

# Hygiene and Sanitation Practices Among Teachers in Early Childhood Schools in Homa Bay County, Kenya

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**Abstract—Background:** Hygiene and sanitation practices of teachers in early childhood schools (ECS) directly influence the uptake of hygiene and sanitation by the children they mentor. Poor hygiene and inadequate sanitation practices leads to outbreak of communicable diseases in learning institutions. The current study was conducted to assess hygiene and sanitation practices of teachers ECS teachers in Homabay County, Kenya. **Methods:** A cross-sectional survey was conducted using a sample size of 217 early childhood education teachers. Data was collected between February 2024 and March 2024 using a structured questionnaire. **Results:** Teachers knowledge on safe water sources, water treatment technologies and importance of toilet use had significant relationship with the uptake of hygiene and sanitation among ECS in Homabay County, Kenya. **Conclusions:** Availability of hygiene and sanitation infrastructure has influence on uptake of hygiene and sanitation practices among ECS teachers in Homabay County, Kenya.

**Keywords—** Teachers, Hygiene, Sanitation, Water, Hand washing, communicable diseases.

## I. INTRODUCTION

Lack of sanitation and poor hygiene also severely limit the impact of other development interventions in education, health, rural and urban development [1]. The situation is common in developing countries due to lack of safe water, poor hygiene and inadequate sanitation infrastructure. Sanitation and hygiene in WASH practices have tremendous potential to improve health and nutritional outcomes for young children [2].

In developing countries, intestinal inflammation is a frequently mentioned problem in school-age children [3]. Many schools in these areas have inadequate access to water, sanitation and hygiene promotion [4]. Frequency of diarrheal diseases in the young children has been linked with impaired cognitive performance in the later childhood [5]. In addition, oral health-related infections are also commonly found in young school-aged children [6].

School provide a critical setting for the development of early life of children, and teachers play a vital role in their behavioural development since they spend substantial amount time in the school compound [7]. Early childhood School teachers' hygiene knowledge and sanitation practices influence on uptake of hygiene and sanitation practices in childhood education centres. While home programs are important in promoting child health, the role of ECS teachers in introducing hygiene and sanitation practices to young

children to promote child health outcomes has also been documented [8]. Children in the ECS are more open to learning and to acquire new concepts and show greater willingness to be responsible as well as to gain more autonomy [9]. Although there has been some research examining certain teacher influence on children's water, hygiene and sanitation practices, it is not clear whether teachers themselves have the correct hygiene and sanitation practice [10].

In Kenya, the school health program conducted by the department of public health mainly emphasizes on environmental health and health screening services for school children and ignores the ECS teachers' hygiene and sanitation health education component [11]. Thus, there remains a gap in the holistic assessment of ECS teachers' hygiene literacy, practices and effectiveness of school-based hygiene practices among the ECS children. In Homabay County, gaps in ECS teachers' ability to conduct health promotion by demonstrating to the ECS children correct hygiene and sanitation practices still exist. This necessitated the need to conduct an assessment of hygiene and sanitation practices among ECS teachers in Homabay County, Kenya in order to inform policy on school health programs.

## II. MATERIALS AND METHODS

*Study design:* The study applied a cross-sectional using both quantitative and observation techniques.

*Period of study:* Study was conducted between February 2024 and March 2024.

### *Sample size determination*

The sample size was calculated using Krejcie and Morgan table for sample size calculation [12]. The table was developed in situations where the researcher wants to come within 5 percentage points (with 95 percent certainty). The population of ECS teachers in Homabay County was about 500 translating into a sample size of 217.

## III. ANALYSIS

Data was tabulated on Microsoft Excel sheet and analyzed using the SPSS software. Cross-tabulation amongst the dependent variables versus independent variables carried out. Chi square test was conducted to test the association between

the variables. The association was considered to be statistically significant if the p-value < 0.05.

IV. RESULTS

Socio-demographic Characteristics of respondents

A total of 217 teachers participated in the study. Majority of the teachers 41% (88) were between the age category of 31-40 years, while 34% (73) were 41-50 years, 17% (37) were 20-30 years and 8.8% (19) were 51-60 years. A total 95 % (206) were female teachers while 5% (11) were male. A total of 94% (204) were ordinary teachers, while 5 % (10) were head teachers and 1 % ( 3) were deputy head teachers. Approximately 67.28 % (146) of the teacher respondents were ECS 2 teachers, 19.82 % (43) were ECS 1 teachers and only 12.9 % (12) were ECS play group teachers. Hygiene and sanitation practices of 422 were observed as follows; 54% (228) ECS 1, 38% (160) ECS 2, 8% (34) Playgroup. The findings above are indicated in table 1 below.

TABLE 1: Socio-demographic Characteristics of respondents

Age category	Number	Percentages (%)
20-30	37	17.0
31-40	88	40.6
41-50	73	33.6
51-60	19	8.8
Total	217	100
Gender	Number	Percentage (%)
Male	11	5.1
Female	206	94.9
Total	217	100
Roles	Number	Percentage (%)
Head teacher	10	5
Deputy head teacher	3	1
Ordinary Teachers	204	94
Total	217	100
Grade	Number	Percentage (%)
ECEC 1	43	19.28%
ECEC 2	146	67.28%
Play group	28	12.9%
Total	217	100

Education Level of ECS teachers in Homabay County

The results showed that 36 % (78) of ECS teachers had attained university degrees, 55% (120) had diploma qualifications while 36% (78) had attained certificate level education. Figure1 shows the education level of ECS teachers in Homabay County.



Figure 1. Education Level of ECS teachers in Homabay County

Training/information on sanitation and hygiene

Table 2 below shows the training received by the ECS teachers. Majority of the participants 69% (78) had received training on hygiene and sanitation. About 33% (29.2) ECS teachers reported that they received training on hygiene and sanitation from the local Public health officers.

TABLE 2. Training/ Information received among respondents

Training/Information on sanitation & hygiene	Uptake of HS Practices		Chi-Square <0.05
	Received Training	Frequency	P-Value
Yes	78(69.03)	142(65.44)	0.247
No	35(30.97)	75(34.56)	

Sources of sanitation and hygiene information

Table 3 below shows the sources of hygiene and sanitation information according to the ECS teachers in Homabay County. Majority 45 (39.82 %) of the ECS teachers received information on hygiene and sanitation during ECS curriculum training.

TABLE 3. Table Sources of sanitation and hygiene information

*PHO	Frequency		P-V
Yes	80(70.8)	156(71.89)	0.709
Yes	33(29.2)	61(28.11)	
Part of school curriculum	Frequency		P-Value
No	68(60.18)	128(58.99)	0.71
Yes	45(39.82)	89(41.01)	
Colleagues/friends	Frequency		P-Value
No	109(96.46)	206(94.93)	0.284
Yes	4(3.54)	11(5.07)	
Other	Frequency		P-Value
No	94(83.19)	186(85.71)	0.267
Yes	19(16.81)	31(14.29)	

\*PHO refers to Public health Officers. \*HS means hygiene and sanitation

ECS teachers' knowledge on sources of water for hygiene and sanitation

The ECEC teachers' knowledge of local sources of water for hygiene and sanitation was poor 91.15% (103). Majority of the ECS teachers 98.23% (111) mentioned the Lake Victoria. Approximately 89.38% (101) mentioned roof catchment as their main source of water. In addition, 86.73% (98) mentioned bore holes as sources of water and 17.04% (17) mentioned other different sources of water. Table 4 shows ECS teachers knowledge on sources of water for hygiene and sanitation.

TABLE 4. ECS teachers' knowledge on sources of water for hygiene and sanitation

Source of water	Uptake of HS Practices		Chi-square <0.05
Natural Springs	Frequency		P-Value
No	103(91.15)	200	0.562
Yes	10(8.85)	17	
Lake	Frequency		P-Value
No	2(1.77)	6(2.76)	0.351
Yes	111(98.23)	211(97.24)	
Rainwater	Frequency		P-Value
No	12(10.62)	28(12.9)	0.296
Yes	101(89.38)	189(87.1)	
Boreholes	Frequency		P-Value
No	15(13.27)	43	0.012
Yes	98(86.73)	174	
Other	Frequency		P-Value

No	96(84.96)	187	0.588
Yes	17(15.04)	30	
Missing	96(84.96)	187(86.18)	0.101
Dams	0(0.00)	3(1.38)	
Ponds	0(0.00)	1(0.46)	
Taps	17(15.04)	26(11.98)	

\*PHO refers to Public health Officers. \*HS means Hygiene and sanitation

Knowledge of ECS teachers on safe drinking water

Knowledge of safe drinking water was high 78.76% (89) among the ECS teachers. Over 56.6% (64) of the ECS teachers were conversant with the importance of safe drinking water as depicted in table 5 below.

TABLE 5. Importance of safe drinking water according to the ECS teachers in Homabay County.

Importance of safe drinking water	Uptake of SH Practices		Chi-square <0.05
Kills germs		Frequency	P-Value
No	24(21.24)	50(23.04)	0.511
Yes	89(78.76)	167(76.96)	
Makes water safe to drink		Frequency	P-Value
No	32(28.32)	57	0.474
Yes	81(71.68)	160	
Reduces chances of getting diarrhea		Frequency	P-Value
No	49(43.36)	87(40.09)	0.305
Yes	64(56.64)	130(59.91)	
Gives water better taste		Frequency	P-Value
No	111(98.23)	210(96.77)	0.206
Yes	2(1.77)	7(3.23)	
Other		Frequency	P-Value
No	111(98.23)	214(98.62)	0.61
Yes	2(1.77)	3(1.38)	
Specify		Frequency	P-Value
Missing	111(98.23)	213(98.16)	0.511
Hygiene	1(0.88)	1(0.46)	
Prevent diseases	1(0.88)	3(1.38)	

ECS Teachers knowledge on safe water treatment techniques

About 88.5% (100) reported that they are aware of water treatment using water treatment chemicals. About 97.12% (98) of ECS teachers were familiar boiling as water treatment technique, while 13.27% (15) had knowledge of sedimentation techniques. Only 12.39% (14) of the ECS teachers had knowledge on water filtration techniques. Boiling water was statistically significant factors affecting water uptake of hygiene and sanitation among ECS children in Homabay County (p-value=0.006 < critical value (α) =0.05). Table 6 teachers' knowledge on safe water treatment techniques.

TABLE 6. Teachers' knowledge on safe water treatment techniques.

Safe Water Treatment techniques	Uptake of WASH Practices		Chi-square <0.05
Boiling		Frequency	P-Value
No	15(13.27)	18(8.29)	0.006
Yes	98(97.12)	199(86.73)	
Filtration		Frequency	P-Value
No	13(11.5)	24(11.06)	0.828
Yes	100(88.5)	193(88.94)	
Sedimentation		Frequency	P-Value
No	99(87.61)	185(85.25)	0.307
Yes	14(12.39)	32(14.75)	
		Frequency	P-Value
No	98(86.73)	189(87.1)	0.865
Yes	15(13.27)	28(12.9)	

Reasons of ECS teachers for proper human faeces disposal.

The ECS teachers gave the following reasons for proper disposal of human feces as shown in table 7 below.

TABLE 7. Reasons of ECS teachers for proper disposal of human faeces in Homabay County.

Importance of disposal of human faeces	Uptake of HS Practices		Chi-square <0.05
Avoid diseases		Frequency	P-Value
No	59(52.21)	121(55.76)	0.273
Yes	54(47.79)	96(44.24)	
Avoids Contaminating water & soils		Frequency	P-Value
No	38(33.63)	59(27.19)	0.026
Yes	75(66.37)	158(72.81)	
Prevent Smell		Frequency	P-Value
No	76(67.26)	149(68.66)	0.641
Yes	37(32.74)	68(31.34)	
	32.74	31.34	

The ECS Teachers practice towards hygiene and sanitation

About 82.03% (178) of the ECS teachers wash their hands routinely after using the toilet. There were 46.54% (101) ECS teachers reported defecating/urinating on the toilet bowl while 38.71% (84) flushed toilet with water after use. Figure 2 shows The ECS Teachers practice towards hygiene sanitation.

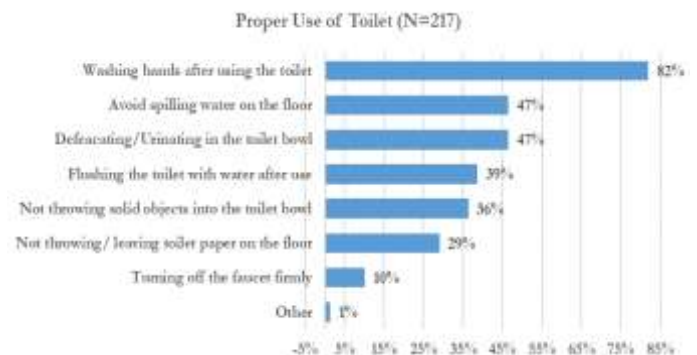


Figure 2. The ECS Teachers practice towards hygiene and sanitation.

Knowledge of ECS teachers on importance of washing hands with soap and water Majority 79.65% (90) of the teachers mentioned the importance of washing hands using water and soap. About 79.65(90) indicated that washing hands using water and soap reduces diarrhea as shown in table 8 below. The findings are presented in table 4.10 below.

TABLE 8. Knowledge of ECS teachers on washing hands using water and soap

Importance of washing hands with soap and water	Uptake of HS practices		Chi-square <0.05
Reduces diarrhea		Frequency	P-Value
No	23(20.35)	43(19.82)	0.836
Yes	90(79.65)	174(80.18)	
Keeps hands clean		Frequency	P-Value
No	55(48.67)	102(47)	0.608
Yes	58(51.33)	115(53)	
Reduces stomach aches		Frequency	P-Value
No	98(87.5)	189(87.91)	0.849
Yes	14(12.5)	26(12.09)	
Yes	0(0.00)	3(1.4)	

Status and uptake of hygiene and sanitation facilities in ECS in Homabay County

Around 52.21% (59) ECS had adequate hygiene and sanitation facilities which significantly influenced good uptake of hygiene and sanitation practices among the ECS children (p-value=0.01< critical value ( $\alpha$ ) =0.05). The findings are presented in table 9 below.

TABLE 9. Status and uptake of hygiene and sanitation facilities in ECS in Homabay County

Status of WASH facilities	Uptake of HS Practices	Frequency	Chi-square <0.05
<b>Access to water</b>			
Limited	67 (59.29)	136 (62.67)	0.283
Improved	46 (40.71)	81 (37.33)	
<b>Access to sanitation</b>			
Limited	54 (47.79)	86 (39.63)	<b>0.01</b>
Improved	59 (52.21)	131 (60.37)	
<b>Access to hand washing with soap</b>			
Limited	29 (25.66)	65 (29.95)	0.150
Improved	84 (74.34)	152 (70.05)	
<b>Total</b>	<b>113</b>	<b>217</b>	

V. DISCUSSION

Hygiene and sanitation education by public health officers was found to play a major role in prevention of diseases in ECS. Public health professionals were the main source of information for ECS teachers. This finding is consistent with other studies in developing countries [13]. The current study showed a significant relationship between access to sanitation and uptake of hygiene and sanitation facilities by ECS teachers. These findings were consistent with the results of a study [14] conducted in Tanzanian schools. The study revealed that most ECS teachers had adequate knowledge of hygiene and sanitation practices. The focus of hygiene and sanitation among the ECS teachers was mainly concerned with hand hygiene. This observation agrees with the findings by [15]. The assessment of hygiene, and sanitation practice suggests that the ECS teachers’ face significant challenges related to access to safe water. There are many similar studies highlighting challenges related to hygiene and sanitation practices in learning institutions in Kenya.

Ethics Statement

Ethical approval was obtained from Maseno University Ethical Review Committee. Research permit was obtained from Kenya National Commission for Science, Technology and Innovation-NACOSTI.

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