

# Assessing factors affecting implementation of water, sanitation and hygiene program in Emuhaya sub county, Vihiga county.

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**Abstract-** Provision of adequate safe water, sanitation (WASH) in schools is important for better health and performance among school going children. In Kenya, the National School Health Policy provides for a comprehensive school health Program, which addresses various health needs of children through the formal school system. However, well maintained and clean toilets, provision of safe water, and promotion of hygiene that ensures safety of the whole school population still remains a challenge. The main objective of this study was to assess the factors affecting implementation of WASH in public primary schools in Emuhaya Sub-County. The specific objectives were: to determine the teachers' Level of knowledge on WASH in public primary schools in Emuhaya Sub-County, to determine the state of WASH facilities in public primary schools in Emuhaya Sub-County and to identify the factors affecting implementation of WASH program in public primary schools in Emuhaya Sub-County, Vihiga County. The study was cross-sectional in which information was collected using a structured questionnaire and observation checklist. Two sets of structured questionnaires one for head teachers and another for other teachers were administered during the period from October - November 2018. An observation checklist was used to obtain information on sanitary facilities and general hygiene in all sampled schools in Emuhaya Sub-County. A total of 45 Head teachers, 45 Sanitation teachers and 135 teachers were sampled. The data obtained was organized, coded and tabulated using SPSS version 22. Descriptive and inferential statistics were used during analysis. The findings revealed that 49% of teachers were not trained on WASH program. On state of WASH facilities in public primary school in Emuhaya Sub County there were 325 latrines for girls (enrollement-12443) and 274 latrines for boys (enrollment-12253). This represented a ratio of 1:44 for girls and 1:51 for boys. Inadequate water, inadequate funding and high enrollment were the main factors influencing implementation of WASH programs in primary schools. On bivariate analysis, all the factors did not have statistically significant association with implementation of WASH program ( $p$ -values>0.05). When subjected to binary logistic regression funding, location of school, training and enrollment were more likely to affect WASH implementation (ODs, 2.28, 1.44, 1.38, 1.12) From the study it can be concluded that inadequate training of teachers on WASH affects cascade of the same to pupils and community as a whole. Also funding, location of school, training and enrollment were more likely to affect implementation of the program. The study recommended that there is need to increase knowledge and awareness of WASH programs in public primary schools so as to enhance proper usage and also need for schools to ensure that they have adequate and better sanitary facilities especially ventilated improved pit latrines (VIP) and hand washing stations. The National Government through Ministry of Education under FPE program should increase allocation of funds to schools to cater for implementation of WASH programs.

**Index Terms-** Safe water, sanitation, hygiene and Safe school

## I. INTRODUCTION

Worldwide, over one billion people lack access to safe water, while over two and a half billion people do not have access to basic sanitation (WHO 2013). Provision of safe water, basic sanitation and hygiene promotion (WASH) in schools and community remains the most important approach in solving this global public health problem (UNICEF 2013). In many developing countries, only about 1/2 of all primary schools have water supply and only 1/3 have adequate sanitary facilities (UNICEF 2013). Approximately 15.2 million school hours could be gained if sustainable development goals (SDGs) related to safe water supply and basic sanitation are achieved and the incidence of diarrheal illness reduced.

The joint WHO and UNICEF report of 2012 showed that regions with low coverage of "improved" sanitation were 65% Eastern Asia, 33% Southern Asia and 31% Sub-Sahara Africa. There are over 26, 606 public primary schools in Kenya with an enrolment of

10.2 million (MOE 2016). These schools receive funding from the Government through the free primary Education (FPE) program, and the amount disbursed per school is dependent on the enrolment. The Government provides Kshs. 1,420 per pupil in a public primary school every year of which very little is allocated for WASH.

In Vihiga County there is inadequate access to safe water with only 30% of schools accessing adequate safe water with a 1: 261 hand washing facilities ratio (VCDP 2014/18). Thus there is need to identify the factors that affect implementation of water, sanitation and hygiene promotion in public primary schools in Emuhaya Sub-County. The Ministry of Education (MOE) in collaboration with the Ministry of Public Health and Sanitation (MOPHS) and other partners, developed a National School Health Policy and National School Health guidelines in 2009. The Policy was to enable the Government and other partners to utilize available resources in an effective and efficient manner towards improving WASH for better Child Health (UNICEF/WHO, 2015). Despite the progress made in recent years in the Education sector in Kenya, many public primary schools still lack quality water supply, sanitation facilities and hygiene Education promotion (UNICEF, 2015).

Children's ability to learn may be affected by inadequate water, sanitation and hygiene conditions in several ways; these include helminthes infections (which affects millions of school-age-children), long term exposure to chemical contaminants in water (e.g. lead and arsenic), diarrhea diseases and malaria infections, all of which force many school children to be absent from school. Poor environmental conditions in the classroom can also make both teaching and learning very difficult. Girls and female teachers are more affected by inadequate water, sanitation and hygiene conditions in schools than boys because the lack of sanitary facilities means that they cannot attend school during menstruation (WHO 2014). Eighty eight percent of diarrheal cases worldwide are linked to unsafe water, inadequate sanitation and / or insufficient hygiene (WHO 2012). Approximately 50% of the world's hospital beds are occupied by patients suffering from water and sanitation related illness (WHO 2015).

Each year, 1 in 5 children die due to diarrhea, a death toll greater than that of AIDS, malaria and measles combined (TM&IH 2014). The introduction of Free Primary Education (FPE) by the NARC Government in 2003 resulted in a rapid increase in the number of children in public primary schools, placing severe strain on school infrastructure and facilities which were and still remain inadequate. This trend has continued with the public primary school enrollment rising from 5.9 million pupils in 2002 to over 10 million in 2015 (MOE 2014)

*In Vihiga County with 374 public primary schools and a total school population of 159,116 pupils, there is inadequate access to safe water with only 30% of schools accessing safe water, 31% access to an adequate sanitation with 1:262 hand washing facilities ratio (VCIDP 2014/18).*

### **3.2 Materials and methods**

This research was cross – sectional design. Its main purpose was to provide accurate and valid information on teacher's knowledge and use of WASH, the current state of WASH facilities and the factors affecting implementation of WASH in public primary schools in Emuhaya Sub-County of Vihiga County.

#### ***The study site/target population.***

The study was conducted in all public primary schools in Emuhaya Sub-County of Vihiga County. There are 45 registered public primary schools in Emuhaya Sub-County as at July 2018. The education sector is administered from the Sub-County director of education office and is divided into 2 zones; Emuhaya West and Emuhaya North. Each zone is supervised by Area Education Officer who reports to the Sub-County Director of Education

The study population comprised of head teachers, sanitation teachers and all other teachers in public primary schools in Emuhaya Sub-County. The public primary schools were chosen because these are schools which are under the jurisdiction of Government of Kenya under the Ministry of Education (MOE). These schools receive funds from the government through the Free Primary Education (FPE) program and majority of pupils are found here. The amount of funding is dependent on the number of pupils registered per school.

#### **3.5 Sampling procedure/Technique.**

The sampling frame was drawn from public primary schools in Emuhaya Sub-County. There was close collaboration with the Sub-County Education Office (SCEO) of Emuhaya which is mandated to oversee the running of public primary schools. After a visit to the office of the SCDE, a list of zones and all public primary schools was provided to enable the researcher obtain sample for the study. Purposive sampling was used to select Head teachers, sanitation teachers who were administered with questionnaire. Stratified random sampling was used to select the number of teachers who do not fall in the category of sanitation teachers and head teachers to participate in the study. The sample size comprised of 45 Head teachers, 45 Sanitation teachers and 135 teachers who are not in the two categories.

#### **3.7 Research Instruments.**

A structured questionnaire and observation checklist were used to assess the current state of WASH facilities in the schools. There were 2 sets of questionnaires for head teachers, sanitation teachers and the rest of the teaching staff. The questionnaire was preferred because it is time saving.

#### **3.8 Data collection.**

The researcher collected data in all schools during normal school day. Permission was sought from the Sub-County director of education Emuhaya.

The researcher first introduced himself to head teacher or deputy head teacher or teacher on duty, briefed him/her on the study before requesting for permission to carry out the study. The respective teacher then signed two consent forms, with one copy retained at school. Data was collected using a structured questionnaires and structured observation checklist.

### 3.9 Data analysis, presentation and interpretation.

#### 3.9.0 Data quality assurance.

To ensure completeness and accurateness in data collection, back checks and data cleaning up was done in the field to ensure all required data was sufficiently captured before leaving the school. In addition, observation of WASH facilities was carried out over same period of time each day i.e. between 11:00 a.m. to 2:30 p.m. to ensure that pupils had had a chance to use the facilities. The data collected using questionnaire and observation checklist was compiled and analyzed using SPSS version 22. Descriptive statistics; - frequencies, proportions, rates, measures of central tendency and dispersion. Also inferential statistics;-measures of association, chi square test and bivariate binary logistic regression (both measures of association) was used in the analysis. The findings were presented in tables, figures (charts, graphs) and followed with a discussion of the findings.

### 4.0 FINDINGS AND DISCUSSIONS

This chapter presents the findings of the study which have been discussed under key sub sections in line with the research objectives. It contains the statistical results that were generated from the data analysis, together with the interpretation thereof. It includes quantitative and qualitative analysis. The findings are presented as below;

**Table 4.1: Response rate**

	Frequency	Percent
Male teachers	91	53.87
Female teachers	77	45.83
Head teacher	41	91.6

A total of 180 participants received questionnaires for the study, of this 168 responded giving a response rate of 93.3% of which 53.87% were male and 45.83 were female. 45 head teachers were given questionnaires and 41 returned the complete questionnaires, giving a response rate of 91.6%.

### 4.2 Knowledge on WASH Program in Public Primary Schools

The first objective of the study was to determine teacher’s level of knowledge on WASH program in public primary schools in Emuhaya Sub-County, Vihiga County

**Table 4.2: Teachers Knowledge on WASH in schools (N=168)**

Characteristic	Frequency	Percent
Presence of sanitation and hygiene education as part of school curriculum	148	88.1
Presence of active Health clubs in the school	58	34.5
Teachers who had undertaken training on WASH program	85	50.6

**Table 4.2 show the teacher’s knowledge on WASH program in schools.**

Out of the 168 teachers who were sampled, 148 (88.1%) indicated that sanitation and hygiene education is part of the school curriculum. 34.5% of the teachers indicated that their schools have active health clubs and 50.6% of the teachers had been trained on WASH program.

**Table 4.3: Head teachers Knowledge on WASH in schools (N=41)**

Characteristic	Frequency	Percent
Awareness of presence of National School Health Policy and Guidelines	29	70.7
Presence of health messages (talking walls) in the school	10	24.4

To further establish the knowledge of the teachers on the program, head teachers were also interviewed on key issues as shown in table 4.3.

The study revealed that 70.7% of the head teachers were aware of the presence of the National School Health policy and guidelines but only 24.4% of them had health messages (talking walls) in their schools.

### 4.3 State of WASH facilities in public primary school

The second objective of the study was to determine the state of WASH facilities in public primary school in Emuhaya Sub-County, Vihiga County. The objective sought to answer what WASH facilities are currently provided in public primary schools in Emuhaya Sub-County, Vihiga County.

For the second objective to be answered, the study first sought distribution of latrines in the schools as shown in table 4.4.

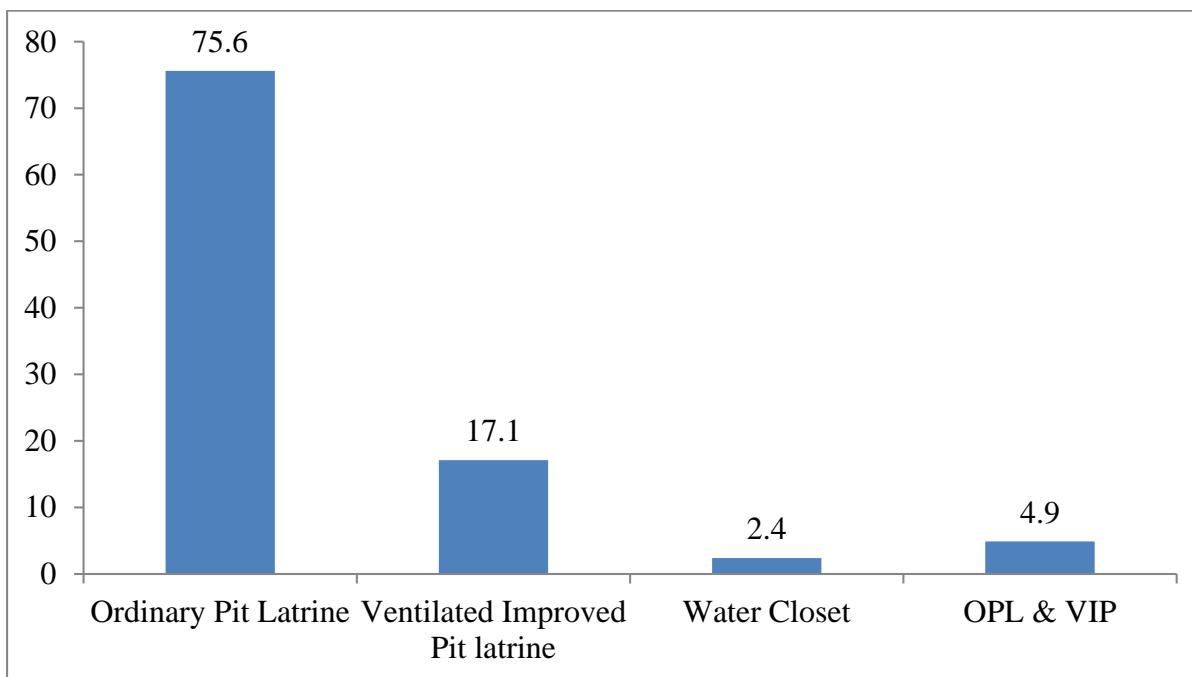
**Table 4.4: Latrine Distribution**

	N	Minimum number of latrines	Maximum number of latrines	Mean number of latrines	Std. Deviation
Girls	325	2	24	8	4.134
Boy	274	2	16	7	3.468
Female staff	51	1	2	1	0.452
Male staff	53	1	5	1	0.764

From table 4.4, the total number of girls' latrine was 325 with a mean of 8 latrines per school with a minimum number of latrines of 2 while the maximum number was 24. The total number of boy latrines was 274 with an average of 7 latrines per school with minimum number of latrines of 2 and maximum number of latrines was 16. The standard deviation for the girls and boys latrines was 4.134 and 3.468 respectively. The teacher's latrines were also considered in the study and there were 51 latrines for the female staff with a minimum of 1 latrine per school and a maximum of 2 with an average of 1 female latrine per school. The male staff had 53 latrines with a mean of 1 per school and a minimum of 1 and maximum of 5. The standard deviation for the female and male staff was 0.452 and 0.764 respectively.

From the results various deductions can be made, there are a lot of latrines for girls as compared to boys although the boys had highest number of latrines in some school. However, the deviation in number of latrines for boys was lower as compared to girls' latrines. Overall the ratio of latrines to pupils was 1:44 for girls and 1:51 for boys.

Furthermore, the study revealed that most primary schools in Emuhaya Sub County have ordinary pit latrine 75.6%, 17.1% were found to have ventilated improved latrines, 2.4% of the schools had water closets and 4.9% of the schools had more than one type of sanitary facility(see figure 4.1)



**Figure 4.1: Types of Sanitary Facilities.**

Availability of water plays an important role in terms of the status of wash facility. The study found out that 38.1% of the schools used rain water, 34.5% used water from protected spring, 21.4% use water from protected wells, 8.3% had other sources of water, 5.4% used piped water and 1.2% did not provide a response on where they get water as shown in figure 4.2.

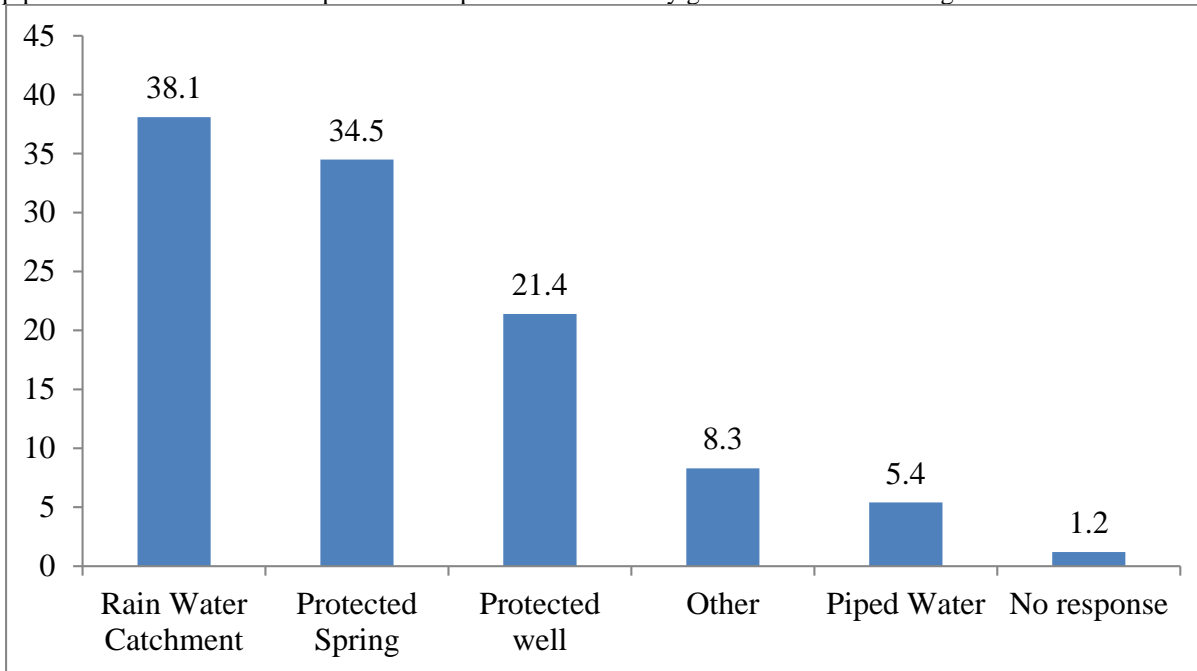


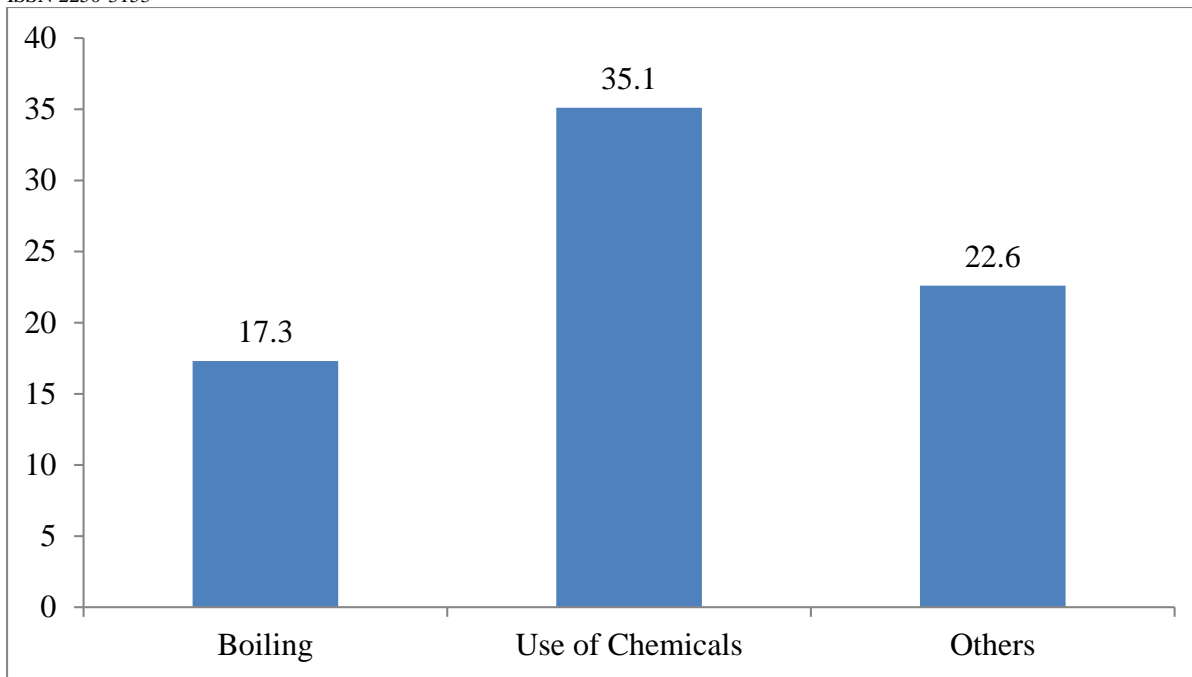
Figure 4.2: Main Source of Water in Schools

Table 4.8: Distribution of Water Adequacy by Water treatment

		Is water treated	
		Yes	No
Availability of water	Yes	63.4	29.2
	No	36.6	70.8
<b>Total</b>		<b>100</b>	<b>100</b>

Table 4.8 shows that 63.4% of the teachers said that the schools have adequate water that is treated while 29.2% of the available water is not treated. On the other hand, 36.6% of the teachers said that water was not adequate but the one available to them was not treated, 70.8%

The study further sought to find out how water is treated. The results revealed that 35.1% of sampled teachers indicated they use chemicals, 17.3% boiled drinking water while 22.6% used other methods such as life straw filters. The results are as shown in Figure 4.3.

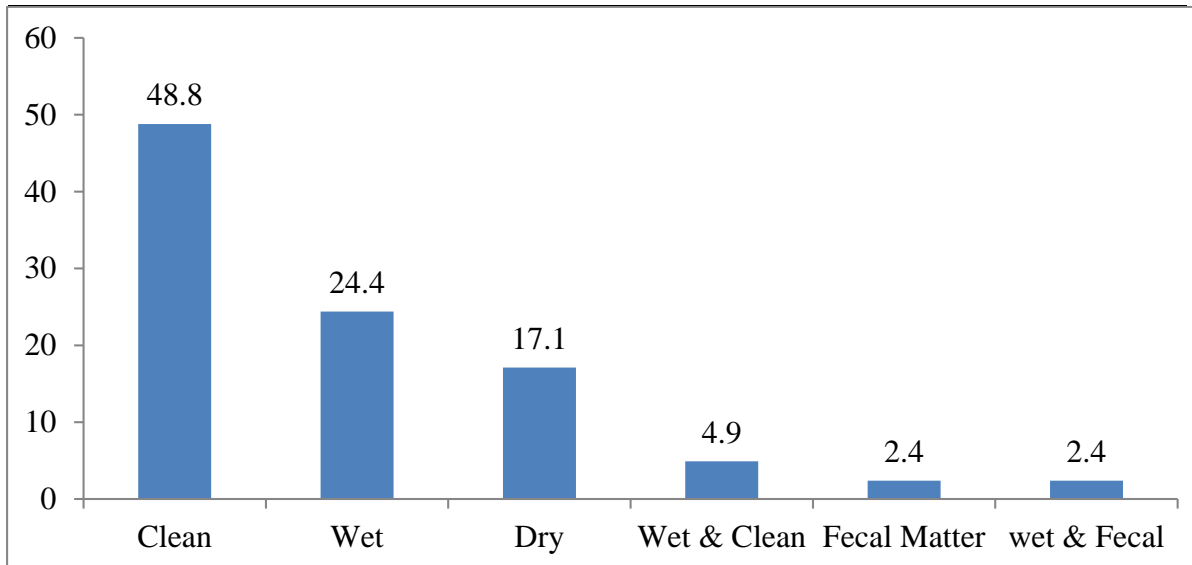


**Figure 4.3: Ways used for Water Treatment**

Currently, the government is encouraging inclusive type of education and therefore, the study sought to find out whether there are sanitary facilities for learners with special needs. It was established that only 9.8% of the sampled schools had facilities for learners with special needs as compared to 90.2% of the schools that did not have such facilities. The results are as shown in table 4.9.

**Table 4.9: Sanitary Facilities for learners with special needs**

	Frequency	Percent
Yes	4	9.8
No	37	90.2



**Figure 4.4: Condition of Floor**

**Table 4.10: presence of hand washing station**

	Frequency	Percent
Yes	27	65.9
No	14	34.1

**Total**

**41**

**100.0**

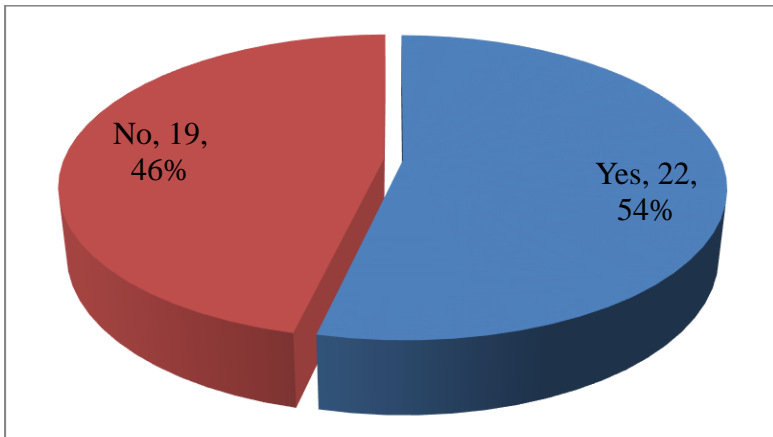
The study found out that 65.9% of schools had hand washing stations while 34.1% of the school did not have hand wash stations as shown in table 4.10.

#### **4.4 Factors affecting implementation of WASH program in public primary schools**

The third objective of the study was to identify the factors affecting implementation of water, sanitation and hygiene program in public primary schools in Emuhaya Sub-County, Vihiga County. The objective sought to answer what are the factors affecting implementation of WASH program in public primary schools in Emuhaya Sub-County, Vihiga County.

##### **4.4.1 School Funded By Government of Kenya**

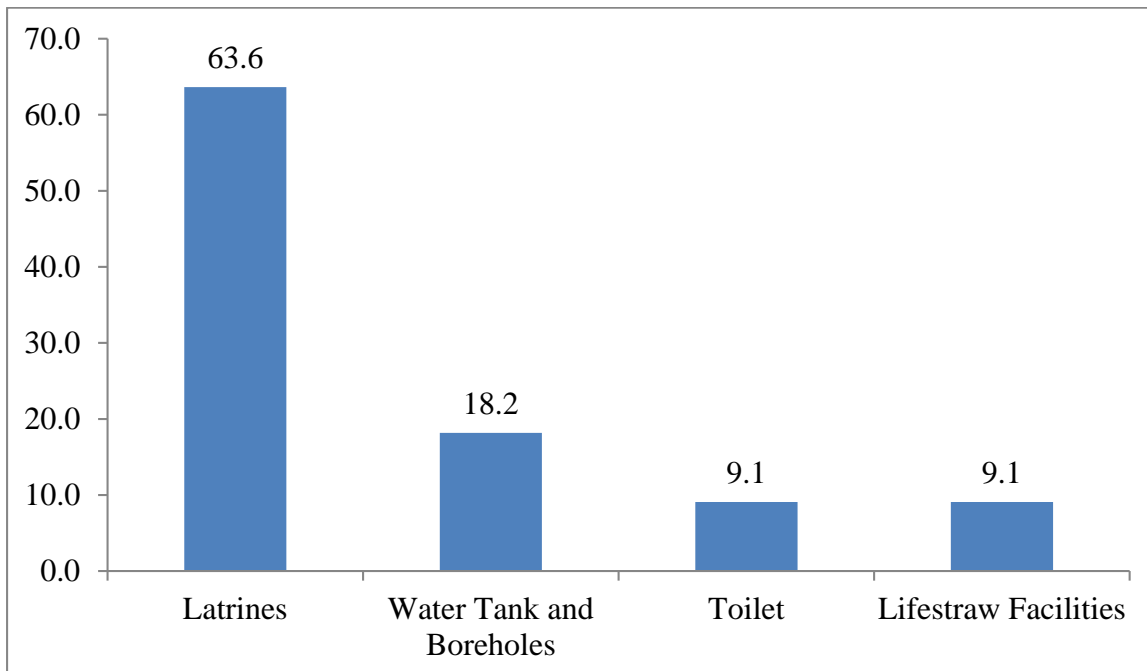
All the sampled 41 schools were funded by the government of Kenya. The government funded public primary schools through Free Primary Education Program. The study sought to find out whether the schools have been funded by other donors to improve sanitary facilities. The results are as shown in Figure 4.6.



**Figure 4.6: Donor funds to Improve Sanitary Facilities**

From figure 4.6, 53.7% of the sampled head teachers indicated that their school had been funded by other donors to improve sanitary facilities unlike 46.3% who did not receive funding from other donors for sanitary facility improvement.

The study further sought to find what facilities were provided by this funding. The results are as shown in Figure 4.7.





**Figure 4.7: Utilization of Donor Funds**

Majority of the schools used the funds to construct latrines as shown by 63.6% of the sampled head teachers while 18.2% bought water tanks and sunk boreholes. Two of the schools used the funds to construct toilets and two of them received life straw facilities. Another factor that affects the implementation of the WASH program is the school enrollment. Table 4.11 shows the total enrolment distribution of the schools.

**Table 4.1: Primary School Enrollment**

	Total	Boys	Girls
Mean	607.44	298.85	303.49
Mode	366	234	382
Std. Deviation	211.989	106.813	104.693
Minimum	256	126	130
Maximum	1279	686	593
Sum	24905	12253	12443
Percentage		49.2%	50.8%

The total enrollment in primary school was 24,905 of which boys were 12,253 and girls were 12,443. The boys were 49.2% of the total school population while the girls were 50.8%. The mean total enrollment was 607 with girls having a higher enrollment mean of 303 while boys having mean enrollment of 299. The total enrollment ranged from 256 to 1279. The boys (126) recorded low minimum enrollment as compared to girls (130). On the other hand, boys had higher maximum enrollment (686) as compared to girls (593).

**Table 4.12: Pre-School Enrollment**

Statistics	Total	Boys	Girls
Mean	83.63	41.80	41.34
Mode	70	43 <sup>a</sup>	34
Std. Deviation	27.589	14.719	14.194
Minimum	38	18	19
Maximum	157	79	78
Sum	3429	1714	1695
Percentage		49.99	49.43

From Table 22, total enrollment in pre-school was 3,429 of which 1,714 were boys and girls were 1,695. Boys represented 49.99% while girls represented 49.43%. The mean enrollment was 84 pupils per facility with boys having mean enrollment of 42 and girls mean enrollment of 41 per school. The total enrollment ranged from 38 to 157 while for boys ranged from 18 to 74 and for girls ranged from 19 to 78.



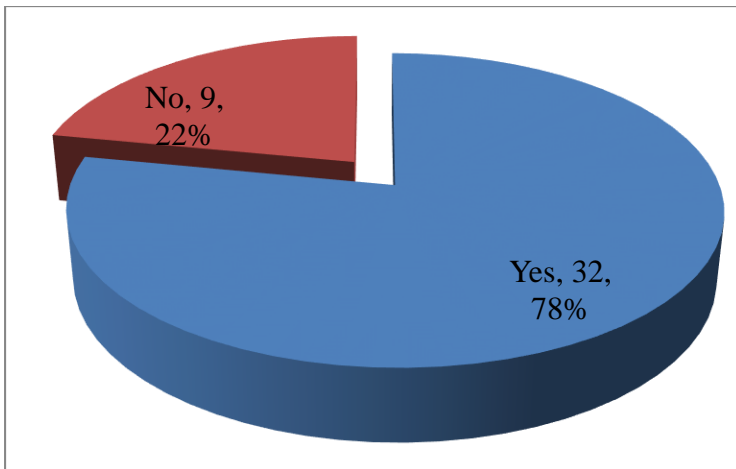
**Table 4.13: Number of Staff**

Statistics	Teachers	Support Staff	Male Staff	Female Staff
Mean	15.07	2.98	6.75	7.60
Mode	12	3	7	9
Std. Deviation	3.958	.851	3.011	3.954
Minimum	8	1	1	1
Maximum	22	5	12	14
Sum	618	122	270	304
Percentage		19.7	43.69	49.19

The study also looked at the total teachers were 618 in the 41 schools with a mean of 15 teachers per school. The number of teachers ranged from 8 to 22 in one of the school. The total support staffs were 122 with a mean of 3 per school. They ranged from 1 to 5 in some schools. Total male staff was 270 which are 43.69% of the total teachers. The mean male staff per school was 7 and they ranged from 1 to 12. Total female staffs were 304 which are 49.19% of the total teachers. The average female teacher per school was 8 and they ranged from 1 to 304.

**4.4.8 Clear Budget for Water, Sanitation and Hygiene in the FPE funds**

The study sought to find out if there is a clear budget for water, sanitation and hygiene in the FPE Funds. The results 78% (32) of the sampled head teachers indicated that there is a clear budget for water, sanitation and hygiene in the FPE funds as compared to 22.0% (9) who indicated that the budget is not clear for WASH. The results are as shown in Figure below



**Figure 4.8: Clear Budget for WASH in the FPE funds**

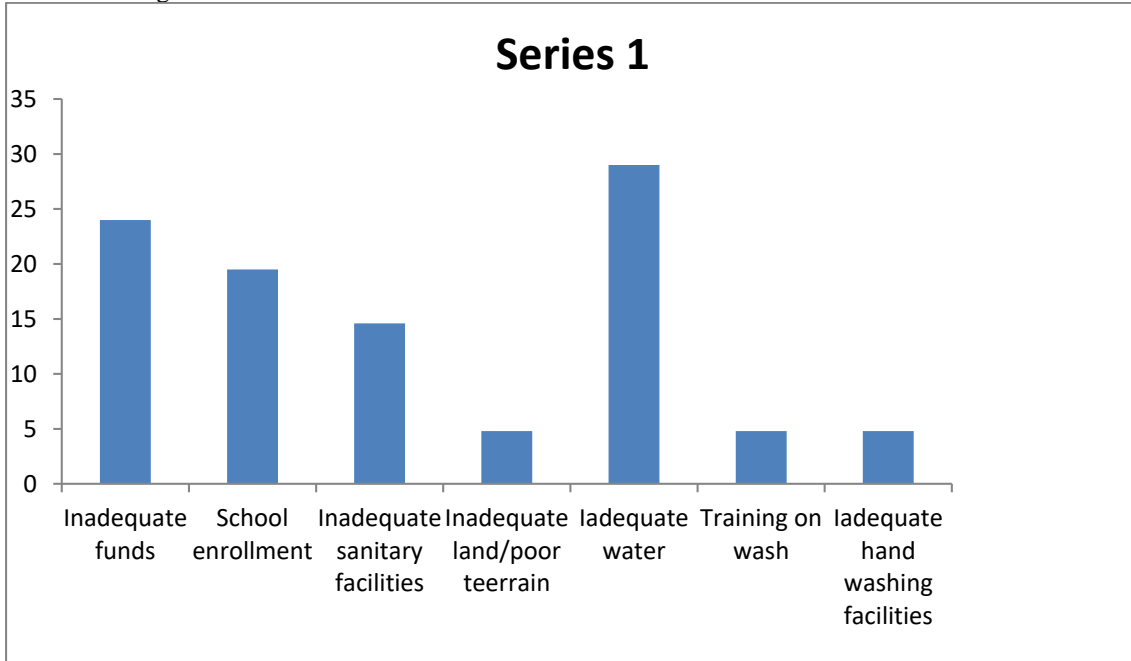
The sampled head teachers were asked to indicate if their school received any other funding for WASH in last three years. The results indicated that only 14.6% (6) received other funds for WASH in the last three years while 85.4% (35) did not receive. The results are as shown in Table 26

**Table 1: School received any other Funding for WASH in last three years**

Response	Frequency	Percent
Yes	6	14.6
No	35	85.4
<b>Total</b>	<b>41</b>	<b>100.0</b>

#### 4.4.10 Main Factor Influencing WASH implementation

The head teachers were required to state some of the main factors influencing implementation of WASH in their school. The results are as shown in Figure 4.9 below



**Figure 4.9: Main Factors influencing WASH Implementation**

From the figure inadequate water-29%, inadequate funding-24%, school enrollment-19%, inadequate sanitary facilities-14%, and inadequate land-5%, lack of training-5% were identified as the main factors affecting implementation of WASH.

Bivariate analysis was done using chi square as a statistical test of measure of association. The level of significance was set at 5%. The results are as shown below:

Variable	N	Implementing WASH		Chi square value	p-value
		Yes n (%)	No n (%)		
Location					
Urban	7	2 (28.6)	5 (71.4)	0.002	0.965
Rural	34	10 (29.4)	24 (70.6)		
Enrolment					
Less than 500	13	4 (30.8)	9 (69.2)	0.021	0.886
More than 500	28	8 (28.6)	20 (71.4)		
School health policy awareness					
Yes	28	9 (32.1)	19 (67.9)	0.352	0.553
No	13	3 (23.1)	10 (76.9)		
Funding					
Yes	32	10 (31.3)	22 (68.7)	0.277	0.599
No	9	2 (22.2)	7 (77.8)		
Health clubs					
Yes	24	5 (20.8)	19 (79.2)	1.989	0.158
No	17	7 (4.2)	10 (58.8)		
Training on WASH					
Yes	25	6 (24.0)	19 (76.0)	0.859	0.354
No	16	6 (37.5)	10 (62.5)		

From the bivariate analysis, all the factors did not have statistically significant association with the implementation of WASH program (all p-values were more than 0.05)

**BIVARIATE BINARY LOGISTIC REGRESSION**

VARIABLE	ODDs RATIO	( OD 1.44 )
Location: Urban Vs Rural	1.44	44% more likely
Enrollment: Less than 500 Vs more than 500	1.12	1.12 times more likely
Awareness of health policy: Yes Vs No	0.74	Less likely by 26%
Funding : Yes Vs No	2.28	2.28 times more likely
WASH training :Yes Vs No	1.38	38% more likely

From the bivariate binary logistic regression, funding (OD 2.28), training (OD 1.44), location of school (OD 1.38) and enrollment (OD 1.12) were more likely to influence implementation of the program while availability and awareness of healthy policy (OD 0.74) was less likely.

**4.5 Discussion of the Findings**

**4.5.1 Knowledge on WASH**

WASH in schools significantly reduces hygiene-related diseases, increases students attendance and learning achievement and contributes to dignity and gender equity. Improving WASH in schools is linked to multiple benefits. The teachers and pupils knowledge on WASH programs is low in public primary schools in Emuhaya Sub County despite the fact that most 88.1% of those sampled indicated that they had hygiene education as part of the school curriculum. From the study not all teachers were trained on WASH as indicated by 50.6% of them who said they had participated in WASH program Training. Sibiya and Gumbo (2013) found out in their study that awareness of health aspects of sanitation behavior is consequently important because it determines the degree of sustainability of an intervention in sanitation. This is in contrast to findings from a study by Mclaughlin (2012) who found out that well empowered teachers on WASH pass the knowledge to pupils who become young advocates of sanitation and hygiene and carry messages learned back to their families and communities hence increasing their awareness and motivation to adopt positive (WASH) behaviors, which result in long-term health and economic benefits for the community.

From the study, only 70.1% were aware of the policy and guidelines on WASH program. This implies that some head teachers have not taken up measures to ensure that pupils and teachers are aware and knowledgeable on WASH programs implemented in their schools. The study findings are similar to that of Chabari (2010) in Machakos District who found out that 66.7% of the public secondary schools had not fulfilled the guidelines by the Ministry of Education on sanitation facilities.

Chikwanu (2014) findings concur with this study finding after he found that in Zambia, health clubs helped with advocacy through which hygiene education was taught. In addition, the study found out that a lot of teachers were involved in ensuring that pupils kept high levels of hygiene in these health clubs. Members of health club held discussions on hygiene with the pupils.

**4.5.2 State of WASH Facilities**

The second objective of the study was to determine the state of WASH facilities in public primary school in Emuhaya Sub-County, Vihiga County. The study found out that 80.5% of the schools had ordinary pit latrines which is characterized by bad odour, flies and requires adequate space so that they are located far away from water sources and buildings. Few schools had WASH facilities for learners with special needs (9.8%) This implies that the facilities are shared among regular learners and learners with special needs. The study revelation of schools not putting into consideration pupils with special need is supported by Erhard (2013) who found out that despite policies and guidelines being in place, there is lack of sanitation facilities for students with disabilities hence their attendance in school is affected.

The separate sanitary facilities for boys and girls offered complete privacy as shown by 63.4%. However, there are some schools (36.6%) which have sanitary facilities that are devoid of privacy. In Zimbabwe, in most schools, latrine to student ratio is a main concern with hundreds of students sharing one toilet thus affording no privacy especially for the girls and forcing most of the students to practice poor hygiene. Girls reported that absence of privacy, which was contributed by doors that could not lock, caused them embarrassment and fear while accessing such toilets (Freeman et al., 2009).

The latrines were mostly cleaned by pupils as shown by 94.6% this implies that pupils are required to clean them in the morning and by the time other pupils want to use them they are still wet. Further, the learning process is interfered with as sometimes pupils are called to clean the toilet when they are supposed to be in class. On the other hand this could be a good opportunity for the pupils to put in practice what they learn regarding sanitation, however it was clear that protective gears were not provided by most schools. A study by Olukani (2013) in public secondary schools also found similar findings where the schools did not provide protective gears during cleaning of latrines hence endangering the health of the pupils leading to outbreak of diseases.

More than half of the schools had latrines with clean floors although some floors were found to be wet (29.3%) with fecal matter (4.8%). Clean latrines indicate that they are well maintained and thus encouraging their use. Similarly, Maria (2010) in her study that was conducted in 6500 schools in South Africa reported that majority of the schools in the Eastern Cape had pit latrines which were poorly maintained with most of them full and therefore no longer in use. This forced the students to look for alternative places where they could relieve themselves when answering to calls of nature.

Only 65.9% of the schools had hand washing stations this implies that some schools did not provide hand washing station to their pupils. A similar study done by Gatheiya and Mutua, (2009) in Nakuru Municipality also found that hand washing facilities in primary schools were inadequate. The situation makes it difficult for students in such schools to practice proper hygiene.

In these hand washing stations, 70.7% were found to have water while 12.2% had soap and this implies that some hand washing stations did not serve their purpose due to lack of water. Therefore, pupils were unable to wash their hands properly after visiting latrines or before and after eating. Similar findings were observed by Siwolo (2004) who conducted a study in public schools in Machakos where he found out that most students did not wash their hands after visiting the toilet due to lack of water.

Fifty six point one percent of schools were found to have source of water although the quantities of water were not adequate. The schools had different sources of water though; the most common sources of water were rain water, protected springs and protected wells. Few schools had piped water. Not all schools treated their drinking water as shown by 64.9% implying that in some schools pupils drank untreated water. The most common method of treating water was use of chemicals and boiling of water. The results were contrary to UNICEF (2009) findings in Tanzania that indicated that 38% of schools had no water supply on school premises, 84 % had no functioning hand washing facilities.

#### ***4.5.3 Factors affecting Implementation of Wash Programs***

The third objective of the study was to identify the factors affecting implementation of water, sanitation and hygiene program in public primary schools in Emuhaya Sub-County. The main factors identified were inadequate funds, enrollment, location of the school, training on WASH and availability of water resources.

Finance was the main factor that influences implementation of WASH programs in Emuhaya Sub County as other factors depend directly and indirectly on funds. All public schools depend on government through FPE fund to implement WASH. However, the funds are inadequate forcing schools to source for other sources of funds for WASH implementation as shown by 53.7% of sampled head teachers who indicated they had received funds from other donors. According to GoK (2015), there is no specific budget allocation for school water, hygiene and sanitation.

The funds are mainly used to construct latrines, buy water tanks and sink boreholes as well as treatment of water. Lack of adequate funds was related with lack of adequate water resources, inadequate training, lack of water treatment, and lack of water storage facilities, lack of sanitary facilities, purchase of detergents and tanks and regular maintenance of WASH facilities. Lack of funds also forced schools to use pupils to clean latrines instead of sourcing support staff who are experienced and reliable in ensuring that latrines are cleaned before pupils arrive in the school. Lack of funds also has resulted to outbreak of diseases as schools are unable to treat drinking water for both pupils and teachers. This concurs with findings of a study by UNICEF (2013) in Kenya which found that low prioritizing and poor funding significantly impacted on scale up of WASH activities in public primary schools.

Another factor that influenced implementation of WASH programs was high enrollment rates against static sanitary facilities. The introduction of FPE resulted to increase in enrollment and schools were unable to match enrollment with sanitary facilities. This implies that as learners' population increases, school administrations are unable to provide proper WASH facilities. A survey conducted by organizations such as African Medical and Research Foundation (AMREF), Netherlands Development Organization (SNV) and Water Aid, indicated that the immense increase of school enrolment to ensure pupils access to education did not go hand in hand with improving the sanitation facilities. School population was increasing faster than provision of sanitation facilities and most schools did not meet the defined standards for the latrines. The findings of the study concur with (Gathieya and Mutua 2009; Mbula 2014) that found out that high population and lack of availability of adequate sanitation facilities had implications on good hygiene practices in schools.

The study also established that availability of water resources in the school was also a great challenge and this affected the availability of water to be used in hand washing stations and drinking water. Therefore, they had to look for alternative sources of water which is expensive and time wasting. Since it was established that schools lacked funds to improve sanitation, harvesting rainwater would provide cheap drinking water to school children. There is a huge potential in water conservation in schools due to the large roof area provided by buildings. Rainwater harvesting could meet their water demands and reduce the costs of water in schools. A study by Casey 2012 in western Uganda, found that the potential of rainwater harvested in schools was of an adequate amount and could lower the cost of water supply thus concurring with the study findings that rain water was the main source of water for the program.

Inadequate source of water also implied that latrines can only be cleaned once in a day when pupils come with water in the morning. Any misuse of latrine during the day would results to outbreak of diseases as there is no water for additional cleaning. Insufficient number of water points in public schools and sometimes complete lack of water pose a big challenge, forcing some children to adopt a common practice of using a basin for washing hands instead of running water. This is a poor hygiene practice which can contaminate the water in the basins when all the children use the same water. An assessment conducted by the Schools Sanitation and Hygiene Working Group in public schools in Nairobi and Kiambu found that 90% of schools in rural Kenya do not have a source of water and lack even the simplest hand washing facilities.

Land was another factor that influenced implementation of WASH programs. Some schools were found to have limited space so as to locate latrines as per the guidelines. According to GoK (2015), in some schools, the limited land can lead to inadequate space for latrine construction and emptying. The latrines are supposed to be located at least 15m from buildings and water sources and not on the windward side. However, some schools are unable to implement these guidelines due to poor planning, land terrain and limited space. In that case, the school bears the brunt of foul odour and contaminated water which can result to outbreak of diseases. The community has also shown little or no support in relation to land issue. Some of the communities are unwilling to release land for expansion of schools. The results revealed that few teachers have been trained on WASH and there is lack of health messages in the school compound. Some schools have no active health clubs which allow interaction of health teachers, health personnel and pupils on matter sanitation. Therefore, some of the pupils are not aware of the importance of WASH and the utilization of WASH facilities. Similarly, some teachers are unable to support the implementation of wash programs due to limited knowledge they possess. According to Gok (2015), the involvement of communities and the private sector in the promotion of hygiene practices and sanitation is low due to poor sensitization on their role.

### 5.3 Conclusion

*From the study it can be concluded that inadequate training of teachers on WASH affects cascade of the same to pupils and community as a whole. Also funding, location of school, training and enrollment were more likely to affect implementation of the program*

### AUTHOR'S CONTRIBUTIONS

Solomon Omutoko, John Kariuki, Japheth Ogendi contributed equally to this work.

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