



# Accessibility of Anal Cleansing Materials for Public Primary School Pupils in Kajiado County, Kenya

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## Abstract

### INTRODUCTION

Anal cleansing is the hygienic practice of cleaning the anal area after defecation. Inaccessibility to anal cleansing materials leads to inappropriate methods resulting in faecal hand contamination. This study assessed the accessibility of anal cleansing materials for public primary school pupils in Kajiado County, Kenya.

### MATERIALS AND METHODS

The researchers used a descriptive cross-sectional study approach, applying a cluster sampling technique to sample eighteen (18) schools to the study. Three hundred and eighty-four (384) pupils were selected from the schools using simple random sampling. The Headteacher and a teacher in charge of school health were purposively sampled due to their knowledge of school resources about hygiene. A total of thirty-six teachers participated in the key informant interviews.

Data were analysed using SPSS version 21, and Chi-square was used to test the hypothesis at  $p < 0.05$  significance level.

### RESULTS

Accessibility to anal cleansing materials was low at 22.9%. Pupils' class ( $p$ -value = 0.036) and level of material awareness ( $p$ -value  $< 0.001$ ) influenced accessibility. For Institutional factors, material sensitisation was associated with accessibility ( $p$ -value = 0.001). The following sustainability measures were proposed; sensitisation on anal cleansing materials, provision through cost sharing, management of the materials by class teachers and prefects, and continued support by government ministries of health and education.

### CONCLUSION

Anal cleansing materials access was low; pupils' predisposing characteristics and institutional factors influenced access.

### RECOMMENDATION

We recommend that school management and ministries of health and education improve access to anal cleansing materials in schools and develop sustainability measures.

*Keywords:* Anal cleansing, Accessibility, Pupils, Public Health, Kenya

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## Introduction

Anal cleansing is essential to personal hygiene, especially in schools where pupils spend most of the day. The use of insufficient and inappropriate anal cleansing materials increases the prevalence of intestinal worms in school children. This occurs where there is a shortage of anal cleansing materials leading to the use of bare hands or other less effective materials, as observed in a study conducted in Thailand on the prevalence of intestinal parasites and related factors in school children (1).

In Mali, the presence and proper use of water sanitation and hygiene commodities like water, clean toilets, anal cleansing kettles, hand washing soap and disinfectants combined with health education and promotion in schools were associated with low cases of diarrhoea in school children (2).

The Kenya national school health policy guideline gives schools the mandate to provide anal cleansing materials (toilet paper and water) for pupils (3). Nevertheless, the provision of such materials has not been fully realised(4).

Findings from a research programme conducted in rural Nyanza to assess the impact, sustainability, and scalability of school-based water sanitation and hygiene intervention showed that the provision of new latrines and water treatment did not reduce the presence of *Escherichia coli* on pupils' hands. The consortium recommended comprehensive hygiene promotion, which includes sufficient supplies of anal cleansing materials, awareness of the availability of materials, and sensitisation of parents on the importance of anal cleansing(5).

Most of the previous studies focused on water for drinking and hand washing, sanitation, knowledge, attitude and practices, excluding anal hygiene(6–8)

Documentation on anal hygiene is limited; such a gap in information leads to a lack of evidence-based planning for the high number

of school-going children in Kajiado County and Kenya.

Therefore, this study's main aim was to determine the accessibility of anal cleansing materials for public primary school pupils in Kajiado County, Kenya. This research contributes to the body of knowledge on anal hygiene and informs interventions to improve the accessibility of anal cleansing materials in schools.

## Materials and Methods

### *Study setting*

The study was conducted in the larger Kajiado North Sub County, one of the five sub-counties in Kajiado County, including Kajiado West which has since been hived off from Kajiado North. The Sub County comprises five educational zones: Ngong, Ongata Rongai, Magadi, Kisamis and Euwaso Kedong. There were 91 public primary schools with a total of 34,541 pupils (9) at the time of the study. According to Kajiado County Integrated Development Plan 2018-2022 (10) hygiene-related diseases, such as upper respiratory tract infections and diarrhoea, are among the top ten causes of morbidity in the area. Weak school health programmes were one of the challenges facing health services in the County. This study was therefore carried out in Kajiado to generate baseline information for County government and development partners' policy formulation and strategic interventions.

### *Study design, population and sampling*

We used a descriptive cross-sectional study design; the design was preferred as it measures the characteristic of interest in a sample population at one point in time (11). The study population was public primary school pupils, head teachers and health teachers. Private schools were excluded from this study due to their semi-autonomous nature. There were a total of 91



public primary schools in the area out of which eighteen (18) schools were selected using a simple random sampling technique. The desired sample size for pupils was determined using the Fischer *et al.* formula (12).

$$n = \frac{Z^2 pq}{d^2}$$

Where

n was the desired sample size for a population greater than 10,000

Z was the standard normal deviate, set at 1.96, corresponding to a 95% confidence level

p was prevalence estimated as 0.5 since there was no known prevalence estimate for access to anal cleansing materials

q was 1.0-p, and

d was the level of statistical significance set at 0.05 corresponding to 1.96

Hence

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16 \approx 384$$

Three hundred and eighty-four (384) pupils were sampled proportionately from the selected schools by gender using a table of random numbers.

In each school, the head teacher and a teacher in charge of school health were purposively sampled due to their knowledge of the management of school resources on hygiene. A total of thirty-six teachers participated in the key informant interviews.

### Data collection

A structured interview schedule was used to record pupils' responses, a key informant interview guide for head teachers and health teachers and an observation checklist to gather first-hand information in the schools. All interviews were conducted face-to-face at the schools; participants' privacy was highly maintained by ensuring that they were not exposed to anyone else but the interviewer.

**Table 1:**  
Accessibility Dimension Parameters and Scores

Dimensions	Definition	Parameters	Scores
<b>Availability</b>	Presence of materials in the right quantity and quality to meet pupils' needs	A roll of tissue paper per child	20%
		2 litres of water per child per day	20%
<b>Geographical access</b>	Physical distance from material placement point to the user	Placed in toilet/latrine	25%
		Placed in classroom	10%
<b>Acceptability</b>	The match between anal cleansing materials and pupils' satisfaction	Tissue paper and or water	20%
<b>Parental Support</b>	Parent/guardian's willingness to provide anal cleansing materials for their children	Willingness to provide	5%
<b>Total scores</b>			<b>100%</b>



## Data analysis

At the end of each session, the filled interview schedules were cross-checked for completeness and any missing entries were corrected through imputation. Quantitative data from the filled interview schedules were coded and entered into the Statistical Package for Social Sciences (SPSS) version 21 database. Demographic data from the interview schedules were analysed using descriptive statistics whereby continuous data were presented as mean and standard deviation while categorical data were presented as frequencies and percentages. The categorical data were further analysed; the Chi-Square test was used to determine possible relationships between the variables. Results were presented using tables, and column graphs. Qualitative data obtained from the key informant interviews were assigned codes and then categorised into emerging patterns which were later grouped into the identified themes.

## Ethical considerations

Approval to carry out the research was given by Kenyatta University Ethical Review Committee and National Commission for Science Technology and Innovation through permits

number PKU/262/I238 and NACOSTI/P/15/8786/4647 respectively. Permission to conduct the research was received from the County directors of Health and Education and also the County Commissioner and their counterparts at the Sub County level including respective head teachers. School head teachers gave informed consent for themselves and the pupils by signing consent forms, while health teachers gave their consent. The participants' privacy and anonymity were highly maintained.

## Results

### Demographic Characteristics

The respondents comprised 51.8% male and 48.2% female, 97.7% were Christians and 2.3% were Muslims. The mean age of the respondents was 11.3( $\pm$ 0.3) years, those in the upper classes were 58.1 %, and lower classes were 29.4 %, while 12.5% were in preschool. Concerning awareness of anal cleansing materials, the majority (80.5%) of the respondents were aware of anal cleansing materials while 19.5% were not as shown in table 2.

**Table 2:**  
Individual Characteristics of the Respondents

Characteristic	Categories	Frequency	Per cent
Gender	Male	199	51.8%
	Female	185	48.2%
Religion	Christian	375	97.7%
	Muslim	9	2.3%
Class	Pre-school	48	12.5%
	Lower class	113	29.4%
	Upper class	223	58.1%
Age in years	$\leq$ 9	104	27.2%
	10 – 13	185	48.3%
	>13	94	24.5%
Material awareness	Aware	309	80.5%
	Not Aware	75	19.5%

## ***Accessibility to anal cleansing materials***

Accessibility was assessed based on its four dimensions of geographical accessibility, parental support, availability and acceptability. Geographical accessibility of anal cleansing materials was low, with only 11.7% of the pupils having materials within their reach in classrooms or toilets. On parental support, 39.1% of the pupils reported that their parents were willing to provide materials for them. The availability of the materials was 56 (14.6%). Toilet paper and water were acceptable to 78.4% of the pupils. Cumulatively, from the four dimensions, accessibility to anal cleansing materials in the schools was generally low with only 88 (22.9%) pupils having access to toilet paper and/ or water while 296 (77.1%) did not have as shown by figure 1.

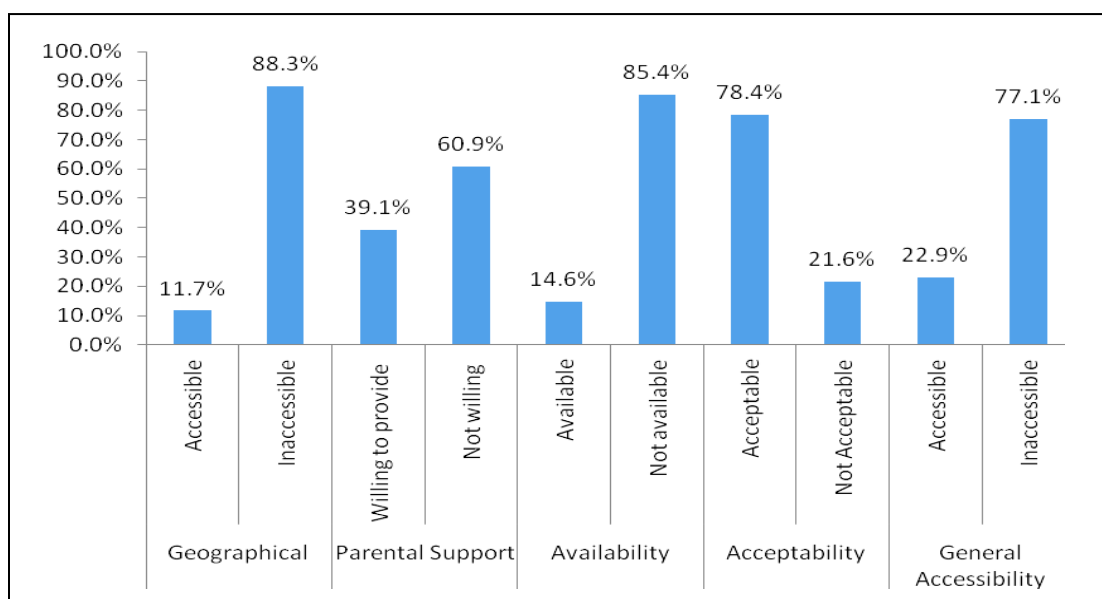
From observation, only one school had toilet paper, which was provided for by parents and stored

communally in the classroom. Water was available in fifteen schools, but none of the schools had an arrangement for its use for anal cleansing.

## ***Predisposing characteristics influencing access***

Pupils' age and gender did not influence the access to the materials while pupils' class and material awareness had a significant influence on the access. Pupils in the upper classes had the highest proportion (27.4%) of access to anal cleansing materials as compared to those in the lower classes. Pearson Chi-square test ( $\chi^2=6.5$ ,  $df=2$ ,  $p\text{-value} = 0.036$ ) indicates that there is a significant relationship between the pupil's class and access to anal cleansing materials.

The level of material awareness also influenced access. Pupils who were aware of anal cleansing material had better (26.9%) access as compared to pupils who were not aware of the materials.



**Figure 1:**  
Accessibility to Anal Cleansing Materials



Chi-square test ( $\chi^2=13.9$ ;  $df=1$ ;  $p$ -value  $<0.001$ ) showed that pupils' level of material awareness had a significant influence on access to anal cleansing material as shown in table 3.

The study did not consider religion in this analysis as the majority (97.7%) of the pupils belong to the same Christian faith.

### ***Institutional factors***

The study established that most (374;97.4%) of the respondents were not supplied with anal cleansing materials by their schools while only 10(2.6%) were provided by well-wishers through a class teacher. From observation, pupils in one school had tissue papers in their classrooms, these materials were carried from home with instruction from the school, therefore, were not considered as provided by the school. Three (3) schools did not have water within their compound at the time of this study, of the ones with water supply; none provided it for anal cleansing.

The key informants gave varying reasons for the non-provision of anal cleansing materials.

A head teacher in one of the schools stated as follows:

*"There are many items needed in the school by pupils and the funds we have is not enough for the provision of toilet paper for every learner"*

A health teacher in another school also reported that the school do not provide materials because pupils are expected to carry them from home. She went on to explain:

*"Just like in secondary schools where students carry all personal items from home to school, anal cleansing materials for primary school learners should be carried from home"*

The majority (68.6%) of the key informants reported that there exists a forum in their schools where pupils are sensitised on anal cleansing material source and choice, while 31.4% reported that there was no such forum. These responses were validated through observation of the presence of health education timetables and Information Education Communication (IEC) materials in each school.

**Table 3:**  
Pupils' Predisposing Characteristics Influence Accessibility

Characteristic	Categories	Inaccessible	Accessible	Chi-square test ( $\chi^2$ ,df,P-value)
<b>Age</b>	≤ 9 years	85(81.7%)	19(18.3%)	2.5, 2, 0.290
	10-13years	142(76.8%)	43(23.2%)	
	> 13 years	68(72.3%)	26(27.7%)	
<b>Gender</b>	Male	151(75.9%)	48(24.1%)	0.3,1,0.560
	Female	145(78.4%)	40(21.6%)	
<b>Religion</b>	Christian	289(77.1%)	86 (22.9%)	0.0,1, >0.999*
	Muslim	7(77.8%)	2(22.2%)	
<b>Class</b>	Pre-school	42(87.5%)	6(12.5%)	6.5,2,0.036
	Lower	92(81.4%)	21(18.6%)	
	Upper	162(72.6%)	61(27.4%)	
<b>Material awareness</b>	Unaware	70(93.3%)	5(6.7%)	13.9,1,<0.001
	Aware	226(73.1%)	83(26.9%)	
<b>* Fisher's Exact Test</b>				

On the option of materials, there were multiple responses, all respondents were sensitised to old papers, 288(75.0%) on toilet

paper, 66(17.1%) were sensitised to natural materials (stones, leaves and sticks) while 10(2.6%) were sensitised on water.



Further analysis indicated that there was a significant association (Fisher's Exact Chi-square:  $\chi^2$  18.3df=4; p-value = 0.001) between materials sensitised on and accessibility of the same, as shown by table 4.

**Proposed sustainability measures**

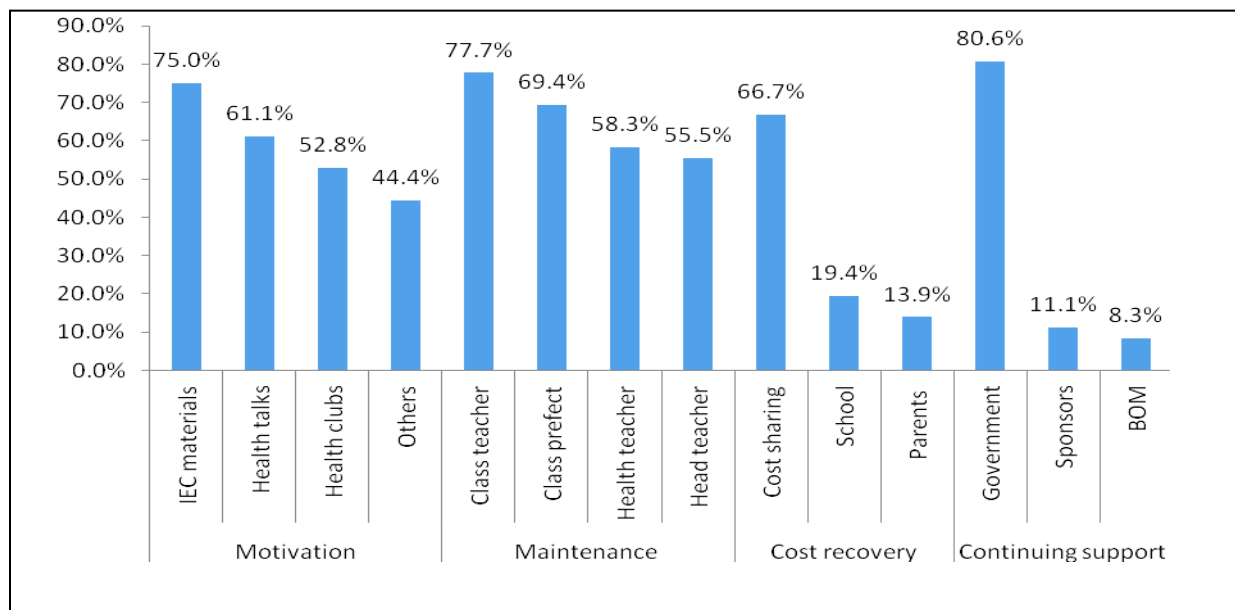
Sustainability was assessed based on pupils' stock-out experience, supply from all sources including from home and well-wishers were considered. It was established that the

majority of the pupils 276(71.9%) had experienced stockouts while 108(28.1%) pupils had sustainable supply.

Different sustainability measures were proposed, use of Information Education Communication materials (75.0%), health talks (61.1%), and health clubs (52.8%) were mentioned by more than half of the respondents as measures for motivation. 44.4 % proposed other ways like skits, songs and poems.

**Table 4:**  
Relationship between Sensitisation and Material Access

Materials sensitised on	Inaccessible	Accessible	Chi-square test ( $\chi^2$ ,df,P-value)
Old papers	296(77.1%)	88(22.9%)	
Toilet paper	207(71.9%)	81(28.1%)	
Natural materials	49(74.2%)	17(25.8%)	
Water	7(70.0)	3(30.0%)	18.3,4,0.001



**Figure 2:**  
Proposed Sustainability Measures

Two levels of maintenance of the materials within the schools were proposed, class level to be controlled by the class teacher (77.7%) and class prefect (69.4%), school level to be

maintained by the teacher in charge of health matters (58.3%) and the head teacher (55.5%). The majority of the respondents (66.7%) mentioned cost sharing as a way of cost recovery



while 19.4% proposed funding by school and 13.9% funding by parents. For continuing, support government ministries of health and education scored higher at 80.6%. Sponsors were proposed by 11.1% while 8.3% of the respondents mentioned the school board of management as shown in figure 2.

## Discussion

Accessibility to the anal cleansing materials was low at 22.9%, pupils' class and their awareness of the material influenced accessibility. For Institutional factors, material sensitisation had an association with accessibility. The following sustainability measures were proposed to improve accessibility; sensitisation on anal cleansing materials, provision of materials through cost sharing, management of the materials by class teachers and prefects, and continued support by government ministries of health and education.

The majority of the pupils (88.3%) experienced geographical inaccessibility similar to government schools in Tanzania (6) where many primary schools visited lacked anal cleansing materials in the toilets, and a study on students' acceptance of conventional and ecological sanitation in rural schools in Eastern Europe, the Caucasus and Central Asia countries (13), in which anal cleansing materials were not placed in latrines forcing pupils to avoid relieving themselves in school toilets and preferring to wait to go home. For support by parents and acceptability, findings were similar to a study done in the Nyanza region in Kenya(14) where parental support was low with parents prioritising buying food over spending money on tissue paper. In both this study and that conducted in Nyanza pupils preferred using tissue paper to other materials. Anal cleansing materials were available to 14.6% of the pupils, a level lower than those of schools in Uganda which was at 22.5% for urban schools and 16% for rural schools (15).

Based on the study findings, in general, accessibility to anal cleansing materials was low, which is consistent with findings of a study on Kenya Comprehensive School Health Programme which showed pupils use unacceptable ways of anal cleansing due to inaccessibility of the appropriate materials. (4)

Pupils' level of awareness of the material in this study (73.1%) was higher than those of pupils in Ethiopia which was at 52% (16). There was a significant relationship between pupils' class and accessibility, this is an indication that the higher the class the more conversant pupils are with accessibility measures.

Schools that participated in this study did not provide anal cleansing materials for their pupils, this left majority with an unreliable supply of materials with pupils carrying it from home, relying on well-wishers or improvising what is available within the school; similar to a study conducted in schools in Tanzania's Kinondoni Municipality where 90% of schools lacked anal cleansing materials and pupils using school book papers (6). The main reason given by teachers for not providing materials was limited funding under free primary education, which is similar to the findings of a study on the life-cycle cost of school water, sanitation and hygiene in Kenya (17).

There existed sensitisation fora in schools on anal cleansing where pupils were advised which material to use. Sensitisation on material choice had a significant association with access to anal cleansing materials. This was similar to findings from schools in western Kenya(5), where schools that trained students and parents in monitoring and engaged parent volunteers to represent health issues within the school management committee had the best sanitary conditions.

The majority of the respondents experienced sustainability challenges comparable





to findings from schools in the Nyanza region in Kenya(14) where pupils reported the hardship of getting the desired anal cleansing materials like toilet paper.

Teachers who participated in this study proposed several sustainability measures. Use of information, education communication materials, health talks, health clubs, skits, songs and poems were given as ways to achieve motivation to ensure the appropriate anal cleansing materials are adopted. They proposed materials to be managed at two levels; head teachers and teachers in charge of health matters to take care of materials at the school level while class teachers and class prefects are in charge at the class level. Respondents mentioned cost sharing as a way of generating resources for the supply of materials with support from government Ministries of Health and Education, sponsors and school boards of management proposed providing support. These findings were similar to a study conducted in Bangladesh where community and government support were mentioned for school sanitation interventions. (18)

## **Strengths and limitations of the Study**

The major strength of this study is the use of mixed methods, both quantitative and qualitative data were collected and analysed to enrich the findings. However, there were a few limitations; one is that we considered toilet paper and or water when assessing accessibility since those are the items recommended in Kenya National School Health Policy. The other limitation is that parents and guardians were not involved in this study; we relied on pupils' responses for parental support but assigned the lowest score of 5%.

## **Policy Implication of this Study**

The findings of this study will contribute to the development of strong school health policies and programmes in Kenya at national

and County levels which will be used to improve the accessibility of anal cleansing materials in public primary schools.

## **Conclusion**

Access to anal cleansing materials for public primary school pupils within Kajiado County was low. Pupils' class and level of material awareness had a significant influence on access to anal cleansing materials, while age and gender did not show any relationship. Sensitisation which is an institutional factor had a relationship with access while material provision did not show any association. For sustainability, the following school-based measures were proposed; use of information, education and communication materials, health talks, and clubs to promote the use of appropriate materials. Teachers and class prefects to manage materials, supply be done through cost sharing and government ministries of education and health to give continuous support.

## **Recommendations**

To improve access to anal cleansing materials for pupils, toilet paper and water should be made available and the materials be placed within the classroom. Pupils should be taught about appropriate anal cleansing materials as early as possible to ensure access is achieved by all including those in the lower classes.

The school administration should mobilise and involve the entire school community, which includes parents, teachers and other stakeholders to recognise anal cleansing as an important component of hygiene and allocate resources through cost sharing and assign responsible persons for its management.

Government line ministries of health and education should also give policies on how such materials are made accessible and supply sustained

Pupils mentioned the use of other materials like old papers, stones, leaves and



sticks, which calls for further research on its effectiveness and safety. Also in this study parents were not involved therefore there is a need to assess parents' opinions on their roles in the accessibility of anal cleansing materials for pupils.

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### Conflict of interest

The authors had no conflicting interest

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