categorized in to two clusters inner and peripheral sub-cities. From 10 (ten) sub cities, 4 (four) sub-cities were categorized under inner sub-city while 6 (six) sub-cities were categorized as peripheral.

Stage: 2

Secondly, one from inner sub-city and one from peripheral sub city were selected randomly by lottery methods. Kirkos sub-city had 97 schools (KG = 47, primary = 40, secondary and preparatory =10) selected from inner sub-cities. while, the peripheral sub city selected was Akaki Kality that had 230 schools (KG = 134, Primary = 80, secondary and preparatory = 16) was selected from peripheral sub-cities.

Stage: 3

From both Kirkos sub-city and Akaki Kality sub-city, 30 % of the schools were selected by considering the school ownership and level of the school by simple random sampling methods.

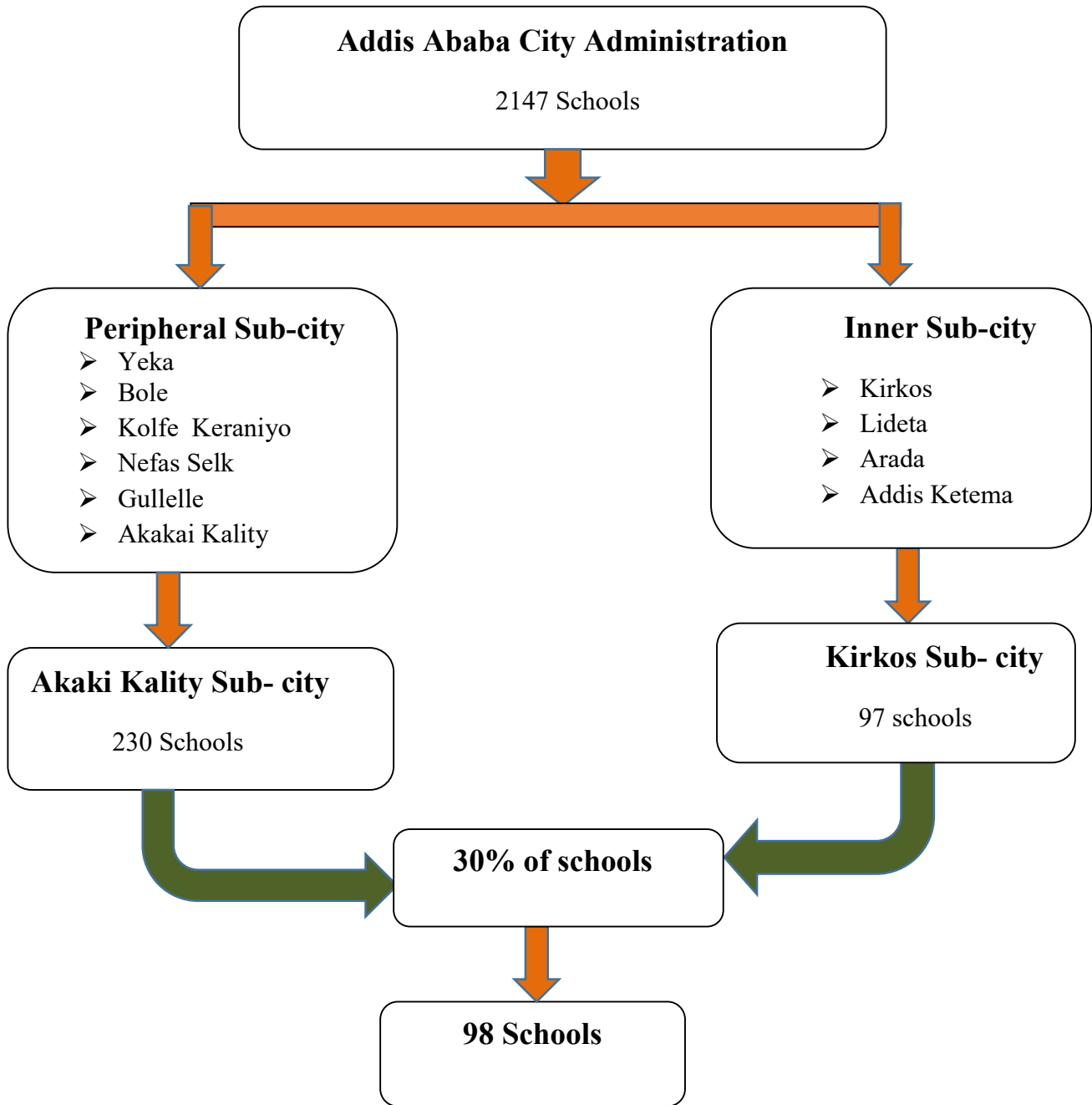


Figure 3 Addis Ababa City Administration schools sampling scheme, 2020

3.6. Sample size determination

Rationale for deciding the sample size was based on factors like homogeneity of school by school location, cost and shortage of time. To this effect, the total sample size of the study was purposively limited to 30% of both Akaki Kality and Kirkos Sub-city schools. Kirkos sub city have 97 schools and Akaki Kality have 230 schools, a total of 327 schools in two sub cities.

The randomly selected inner sub-city was Kirkos sub city that have 97 schools (KG 47, primary 40, secondary and preparatory 10). Of 97 schools 55 (KG 30, primary 20, 5 secondary) are private and 42 (KG 17, primary 20, secondary and preparatory 5) are government schools. The selected peripheral sub city was Akaki Kality that have 230 (KG 134, primary 80, secondary and preparatory 16) schools. Of 230 schools 62 (KG 26, Primary 26, sec and prep 10) schools were government and 168 (KG 108, Primary 54, secondary and preparatory 6) were private schools.

1. For first objective as it is facility assessment, 30 % of the school (98 school) sample were assumed to be representative purposively for the assessment which is 31 schools from Kirkos (18 KG, 10 primary, 3 secondary and preparatory) and 67 schools (38 KG, 24 primary, 5 secondary and preparatory) were from Akaki Kality sub-city.

The participant Schools were selected by using simple random sampling method.

2. For second objective, sample size of students for hand washing practice was determined by employing population formula to estimate a population proportion. Because there was no prior national or local data in similar setting on hand washing practice of students and as multi stage sampling method used, sample proportion of 50 % was used in order to maximize the sample size. $p=0.5$, design effect ($g=2$).

$$n = g \times \frac{(Z\alpha / 2)^2 P(1 - P)}{d^2}$$

Where: n = sample size

d = margin of error

Z = level of confidence

P = population proportion

g = design effect

The sample size was determined by using the following values in to the formula as:

$$d = 0.05, Z = 1.96, p = 0.5, g=2$$

$$n = 2 \times \frac{(1.96)^2 0.5(1 - 0.5)}{(0.05)^2}$$

$$n = 2 \times \left(\frac{0.96}{0.0025} \right)$$

$$n = 2 \times (384)$$

$$n = 768$$

From 12 schools that have water with soap, 768 students were randomly selected for observation. So, the sample sizes of students were 384 before eating and 384 after defecation.

Table 1 The number of students for observation on hand washing practice in Addis Ababa schools, 2020

Schools level	Akaki Kality				Kirkos				Total sampled students
	Private (N=3)		Government (N=3)		Private (N=3)		Government (N=3)		
	BE	AD	BE	AD	BE	AD	BE	AD	
KG	32	32	32	32	32	32	32	32	256
Primary	32	32	32	32	32	32	32	32	256
Secondary & preparatory	32	32	32	32	32	32	32	32	256
Total	96	96	96	96	96	96	96	96	768

Note: N= Number of schools, BE = Before eating, AD = After defecating

3. For third objective 12 schools were selected which is 6 schools (2 KG, 2 Primary, 2 sec and prep) from each sub city by considering 1 from government and 1 from private purposively. Of 12 schools, 12 school administrator and 12 WaSH club heads were selected for interview which means a total of 24 person were interviewed.

3.7. Data collection methods

Table 2 Data collection methods

Method	Description	Sample
Semi-structured questionnaire and observational checklist	Data from head of school director on school WaSH status were collected by semi-structured questionnaire and on-site observation was done for latrines, water points and hygiene facilities.	98 school directors were participated
Observation of student's hand washing practice	Strategically observation on hand washing practice of students for schools which have water with soap before eating and after toilet visit.	768 observations:- 384 after defecation 384 before eating
In-depth interview with key informant	In-depth interview with selected head of WaSH club and school administrator on the status of school WaSH, main challenges that can hinder WaSH status and related questions were asked.	24 interview:- 12 WaSH club 12 school administrator

3.8. Study variables

3.8.1. Independent variables

A. Socio demographic factors

- ❖ Geographic location
- ❖ School Level
- ❖ Sex
- ❖ Owner of facility

B. Institutional factors

- ❖ Budget allocation
- ❖ Maintenance plan

- ❖ PTA
- ❖ WaSH club

C. Software

- ❖ Training
- ❖ Health education
- ❖ Standards and guidelines on WaSH

D. Behavioral factors

- ❖ Latrine utilization
- ❖ Hand washing
- ❖ Open defecation

3.8.2. Dependent variables

- ❖ Status of school WaSH
- ❖ Level of proper hand washing practice

3.9. Data management

In the field, data were collected by a structured questionnaire, observational checklists, key informant interview and checked daily for errors and completeness.

3.10. Data processing and analysis

Data was checked manually for completeness, after coding, the collected data was entered into a database using EPI Info 7.2.2.6 and was exported to SPSS version 22.0 for data cleaning (for any inconsistencies and missing values) and analysis.

For the first, second objectives descriptive statistics were analyzed including frequencies, percentages, and ratio used to examine current status of WaSH facilities and hygiene practices of students before eating, after defecation and displayed by appropriate tables, pie charts and bar charts. The status of school WaSH facilities and association with school characteristics was analyzed by chi-square test using SPSS software.

For second objectives on hand washing practice of students with school characteristics and student socio demographic characteristics, bivariate analysis was performed to see the crude association of the independent variables with the outcome variable.

Finally, variables which showed significant association with the dependent variable on the bivariate analysis were entered to multivariate logistic regression model to identify their independent effects. P-value and 95% confidence interval (CI) for odds ratio (OR) were used in judging the significance of the associations. P-value less than 0.05 were taken as significant association.

For third objectives, qualitative research data was analyzed and described by using narrative approaches and the information obtained from analysis in both quantitative and qualitative approach was crosschecked and interpreted.

3.11. Data quality control

Before data collection, primary researcher was made a brief orientation and training on the questionnaire and the way to go for data collection. In order to evaluate clarity of the questionnaire and reactions of the respondents to the questionnaire a pretest was conducted in lideta and Yeka sub-city schools that has similar geographic locations. To avoid biasing information and variables, the questionnaire prepared in English language was translated into Amharic language to make it easy to understand and retranslated to English to check consistency with original questionnaire.

3.12. Ethical considerations

The support letter was written from Addis Ababa University, Ethiopian Institute of Water Resource to Addis Ababa Education Bureau to get permission and desired cooperation for the study. The permission letter was written from Education Bureau to both sub- city Education offices. Then, both sub-cities' Education Offices wrote letter of cooperation to sampled schools.

Study participants identification number / school name was used to make anonymous and the information collected was kept confidential. Before starting data collection, the data collectors were clearly explained the objective of the study to the study participants and the study was conducted after getting consent from each study participant.

3.13. Dissemination of the study findings

The final copy of the research with appropriate recommendation will be given to Ethiopian Institute of Water Resources, Addis Ababa University. The results of the study will be also disseminated to Addis Ababa Education Bureau, Ministry of Education, Ministry of Health and other concerned bodies. Finally, effort will be made to publish in national or international journal for dissemination worldwide.

3.14. Limitation of the study

The study was cross sectional, it shows school condition only at the time of survey. Although an adjusted multivariable logistic regression model used in hand washing practice of students, statistical adjustment can control for measured confounders but not for other complex confounding that were not measured. Therefore, there could be residual confounding due to unmeasured variables. The other limitation is it does not include boarding schools because the government gives special attention to fulfill WaSH and other facilities in such schools.

4. RESULTS

4.1. Characteristics of the sampled schools and respondent

The study was conducted to assess the status of WaSH services in 98 schools composed of 56 KG, 34 primary and 8 secondary and preparatory schools sampled from private 54.1% and government 45.9% schools in Addis Ababa. The sampled schools have a total of 48003 students of this 54.2% were female. Among the total students, 261 students had a disability. The total number of staff in surveyed schools was 3283 of which female account 58.5%. Out of 98 responded school directors, 58 (59.2%) and 40 (40.8%) were female and male respectively. About 43% schools had no budget and 66% no maintenance plan for school WaSH facilities. Furthermore, 50% of the schools had no health/WaSH club. The general characteristics of the sampled schools are presented in (Table 3).

Table 3 Characteristics of sampled school and participants in Addis Ababa, 2020.

Variables	Response	Kirkos (N=31)	Akaki (N=67)	Total (N=98)
Owner	Private	16 (51.6)	37 (55.2)	53 (54.1)
	Government	15 (48.4)	30 (44.8)	45 (45.9)
School level	Pre-primary	18 (58.1)	38 (56.7)	56 (57.1)
	Primary	10 (32.2)	24 (35.8)	34 (34.7)
	Sec and prep	3 (9.7)	5 (7.5)	8 (8.2)
Student no	Female	6534 (25.1)	19497 (74.9)	26031 (54.2)
	Male	5655 (25.7)	16317 (74.3)	21972 (48.8)
Staff	Female	585 (30.4)	1337 (66.6)	1922 (58.5)
	Male	454 (33.4)	907 (66.6)	1361 (41.5)
Disability	Female	20 (15.2)	112 (84.8)	132 (50.6)
	Male	25 (19.4)	104 (80.6)	129 (49.4)

Budget	Yes	14 (45.2)	42 (75)	56 (57.1)
	No	17 (54.8)	25 (37.3)	42 (42.9)
PTA	Yes	27 (87.1)	61 (91)	88 (88.8)
	No	4 (12.9)	6 (9)	10 (10.2)
Health club	Yes	15 (48.4)	34 (50.7)	49 (50)
	No	16 (51.6)	33 (49.3)	49 (50)
Maintenance plan	Yes	24 (77.4)	9 (13.4)	33 (33.7)
	No	7 (22.6)	58 (86.6)	65 (66.3)

4.2. Status of school water, sanitation and hygiene services in Addis Ababa

The basic water, sanitation and hygiene service level of schools were 65.3%, 70.4% and 36.7% respectively as shown in (Figure 4).

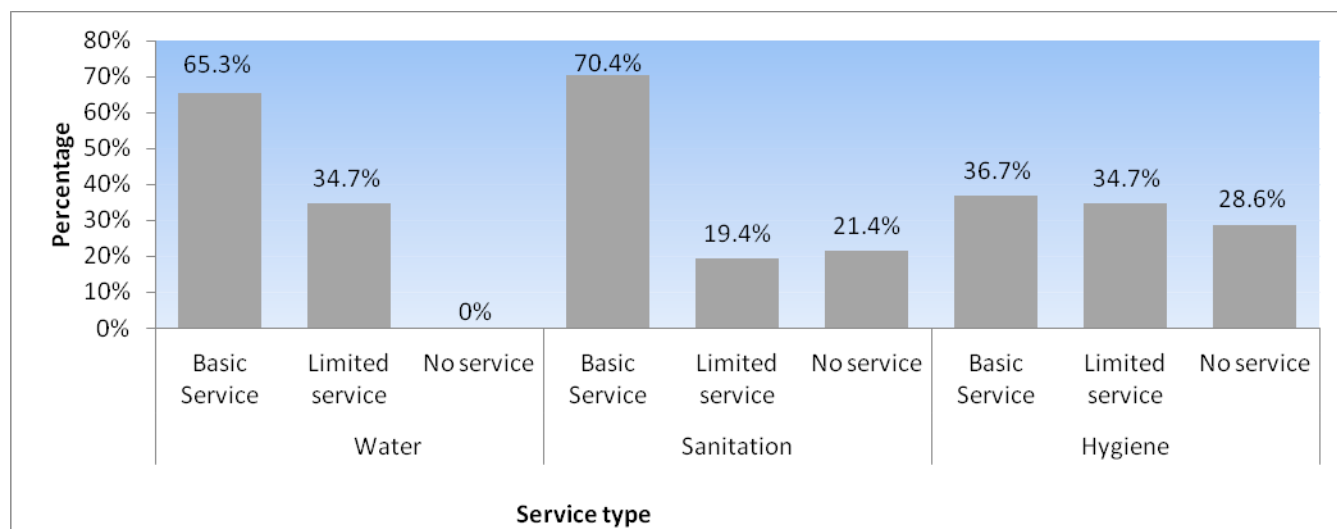


Figure 4 School water, sanitation and hygiene service level in Addis Ababa, 2020

The school WaSH service level of Addis Ababa had a variation by school level and ownership. Table 4 presents the school WaSH service level by ownership of school and school levels in Addis Ababa.

Table 4 The status of WaSH facility services by ownership and level of schools in Addis Ababa, 2020

Service type	Service level	Private N (%)	Government N (%)	KG N (%)	Primary N (%)	Secondary & preparatory N (%)	Total N (%)
Water	Basic	43 (81.1)	21 (46.7)	43 (77)	19 (56)	2 (25)	64 (65.3)
	Limited	10 (18.9)	24 (53.3)	13 (23)	15 (44)	6 (75)	34 (34.7)
	No service	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Sanitation	Basic	48 (90.5)	21 (46.7)	38 (67.9)	25 (73.5)	6 (75)	69 (70.4)
	Limited	3 (5.7)	5 (11.1)	7 (12.5)	1 (3)	0 (0)	8 (8.2)
	No service	7 (13.2)	14 (31.1)	11 (19.6)	8 (23.5)	2 (25)	21 (21.4)
Hygiene	Basic	28 (52.8)	8 (17.8)	24 (42.9)	12 (35.3)	0 (0)	36 (36.7)
	Limited	17 (32.1)	17 (37.8)	17 (30.4)	14 (41.2)	3 (37.5)	34 (34.7)
	No service	8 (15.1)	20 (44.4)	15 (26.8)	8 (23.5)	5 (62.5)	28 (28.6)

4.3 School drinking water, sanitation and hygiene adequacy in Addis Ababa

The water, sanitation and hygiene facility to student ratio was 1:48 for water points, 1:59 for toilet stance and 1:147 for hand washing points. There were high disparities in student to toilet ratios and hand washing facilities between male and female in government schools (Table 5). All schools had drinking water points which are not sex separated and shared by female and male students.

Table 5 WaSH facility to student ratios in schools of Addis Ababa, 2020

Facility type	Response	Private	Government	KG	Primary	Sec and prep	Mean student to facility ratio	Standards
Water points	Common use	1:27	65	1:24	1:44	1:77	1:48	1:20
Toilets drop hole	Male	1:35	1:63	1:41	1:52	1:55	1:49	1:20
	Female	1:40	1:91	1:40	1:74	1:88	1:68	
	Staff	1:5	1:18	1:5	1:16	1:18	1:13	
Hand washing points	Male	1:102	1:134	1:90	1:114	1:138	1:114	1:20
	Female	1:112	1:229	1:92	1:150	1:294	1:179	
	Staff	1:15	1:8	1:11	1:36	1:55	1:34	

4.4 Drinking water functionality and availability status at schools in Addis Ababa

All schools had at least limited water supply services. Of 98 schools 96 (97.9%) had a piped water supply and 2 (2.1%) had both piped water supply and bottled water during water supply interruption.

From 1425 water points found in 98 schools, 1104 (77.5%) were functional whereas, 321 (22.5 %) of water points were non-functional. There were differences in non-functionality rate among private and government and from the school level. In private schools, of 756 water points, 664 (87.8%) were functional while in government schools 440 (65.8%). By school level, 118 (66.3%) water points in secondary schools, 565 (75%) water points in primary schools and 421 (85.2%) water points in KG schools were functional.

In 48% schools the non-functional water point lasts more than 6 (six) months without maintenance. The main reason for non-functionality of water points stated by school directors was poor operation and maintenance 80 (76.9%) as shown below (Figure 5).

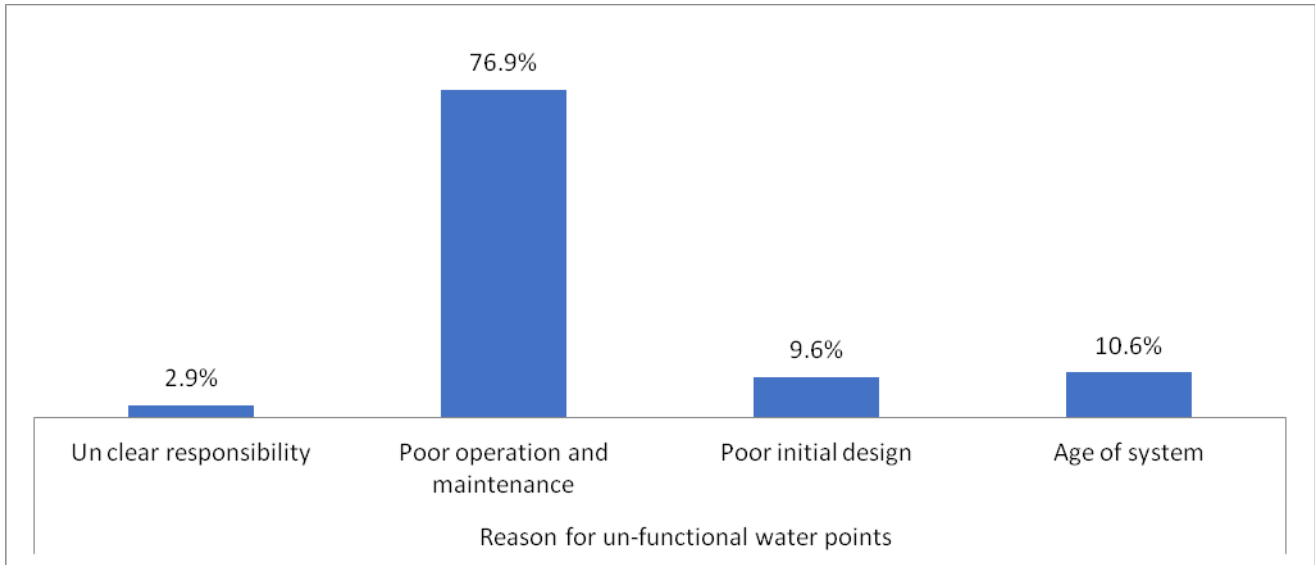


Figure 5 The main reasons for non-functional water points in Addis Ababa, 2020.

Almost all schools had drinking water accessible 96 (97.9%) for normal children but 57 (58.2%) schools water was not accessible for disabled students. The water availability from the main source had incontinence problem and only 5 (5%) school get water 24 hours (Figure 6). During time of survey 64 (65.3%) schools had drinking water from the main source.

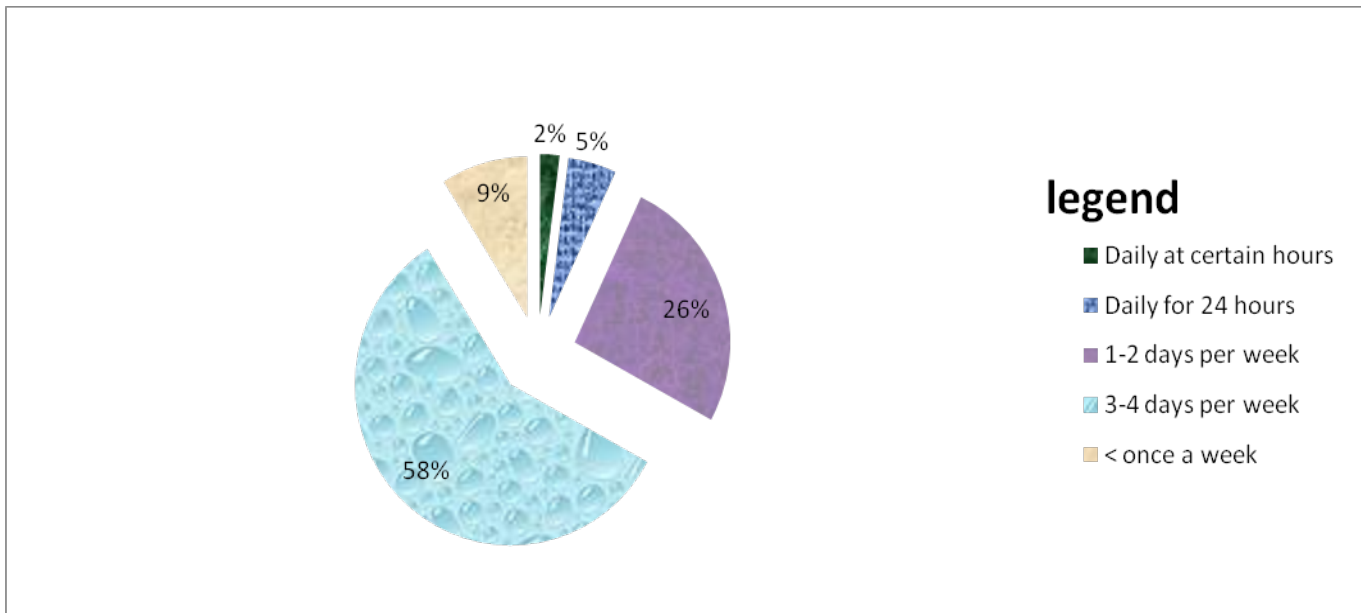


Figure 6 Water availability per week at schools in Addis Ababa, 2020.

Of 98 schools, 85 (86.7%) schools had a water storage tanker. Storage tanker cleaning frequencies were 18 (21.2%) once a year, 36 (42.4%) once every six months, 21 (24.7%) once a month, and 8 (9.4%) once a week. Only 16 (16%) schools practiced water treatment in their school, most students from 63 (64.3%) school brings water from home the main reason is due to water in- continence as described on (Table 6).

Table 6 Schools drinking water storage facility, treatment and usage status in Addis Ababa, 2020

Variable	Response	KG (N=56)	Primary (N=34)	Secondary and Preparatory (N=8)	Total
Water tanker	Yes	46 (82.1)	32 (94.1)	7 (87.5)	85 (86.7)
	No	10 (17.9)	2 (5.9)	1 (12.5)	13 (13.3)
Water treatment in school	Yes	9 (16.1)	5 (14.7)	2 (25)	16 (16.3)
	No	47 (83.9)	29 (85.3)	6 (75)	82 (83.7)
Treatment method used	Filtration	1 (1.8)	1 (2.9)	0 (0)	2 (12.5)
	Boiling	0 (0)	0 (0)	0 (0)	0 (0)
	Chlorination	8 (14.3)	4 (11.8)	2 (25)	14 (87.5)
Student bring water from home	most student	42 (75)	17 (50)	4 (50)	63 (64.3)
	Roughly half student	13 (23.1)	13 (38.2)	3 (37.5)	29 (29.6)
	Some student	1 (1.8)	4 (11.8)	1 (12.5)	6 (6.1)
	No student	0 (0)	0 (0)	0 (0)	0 (0)
Reason bring water from home	Less quality expectation	44 (82)	12 (35.3)	0 (0)	56 (57.1)
	Water incontinence	37 (66.1)	24 (70.7)	8 (100)	69 (70.4)
	Lack water accessibility	1 (1.8)	0 (0)	1 (14.3)	2 (20.4)

4.5 School sanitation facilities functionality and adequacy in Addis Ababa

All schools had sanitation facility and from this the majority of schools 72 (73.5%) had VIP latrine, 5 (5.1%) pour flush latrine and 21 (21.4%) had unimproved pit latrine.

From 1192 toilet drop hole 1097 (92%) were functional. The functionality of the latrine drop hole had disparities by the owner of the school. In government schools, of 578 latrine drop hole, 504 (87.2%) were functional and in private school 593 (96.6%) are functional.

The majority schools 96 (98%) had no urinals, only 2 (2%) had urinals which are 1 continuous gutter and 1 individual urinals. 31 (31.6%) of schools had adequate toilet facility, 67 (68.4%) had no adequate toilet facility due to factors stated on the Figure 7 below.

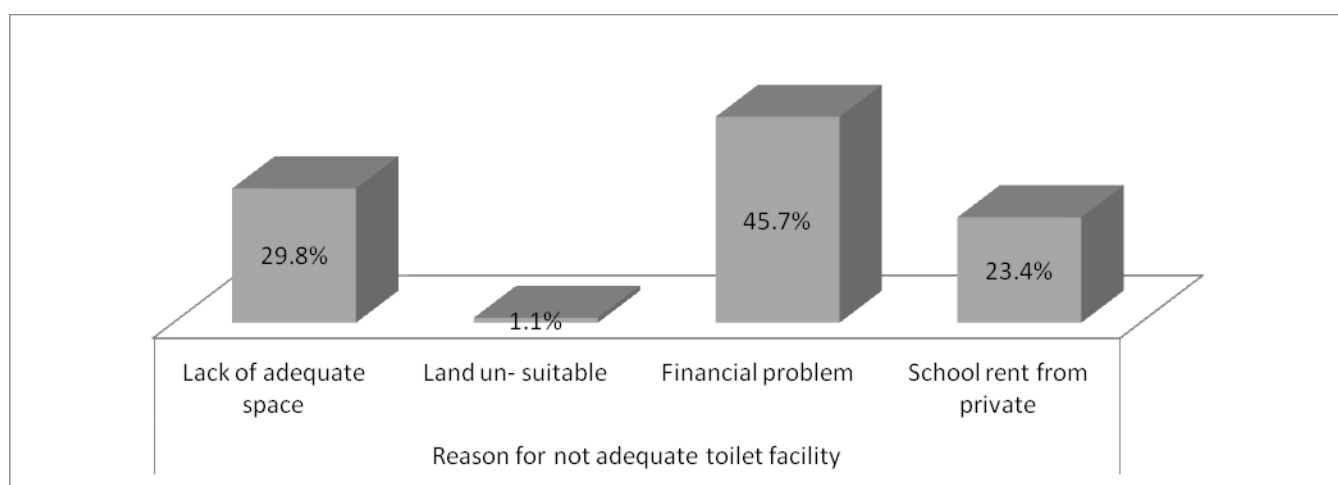


Figure 7 The main reasons school no adequate toilet facility in Addis Ababa, 2020

Of 98 school toilets, 96 (98%) toilet facility accessible for normal student, 26 (26.5%) for disabled men and 22 (22.5%) for disabled female student. The main reason most toilets were not accessible because of the design problem 74 (96%) and 3 (4%) are not accessible due to the toilet is far.

The majority of the schools 94 (95.9%) were open defecation free. The main reasons for open defecation stated by directors from schools with open defecation were 1 (25%) lack of latrine, 2 (50%) strong offensive smell, 1 (25%) lack of privacy. All school had cleaners for toilet cleaning and 47 (48.5%) clean latrine more than once daily, 44 (45.4%) daily, 5 (5.2%) 2-4 days a week, 1 (1%) once a week.

Almost all schools director stated that shortage of water is the main reason for not be able to clean repeatedly. Almost half 63 (64.3%) of the latrines provide privacy for students and toilet super structure

were in good condition 92 (94%). The detail sanitation facilities statuses of schools in Addis Ababa are presented below (Table 7).

Table 7 Schools sanitation facility, privacy and functionality status in Addis Ababa, 2020

Variable	Response	KG(N=56)	Primary (N=34)	Secondary & preparatory (N=8)	Total (N=98)
Separate toilet for both sex	Yes	51 (91.1)	33 (97.1)	8 (100)	92 (93.9)
	No	5 (8.9)	1 (2.9)	0 (0)	6 (6.1)
Separate toilet for teachers	Yes	47 (83.1)	30 (88.2)	8 (100)	85 (86.6)
	No	9 (16.1)	4 (11.8)	0 (0)	13 (13.3)
Total no of toilet drop hole(1192)	Male	181 (37.7)	219 (45.6)	80 (16.7)	480 (40.3)
	Female	175 (40.1)	194 (44.5)	67 (15.4)	436 (36.6)
	Staff	78 (32.3)	121 (50)	43 (17.7)	242 (20.3)
	Common use	28 (82.4)	6 (17.6)	0 (0)	34 (2.8)
Functional toilet drop hole(1097)	Male	176 (37.8)	212 (45.6)	77 (16.6)	465 (42.4)
	Female	160 (41.6)	168 (43.6)	57 (14.8)	385 (35.1)
	Staff	69 (32.4)	104 (48.8)	40 (18.8)	213 (19.4)
	Common use	28 (82.4)	6 (17.6)	0 (0)	34 (3.1)
Problem of toilet functioning due to	Blockages	43 (76.8)	26 (76.5)	7 (87.5)	76 (77.6)
	Low water pressure	11 (19.6)	5 (14.7)	4 (50)	20 (20.4)
	Odor	49 (87.5)	34 (100)	7 (87.5)	90 (91.8)
	Pits fill quickly	2 (3.6)	0 (0)	1 (12.5)	3 (3.1)
	Not safe to children	2 (3.6)	1 (1.8)	0 (0)	3 (3.1)

Roof structure in good condition	Yes	52 (92.9)	32 (94.1)	8 (100)	92 (93.9)
	No	4 (7.2)	2 (5.9)	0 (0)	6 (6.1)
provide privacy and security	Yes	40 (71.4)	21 (61.8)	2 (25)	63 (64.3)
	No	16 (28.6)	13 (38.2)	6(75)	35 (35.7)
latrine cleanness status	Clean	14 (25)	4 (11.8)	0 (0)	18 (18.4)
	Somewhat clean	42 (75)	23 (67.6)	5 (62.5)	70 (71.4)
	Not clean	0 (0)	7 (20.5)	3 (37.5)	10 (10.2)

4.6 School hygiene and hygiene facility status in Addis Ababa

4.6.1 Hand washing facility and practices

From 98 schools 85 (86.7%) schools had hand washing facility. Both soap and water available for 33 (38.8%) schools, water for 34 (40%) schools, soap only for 2 (2.4%) schools and 16 (18.8%) schools had neither water nor soap at the time of the survey. Of 85 schools, 513 hand washing points are available among which 418 (81.5%) are functional and 95 (19.5%) are nonfunctional.

There was a difference in functionality of hand washing points between government and private schools and in school level. From 234 hand washing points in government and 279 hand washing points in private schools, the functionality rates were 71.8% and 89.6% respectively. By school level, hand washing point's functionality rates was 53.8% for secondary and preparatory, 82.6% for primary, and 88.2% of KG schools. Concerning access to soap provision to students for hand washing in schools, 45 (45.9%) and 29 (29.6%) schools gets from student family and schools respectively, while, 24 (24.5%) schools had no soap at any time. Hand washing facilities were located near the latrine for 71 (83.5%) schools. Table 8 describes hand washing facility, sitting and functionality status in Addis Ababa schools.

Table 8 Schools hand washing facility, sitting and functionality status in Addis Ababa, 2020

Variable	Response	KG (N=56)	Primary (N=34)	Secondary & preparatory (N=8)	Total (N=98)
Total no of hand washing facility (513)	Male	80 (41)	84 (43.1)	31 (15.9)	195 (38)
	Female	75 (40.8)	89 (48.4)	20 (10.9)	184 (35.9)
	Common use	73 (54.5)	47 (35.1)	14 (10.4)	134 (26.1)
Functional hand washing facility (418)	Male	69 (46)	68 (45.3)	13 (8.7)	150 (35.9)
	Female	73 (42.2)	85 (49.1)	15 (8.7)	173 (41.4)
	Common use	54 (56.8)	37 (38.9)	7 (7.4)	95 (22.7)
Water and soap	Water and soap	26 (46.4)	10 (29.4)	(0)	36 (36.7)
	Water only	20 (35.7)	12 (35.3)	4 (50)	36 (36.7)
	Soap only	2 (3.6)	(0)	(0)	2 (2)
	Neither	8 (14.3)	12 (35.3)	4 (50)	24 (24.5)
Where hand washing facility water with soap	Toilets	23 (41.1)	10 (29.4)	0 (0)	33 (91.7)
	Food consumption	17 (30.4)	10 (29.4)	0 (0)	27 (27.6)
	School yard	1 (1.8)	0 (0)	0 (0)	1 (1)
Student always hand wash after visit toilet	Yes	22 (39.3)	12 (35.3)	1 (25)	35 (35.7)
	No	34 (60.6)	22 (64.7)	7 (75)	63 (64.3)
Student always wash	Yes	20 (35.7)	11 (32.4)	0 (0)	31 (31.6)

hand before eating	No	36 (64.3)	23 (67.6)	8 (100)	67 (68.4)
Reason not wash hand	Not near enough	9 (26.5)	4 (11.76)	1 (12.5)	14 (14.3)
	No enough water	28 (50)	18 (52.9)	8 (100)	54 (55.1)
	No soap	28 (50)	23 (67.6)	8 (100)	59 (60.2)
	To crowded	1 (2.9)	1 (4.3)	0 (0)	2 (2)
Hygiene practice status	Very good	6 (10.7)	2 (5.9)	0 (0)	8 (8.2)
	Good	44 (78.6)	28 (82.4)	5 (62.5)	77 (78.6)
	Poor	6 (10.7)	4 (11.8)	3 (37.5)	13 (13.2)
	Very poor	0 (0)	0 (0)	0 (0)	0 (0)

4.6.2 School solid and liquid waste management system in Addis Ababa

Almost all 95 (96.9%) school had liquid waste management systems and among this sewer line 18 (18.5%), 77 (78.6%) had septic tanks and among liquid waste management practice in the school 3 (3.1%) open dumping in their schools were un-acceptable. Besides 91 (92.9%) school had a solid waste disposal system, of this 89 (90.8%) collected by municipal waste collectors, 2 (2.1%) incineration, 3 (3%) burned on premise and 4 (4.1%) open dumping. Among solid waste disposal mechanism practiced by the schools open dumping and burning on premise were un-acceptable. Only 46 (47%) school had a dust bin for solid waste collection.

4.6.3. Menstrual hygiene Management (MHM) in Addis Ababa schools

Of 98 schools, 38 (39%) schools need MHM provision and 35 (92%) schools had MHM provisions. From the schools that have provision of MHM the majority 35 (92.1%) schools had pads and the least one is 1 (2.6%) bathing areas. The overall provisions of MHM are shown below on (Figure 8).

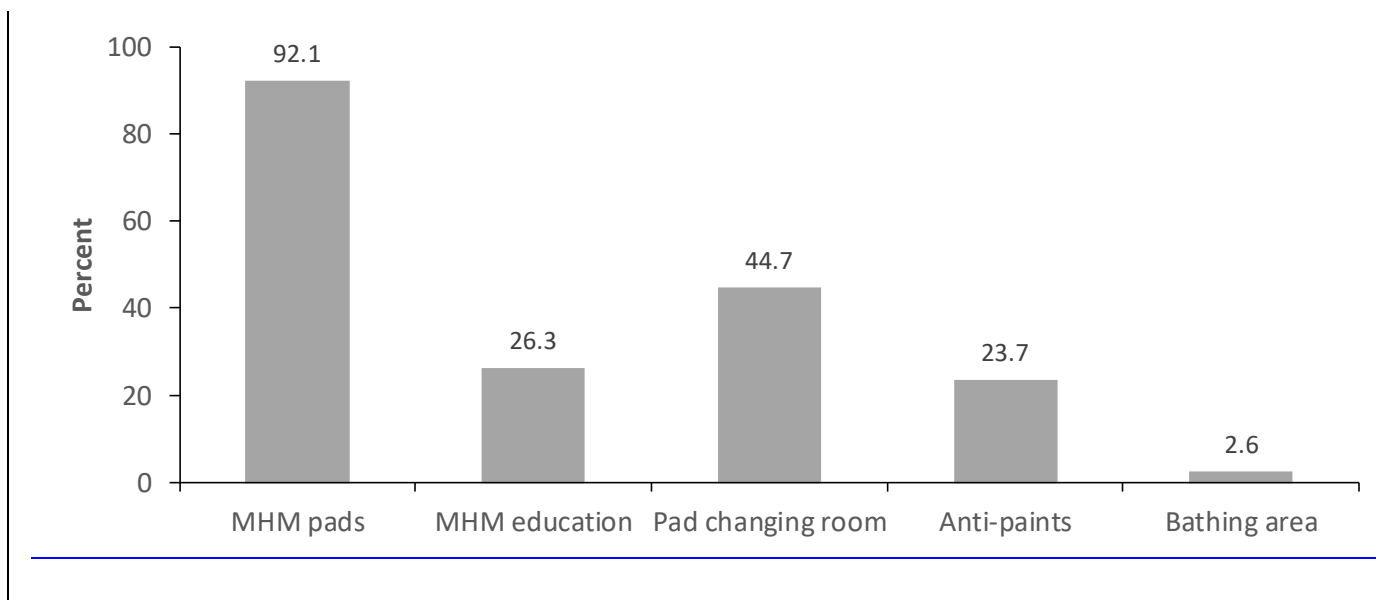


Figure 8 The provision of school MHM services by type in Addis Ababa, 2020

Among 35 schools that had provision of MHM, 17 (44.7%) schools had pad changing room, none of pad changing room had water with soap. 11 (64.7%) schools had disposal mechanism of MHM materials by waste collector. Table 9 describes MHM systems in schools.

Table 9 The MHM systems in schools of Addis Ababa, 2020

Variable	Response	Frequency	%
Menstrual hygiene is important for the school	Yes	38	39
	No	60	61
water and soap at pad changing room	Yes, water and soap	0	0
	Water only	2	11.8
	no water and soap	15	88.2
Dust bin for MHM material collection	Yes	11	64.7
	No	6	35.3
Is there disposal mechanism MHM wastes	Yes	13	76.5
	No	4	23.5
Disposal mechanism of MHM materials	Incineration	2	11.8
	municipal waste collector	11	64.7
	open disposal	4	23.5

4.6.4 Hygiene education in schools

All most all schools 85 (86.7%) had no trained health coordinator, 83 (84.7%) had a teaching program on health and 20 (20.4%) school had get training. Moreover, the topic of training in those schools were 14 (70%) train on hygiene and sanitation, 7 (35%) train on menstrual hygiene and 19 (95%) train on gender related issues. Table 10 describes the hygiene education and training systems in the schools.

Table 10 Health education status of schools in Addis Ababa, 2020

Variable	Response	Frequency (N=98)	%
Model teacher hygiene practice for their students	Yes	56	57.1
	No	42	42.9
Trained health coordinator	Yes	13	13.3
	No	85	86.7
Teaching program on health	Yes	83	84.7
	No	15	15.3
Training	Yes	20	20.4
	No	78	79.6
Topic of training	Hygiene and sanitation	14	70
	Menstrual hygiene	7	35
	HIV AIDS	1	5
	Gender related issues	19	95
Who give training	Teachers	14	70
	HEWs	6	30
	NGOs	2	10
	Club members	20	100

4.6.5 Food safety and hygiene for mass feeding schools

Of 98 schools, 41 (41.8%) government schools (KG and primary) had mass feeding program. Among the schools that had feeding program, 33 (80.5%) had kitchen, 31 (75.6%) had feeding room and only 6 (14.6%) schools had a hand washing facility with water and soap at mass feeding. Surprisingly, no dishwashing compartments for utensil washing. Almost all kitchen and mass feeding room floor, wall and ceiling were not washable as shown in (Table 11).

Table 11 School mass feeding premises, food handlers safety and hygiene status in Addis Ababa, 2020.

Variable	Response	Frequency	(%)
Mass feeding	Yes	41	41.8
	No	57	58.2
Kitchen	Yes	33	80.5
	No	8	19.5
Kitchen structure Washable	Wall	2	6.7
	Floor	24	80
	Ceiling	4	13.3
Feeding room	Yes	31	75.6
	No	10	24.4
Feeding room structure Washable	Wall	9	33.3
	Floor	25	92.6
	Ceiling	4	14.8
Management follow-up feeding environment	Yes	32	78
	No	9	22

Food handler have uniform (Hair net, apron...)	Yes	16	39.2
	No	25	60.8
Sink for utensil washing	Manual	41	100
Medical checkup of food handler	Yes	25	60.8
	No	16	39.2
Hand washing water with soap at mass feeding	Yes	6	14.6
	No	35	85.4
Dust bin at feeding areas	Yes	3	7.3
	No	38	92.7

4.7 Results of Chi-square analysis on association of school WaSH with school characteristics

There was statistical significant association for drinking water availability with ownership (χ^2 (1, N=98)=12.8, p=0.000), school level (χ^2 (2, N=98)= 10.3, p=0.006), budget (χ^2 (1, N=98)= 5.7, p=0.017), health club (χ^2 (1, N= 98) = 4.5, p=0.034), training (χ^2 (1, N=98) = 5, p=0.026), and teaching program (χ^2 (1, N=98)= 6.3, p=0.012) in schools of Addis Ababa, but geographic location, standards and guidelines, PTA and maintenance plan had no significant association with drinking water facility service level as shown in (Table 12).

Table 12 Association of school characteristics with drinking water facility service level, 2020

Variable	Categories	Water facility service level		Total N(%)	χ^2	P-Value
		Basic	Limited			
Owner	Private	43 (81.1)	10 (18.9)	53 (54.1)	12.8	0.000
	Government	21 (46.7)	24 (53.3)	45 (49.9)		
Geographic location	Peripheral	45 (67.2)	22 (38.2)	67 (68.4)	0.3	0.650
	Inner	19 (61.3)	12 (38.7)	31 (31.6)		

School level	Pre-primary	43 (76.8)	13 (23.2)	56 (57.1)	10.3	0.006
	Primary	19 (55.9)	15 (44.1)	34 (34.7)		
	Secondary and preparatory	2 (25)	6 (75)	8 (8.2)		
Budget	Yes	31 (55.4)	25 (44.6)	56 (57.1)	5.7	0.017
	No	33 (78.6)	9 (21.4)	42 (42.9)		
PTA	Yes	57 (64.8)	31 (35.2)	88 (88.8)	0.1	0.742
	No	7 (70)	3 (30)	10 (10.2)		
Health club	Yes	27 (55.1)	22 (44.9)	49 (50)	4.5	0.034
	No	37 (75.5)	12 (24.5)	49 (50)		
Training	Yes	10 (45.5)	12 (54.5)	22 (22.4)	5	0.026
	No	54 (71.1)	22 (28.9)	76 (77.6)		
Teaching program	Yes	58 (68.2)	27 (31.8)	85 (86.7)	6.3	0.012
	No	6 (46.2)	7 (53.8)	13 (13.3)		
Standards and guidelines	Yes	19 (82.6)	4 (17.4)	23 (23.5)	3.9	0.50
	No	45 (60)	30 (40)	75 (76.5)		
Maintenance plan	Yes	24 (72.7)	9 (27.3)	33 (33.7)	1.2	0.271
	No	40 (61.5)	25 (38.5)	65 (66.3)		

There was statistical significant association for latrine cleanliness status with ownership (χ^2 (1, N= 98)= 15.9, p = 0.000), school level (χ^2 (2, N= 98) =18.3, p = 0.001), budget (χ^2 (1, N= 98) = 10.1, p = 0.006), health club (χ^2 (1, N= 98) = 4.5, p = 0.034), training (χ^2 (1, N=98) = 8.6, p = 0.014), teaching program (χ^2 (1, N= 98) = 14.9, p = 0.001), standards and guidelines (χ^2 (1, N= 98)= 8.6, p = 0.013) and maintenance

plan ($\chi^2(1, N = 98) = 8.7, p = 0.013$) in schools of Addis Ababa, but geographic location and PTA had no significant association with latrine cleanness as shown in (Table 13).

Table 13 Association of school characteristics with latrine cleanness status, 2020

Variable	Categories	Latrine cleanness status			Total N (%)	X ²	P-Value
		Clean	Somewhat Clean	Not Clean			
Owner	Private	17 (32.1)	35 (66)	1 (1.9)	53 (54.1)	15.9	0.000
	Government	3 (6.6)	34 (75.6)	8 (17.8)	45 (49.9)		
Geographic location	Peripheral	15 (22.4)	45 (67.2)	7 (10.4)	67 (68.4)	0.9	0.637
	Inner	5 (16.1)	24 (77.4)	2 (6.5)	31 (31.6)		
School Level	Pre-primary	14 (25)	41 (73.2)	1 (17.8)	56 (57.1)	18.3	0.001
	Primary	6 (17.6)	23 (67.7)	5 (14.7)	34 (34.7)		
	Sec and prep	0 (0)	5 (62.5)	3 (37.5)	8 (8.2)		
Budget	Yes	14 (25)	33 (58.9)	9 (16.1)	56 (57.1)	10.1	0.006
	No	6 (14.3)	36 (85.7)	0 (0)	42 (42.9)		
PTA	Yes	18 (20.5)	61 (69.3)	9 (10.2)	88 (88.8)	1.2	0.555
	No	2 (20)	8 (80)	0 (0)	10 (10.2)		
Health club	Yes	13 (26.5)	32 (65.3)	4 (8.2)	49 (50)	4.5	0.034
	No	7 (14.3)	37 (75.5)	5 (10.2)	49 (50)		
Training	Yes	8 (36.4)	13 (59.1)	1 (4.5)	22 (22.4)	8.6	0.014
	No	12 (15.8)	56 (73.7)	8 (10.5)	76 (77.6)		
Teaching program	Yes	20 (23.5)	62 (72.9)	3 (3.6)	85 (86.7)	14.9	0.001
	No	0	7 (53.8)	6 (46.2)	13 (13.3)		

Standards & guide line	Yes	9 (39.2)	13 (56.5)	1 (4.3)	23 (23.5)	8.6	0.013
	No	11 (14.7)	56 (74.7)	8 (10.6)	75 (76.5)		
Maintenance plan	Yes	11 (33.3)	21 (63.6)	1 (3.1)	33 (33.7)	8.7	0.013
	No	9 (13.8)	48 (73.9)	8 (12.3)	65 (66.3)		

There was a statistical significant association for hygiene status with ownership ($\chi^2(1, N = 98) = 4.7, p = 0.031$), budget ($\chi^2(1, N = 98) = 5.8, p = 0.016$), teaching program ($\chi^2(1, N = 98) = 7.3, p = 0.007$), maintenance plan ($\chi^2(1, N = 98) = 3.9, p = 0.047$) in schools of Addis Ababa, but geographic location, and PTA, school level, health club, training and standards and guidelines had no significant association with hygiene facility availability as presented in (Table 14).

Table 14 Association of school characteristics with hand washing facility availability, 2020

Variable	Categories	Hand washing facility		Total N (%)	X ²	P-Value
		Yes	No			
Owner	Private	50 (94.3)	3 (5.7)	53 (54.1)	4.7	0.031
	Government	36 (80)	9 (20)	45 (49.9)		
Geographic location	Peripheral	61 (91)	6 (9)	67 (68.4)	2.1	0.144
	Inner	25 (80.6)	6 (19.4)	31 (31.6)		
School Level	Pre-primary	48 (85.7)	8 (14.3)	56 (57.1)	2.7	0.258
	Primary	32 (94.1)	2 (5.9)	34 (34.7)		
	Sec and prep	6 (75)	2 (25)	8 (8.2)		
Budget	Yes	53 (94.6)	3 (5.4)	56 (57.1)	5.8	0.016
	No	33 (78.6)	9 (21.4)	42 (42.9)		
PTA	Yes	77 (87.5)	11 (12.5)	88 (88.8)	0.5	0.819
	No	9 (90)	1 (10)	10 (10.2)		

Health club	Yes	45 (91.8)	4 (18.2)	49 (50)	1.5	0.218
	No	41 (83.7)	8 (16.3)	49 (50)		
Training	Yes	18 (81.8)	4 (18.2)	22 (22.4)	0.2	0.676
	No	65 (85.5)	11 (14.5)	76 (77.6)		
Teaching program	Yes	77 (90.6)	8 (9.4)	85 (86.7)	7.3	0.007
	No	6 (46.2)	7 (53.8)	13 (13.3)		
Standards and guide lines	Yes	20 (87)	3 (13)	23 (23.5)	1.4	0.234
	No	63 (84)	12 (16)	75 (76.5)		
Maintenance plan	Yes	32 (97)	1 (3)	33 (33.7)	3.9	0.047
	No	54 (83.1)	11 (16.9)	65 (66.3)		

4.8 Findings of observation and qualitative study

4.8.1 Observed hand washing behavior of students in schools

The observations were done to assess student's hand washing practices and their behavior at two critical times: after using the toilet and before eating. Observations were only carried out in those schools which provided all the necessary materials (i.e. hand washing facility with soap and water). In secondary and preparatory school no observation were done due lack of soap in both government and private schools.

Therefore, it is the proportion of children practicing hand washing in schools when the required conditions are fulfilled, were carried out during the lunch hour before eating and during the morning break after visiting toilet. A total of 512 observations were done. In the schools in which hand washing behavior was studied, 19.1% of students did not wash their hands after defecation and before eating.

The number of student's not using hand washing facility had great disparities between private 37.3% and government 62.7% schools. In private schools, 59.7% students wash hands properly while in government schools it was less than half 40.3% as shown in (Table 15).

Table 15 Hand washing practice of students by owner of schools in Addis Ababa, 2020 (n=512)

Questionnaire variable	Response	Private (N=256)	Government (N=256)	Total (N=512)
Student using hand washing facilities	Yes	218 (54.9)	192 (45.1)	410 (80.1)
	No	38 (37.3)	64 (62.7)	102 (19.9)
Number of student using soap	Yes	197 (58.5)	140 (41.5)	337 (82.2)
	No	17 (23.3)	56 (76.7)	73(17.8)
Techniques of HW	One hand	13 (22.4)	45 (77.6)	58 (30.1)
	Two hand	199 (56.6)	153 (43.5)	352 (69.9)
Properly hand washing (410)	Yes	184 (59.7)	124 (40.3)	308 (75)
	No	34 (33.3)	68 (66.7)	102 (25)

Overall, (80.1%) of students use hand washing facilities, from these boys were less likely to use hand washing facilities than females that is 44.1% of male and 55.9% of girls.

There was a gender differences in the usage of soap during hand washing (39.5%) male and (60.5%) female. Of students used hand washing facility, 352 (85.9%) wash two hands among this 147 (41.8%) male and 205 (58.2%) female. Among those students that wash their hands, 75% wash hands properly, from these 38.6% male and 61.4% female students at the time of survey as presented in (Table 16).

Table 16 Hand washing practice of students by sex and washing time in Addis Ababa, 2020

Questionnaire variable	Response	Male (N=256)	Female (N=256)	Before eating (N=256)	After defecatio n (N=256)	Total (N=512)
Student using hand washing facilities	Yes	181 (44.1)	229 (55.9)	207 (80.9)	203 (79.3)	410 (80.1)
	No	73 (71.6)	29 (28.4)	49 (19.1)	53 (20.7)	102 (19.9)
No of student using soap or substitutes (410)	Yes	133 (39.5)	204 (60.5)	175 (51.9)	162 (48.1)	337 (82.2)
	No	58 (79.6)	15 (20.5)	34 (46.6)	39 (53.4)	73 (17.8)
Techniques of HW (410)	One hand	46 (79.4)	12 (20.6)	28 (48.3)	30 (51.7)	58 (14.1)
	Two hand	147 (41.8)	205 (58.2)	172 (48.9)	180 (51.1)	352 (85.9)
Properly hand washing	Yes	119 (38.6)	189 (61.4)	156 (50.6)	152 (49.4)	308 (75)
	No	62 (60.8)	40 (39.2)	50 (48.5)	52 (50.5)	102 (25)

4.8.2 Results of the logistic regression analysis

The results of the bi-variate analysis in study participants were done using variables ‘hand washing practice properly’ as dependent factor and other independent variables. The results show that ownership of the school and sex of student was significantly associated with hand washing properly. The detail bivariate logistic regression information of the respondents was presented in (Table 17).

Table 17 Bivariate logistic regression of the schools and students characteristics with hand washing practice in Addis Ababa, 2020.

Variables	Categories	Hand washing practices properly		COR (95%)	P value
		Yes	No		
Owner	Government	117 (45.7)	139 (54.3)	0.484 (0.328-0.715)	0.000
	Private	183 (71.5)	73 (28.5)	1	
geographic location	Peripheral	138 (53.9)	118 (46.1)	1.242 (0.846-1.824)	0.268
	Inner	169 (66)	87 (34)	1	
student school level	Pre-primary	157 (61.3)	99 (38.7)	0.902 (0.614-1.324)	0.598
	Primary	150 (58.6)	106 (41.4)	1	
sex of student	Female	192 (75)	64 (25)	2.435 (1.651-3.591)	0.000
	Male	115 (44.9)	141 (55.1)	1	
hand washing time	Before eating	155 (60.5)	101 (39.5)	1.109 (0.755-1.628)	0.599
	After defecation	152 (59.4)	104 (40.6)	1	

Variables which showed significant association with the dependent variable in the bivariate analysis were entered in to multivariate logistic regression model to identify their independent effects. All variables ($P < 0.05$) were entered into a multivariate analysis. In multivariate logistic regression analysis, ownership of the school and sex of student was significantly associated with hand washing practice of school children. From socio demographic characteristics, sex of student was significantly associated with hand washing practice, In this aspect, female student in school children more likely performed proper

hand washing practice 2.4 times (AOR: 2.439, 95% CI: (1.656, 3.591)) than male students. The detail multivariate logistic regression information of the student is presented in (Table 18).

Table 18 Multivariate logistic regression of the schools and student characteristics with hand washing practice in Addis Ababa 2020.

Variables	Categories	Hand washing practices properly		COR (95%)	AOR(95%CI)	P value
		Yes	No			
Owner	Government	117 (45.7)	139 (54.3)	0.484 (0.328-0.715)	0.490 (0.332-0.721)	0.000
	Private	183 (71.5)	73 (28.5)	1	1	
Geographic location	Peripheral	138 (53.9)	118 (46.1)	1.242 (0.846-1.824)	–	–
	Inner	169 (66)	87 (34)	1		
Student school level	Pre-primary	157 (61.3)	99 (38.7)	0.902 (0.614-1.324)	–	–
	Primary	150 (58.6)	106 (41.4)	1		
Sex of student	Female	192 (75)	64 (25)	2.435 (1.651-3.591)	2.439 (1.656-3.591)	0.000
	Male	115 (44.9)	141 (55.1)	1	1	
Hand washing time	Before eating	155 (60.5)	101 (39.5)	1.109 (0.755-1.628)	–	–
	After defecation	152 (59.4)	104 (40.6)	1		

4.8.3 Interview with WaSH club head/Student representatives

In almost all interviewed government school students reported that they used water in their school for *"hand washing, for drinking and food preparation."* In KG private school they used *"water only for hand washing"* and in primary and secondary private school they also used for *"hand washing and drinking purpose."* Of 12 (twelve) school club heads/representatives interviewed, only (2) two private KG school said *"we had no water accessibility problem."*

The interview with students on toilet facility usage, students from two secondary and preparatory schools said that *"they don't use the toilet in their school because the toilet is very dirty, had a bad smell and it doesn't give privacy (toilet door broken and no closable)."* Furthermore, in all school students said that *"there is no any consultation during WaSH facility construction, maintenance, design, cleanness and problems that distress WaSH facilities."* Moreover, students from all school said that *"we want improvement in cleanness of latrine facility, hand washing facility near latrine, soap for hand washing, dust bins for collection of anal cleansing materials."*

when a student asked why toilet lack cleanness problem, the student said that *"toilets are not cleaned daily by cleaners due to water shortage, so student didn't use properly toilets they defecate outside, some student drop anal cleansing materials in toilet and outside toilet, some student did not use toilet facilities properly even when the toilet is clean due to careless."*

Student interviewed also raised that some student had WaSH facility usage problem *"Water points and hand washing facilities are broken, toilet blockage by disposing solid waste, by students due to poor operation and usage, even if there is water and soap they didn't use it."*

In 4 (four) secondary schools there is no hygiene education program and active health club and in 4 KG no health club. The reason behind this when a student asked said *"school management did not help to participate and work on us"*. In 1 (one) school students participates in the school WaSH program by collecting money from their parents and they bought large water storage tanker.

In (2) two government school student raised as good practice *"water treatment in the school by chlorination and using filtration with the help of NGO, in 1 (one) school student raised they had pad changing room, pads, anti-pains and 1 (one) primary school student raised they had bed for first aid and hand washing with soap at pad changing room."*

The main challenge raised by students with WaSH in schools were *"water incontinence, student have no feeding room and eat at their class, no water for drinking, improper usage of WaSH facility by students, non-functional WaSH facility, absence of soap/lack of soap, toilet had no privacy, lack cleanness, in 1 (one) high school water source broken and had design problem and no give service for 4 years and student use tanker water..."*

The main solutions raised for these challenges by interviewed health club were *" to work with AAWSA, use more tanker and treat the tanker water, maintain the facility immediately, construct feeding room, educating students on usage of WaSH facilities and behavioral change, activate student health clubs, to allocate budget specifically for WaSH facilities, consult students, professionals during design, maintenance and construction facility. Construct bore hole especially for hand washing, toilet...."*

4.8.4 Interview with head of school administration.

The principal stakeholders stated by the head of school administration when asked were *"education office, health office, food and medicine, solid waste management agency, NGO, PTA."*

Almost all school respondent said they had interface but only 2 (two) school administration had no interface and in all schools no constant time to evaluate the work progress even after signing interface.

When the way these stakeholders participated asked in 4 (four) government schools, school administrators said that, *" stake holders participate in planning, implementing, monitoring and evaluation, maintenance, 2 (two) government school planning, implementing, monitoring and evaluation. In all private schools stake holders participate only by planning, monitoring and evaluation..."*

In 2 (two) private KG school toilets are adequate but, not disability inclusive due to design problem. In other schools WaSH facilities are not adequate due to shortage of budget, not disability inclusive.

When they asked why toilets are not inclusive they said *"we have no disabled student, in private schools there is not adequate spaces, school rent from private for construction."*

There is problem of WaSH facility adequacy and when school administration asked why not adequate WaSH facility, in all private schools they said *"we had no problem of budget for construction of WaSH facilities and maintenance but, the main problem was school rent from private and lack of space."* In 1 (one) primary government schools administration head said *"no shortage of budget for WaSH facility."*

In other 3 (three) schools there is *“no enough budget to maintain and construction of facilities and school administration said that even when we ask budget politicians doesn't approve budget for WaSH facility.”*

The school budget on maintenance in all schools used maintenance of different activities. In all private schools no plan for construction and maintenance of WaSH facilities due to schools are rented from private and in 3 government schools they have planned but due to shortage of budget no start to action.

Hand washing practices were poor in government school due to lack of water and soap, some student did not wash hands at critical times even when water and soap present due to behavioral factors. In 2 (two) government secondary and preparatory school administrator said that *“most students did not use drinking water and hand washing facilities properly, they break them and almost all hand washing points are non-functional, So WaSH facility usage of students at all levels must be improved.”*

In almost all 6 (six) school no open defecation but in 2 preparatory and secondary schools there is open defecation and school administration said this may be *“due to toilets are not clean and no give privacy.”*

In all schools, school administration had responsibility for WaSH facility maintenance, in 2 (two) government schools NGO maintains WaSH facilities. In 3 (three) government schools the WaSH facility design and construction had quality problems. In all private schools no problem of quality but it had problem of inclusiveness for disabled. In 2 (two) government and all (six) private schools there is system to maintain WaSH facilities by paying per-diem for technicians/laborers so that non-functionality is small. In 2 (two) government school, NGO and school administration maintain following finance rule which is a lengthy process within a long period of time.

Furthermore, when a school administrator asked the way school community participates, the administrator said that, *“health club and teachers by giving health education, community support by giving soap and in Birr, school administrator and NGO by construction and maintenance of the facility and no system for consultation and participation of students.”*

Moreover, in all government schools the great challenges stated by school administrator for implementation of WaSH program were *“water incontinence, shortage of budget, feeding room problem, the design and usage of WaSH facilities, facilities broken and the toilet cleanness problem.* In private schools the main challenges are *water incontinence, rent from school, space not adequate.”*

5. DISCUSSIONS

5.1 Drinking water status in schools

The drinking water service level has its own difference between private and government schools and by school level. Private schools had highest basic service 43 (81.1%) compared to government schools 21 (46.7%). By school level the service levels were, 43 (77%), 19 (56%), 2 (25%) KG, Primary and Secondary at the time of survey respectively. These service level difference may be due to attention given in private and KG schools for drinking water facilities were better than others. The basic drinking water service levels in Addis Ababa schools 64 (65.3%) were smaller than global studies in the world school by JMP, 69 % had basic, 12 % limited, 19 % no drinking water service (JMP, 2018). The basic service level in Addis Ababa may be smaller due to water incontinence was higher.

The functionality rate of drinking water facilities had great disparities by owners of school. In private school 664 (87.8%) and in government schools 440 (65.8%) are functional. By school level, 118 (66.3%) in secondary, 565 (75%) in primary and 421 (85.2%) in KG school were functional. This may be the maintenance and usage of drinking water were poorer in government schools and secondary and preparatory schools. The result of non-functionality rate in Addis Ababa school was higher than reported by Addis Ababa education bureau 13.5% and non- functionality report by MoE 20.1% for primary, 9.7% for secondary schools (Addis Ababa Education Bureau, 2018; MoE, 2017). This may be the recent maintenance, usage and management of WaSH facilities were poorer than previously reported by bureau. The non-functionality rate in Addis Ababa was better than study done in Nicaragua that 43% of school access to water infrastructure, 26% water was non-functional water points (Jordanova *et al.*, 2015).

Addis Ababa city Administration school drinking water facilities were also better than study done in Malawi, Blantyre state primary schools which had 22% of the primary schools in the city had water supply either tap water or boreholes (Kuwonga and Kalenga, 2012).

The non functionality of drinking water points in 47 (48%) school lasts more than 6 (six) months without maintenance and in most government school during interview they raised shortage of budget, student usage problems and commitment of the school management were the main reason.

The overall average student to functional water tap ratio was 1:48. There is great disparities student to water taps between private and government schools that is 1:27 in private and 1:65 in government. By

school level student to water tap 1:24 KG, 1:44 in primary, 1:77 secondary and preparatory schools. This may be the number of student in government schools are very larger than privates, the maintenance, construction and management may be better in private and KG schools. The average water tap to student ratio were poorer than reported by bureau 1:40 this may be due to maintenance of facilities were poor after the assessment done by bureau or the ratio sent by each sub-cities had its own problem (Addis Ababa Education Bureau, 2018).

The average water tap students ratio appears to be un acceptable and more than two times less than recommended by the education bureau 1:20 (Addis Ababa Education Bureau, 2018).

Addis Ababa school functional water point to student ratio was better than the same study done on schools of Dessie city that was 1:114. This may be due to Addis Ababa is a capital city and the budget allocation, construction and maintenace were better than Dessie (Hassen and Abera, 2013).

These study result on the accessibility of water points in Addis Ababa were less than study done in south wollo, 62.5% of the water points accessible by children with disability. This may be in Addis Ababa schools the consultation of students, participation of stakeholders during design and construction of WaSH facilities at all level was very low (Andargachew and Salamon, 2013)

All school in Addis Ababa had drinking water and 97 (99%) are accessible for normal children, which is higher than reported by MoE, 68.5% for normal children. Only 57 (58.2%) school drinking water in Addis Ababa accessible for disabled student which is higher than reported by MoE 40.4% in primary and 32.6% in secondary school (MoE, 2017).

The present study showed that during time of survey 64 (65.3%) schools had drinking water from the main source. The water availability from the main source have incontinence problem and only 5% school can get water 24 hours, 58% (3-4 days per week), 26% (1-2 days per week), 9% (Less than once a week) which is poorer than reported by ministry of education that 69% (5-7 days), 19.7% (4 days) and 13.4% (2 and less than 2 days) per week available within the school premises (MoE, 2017).

There was significant association between owner, school level, budget, health club, training and teaching program with drinking water service level in schools of Addis Ababa.

5.2 Sanitation facility status in schools

All schools had sanitation facility in their schools and the majority of school 72 (73.5%) had VIP toilet, 5 (5.1%) pour flush toilet, 21 (21.4%) had pit latrine; only 2% school had urinals and 95 (8%) toilet drop hole were non-functional. This result was higher coverage and improved latrine facilities than study done by MoE that, 86% in primary schools had latrine facilities, 53.6% improved latrine (45.1% in primary, 62.1% in secondary and preparatory) (MoE, 2017). The coverage of this study was better and the functionality was almost similar with study conducted by the MoH that 76% of schools in Ethiopia had latrines, 77% traditional pits and 93% was functional (MoH, 2016). The coverage and improved sanitation facilities may be large that Addis Ababa is capital city of Ethiopia and the Ministries study includes rural schools as well.

This study result was better improved sanitation than studies done in Nicaragua that almost half schools 64% had improved sanitation facilities on premises (Jordanova *et al.*, 2015). At the same time this study result was also better coverage of latrine than study done in GhanaTano district that 53% schools were without toilet facilities (Daniel, 2009).

In Addis Ababa 69 (70.4%) schools had basic service, 8 (8.2%) had limited service, 21 (21.4%) had no service. These results are also supported by previous globally study done in world schools by JMP indicated that 66% schools had basic sanitation, 12% limited, 23% no sanitation service (JMP, 2018). The sanitation service level has its own difference between private and government schools and by school level. Private schools had highest basic service 48 (90.5%) compared to government 21 (46.7%). This may be due to private schools had good budget for WaSH, most toilets were improved, allocation of toilet was done by considering sex. By school level the basic service level of sanitation were 38 (67.9%), 25 (73.5%), 6 (75%) for KG, Primary and Secondary schools at the time of survey respectively. The service level in KG school was very lower than primary and secondary due to toilet facilities were not separated by sex, which it is not mandatory to separate by sex.

The average toilet facility to student ratio was 1:59 (1:49 for male, 1:68 for female) which is very good than study done at a national level which 1: 109 students (MoE, 2017). There is great disparities student to toilet ratios between male and female in secondary schools (1:55 male, 1:88 female), primary (1:52 for male, 1:88 female). The great disparities between male and female student to toilet ratio occurred in

primary, secondary and government school due to the allocation of toilet facilities were not consider number of student by sex.

Another studies done in Arada sub city the average student to toilet ratio was 1: 68 which is poorer than this study (Getahun, 2016).

At the same time this study result had small disparities from reports by Addis Ababa education bureau that the average toilet to student ratio 1:56 (male 1:52, female 1:59) (Addis Ababa Education Bureau, 2018). The average student-to-drop hole ratio found across the sampled schools is over twice the amount that is recommended by education bureau 1:20. This suggests that the average number of latrines currently available in the sampled schools is highly insufficient.

The Addis Ababa schools toilet to student ratio were better than studies done in schools of Dessie city 1:64 and Haitian schools 9.5% schools had 1:500 latrine, 33% 1: 100-300 students (Hassen and Abera, 2013;Giardina, Prandini and Sorlini, 2013).

The finding on accessibility of toilets was, 96 (98%) for normal students, 26 (26.5%) for disabled men and 22 (22.5%) for disabled female students. The finding on the accessibility of toilets for normal children was higher than MoE and lower for disabled, 53% for normal children and 35.9% for disabled respectively (MoE, 2017). But, the result was better than assessment done in Haitian schools, there were no latrines for disabled (Giardina, Prandini and Sorlini, 2013).

The majority of schools 94 (94%) are free from open defecation, 4 (4%) have open defecation in their schools. The main reason for open defecation stated by school directors were 1 (25%) lack of latrine, 2(50%) strong offensive smell, 1 (25%) lack of privacy. The same study done in Zimbabwe in Masvingo district schools showed that, open defecation was reported in 27% schools which was higher than this result. The main reason for open defecation in school latrines were almost the same with Masvingo schools that were inadequate and far from the classroom blocks (SNV, 2012).

All school had cleaners for toilet cleaning but during interview the main challenges rose by school administrator to repeatedly clean toilet were water incontinenes problems. There were significant association between owner, school level, budget, health club, training, teaching program, standards and guidelines and maintenance plan with Latrine cleanness status in schools.

5.3 Hygiene facility status in schools

5.3.1 Hand washing facility status

The majority 85 (86.7%) school had hand washing facility, both soap and water available 33 (38.8%) schools , 34 (40%) water , 2 (2.4%) soap only and 16 (18.8%) had neither water nor soap at the time of survey. These result finding was better than studies done in Arada sub-city 88.1 % did not had hand-washing facilities, in those schools with a hand washing facility, in 73.5% water available, however, 99.9% had no soap available (Getahun, 2016).

The result in Addis Ababa was also better than the same study done in Nepal secondary schools that they had proper hand washing facilities but no any soap available in all sampled school (Shrestha *et al.*, 2016). While, study done in schools of Lahore Islamabad, showed that 86% school had no soap for washing hands which were poorer than Addis Ababa schools (Butt, 2014).

The study result in Addis Ababa schools water with soap was poorer than global studies on world school hand washing facilities with soap and water 53% of schools had soap and water , 11% had only water and 36% had no hand washing service (JMP, 2018).

The study also revealed that, the non-functional hand washing points in Addis Ababa schools were 95 (19.5%) . These non-functional hand washing points were better than studies done in Arada Sub-city, 30% of schools had non-functional hand washing (Getahun, 2016). But, the non-functionality rate was larger than stated by MoE 11.1% primary and 16% in secondary schools (MoE, 2017).

The EMIS in Philippines record and assessment in Nairobi Kajiado District showed that 30% of study schools had functional hand washing and 60% in philippines school were non-functionality in Addis Ababa were better (Annette, 2012; JMP, 2018). At the same time these result was better than study done in Tanzania on primary school that, 43% had functional hand washing (Antwi-Agyei *et al.*, 2017)

The location of the hand washing facility were located near the latrine facilities in 71 (83.5%) schools. These result was better than study done by in South Wollo school facilities near latrine not available (Andargachew and Salamon, 2013). The same study done in North Shewa Kimbibit woreda schools showed that, 6.3% of school had hand washing facilities near latrine which is less better than Addis Ababa (Tsige, Kumme and Dejene, 2018).

In Addis Ababa 36 (36.7%) schools had basic service, 34 (34.7%) had limited, 28 (28.6%) had no service. From school no service 28 (28.6%), the highest were in secondary and preparatory 5 (62.5%). The basic service level in Addis Ababa schools were smaller than globally study done by JMP for the world schools that 53 % had basic hygiene, 11 % limited, 36 % no hygiene service and for the case of Ethiopia, the report showed 6% basic service which was very much less than this study (JMP, 2018).

The hygiene service level had its own difference between private and government schools and by school level. Private schools had highest basic service 28 (52.8%) compared to government schools 8 (17.8%) and by school level basic service level of hygiene, 24 (42.9%), 12 (35.3%), 0 (0%) for KG, Primary and secondary schools at the time of survey respectively. In KG and private schools the basic service level was better, this may be due to school students get soap from their parents, maintenance, construction, usage and attention given for hand washing facilities by the schools were better.

This study result on water with soap were better than Nicaragua schools that 81% of schools did not had hand-washing facilities and among schools hands washed, 74% washed without soap and 95% acquired soap from parents of students (Jordanova *et al.*, 2015).

The average hand washing facility to student ratio was 1:147 (1:114 for male, 1:179 for female) and there is great disparities student to hand washing ratios between male and female in secondary schools 1:138 for male and 1:294 for female. The hand washing point ratio for female were almost two times less than males. The hand washing facilities ratio in Addis Ababa were less than seven times recommended by bureau 1:20 (Addis Ababa Education Bureau, 2018).

There were significant association between owner, budget, teaching program, maintenance plan and hand washing facility availability in schools.

5.3.2 The availability of Liquid and solid waste management facilities

Almost all 95 (96.9%) school had liquid waste management facilities and among this sewer line 18 (18.5%), septic tank 77 (78.6%) and among liquid waste management practice in the school 3 (3.1%) open dumping in their schools were un-acceptable.

Furthermore, 91 (92.9%) school had solid waste disposal system, of this 89 (90.8%) collected by municipal waste collectors, 2 (2.1%) incineration, 3 (3%) burned on premise and 4 (4.1%) open dumping. Among solid waste disposal mechanism practiced by the schools open dumping and burning on premise were bad practice which was un-acceptable.

5.3.3 Menstrual hygiene Management

Among 38 (39%) schools that need MHM provision, 35 (92%) schools had MHM provisions. Of schools that had provision, 10 (26.3%) menstrual hygiene education. This study result was very much smaller than similar study done in south wollo that 92% of respondents had received education on menstrual hygiene (Andargachew and Salamon, 2013). But, this result was very much larger than study done in Uganda Only 7.1% had menstrual hygiene facilities (Water Aid, 2013).

Among the schools that had provision of MHM, 17 (44.7%) had pad changing room; none of pad changing room had water with soap. The same study done in Kenya schools for menstruating girls showed, 60% had hand washing water, 13% had water in latrines for menstruating girls and 2% had soap which was better than in Addis Ababa (Alexander *et al.*, 2014).

The porovision of pads in Addis Ababa school was better than study done in Zimbabwe Masvingo district 25% of the schools had back-up sanitary pads for emergency and anti-pains in 24% which was almost the same with Addis Ababa schools. While, 92% of the girls were given lessons relating to menstrual hygiene which is very much better than Addis Ababa schools (SNV, 2012). During interview Addis Ababa schools raised as a main reason there was no budget to train and educate students.

5.3.4 Hygiene education

All most all schools in Addis Ababa 85 (86.7%) had no trained health coordinator and 83 (84.7%) had teaching program on health. The teaching program in Addis Ababa was better than Benishangul Gumz region that 59% teachers mentioned that hygiene education was given to students (Alemu, 2011). This study also revealed that only 20 (20.4%) get training and 14 (14.3%) mention they get training on hygiene and sanitation, when compared with studies in in Benishangul Gumz region 27% of teachers get training on school WaSH which was better than Addis Ababa schools (Alemu, 2011). This may be due to shortage of budget, support of NGO in Addis Ababa school was smaller and attention given on training of hygiene and sanitation was poor.

5.3.5 Food safety and hygiene for mass feeding school

Of 41 (41.8%) government KG and primary schools mass feeding, 33 (80.5%) had kitchen, 31 (75.6%) had feeding room but, small no of kitchen and feeding room compartment were washable. The hand washing water with soap at mass feeding room was poor 6 (14.6%), surprisingly no school had dish washing compartment and only 3 (7.3%) school have dust bin around feeding. Only 25 (61%) of school have food handlers medical checkup on communicable disease.

Even if the feeding program started recently, the premise, absence of dish washing compartment and hygiene status food handlers and feeding environments in general had great short comings which can create good environment for hygiene related disease replication and transmission of disease.

5.4 Observed hand washing behavior of students in school

Overall, 80.1% of students use hand washing facilities and 19.1% of students did not wash their hands after defecation and before eating. The student no using hands washing facility had great disparities between private 37.3% and government 62.7%. In private school 59.7% students, 40.3% government school student wash hands properly and 17.8% use only water. During the interview of school administrator and club members in all private schools they confirmed there were follow up of teachers and school management to use hand washing facilities and wash hands properly. These result was better than studies done in Arada sub- city that 28% wash their hands by using water (Getahun, 2016).

At the same time Addis Ababa school student was better than study done in Arba minch schools that 22.3% of primary school children practice proper hand washing behavior and the rest 77.7% of children practice improper hand washing behavior (Besha *et al.*, 2016).

Among students used hand washing facilities, boys were less to use hand washing facilities than females that 44.1% of male and 55.9% of girls. This result was almost similar with the study done in Arada sub city 49.7% of boys wash hands compared to 54.6% of girls (Getahun, 2016).

There was a gender differences in usage of soap during hand washing 39.5% male and 60.5% female. Of students used hand washing facility 352 (69.9%) wash two hands, of this 147 (41.8%) male and 205 (58.2%) female. Among those students that wash their hands 75% wash hands properly, from these 38.4% male and 61.6% female students wash properly.

6. CONCLUSIONS

The overall research finding revealed that the school in Addis Ababa lacks adequate WaSH facilities and the service levels of facilities are un-satisfactory. The average WaSH facilities to student ratio were different in schools by school level, owners and sex of student which is better in KG, private school and for male students. The functionality of WaSH facilities was better in private schools when compared with government.

Moreover, the study result revealed that school WaSH facility had various shortcomings that the existed facilities were poor in quality, lack of care and maintenance, lack consistent drinking water supply, toilet lack cleanliness, bad smell, most design of WaSH facilities were not all inclusive, toilet lack privacy and due to this there are open defecation at some schools.

In schools that had water with soap there are students that did not use hand washing facility, hand washing properly at the school and had significant difference across sexes, owners of school. Girls were more likely to use hand washing facility, wash their hands with soap and practice properly when compared to boys. This implies providing the necessary materials for hand washing is not enough to encourage students to practice hand washing with soap at critical times.

In schools which had mass feeding program there is a great gap starting from premise to hygiene of food handlers are poor.

In general the attention given to school WaSH at different management level of education and school community was very low. Due to this most school lack budget for the implementation of WaSH activities, the involvement of stakeholders were poor. Hence, water, sanitation and hygiene conditions of the schools primarily require attention and commitment of stakeholders to realize a healthy school learning environment.

7. RECOMMENDATIONS

From this study, the recommendation goes to Ministry of education, Addis Ababa education bureau Ministry of Health and to Addis Ababa schools.

Ministry of Education:-

- There should be a structure that lead by professionals that follows WaSH activities and made intervention on school WaSH from ministries to school level.
- Education policies on establishment of new institutions and previously opened schools should be reviewed that institutions meet minimum standards on WaSH should registered and continue.
- The ministry of education should introduce WaSH project and initiate research on implementation and management of school WaSH activities.
- Advocate the inclusion of MHM in school standards and attention should be given, for pad changing room water with soap, pads and anti- pains.

Addis Ababa Education Bureau:-

- Education Bureau should develop a guide or additional curriculum for students to enable them to better promote hygiene and to encourage participation of health club at the school.
- There should be collaboration with AAWSA to alleviate problems of water incontinence and mandatory interface should be signed.

Ministry of Health/ Health Bureau:-

- There should be guidance, support on standards and guideline review, training and advice from MoE to school management on water, sanitation and hygiene.
- Health professionals should give license on WaSH, inspect and enforce standard and guidelines.

Sub-city Education Office level:-

- There should be training for teachers on WaSH to create awareness and integrate into the daily instructions to encourage positive behavioral change.
- Education Office should influence increment of budgetary allocation for school WaSH programs based on specific needs of the schools.
- There should be inspection of school WaSH facilities to ensure they are properly used and maintained.
- Standards, guidelines and manuals published by MoE and Education Bureau should be availed to all school heads.

At school level:-

- The mobilization of additional resources to supplement budget allocated from government should be done.
- Priority should be given on rehabilitation, management and construction of WaSH facilities.
- There should be cooperation and involvement of students, teachers and stake holders on the design, maintenance, construction and implementation of School WaSH Program.
- Hand washing facilities should have water with soap at all schools one possible strategy might be to engage parents, donors and development partners to donate needed hygiene material.
- School should promote and ensure students to use school WaSH facilities in the appropriate manner, hand washing and soap usage at critical times is practiced by all student.
- Greater emphasis on urinals should be given to reduce amount of liquids draining into latrine and it is easier, less costly to construct and maintain than latrines used for the same purpose.
- WaSH facilities should be all inclusive, allocating toilets on the basis of no of student by sex can ensure privacy and dignity for menstruating girls.
- In schools which had mass feeding program there should be improvement from premise to hygiene of food handlers.

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ANNEXES

Questionnaires

Participant Information Sheet, English Version

Good morning/afternoon. My name is _____. I am a member of a data collector team on behalf the study conducted by Abayneh Melaku, who is student at Addis Ababa University Ethiopian Institute of Water Resources, Department of Water and Health Graduate Study Program.

Title of the Research:- “Assessment of School Water, Sanitation and Hygiene Status in Addis Ababa, Ethiopia.”

Study Aims and Significance.

This study focuses on to identify current status of water, sanitation and hygiene facilities in schools, determine sanitation and hygiene practices of students in schools of Addis Ababa.

The findings of this study will help implementation of WaSH programs and WaSH activities by identifying factor distressing school WaSH and to forward strategies for this problems, that will be important to policy makers, donors and for those who would be interested in supporting Addis Ababa education system in mitigating obstacles to healthy school environment.

Activities

The study involves collecting of data on the status of WaSH facilities and practice of students in Addis Ababa schools by using semi-structured Questionnaire. Each Questionnaire will take 20-25 minutes.

Participation and use of information

Participation is voluntary and school directors from Addis Ababa schools can participate. Confidentiality is one of the main priorities. The information collected from any participants will not be available to other participants will be accurately aggregate into a report. Personal and institutional identifying information (*audiotapes, photograph*) will be destroyed at the conclusion of the project.

Questions If you have any queries, questions about the research please feel free to contact Abayneh Melaku on 0912 71 8461 phone number, email abaynehmelaku@ymail.com

Consent form for participants

I have read the Information Sheet concerning this thesis and I understand what it is. I understand that I am free to request further information at any stage. I am giving my consent to participate in the study entitled as **“Assessment of School Water, Sanitation and Hygiene Status in Addis Ababa, Ethiopia.”** I have been informed that the purpose of this study and participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way. I understood that participation in this study does not involve risks. I understood that Abayneh Melaku is the contact person if I have questions about the study as a study participant.

I agree to take part in this research:

.....


(Signature of participant) (Date)

Questionnaire for data collection from school directors

Name of School: _____ Location: Subcity _____ Woreda ___ Northing _____



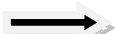
Easting _____ Altitude _____ Name of the interviewer _____ Date _____

Code	Questions	Response options
Part 1 <u>Question on general information of school</u>		
101	Owner ship of School	1.private 2.government
102	School Geographic location	1.Pheriperal 2.Inner
103	Level of school	1.pre primary (KG) 2.Grade 1-8 (primary) 3.Grade 9-12 (secondary and prep)
104	Number of Students	Total _____ Male _____ Female _____
105	Number of Staff	Total _____ Male _____ Female _____


106	Number of students with physical disabilities?	Total _____ Male _____ Female _____
107	Total Number of classroom/spaces/	_____
108	Sex of the Respondent	1.Male 2.Female
109	Does this school have a parents' committee or PTA?	1.Yes 2.No
110	Does this school have school WaSH club?	1.Yes 2. No
111	Is budget allocated for WaSH facilities?	1.Yes 2.No
112	Is the school had WaSH facility maintenance plan?	1.Yes 2. No
113	If yes, Who maintains un functional WaSH facilities? (more than one answer possible)	1.school administration 2.NGO 3.students 4.Teachers 5.parent and teachers association
114	Did students consulted during site selection, design and construction of water and sanitation facilities?	1.Yes 2.No  Skip to 201
115	If yes...did female students equally consulted in school?	1.Yes 2.No 3.I don't know
<u>Part 2 Questions related with Water</u>		
201	Is there any type of water supply for the school?	1.Yes 2. No
202	If yes, what is the source?	1. Piped water supply 2. Protected well/spring 3. Rainwater 4. Unprotected well/spring 5. Packaged bottled water


		6. Tanker-truck or cart 7. Surface water (lake, river, stream)
203	Is drinking water supply from the main Source currently at time of survey? (Observe)	1.Yes 2.No
204	How many water taps/points?	Total ___ men ___ women ___ common use _____
205	Numbers of functional water points at the school?	Total _____ men ___ women _____ common use _____
206	If drinking water source was not functional, How long has it been non-functional?	1.one day 2.within a week 3.within 2 weeks 4.within 3-4 weeks 5.more than a month 6.other (specify)
207	If the drinking water supply system is not functional at this time, what are the main reasons? (more than one answer possible)	1.unclear responsibility 2.poor operation and/or maintenance 3.lack of spare parts 4.poor initial design of the system 5.age of the system 6.other (specify) _____
208	Are water points accessible for children? (not applicable for sec school) (observe)	1.Yes 2.No
209	Are water points accessible for disabled? (observe)	1.Yes 2.No
210	How frequently was water from the main source available during the last week?	1.daily at certain hours 2.daily for 24 hours a day 3.one or two days a week 4.three to five days a week 5.less than once a week
211	Is the school had water tanker for water storage?	1.Yes


		2.No
212	How often does the school usually clean the water storage container?	1.once a week 2.once a month 3.once every three month 4.once every six months 5.other _____
213	What is the distance between water and class	_____
214	What is the distance from the toilet to water points?	_____
215	Does the school do anything to the water from the main source to make it safe to drink?	1.Yes 2.No
216	If yes, what treatment method is used?	1. Filtration 2. Boiling 3. Chlorination 4. Other _____
217	Does the school have a system to check water quality test?	1.Yes 2.No
218	How would you rate the quality of your drinking water from the main source?	1.Very good 2. Good 3.Moderate 4.Bad 5.Very bad
219	Do students bring their own drinking water from home?	1.most students bring from home 2.roughly half the students 3.some students bring from home 4.no students bring water from home
220	If students bring water from home what is the reason?	1. less water quality expectation 2.due to water incontinence 3.water is no accessible 4.I don't know
<u>Part 3 Questions related with Sanitation /Toilet facilities</u>		
301	Is there toilet facility in the school?	1.Yes

		2.No  Skip to 307
302	If yes, What type of student toilets?	1.Pit latrine 2.VIP latrine 3.Pour-flush toilets 4. other _____
303	Are there separate toilet facilities for men and women?	1.Yes 2.No
304	Do teachers have their own toilet facilities separated from student's facilities?	1.Yes 2.No
305	How many toilets drop-hole are at the school?	Total _____ men _____ girls _____ staff _____ common use _____
306	Number of functional toilet drop- hole	Total _____ men _____ women _____ staff _____ common use _____
307	Does the school have urinals?	1.Yes 2.No  Skip to 312
308	What kinds of urinals exist?	1.Individual urinal units 2.Continuous urinal walls/gutters
309	If there are continuous, what is the total length in meters?	_____
310	If individual urinal, how many urinals are there?	Total ___ student ___ staff ___ Common use _____
311	How many functional urinals are there?	Total ___ student ___ staff ___ Common use _____
312	Is the latrine and urinals Adequate?	1.Yes  Skip to 314 2.No
313	Reasons for not having adequate sanitation facilities?	1.Lack of adequate space 2.land un suitable to construct latrine 3.financial problem 4.school is rent from private 5.other, specify _____

314	What problems do you face with the way the school's toilet facility is functioning? (more than one answer possible)		1.Blockages 2.Low water pressure 3.Odor 4.Pits fill up too quickly 5.Not safe for children 6.Other (specify) _____
315	Within the school, who is responsible for cleaning the toilet facilities?		1.staff (cleaners) 2.students 3.teachers 4.other (specify) _____
316	How often are the toilets for students cleaned in this school?		1. more than once daily 2. daily 3. 2-4 days/week 4.once a week 5.once every two weeks 6.other _____
317	What is the distance from toilet to classroom? (observe)		_____
318	Are there toilets accessible for children (not applicable for secondary and prep) (observe)	Men's	1. Yes 2. No
		Women's	1. Yes 2. No
319	Are there toilets accessible for disabled(observe)	Women's	1. Yes 2. No
		Men's	1. Yes 2. No
320	If no, why it is not accessible? (more than one answer possible)		1.Because of the design 2.It is too far 3.Other specify _____
321	Is the toilet roof structure in a good condition? (observe)		1.Yes 2.No
322	Do the toilets provide privacy and security (Can the facilities have locked inside)? (observe)		1.Yes 2.No

323	In general, how clean are the student toilets? (observe)	1. Clean 2. Somewhat clean 3. Not clean
324	Is there Open defecation (OD) in school?(observe)	1. Yes 2. No
325	If yes what is the cause of OD? (more than one answer possible)	1. Lack of latrines 2. Strong offensive smells 3. Don't like Toilet use 4. lack of privacy (no doors or that can open and close properly)
<u>Part 4 Questions related with Hygiene</u>		
4.1 Hand Washing facilities and practice		
401	Did the school have hand washing facilities?	1. Yes 2. No  Skip to 409
402	The number of hand washing facilities in school	Total ___ Male ___ Female ___ Common use _____
403	The number of functional hand washing facilities in school	Total ___ Male ___ Female ___ Common use _____
404	Are both soap and water currently available at the hand washing facilities? (observe)	1. Yes, water and soap 2. Water only 3. Soap only 4. Neither water or soap
405	Who is responsible for providing the soap?	1. Teachers 2. school administration 3. students/families 4. local government 5. other (specify) _____
406	If yes, Where is hand washing facilities with water and soap located at the school?	1. Toilets 2. Food preparation area 3. Food consumption area

		4.School yard 5. Other _____
407	Is the hand washing facility near the latrines?	1.Yes 2.No
408	Do students always wash their hands after using the toilet?	1.Yes 2.No
409	Do students always wash their hands before eating?	1.Yes  Skip to 412 2.No
410	If students don't always wash their hands after using the toilet and before eating, why not?	1.facility is not near enough 2.there is not always enough water 3.there is not always soap 4.it's sometimes too crowded 5.other specify _____
411	How many hand washing facilities with water and soap are located at the school? (observe)	Total _____ men _____ women _____ staff _____ common use _____
412	What do you think about the hygiene practices of the students in your school?	1. Very good 2.Good 3. Poor 4. Very poor
4.2 Waste Management		
413	How does the school dispose its liquid waste?	1.Seepage pit 2.Open field 3. sewer line 4.septic tank 5.Other specify _____
414	Are there dust bins and waste disposal pits in the school?	1.Yes 2.No
415	How is solid waste (garbage) from the school disposed of?	1. Collected by municipality 2. Burned on premises 3. Buried and covered on premises

		4. Openly dumped on premises
4.3 Menstrual Hygiene Management (Not applicable in KG schools)		
416	Which of the following provisions for menstrual hygiene management (MHM) are at the school? (more than one answer possible)	1. Bathing areas 2. MHM materials (e.g. pads) 3. MHM education 4. pad changing room 5. Anti-pains
417	Is water and soap available in the girls' toilet cubicles for menstrual hygiene management? (not applicable in KG schools) (observe)	1. Yes, water and soap 2. Water, but not soap 3. soap only 4. no water and soap
418	Are there covered bins for disposal of menstrual hygiene materials in girls' toilets? (observe)	1. Yes 2. No
419	Are there disposal mechanisms for menstrual hygiene waste at the school? (not applicable in KG)	1. Yes 2. No
420	If yes, what are disposal mechanisms for menstrual hygiene waste school?	1. Incineration 2. Municipal waste collector 3. Open disposal 4. Other specify _____
4.4 Hygiene promotion		
421	Did your school have trained school health coordinator on WaSH?	1. Yes 2. No
422	Are there model teachers for their students by practicing hygiene themselves?	1. Yes 2. No
423	Does your school have hygiene and sanitation Teaching program?	1. Yes 2. No
424	Is there any type of training in school for students and teachers?	1. Yes 2. No  Skip to 427
425	If yes, on what topic? (more than one answer possible)	1. Hygiene and sanitation 2. Menstrual hygiene

			3.HIV AIDS 4.Gender related issues 5. Other specify_____
426	If yes, who give training? (more than one answer possible)		1.Teachers 2. HEWs 3.NGOs 4.WaSH club members 5.Others specify_____
427	Did the school have standards and guide lines on school WaSH?		1.Yes 2.No
4.5 Food safety and hygiene (only for schools that have mass feeding program)			
428	Did the feeding and food preparation premises washable?(observe)	Wall	1.Yes 2. No
		floor	1.Yes 2.No
		ceiling	1.Yes 2. No
429	Did the school management follow feeding environment (personal hygiene of food handlers...)?		1.Yes 2.No
430	Did all food handlers have uniform (apron, hair net...)? (observe)		1.Yes 2.No
431	Is there a sink for utensil washing? (observe)		1. One dish washing compartment 2. Two dish washing compartment 3. Three dish washing compartment 4. Manual
432	Did the school food handlers have medical checkup which is less than 6 months? (observe)		1.Yes 2.No
433	Did the school have hand washing facilities with water and soap at lounge (mass feeding areas)?		1.Yes 2.No
434	Did the school prepare dust bins in food preparation and feeding areas?		1.Yes 2.No

Your contribution to this survey greatly appreciated

Observational Check List for Hand washing Practice of Students

School Name: _____ Location: Sub-city _____ Woreda _____ school Type _____

School Level _____ Date of Observation _____ Name of the Observer _____

S.No	Description	Assessment Result
1. general information of school and student		
101	Owner ship of School	1.private 2.government
102	School Geographic location	1.Pheriperal 2.Inner
103	Level of school	1.pre primary (KG) 2.Grade 1-8 (Junior) 3.Grade 9-12 (sec and prep)
104	Observed Student Sex	1.Male 2.Female
105	Hand washing practices	1. Before eating 2. After defecation
2. Hand Washing Practices		
201	Do students use the hand washing facilities?	1.Yes 2.No
202	Does the student use soap or substitutes to wash hands?	1.Yes 2.No
203	Hand washing practice	1. one hand 2. two hand
204	In general does a student wash hands properly?	1.Yes 2.No

Key Informant Interview with WaSH club head / student representatives

School Name: _____ Location: Sub-city _____ Woreda _____ school Type _____

School Level _____ Interviewer Name _____ Grade level: _____ Sex: Male/Female _____

1. For what use do you need water in your school?
2. Is there a problem of access to water for drinking and washing; toilets and hand washing facilities?
1) Yes 2) No
3. Do you use toilets at school? At home? Why not?
4. School management consults you during WaSH facility design and construction process? 1) Yes 2) No
5. What do you want the toilets to be? 1) Clean 2) segregated 3) other specify _____
6. Do you think students are using the existing facilities properly? 1) Yes 2) No If not why not?
7. Do you take hygiene education? 1) Yes 2) No
8. Do you have active sanitation clubs? 1) Yes 2) No
9. Do you play an active role in the cleaning and maintenance of WaSH facilities?
10. What are good practices of the school with regard to water supply, sanitation and hygiene?
11. What are major challenges of the school with regard to water supply, sanitation & hygiene?
12. What solutions do you suggest for these major challenges?

Key Informant Interview with head of school administration office

School Name:- _____ Location: Sub-city _____ Woreda _____ school Type _____

School level _____ Sex of the Respondent: Male/Female _____ Interviewer name _____

1. Who are your principal stakeholders with regard to the school WaSH? List them! _____
2. Is there any procedures, guidelines and systems that govern you & your stakeholders to undertake the school WaSH program? If yes, list them! _____
3. In which activity the stakeholders participate? a) Planning b) Implementing c) Monitoring and Evaluation d) Financing e) operation and maintenance f) Specify, if any _____
4. Did your school Water, Sanitation and hygiene facilities are adequate and children, gender and disability inclusive? 1) Yes 2) No If no, why?
 5. Did the school have enough Budgets for construction and maintenance of WaSH facilities?
 - 1) Yes 2) No If no, why?
6. Does the school administration provide WaSH funding?
 - a) Advocacy 1) Yes 2) No c) monitoring & evaluation 1) Yes 2) No
 - b) Training 1) Yes 2) No d) Operation & maintenance 1) Yes 2) No e) other specify _____
7. Do you have a plan to provide WaSH facilities in schools? 1) Yes 2) No If not, why not?
8. What is the current hygiene and sanitation practice, what behavior change needs in your school? _____
9. Is there open defecation in your school? If yes, what is the main cause of open defecation?
10. Who is responsible for managing the WaSH facilities constructed by the school? [*Probe: who is responsible for follow up and maintenance?*]
11. How do you describe the design and construction of WaSH facilities constructed in terms of providing services in a sustainable way?
12. What types of tools the schools have for minor maintenance of WaSH facilities?
13. In what way the school communities involved in planning, implementation and monitoring of school WaSH project? [*Probe: involvement of students, teachers, school administration and the community*]
14. What was the level of student's participation? [*Probe: Consultation with students consulted in the design and site selection of WaSH facilities.*]
15. Have there been any challenges in implementing WaSH programs? 1) Yes 2) No
16. If yes what are the main challenges that were encountered in relation to the Environment, Economic, Social and Technical/Technological?

Participant Information Sheet, Amharic Version

ስለ ጥናቱ ለተሳታፊዎች በአማርኛ መረጃ መስጫ

ደህና አደሩ/ደህና ዋሊ.ስሜ _____ እባላለሁ የመጣሁት ለአቶ አባይነህ መላኩ መረጃ

ለመሰብሰብ ሲሆን አቶ አባይነህ መላኩ ለ ሁለተኛ ድግሪ መመረቁያ የሚሆን ጥናታዊ ጽሁፍ በአዲስ አበባ ዩኒቨርሲቲ የኢትዮጵያ ዉሃ ሃብት ኢንስቲትዩት የዉሀና ጤና ትምህርት ክፍል በአዲስ አበባ ከተማ በሚገኙ ትምህርት ቤቶች የዉሃ፣መፀዳጃ ቤት፣የእጅ መታጠቢያና አጠቃላይ ንፅህና ያለበት ደረጃ በሚል ርዕስ እያካሄድኩ እገኛለሁ።

የጥናቱ ዓላማና ጥቅም: ይህ ጥናት የሚያተኩረው በአዲስ አበባ የሚገኙ ትምህርት ቤቶች የዉሃ፣ መፀዳጃ ቤት፣ የእጅ መታጠቢያና አጠቃላይ ንፅህና፣የተማሪዎች እጅ አስጣጠብ ሁኔታ ዉሃ መፀዳጃ ቤት እና የእጅ መታጠቢያን የሚጎዱ ተግባራትን መለየትና ማጥናት እና ሌሎች ተጓዳኝ ጉዳዮችን የሚዳስስ ሲሆን ያለዉ ዉሃ ሳኒቴሽን እና ሃይጅን ያለበት ደረጃ እና የተማሪዎች አጠቃቀም እንዲሁም ተጓዳኝ ነገሮችን እንድናወቅ ይረዳናል። ይህም በቀጣይ በትምህርት ቤት ያለዉን መፀዳጃ ቤት ፣ዉሃና እጅ መታጠቢያ መጠን እና ንፅህና የተሻለ እንዲሆን የሚረዳና ለትምህርት ቤቶች፣ለትምህርት ቢሮ፣ለበጎ አድራጎት ድርጅቶችና ለፖሊሲ አዉጭዎች ትልቅ ፋይዳ ያለዉ ነዉ።

የሚሰሩ ስራዎች:-ይህ ጥናት በአዲስ አበባ ትምህርት ቤቶች ዉስጥ ያለዉ ዉሃ ሳኒቴሽን እና ሃይጅን ያለበት ደረጃን፣የተማሪዎች ሃይጅን እና ሳኒቴሽን አተገባበር በአይን በማየት በተዘጋጀዉ ቅፅ ላይ በመሙላት እና ከርዕሳን መምህራን ደግሞ ስለ አጠቃላይ የዉሃ፣ሃይጅን እና ሳኒቴሽን አጠቃላይ መረጃ እንዲሁም በቂ የዉሃ፣ሃይጅን እና ሳኒቴሽን እንዳይኖር የሚያደርጉ ተግዳሮቶች ያለዉን ሁኔታ በመጠይቅ መረጃ ይበበሰባል። ከእያንዳንዱ ርዕሰ መምህርና የተቋም መረጃ አስፈላጊ ቃለ መጠየቅ ለማከናወን በአማካኝ ከ20-25 ደቂቃ ሊወሰድ ይችላል።

በጥናቱ ላይ መሳተፍ፣የመረጃ አጠቃቀም ና ሚስጢር መጠበቅ:ከላይ ለመግለጥ እንደተሞከረዉ ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተና በአዲስ አበባ ትምህርት ቤቶች ዉስጥ ያሉ ርዕሰ መምህራንን ያካተተ ነዉ። እርስዎ በፈቃደኝነት ላይ በተመሰረተ የሚሰጡኝ የተቋሙ መረጃ ሚስጢራዊነቱ የተጠበቀ እና በምንም መልኩ ለሶስተኛ ወገን አይታይም ለ ጥናቱ ብቻ የሚውልና በሪፖርት መልክ የሚጠመር ይሆናል። የግል እና የተቋማት መረጃዎችን የሚያንጸባሩቁ ይህ ጥናት እንዳለቀ የሚሰረዙ ይሆናል።

ጥያቄ ከለዎት: ስለጥናቱ ማንኛውም ዓይነት ጥያቄ ቢኖርዎት፣ተጨማሪ ማብራሪያ ብያስፈልጎ ወይም ስለጥናቱ መጨረሻ ውጤት ማወቅ ቢያስፈልግዎት በሚከተለው የዋናው ተመራማሪ አድራሻ ማግኘት ይችላሉ።

የዋናው ተማራማሪ አድራሻ:አባይነህ መላኩ ስልክ: 0912718461፣ ኢሜይል.abaynehmelaku@ymail.com

የተሳታፊዎች ስምምነት ቅጽ

እኔ ከዚህ በታች የምፈረመው ግለሰብ በመረጃ ቅጹ ላይ ያለውን አምብሌ ተረድቼ በአዲስ አበባ ከተማ በሚገኙ የመንግስትና የግል ትምህርት ቤቶች የወሃ፣ መጠጫ ቤት፣ የእጅ መታጠቢያና አጠቃላይ ንፅህና ያለበት ደረጃና እንዲሁም ተጓዳኝ ነገሮች ለማወቅ በሚጠናው ጥናት ውስጥ እኔ ተሳታፊ እንድሆን መስማማቴን አየገለጽኩ ጥናቱ በፈቃደኝነት ላይ የተመሰረተ መሆኑንም ተረድቻለሁ። ከዚህ ቀጥሎ በሚገኘው መጠይቅ የምሰጠው መረጃም ሚስጢርነቱ የተጠበቀ እንደሚሆንም በሚገባ ተነግሮኛል። በመጨረሻም ስለ ጥናቱ እና የጥናቱ ተሳታፊ እንደመሆኔ ባለኝ መብት ዙሪያ ጥያቄ ቢኖረኝ አባይነህ መላኩ የተባለውን የጥናቱ ዋና ባለቤት ማናገር አንደምችልም ተረድቻለሁ።

የተሳታፊው ፊርማ-----የመረጃ ሰብሰቢው ፊርማ-----ቀን-----

መጠይቆች

ከትምህርት ቤት ዕሳነ መምህራን መረጃ መሰብሰቢያ መጠይቅ

የትምህርት ቤቱ ስም: _____ አድራሻ: አዲስ አበባ ክፍለ ከተማ _____ ወረዳ _____ ሰሜን _____ ምስራቅ _____ ክፍታ _____ መጠይቁ የተከናወነበት ቀን _____ መጠይቁን ያስሞላው ስም _____

መ.ቁ	ጥያቄዎች	መልስ
ክፍል አንድ:-አጠቃላይ የትምህርት ቤቱ እና ለቃለ መጠይቅ የተመረጠው ሰው መረጃ		
101	የትምህርት ቤቱ ባለቤትነት	1.የግል 2.የመንግስት
102	ትምህርት ቤቱ የሚገኝበት ቦታ	1.ዳር ከተማ 2.መኃል ከተማ
103	የትምህርት ቤት ደረጃ	1.ኬጂ 2.ከ1ኛ-8ኛ ክፍል 3.ከ 9ኛ-10ኛ ክፍል 4.ከ 11ኛ-12ኛ ክፍል
104	የተማሪዎች ብዛት:	ወንድ _____ ሴት _____ ድምር _____
105	የሰራተኞች ብዛት	ወንድ _____ ሴት _____ ድምር _____
106	አካል ጉዳት ያለባቸው ተማሪዎች ብዛት?	ወንድ _____ ሴት _____ ድምር _____
107	አጠቃላይ የተማሪዎች መማሪያ ክፍል ብዛት	_____
108	ቃለ መጠይቁ የተደረገለት ሰዓት ጾታ	1.ወንድ 2.ሴት
109	ትምህርት ቤቱ ወላጅ ተማሪ መምህራን(ወተመ) ኮሚቴ አለው?	1.አዎ 2.የለም

110	ትምህርት ቤታችሁ የጤና አጠባበቅ ክብብ አለዉ?	1.አዎ 2.የለም
111	በትምህርት ቤታችሁ ለዉሃ ሳኒቴሽንና ሃይጅን በጀት ተመድቧል ?	1.አዎ 2.የለም
112	በትምህርት ቤታችሁ የዉሃ ሳኒቴሽንና ሃይጅን መሰረተ ልማት ጥገና እቅድ አለ ?	1.አዎ 2.የለም
113	መልሶ አዎ ከሆነ አገልግሎት የማይሰጡ የዉሃ ሳኒቴሽንና ሃይጅን መሰረተ ልማትን ማን ነዉ የሚጠግነዉ? (ከአንድ በላይ መልስ ይቻላል)	1.የትምህርት ቤቱ አስተዳደር 2.ግብረ ሰናይት ድርጅት 3.ተማሪዎች 4.መምህራን 4.ወተመ
114	በትምህርት ቤታችሁበዉሃ በሳኒቴሽንና በሃይጅን መሰረተ ልማቶች ዲዛይን እና ግንባታ ወቅት ታማክሯቸዋለችሁ?	1.አዎ 2.የለም
115	መልሶ አዎ ከሆነ ሴት ተማሪዎች ከወንዶች እኩልታማክሯቸዋለችሁ?	1.አዎ 2.የለም 3.አላዉቅም
ክፍል ሁለት ንጹህ የዉሃ አቅርቦት በተመለከተ		
201	ትምህርት ቤቱ የራሱ የዉሃ አቅርቦት አለዉ?	1.አዎ 2.የለም
202	አዎ ከሆነ ምን አይነት የዉሃ አቅርቦት?	1.የመስመር ዉሃ 2.ንጽህናዉ የተጠበቀ የጉድጓድ/ምንጭ ዉሃ 3. የዝናብ ዉሃ 4.ንጽህናዉ ያልተጠበቀ የጉድጓድ/ምንጭ ዉሃ 5. የታሽገ ዉሃ 6. የሮቶ ዉሃ
203	ይሄ መጠይቅ ሲሞላ ዉኃዉ ከዋናዉ መስመር አለች?(መልከታ አድርግ)	1.አዎ 2. የለም
204	ስንት የዉሃ ጡት አለ?	አጠቃላይ ___ ለወንድ ___ ለሴት የጋራ ___
205	አገልግሎት የሚሰጡ የዉሃ ጡት ብዛት?	አጠቃላይ ___ ለወንድ ___ ለሴት የጋራ ___
206	በአሁኑ ሰዓት አገልግሎት የማይሰጥ የዉሃ ጡት ካለ ብልሽቱ ከተፈጠረ ስንት ጊዜ ሆነዉ?	1.አንድ ሳምንት 2. አንድ ሳምንት 3. ሁለት ሳምንት 4.ከሶስት-አራት ሳምንት 5. ከአንድ ወር በላይ 6.ሌላ ካለ ይጥቀሱ

207	በአሁኑ ሰዓት የዉሃ አቅርቦቱ አገልግሎት የማይሰጥ ከሆነ አገልግሎት የማሰጥበት ምክንያት ምንድነው? (ከአንድ በላይ መልስ ይቻላል)	1. የሚያስጠግነው ሰው በግልፅ አለመቀመጡ 2. ጥገና አደራረጉ ጥራት የሌለው በመሆኑ 3. የመለዋወጫ እጥረት መኖሩ 4. ጥራት የሌለው ዲዛይን እና አሰራር 5. እድሜዉ የቆየ መሆኑ 6. ሌላ ከሆነ ይግለፁ _____
208	የዉሃ ጡቶቹ ለአካል ለሀፃናት አመቺ ነዉ?(ምልከታ)	1. አዎ 2. የለም
209	የዉሃ ጡቶቹ ለአካል ጉዳተኞች አመቺ ነዉ?(ምልከታ)	1. አዎ 2. የለም
210	ዉሃዉ ከዋናዉ መስመር በባለፈዉ ሳምንት ምን ያክል ይኖራል?	1. በየቀኑ በተወሰኑ ሰዓታት ዉስጥ 2. በየቀኑ ለ24 ሰዓት 3. አንድ ወይም ሁለት ቀን በሳምንት 4. ከሶስት እስከ አምስት ቀን በሳምንት 5. በሳምንት ከአንድ ግዜ በታች
211	ትምህርት ቤቱ የዉሃ ማጠራቀሚያ ታንከር አለዉ?	1. አዎ 2. የለም
212	ትምህርት ቤቱ ዉሃ ማጠራቀሚያዉን ታንከር በምን ያክል ግዜ ነዉ የሚጸዳዉ?	1. በየቀኑ 2. በሳምንት አንዴ 3. በወር አንዴ 4. በሶስት ወር አንዴ 5. በስድስት ወር አንዴ 6. ሌላ ካለ ይግለፁ _____
213	መማሪያ ክፍል ከመጠጥ ዉሃዉ ያለዉ ርቀት?	_____
214	ከመጸዳጃ ቤቱ የዉሃ መስመሩ ምንታክል ይርቃል?	_____
215	ትምህርት ቤቱ የሚመጣዉን ዉሃ ለማከም የሚያደርገዉ ጥረት አለ?	1. አዎ 2. የለም
216	አዎ ከሆነ ለማከም የሚጠቀምበት መንገድ ምንድነዉ?	1. ማጥለል 2. ማፍላት 3. ኬሚካል በመጠቀም 4. ሌላ ካለ ይግለጹ _____
217	ትምህርት ቤቱ የዉሃዉን ጥራት ያረጋግጣል በምርመራ?	1. አዎ 2. የለም
218	አዎ ከሆነ የዉሃዉ ጥራት ያለበት ደረጃ?	1. በጣም ጥሩ 2. ጥሩ 3. መካከለኛ 4. መጥፎ 5. በጣም መጥፎ

219	ተማሪዎች የሚጠጣ ዉሃ ከቤታቸዉ ነዉ የሚያመጡት?	1.አብዛኞቹ ተማሪዎች ያመጣሉ 2.ግማሾቹ ተማሪዎች ያመጣሉ 3.የተወሰኑ ተማሪዎች ከቤት ያመጣሉ 4.ከቤት የሚያመጡ ተማሪዎች የሉም
220	ተማሪዎቹ ከቤት ዉሃ የሚያመጡ ከሆነ ምክንያቱ ምንድን ነዉ?	1.ዉሃዉ ጥራት የለዉም ተብሎ ስለሚታሰብ 2.ዉሃዉ ስለሚቆራረጥ 3.ዉሃዉ ለመቅዳት አመቺ ስላልሆነ
<u>ክፍል ሶስት ከሳኒቴሽን/ከመጻዳጃ ቤት ጋር የተገናኙ ጥያቄዎች በተመለከተ</u>		
301	በትምህርት ቤቱ መጻዳጃ ቤት አለ?	1.አዎ 2.የለም
302	አዎ ከሆነ መልሶ ምን አይነት መጻዳጃ?	1.የጉድጓድ መጻዳጃ 2.የተሻሻለ መጻዳጃ 3. በዉሃ ግሬት የሚሰራ መጻዳጃ 4. ሌላ ይግለጹ _____
303	ለወንድ እና ለሴት የተለያዩ መጻዳጃ በተለያዩ አቅጣጫ ነዉ?	1.አዎ 2.የለም
304	አስተማሪዎች የብቻቸዉ ከተማሪዎች የተለየ መጻዳጃ አላቸዉ?	1.አዎ 2.የለም
305	ትምህርት ቤቱ መጻዳጃ ቤት ካለዉ ስንት ቀዳዳዎች አለዉ?	አጠቃላይ _____ ለወንድ _____ ለሴት _____ ለሰራተኞች _____ የጋራ _____
306	አገልግሎት እየሰጡ ያሉ መጻዳጃ ቤቶች ብዛት	አጠቃላይ _____ ለወንድ _____ ለሴት _____ ለሰራተኞች _____ የጋራ _____
307	ትምህርት ቤቱ ሽንት መሽኛዎች አሉት ?	1.አዎ 2.የለም
308	አዎ ከሆነ ምን አይነት ሽንት መሽኛዎች አሉት ?	1.የግል ሽንት መሽኛ 2.ረጅም የጋራ ሽንት መሽኛ /በይ
309	የጋራ ሽንት መሽኛ ከሆነ የጋራ መሽኛ በዩ ርዝመት ?	_____
310	የግል ሽንት መሽኛ ከሆነ የሽንት መሽኛ ብዛት?	አጠቃላይ _____ ለተማሪዎች _____ ለሰራተኞች _____ የጋራ _____
311	አገልግሎት እየሰጡ ያሉ የሽንት መሽኛ ብዛት?	አጠቃላይ _____ ለተማሪዎች _____ ለሰራተኞች _____ የጋራ _____
312	መጻዳጃ ቤቱና ሽንት መሽኛዉ በቂ ነዉ?	1.አዎ 2.የለም
313	በቂ ካልሆነ በቂ ያልሆነበት ምክንያት?	1.በቂ ቦታ መስሪያ ስላሌለ 2.ቦታዉ መጻዳጃ ለመስሪያ አመቺ ስላልሆነ 3.የበጀት ችግር 4.ትምህርት ቤቱን የተከራየነዉ በመሆኑ 5.ሌላ ከሆነ ይግለጹ _____

314	ምን አይት ችግር ገጥሞዎታል የመጻፍኛ ቤት አገልግሎት አሰጣጥ ጋር በተገናኘ? (ከአንድ በላይ መልስ ይቻላል)	1. መጻፍኛ ቤቱ ፍሳሽ መሄጃ መገደብ 2. የዉሃ ግፊት መቀነስ 3. ሽታ 4. መጻፍኛ ቤቱ ቶሎ ቶሎ መሙላት 5. ለህፃናት ምቹ አለመሆን 6. ሌላ ካለ ይግለፁ _____	
315	በትምህርት ቤታችሁ መጻፍኛ ቤቱን የማጽዳት ሃላፊነት የማን ነዉ?	1. የጽዳት ሰራተኛ 2. የተማሪ 3. የመምህራን 4. ሌላ ከሆነ ይግለፁ _____	
316	መጻፍኛ ቤቱ በምን ያክል ግዜ ይጻፋል?	1. በቀን ከአንድ ግዜ በላይ 2. በየቀኑ 3. በሳምንት አንድ ግዜ 4. በአስራ አምስት ቀን አንዴ 5. ሌላ ከሆነ ይግለጹ _____	
317	መማሪያ ክፍልና መጻፍኛ ቤት መካከል ርቀት?(ተመልከት)	_____	
318	መጻፍኛ ቤቱ ህፃናትን ያማከለ ነዉ (ተመልከት)	ለወንዶች	1. አዎ 2. የለም
		ለሴቶች	1. አዎ 2. የለም
319	መጻፍኛ ቤቱ አካል ጉዳተኞችን ያማከለ ነዉ (ተመልከት)	ለወንዶች	1. አዎ 2. የለም
		ለሴቶች	1. አዎ 2. የለም
320	የለም ከሆነ ምክንያቱ ምንድን ነዉ? (ከአንድ በላይ መልስ ይቻላል)	1. የመጻፍኛ ቤቱ ዲዛይን 2. በጣም እርቅ ስለሆነ 3. ሌላ ከሆነ ይግለፁ _____	
321	መጻፍኛ ቤቱ ጣሪያ ደህና ነዉ/አለዉ?(ተመልከት)	1. አዎ 2. የለም	
322	መጻፍኛ ቤቶቹ ነጻነት ያላቸዉ እና ለደህንነት ችግር የለባቸዉም(ከዉስጥ የሚቆላፍ በርአለቸዉ)? (ተመልከት)	1. አዎ 2. የለም	
323	በጠቃላይ ሲታይ የመጻፍኛ ቤቶቹ ንጽህና ሁኔታ? (ተመልከት)	1. ንጹህ 2. የተወሰነ ንጹህ 3. ንጹህ አይደለም	
324	በትምህርት ቤት ግቢ ዉስጥ ሜዳ ላይ /ጫካ ዉስጥ መጻፍኛት አለ? (ተመልከት)	1. አዎ 2. የለም	
325	አዎ ከሆነ በትምህርት ቤት ሜዳ ላይ /ጫካ ዉስጥ መጻፍኛት ምክንያቱ ምንድን ነዉ?	1. መጻፍኛ ቤት እጥረት 2. መጥፎ ሽታ 3. መጻፍኛ ቤት መጠቀም አለመፈለግ	

		4. መጻፍት ቤቱ ነፃነት አለመስጠት
ክፍል አራት ከሃይጅን ጋር የተያያዙ ጥያቄዎች በተመለከተ		
4.1 የእጅ መታጠቢያ እና የእጅ አስተጣጥብ አተገባበር		
401	እጅ መታጠቢያ አለ ትምህርት ቤት ውስጥ?	1.አዎ 2.የለም
402	የእጅ መታጠቢያ ብዛት	አጠቃላይ _____ ለወንድ _____ ለሴት _____ ለሰራተኞች _____ የጋራ _____
403	አገልግሎት የሚሰጡ እጅ መታጠቢያ ብዛት	አጠቃላይ _____ ለወንድ _____ ለሴት _____ ለሰራተኞች _____ የጋራ _____
404	ዉሃና ሳሙና ይህ መረጃ ሲሰጠህ እጅ መታጠቢያዉ ጋር አለ?(ተመልከት)	1.አዎ ዉሃና ሳሙና 2. ዉሃ ብቻ 3. ሳሙና ብቻ 4. ዉሃም ሳሙናም የለም
405	ማን ነዉ ሳሙናዉን የማቅረብ ሃላፊነት ያለበት?	1.መምህራን 2.የትምህርት ቤት አስተዳደር 3.የተማሪ ቤተሰብ 4.ወተመ 5.የአካባቢዉ መንግስት አካላት 6.ሌላ ከሆነ ይግለጹ _____
406	አዎ ከሆነ ዉሃና ሳሙና ለእጅ መታጠቢያ የት የትምህርት ቤቱ አካባቢ ይገኛሉ?(ተመልከት)	1.መጻፍት ቤት 2. ምግብ ማዘጋጃ አካባቢ 3. ምግብ መመገቢያ አካባቢ 4. መማሪያ ክፍል አካባቢ 5.ትምህርት ቤት ግቢ ውስጥ 6. ሌላ ይግለጹ _____
407	እጅ መታጠቢያ መጻፍት ቤቱ አካባቢ አለ?	1.አዎ 2.የለም
408	ተማሪዎች መጻፍት ቤት ከተጠቀሙ በኋላ ሁል ጊዜም እጃቸውን ይታጠባሉ?	1.አዎ 2.የለም
409	ተማሪዎች ምግብ ከመመገባቸዉ በፊት ሁሌም እጃቸውን ይታጠባሉ?	1.አዎ 2.የለም
410	ተማሪዎች እጃቸውን የማይታጠቡ ከሆነ ለምንድነዉ የማይታጠቡት?	1.እጅ መታጠቢያዉ ቅርብ ስላልሆነ 2.በቂ ዉሃ ስላሌለዉ 3.ሳሙና ሁሌም ስላሌለ 4.ለመታጠብ ወረፋ ስለሚበዛ 5.ሌላ ከሆነ ይግለጹ _____
411	በትምህርት ቤታችሁ ውስጥ ዉሃና ሳሙና ያላቸዉ እጅ መታጠቢያ ብዛት ስንት ነዉ?(ተመልከት)	አጠቃላይ _____ ለወንድ _____ ለሴት _____ ለሰራተኞች _____ የጋራ _____

412	በትምህርት ቤታችሁ የሳኒቴሽንና ሃይጅን አተገባበር በተማሪዎች ዘንድ በምን ደረጃ ነው ብለው ያስባሉ?	1. በጣም ጥሩ 2. ጥሩ 3. መካከለኛ 4. ደካማ 5. በጣም ደካማ
4.2 ቆሻሻ አወጋገድ በተመለከተ		
413	ትምህርት ቤቱ ፍሳሽ ቆሻሻ ለማስወገድ የሚጠቀምበት መንገድ?	1. የፍሳሽ ማስወገጃ ጉድጓድ 2. ሜዳ ላይ በመልቀቅ 3. ከውሃና ፍሳሽ መስመር ማገናኘት 4. ሴፕቲክ ታንክ በመጠቀም
414	በትምህርት ቤቱ ደረቅ ቆሻሻ ማጠራቀሚያ ደስት ቢን አለ?	1. አዎ 2. የለም
415	ከትምህርት ቤት ደረቅ ቆሻሻ እንዴት ነው የሚወገደው?	1. በማህበራት ይሰበሰባል 2. ይቃጠላል ትምህርት ቤት ውስጥ 3. ተቆፍሮ ይቀበራል 4. ሜዳ ላይ ይጣላል
4.3 የወር አበባ ንጽህና አጠባበቅ በተመለከተ (ለ ኬጂ ትምህርት ቤቶች አስፈላጊ አይደለም)		
416	በትምህርት ቤት ውስጥ የትኛው የወር አበባ መጠበቂያ መንገድ ነው ያለው?	1. ገላ መታጠቢያ 2. የንጽህና መጠበቂያ (ለምሳሌ ሞደስ) 3. የወር አበባ ንጽህና አጠባበቅ ትምህርት 4. ሞደስ መቀየሪያ ክፍል 5. ህመም ማስታገሻ
417	ሳሙና እና ውሃ በሴቶች በመጸዳጃ ውስጥ የወር አበባ ንጽህና ለመጠበቅ ይቀመጣል? (ለ ኬጂ ትምህርት ቤቶች አስፈላጊ አይደለም)	1. አዎ, ውሃና ሳሙና 2. ውሃ ብቻ 3. ሳሙና ብቻ 4. ሳሙና እና ውሃ ሁለቱም የለም
418	ክዳን ያለው ቆሻሻ ማጠራቀሚያ ሴቶች መጸዳጃ ውስጥ አለ ለ ሞደስ መስቀመጫ?	1. አዎ 2. የለም
419	ለወር አበባ ንጽህና መጠበቂያ የተጠቀምንበትን ቆሻሻ ማስወገጃ መንገድ አለ በትምህርት ቤት ውስጥ?	1. አዎ 2. የለም
420	መልሶ አዎ ከሆነ ምን ዓይነት ቆሻሻውን ማስወገጃ መንገድ ነው የሚጠቀሙት?	1. ኢንስኔሬት ማድረግ 2. የደረቅ ቆሻሻ ሰብሳቢዎች ይወስዳሉ 3. ሜዳ ላይ ይጣላል 4. ሌላ ከሆነ ይግለጹ
4.4 ሃይጅን ፕሮሞሽን		
421	ትምህርት ቤታችሁ በውሃ ሳኒቴሽንና ሃይጅን ዙሪያ የሰለጠነ አስተባባሪ ባለሙያ አለው?	1. አዎ 2. የለም
422	በትምህርት ቤታችሁ በውሃ ሳኒቴሽንና ሃይጅን አተገባበር	1. አዎ

	ለተማሪዎች አርያ የሚሆኑ ሞዴል አሉ?	2. የለም
423	በትምህርት ቤታችሁ በወሃ ሳኒቴሽንና ሃይጅን ዙሪያ ማስተማሪያ መርሃ-ግብር አሉ?	1.አዎ 2.የለም
424	በትምህርት ቤቱ ለመምህራን እና ለተማሪዎች ስልጠና ይዘጋጃል?	1.አዎ 2. የለም
425	መልሶ አዎ ከሆነ በምን ርዕስ ዙሪያ? (ከአንድ በላይ መልስ ይቻላል)	1. በሃይጅን እና ሳኒቴሽን ዙሪያ 2.በወር አበባ ንፅህና አጠባበቅ ዙሪያ 3.በኤች አይ ቪ ዙሪያ 4.በስርዓተ ፆታ ዙሪያ 5. ሌላ ከሆነ ይግለጹ _____
426	አዎ ከሆነ ስልጠናውን ማን ነው የሰጠው? (ከአንድ በላይ መልስ ይቻላል)	1.መምህራን 2.ጤና ኤክስቴንሽን ባለሙያ 3.ግብረ-ሰናይት ድርጅቶች 4.የተማሪ የጤና ክበባት
427	ትምህርት ቤታችሁ በወሃ በሳኒቴሽንና በሃይጅን ዙሪያ መመሪያና ስታንዳርዶች አሉት?	1.አዎ 2.የለም

4.5 የምግብ ደህንነትና ንፅህና አጠባበቅ (የጋራ የተማሪ ምገባ ላላቸው ትምህርት ቤቶች ብቻ)

428	የመመገቢያና የምግብ ማዘጋጃ የተሰሩበት ሁኔታ ለማፅዳት ምቹ ናቸው?(ተመልከት)	ግድግዳ	1.አዎ 2.የለም
		መሬቱ	1.አዎ 2.የለም
		ጣሪያው	1.አዎ 2.የለም
429	የትምህርት ቤቱ አስተዳደር አካላት የመመገቢያ ሁኔታን ይከታተላሉ (የምግብ አዘጋጆች ንፅህና...)?	1.አዎ 2.የለም	
430	ምግብ አዘጋጆች የስራ ዩኒፎርም (ጋወን፣የፀጉር መሸፈኛ....) ይጠቀማሉ? (ተመልከት)	1.አዎ 2.የለም	
431	የእቃ ማጠቢያ ሲንክ አላቸው? (ተመልከት)	1. አንድ ኮምፓርትመንት እቃ ማጠቢያ 2. ሁለት ኮምፓርትመንት እቃ ማጠቢያ 3. ሶስት ኮምፓርትመንት እቃ ማጠቢያ 4. በልማዳዊ (በአንድ መዘፍዘፊያ ማጠብ)	
432	የምግብ አብሳዮችና አሰተናጋጆች ስድስት ወር ያልሞላው ከተላላፊ በሽታ ነፃ የጤና ምርመራ አላቸው? (ተመልከት)	1.አዎ 2.የለም	
433	ትምህርት ቤቱ የእጅ መታጠቢያ ከሰሙና ጋር የመመገቢያ አዳራሽ አካባቢ አላቸው? (ተመልከት)	1.አዎ 2.የለም	
434	ትምህርት ቤቱ የቆሻሻ ማጠራቀሚያ መመገቢያና ምግብ ማዘጋጃ አካባቢ አላቸው? (ተመልከት)	1.አዎ 2.የለም	

ለዚህ ጥናት መሳካት የህርሶ አስተዋጾ በጣም ወሳኝ ነው

ቃለ መጠይቅ ለተመረጡ ሰዎች

ከአካባቢ ጤና አጠባበቅ/ጤና ክበባት/ ከተማሪ ተወካዪዎች ቃለ-መጠይቅ

የትምህርት ቤት ስም:- _____ አድራሻ: ክፍለ ከተማ _____ ወረዳ _____ የትምህርት ቤት አይነት _____

የትምህርት ቤቱ ደረጃ _____ መረጃውን የሰበሰበው ሰው ስም _____ ክፍል _____ ፆታ : ወንድ/ሴት _____

1. በትምህርት ቤታችሁ ያለውን ዉሃ ለምን አገልግሎት ነዉ የምትጠቀሙት?
2. በትምህርት ቤታችሁ የሚጠጣና የመታጠቢያ ዉሃ ችግር አለ? 1) አዎ 2) የለም
3. በትምህርት ቤታችሁ ያለውን መጻዳጃ ቤት ተማሪዎች ይጠቀማሉ? እቤታችሁስ? የማትጠቀሙ ከሆነ ለምን?
4. የትምህርት ቤት አመራሮች የመጻዳጃ ቤት ዲዛይን ሲሰራና ሲገነባ ያማክሯቸዋል? 1) አዎ 2) የለም
5. መጻዳጃ ቤቱ ምን አንዲሆን ይፈልጋሉ? 1) ንጹሀ 2) በፆታ የተከፋፈለ 3) ሌላ ካለ ይግለጹ _____
6. በትምህርት ቤት ያለውን የዉሃ የሳኒቴሽንና የሃይጅን መሰረተ ልማቶችን በአግባቡ የሚጠቀሙ ይመስሎታል?
1) አዎ 2) የለም የለም ከሆነ ለምን?
7. በትምህርት ቤታችሁ የሃይጅን ትምህርት ተምረዉ ያዉቃሉ? 1) አዎ 2) የለም
8. በትምህርት ቤታችሁ አገልግሎት እየሰጠ ያለ ሃይጅንና ሳኒቴሽን ክበብ አለ? 1) አዎ 2) የለም
9. ዉሃ ሳኒቴሽንና ሃይጅን መሰረተ ልማቶች ማፅዳትና ጥገና ዙሪያ ንቁ ተሳትፎ ታደርጋለችሁ?
10. የትምህርት ቤት ዉሃ ሳኒቴሽንና ሃይጅን ዙሪያ የሚስተዋሉ ዋና ዋና ችግሮች ምንድናቸዉ?
11. ለነዚህ ችግሮች ዋናዉ መፍትሄ ምንድነዉ ብለዉ ያስባሉ?

ከትምህርት ቤት አስተዳደር ክፍል ኃላፊዎች ጋር ቃለ-መጠይቅ

የትምህርት ቤት ስም:- _____ አድራሻ:ክፍለከተማ _____ ወረዳ _____ የትምህርት ቤቱ ባለቤት _____
የትምህርት ቤቱ ደረጃ _____ ያታ : ወንድ/ሴት _____ መረጃውን የሰበሰበው ስም _____

1. የናንተ ዋና ባለድርሻ አካላት ከዉሃና ሳኒቴሽንና ሃይጅን በተመለከተ እነማናቸው?ዘርዘራቸው _____
2. በትምህርት ቤታችሁ መመሪያና ስርዓት/ አስገዳጅ ሁኔታዎች ከባለድርሻ አካላት ጋር በትምህርት ቤት ዉሃ ሳኒቴሽን እና ሃይጅን ፕሮግራም ተግባራዊ ለማድረግ አለ? አዎ ከሆነ ይዘርዘሩ _____
- 3.በየትኛው የስራ እንቅስቃሴ ነዉ ባለድርሻ አካላት የሚሳተፉት? 1) እቅድ ማቀድ 2) ተግባራዊ ሲደረግ 3) በክትትልና ግምገማ 4) በፋይናንስ 5) በአሰራር እና ጥገና 6) ሌላ ከሆነ ይዘርዘሩ _____
4. የትምህርት ቤቱ ዉሃ ሳኒቴሽንና ሃይጅን በቂና አካል ጉዳተኞችን ያካተተ ነዉ? 1) አዎ 2) የለም የለም ከሆነ ለምን?
5. በቂ በጀት ዉሃና ሳኒቴሽን እንዲሁም ሃይጅን መሰረተ ልማቶች ለመስራት እና ለመጠገን አለዉ? 1) አዎ 2) የለም የለም ከሆነ ለምን?
6. የትምህርት ቤቱ አስተዳደር የትምህርት ቤቱን በጀት ለምን አገልግሎት ይጠቀማሉ?
1) ለቅስቀሳ 1) አዎ 2) የለም 3) ክትትልና ግምገማ 1) አዎ 2) የለም
2) ለስልጠና 1) አዎ 2) የለም 4)ስራ ለመስሪያና ጥገና 1) አዎ 2) የለም 5) ሌላ ካለ ይግለጹ _____
7. ዉሃ ሳኒቴሽንና ሃይጅን መሰረተ ልማቶች ለመስራት እቅድ አላችሁ? 1) አዎ 2) የለም የለም ከሆነ ለምን?
8. አሁን ያለዉ ሳኒቴሽን እና ሃይጅን አተገባበር ምን ደረጃ ላይ ነዉ? ምን አይነት የበህሪ ለዉጥ ያስፈልጋል?
9. በትምህርት ቤታችሁ በጫካ ዉስጥ/ሜዳ ላይ መጸዳዳት አለ? አዎ ከሆነ ምክንያቱ ምንድነዉ?
10. የተሰሩ ዉሃ መጸዳጃና እጅ መታጠቢያ የማስተዳደር የማን ሃላፊነት ነዉ? [Probe: የመከታተልና የማስጠገን?]
11. በትምህርት ቤታችሁ ያለዉን የዉሃ ሳኒቴሽን እና ሃይጅን ዲዛይንና ግንባታ በዘላቂነት ማገልገል የሚችል ነዉ?
12. ጥቃቅን ጥገናዎችን ለማከናወን ትምህርት ቤቱ የሚሰራበት አሰራር ዘዴ አለ?
13. በምን አይነት ሁኔታ ነዉ የትምህርት ቤታችሁ ህብረተሰብ በዉሃ፣ሳኒቴሽንና ሃይጅን ፕሮጀክት እቅድ ማቀድ ትግበራና ክትትልና ግምገማ ላይ ይሳተፋሉ? [የተማሪዎች ተሳትፎ፣የመምህራን፣አስተዳደርና ህብረተሰቡ]
14. የተማሪዎች ተሳትፎ ምን ይመስላል? [ዉሃና ሳኒቴሽን ሃይጅን ዲዛይን መሰረተ ልማት ለመገንባት]
15. የዉሃ ሃይጅንና የሳኒቴሽን መርሃ ግብሮችን ተግባራዊ ለማድረግ ተግዳሮቶች አሉ? 1) አዎ 2) የለም
16. አዎ ከሆነ ዋና ዋና ተግዳሮቶች ከአካባባዊ ሁኔታ፣ኢኮኖሚያዊ እንዲሁም ከህዝብና ከቴክኖሎጂ አንፃር ይዘርዘሩ?

በትምህርት ቤት የተማሪዎች የእጅ አስተጣጠብ አተገባበር ምልክታ ጅክሊስት

የትምህርት ቤት ስም: _____ አድራሻ: ክፍለ ከተማ _____ ወረዳ _____ የትምህርት ቤት አይነት _____

የትምህርት ቤት ደረጃ _____ ምልክታዊ የተደረገበት ቀን _____ ምልክታዊን ያደረገዉ ሰዉ ስም _____

ተ.ቁ	ገለፃዎች	ምልክታዊ ዉጤት
1. አጠቃላይ የትምህርት ቤቱ እና ምልክታ የተደረገበት ተማሪ መረጃ		
101	የትምህርት ቤቱ ባለቤትነት	1.የግል 2.የመንግስት
102	ትምህርት ቤቱ የሚገኝበት ቦታ	1.ዳር ከተማ 2.መኃል ከተማ
103	የትምህርት ቤት ደረጃ	1.ኬጂ 2.መጀመሪያ ደረጃ(1ኛ-8ኛ) 3.ሁለተኛና መሰናዶ (9ኛ-12ኛ)
104	ምልክታ የተደረገበት ተማሪ ጾታ	1.ወንድ 2.ሴት
105	የእጅ አስተጣጠብ ሰዓት	1. ምግብ ከመመገብ በፊት 2. መጻዳጃ ቤት ከገቡ በኋላ
2 የእጅ አስተጣጠብ ልምምድ (አተገባበር)		
201	ተማሪዎች እጅ መታጠቢያዎችን ይጠቀማሉ?	1.አዎ 2.የለም
202	ተማሪዎች እጅ ለመታጠብ ሳሙና ይጠቀማሉ ?	1.አዎ 2.የለም
203	የተማሪዎች እጅ አስተጣጠብ ሁኔታ	1. አንድ እጅ 2. ሁለት እጅ
205	ባጠቃላይ የተማሪዎች እጅ አስተጣጠብ ሁኔታ	1.ትክክል 2.ትክክል አይደለም

WHO Hand Washing Procedures

1. Wet hands with water
2. Apply enough soap to cover all hand surface
3. Rub hands palm to palm
4. Rub back of each hand with palm of other hand with fingers interfaced
5. Rub palm to palm with fingers interfaced
6. Rub with back of fingers to opposing palm with fingers interlocked
7. Rub each thumb class bed in opposite
8. Rub tips of fingers in opposite palm in circular motion
9. Rub each wrist with opposite hand
10. Rinse hand with water

Operational Definition

Drinking Water service level

Improved drinking water source: An “improved” drinking water source is one that adequately protects the source from outside contamination, particularly fecal matter. It includes: piped, protected well/spring, rainwater catchment and packaged bottled water (JMP, 2016).

Unimproved drinking water sources : Includes: unprotected well/spring, tanker-trucks and surface water (e.g. lake, river, stream, pond, canals, irrigation ditches) or any other source where water is not protected from the outside environment (JMP, 2016).

Advanced Service: Drinking water from an improved source and water is available at the school at the time of survey including adequate quantity, continuity and accessibility to all (JMP, 2016).

Basic service: Drinking water from an improved source and water is available at the school at the time of survey (JMP, 2016).

Limited service: Drinking water from improved source but water is unavailable at the time of survey (JMP, 2016).

No service: Water from an unimproved source or no water source at the school (JMP, 2016).

Access to safe water: Water with a distance of up to 100 meters and the water facility should be accessible for young boys and girls and disabled students/ staff members with disability (MoE,2017).

Adequate water points: One faucet for 20 students (Addis Ababa Education Berueau, 2018).

Water quality: As per the national standard, the water supplied should meet the minimum parameters of bacteriological, physical and chemical quality of drinking water (MoE, 2017).

Water scheme functionality: The water point opening and closing were functional provides water including for drinking and hand washing. The system should provide water throughout the year with maximum of 10 days down time for maintenance (MoE, 2017).

Sanitation/Toilet service level

Improved sanitation facilities: is facility that hygienically separates human excreta from human contact. include: pour-flush toilets, pit latrines with slab and composting toilets (JMP, 2016).

Unimproved sanitation facilities : Includes pit latrines without slab, hanging latrines, bucket latrines, or any other facility where human excreta is not separated from human contact (JMP, 2016).

Advanced service: Improved sanitation facilities at the school that are single-sex , usable, student to toilet ratios, MHM facilities, cleanliness and accessible to all users (JMP, 2016).

Basic service: Improved sanitation facilities at the school that have single-sex and usable (available, functional and private) at the time of the survey (JMP, 2016).

Limited service: Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey (JMP, 2016).

Toilet clean: all toilets do not have a strong smell or significant numbers of flies or mosquitoes, and there is no visible feces on the floor, walls, seat (or pan) or around the facility (JMP, 2016).

Toilet somewhat clean: There is some smell or some sign of fecal matter in some of the toilets (JMP, 2016).

Toilet not clean: There is a strong smell and/or presence of fecal matter in most toilets (JMP, 2016).

Toilet accessible to children: - Which has a smaller toilet hole, a lower seat and a lower door handle (JMP, 2016).

Toilet accessible to disabled:- The facility can be accessed via a clear path without stairs that is free of obstructions and has age-appropriate handrails, enough space inside for a wheelchair user , close the door and the toilet (1.5 m²), door is wide enough for a wheelchair and opens outward and the door handle or movable raised toilet seat to accommodate children that have difficulty squatting (JMP, 2016)

Access to improved latrines: Improved latrines were easily accessible to all, including students and staffs with disabilities and should be located at a maximum distance of 30m and the facilities should be split by gender that is 20 m apart and Latrines should have privacy, safety (MoE, 2017).

Adequate number of toilets: One drop hole for 20 girl students and one drop hole for female staffs and drop hole for 1:20 boys and one urinals for 50 boys and one drop hole male staffs (Addis Ababa Education Bureau, 2018).

Adequate number of urinals: One urinal caters for 150 girl students and female staffs and for 200 boys and male staffs (MoE, 2017).

Hygiene facilities service level

Advanced service: Additional criteria may include hygiene education, group hand washing, menstrual hygiene materials and accessibility to all users (JMP, 2016).

Basic service: Hand washing facilities with water and soap available at the school at the time of the survey (JMP, 2016).

Limited service: Hand washing facilities with water but no soap available at the school at the time of the survey (JMP, 2016).

No service: Any hand washing facilities available or no water available (JMP, 2016).

Adequate hand Washing facility: Said to be adequate one faucet for 20 students (Addis Ababa Education Bureau, 2018).

Hand-washing facilities accessibility: The facility water with soap should be available in or near (3 meters) of school latrines. The number of faucets for hand washing should be equivalent to the number of latrines (MoE, 2017).

Hand washing accessible to disabled:-Hand washing facilities can be accessed via a clear path without stairs that is free of obstructions and has age-appropriate handrails, the tap and soap are reachable from a seated position and can be operated by feet or one closed fist with minimal effort (JMP, 2016).

Hand washing accessible to children:-The smallest children should be able to reach the tap and soap, and be able to operate the tap on their own with minimal effort (JMP, 2016).