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Assessing Handwashing Practices Among Primary and Secondary Students in Relation to Handwashing Critical Moments in Gicumbi District

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Abstract: **Handwashing with soap is an effective and affordable public health intervention for preventing communicable diseases, including diarrheal and respiratory infections. Practicing handwashing at critical moments is particularly important among school-aged children and adolescents because it helps reduce the transmission of infectious diseases. This study assessed handwashing practices among primary and secondary school students in relation to handwashing critical moments in Gicumbi District, Rwanda. A cross-sectional study design employing a mixed-methods approach was used. The study was conducted in ten selected schools, comprising five primary schools and five secondary schools. A minimum sample size of 384 students was determined using William G. Cochran's formula for large or unknown populations, and students were selected through simple random sampling. Purposive sampling was used to select key informants, including head teachers, teachers responsible for school health programs, and student representatives. Data were collected using structured questionnaires, observation checklists, focus group discussions, and key informant interviews. Quantitative data were double-entered in Microsoft Excel and exported to IBM SPSS Statistics version 25 for analysis. Descriptive statistics were used to summarize students' handwashing practices at critical moments. The Pearson chi-square test was used to examine associations between categorical variables and handwashing practices, with statistical significance set at $p < 0.05$. Logistic regression analysis was conducted to estimate crude and adjusted odds ratios with 95% confidence intervals. Qualitative data were analyzed thematically to complement the quantitative findings. The study findings provide evidence on students' handwashing practices at critical moments in the selected schools in Gicumbi District. The results can inform the development and strengthening of school-based hygiene promotion interventions to improve handwashing practices and reduce the risk of communicable diseases among primary and secondary school students.**

Keywords: **Handwashing Practices, Primary and Secondary Students, Critical Moments, Gicumbi District.**

1. INTRODUCTION

Handwashing with soap and water is one of the most effective, affordable, and accessible public health interventions for preventing the transmission of communicable diseases. It helps remove dirt, organic matter, and disease-causing microorganisms from the hands, thereby reducing the risk of diarrheal diseases, respiratory infections, and other hygiene-related illnesses (Centers for Disease Control and Prevention [CDC], 2024). Effective handwashing is particularly important among school-aged children and adolescents, who interact frequently in shared environments and may be exposed to infectious agents through contaminated surfaces, food, water, and person-to-person contact. Practicing handwashing at critical moments, especially after using the toilet and before eating or handling food, is therefore essential for protecting students' health and promoting a safe school environment.

Schools provide an important setting for promoting appropriate handwashing practices because children and adolescents spend a substantial proportion of their time in these institutions. However, inadequate hand hygiene practices and limited access to handwashing facilities can increase the risk of disease transmission among students.

According to the World Health Organization (WHO, 2023), pneumonia and diarrheal diseases remain major causes of mortality among children under five years of age. Although these figures concern younger children, they demonstrate the broader public health importance of preventive hygiene practices. Evidence also indicates that handwashing education and appropriate handwashing with soap can contribute to improved school attendance by reducing illness-related absenteeism (CDC, 2024). Consequently, assessing whether students wash their hands at appropriate moments is important for understanding their hygiene behaviors and identifying opportunities to improve health outcomes in schools.

Despite the recognized importance of hand hygiene, access to basic handwashing facilities remains inadequate in many educational institutions worldwide. The WHO and UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) has documented substantial gaps in access to water, sanitation, and hygiene services in schools, particularly in low-income settings (WHO/UNICEF, 2018, 2020). These gaps include the absence of water and soap, insufficient handwashing stations, and facilities that are unavailable or non-functional. Such limitations can prevent students from practicing handwashing consistently, even when they understand its importance. Therefore, assessing handwashing practices requires consideration not only of students' reported behaviors but also of the availability and functionality of the facilities needed to perform hand hygiene at critical moments.

The importance of school hygiene has also been emphasized through the Health-Promoting Schools framework developed by WHO and its partners. This framework promotes a whole-school approach to improving students' health, well-being, and educational outcomes through coordinated action involving school administrators, teachers, students, families, and other stakeholders (WHO, 2021). Within this approach, hand hygiene promotion should extend beyond providing information to students. It should also ensure access to water and soap, maintain functional handwashing facilities, and establish an environment that encourages appropriate hygiene behaviors. School-based interventions are more likely to support consistent handwashing when hygiene education is accompanied by adequate facilities and opportunities for students to practice what they have learned.

In sub-Saharan Africa, inadequate water, sanitation, and hygiene services continue to present challenges for schools. A systematic review by Poague et al. (2022), which examined school water, sanitation, and hygiene conditions in low- and middle-income countries, identified substantial deficiencies in infrastructure and service provision across the settings studied. The findings highlighted that the mere presence of facilities does not necessarily guarantee their adequacy, functionality, or accessibility. This distinction is important when assessing handwashing practices because students may be unable to wash their hands at critical moments if water or soap is unavailable, facilities are poorly maintained, or access is inconvenient. Furthermore, handwashing behaviors may be influenced by students' knowledge, attitudes, habits, school routines, and the hygiene practices encouraged by teachers and school administrators. Research conducted in different African settings has also highlighted challenges in students' handwashing behaviors. For example, Mohamed (2021) reported inadequate handwashing practices among primary school students in Mogadishu, Somalia, and identified cultural influences and limited education about hand hygiene as relevant concerns. Other research has examined handwashing behavior in sub-Saharan African populations, indicating the importance of understanding the circumstances in which people practice hand hygiene (Obadia et al., 2023). Although findings from other countries provide useful contextual evidence, differences in school infrastructure, educational environments, and hygiene promotion activities mean that these findings cannot automatically be generalized to all schools.

Assessments conducted in specific local settings are therefore necessary to establish the handwashing practices of students and identify areas requiring improvement.

Handwashing at critical moments is a particularly important aspect of school hygiene. These moments include washing hands after using the toilet or latrine and before eating or handling food. Other relevant situations may include cleaning up waste, handling potentially contaminated materials, and situations in which hands become visibly dirty. Regular handwashing at these moments can reduce opportunities for pathogens to spread through contaminated hands to the mouth, food, surfaces, and other individuals. Nevertheless, the availability of hygiene information does not necessarily translate into consistent practice. Students may know that handwashing is important but fail to perform it because of limited access to facilities, inadequate availability of soap and water, time constraints, or established behavioral habits. Assessing

handwashing practices in relation to critical moments is therefore necessary to distinguish general awareness of hand hygiene from the actual implementation of appropriate practices.

In Rwanda, promoting hand hygiene among schoolchildren is relevant to broader efforts to improve public health, school hygiene, and the quality of the learning environment. Primary and secondary school students represent important groups for hygiene promotion because behaviors established during childhood and adolescence may influence personal and community health. However, students at different educational levels may experience different school environments, routines, and opportunities to access handwashing facilities. Assessing both primary and secondary school students can therefore provide a broader understanding of handwashing practices across educational levels and help identify areas in which school-based hygiene promotion may be strengthened.

In Gicumbi District, examining handwashing practices among primary and secondary school students in relation to critical moments is important for generating context-specific evidence to support school health initiatives. The assessment focuses on whether students practice handwashing at appropriate moments and considers the school environment in which these behaviors occur. Information obtained through student questionnaires, observations of handwashing facilities, and qualitative discussions with students and school personnel can provide complementary perspectives on reported practices and the conditions that support or hinder hand hygiene. Such evidence can help identify gaps in handwashing practices and inform practical measures to promote consistent handwashing in schools.

Therefore, this study assessed handwashing practices among primary and secondary school students in relation to handwashing critical moments in Gicumbi District, Rwanda. By focusing on students' handwashing behaviors and the school contexts in which they occur, the study sought to generate evidence that can inform the strengthening of school-based hygiene promotion strategies and contribute to the prevention of communicable diseases among students.

2. METHODOLOGY

2.1 Research Design

The research used a descriptive cross sectional survey research design that helped her in gathering information where little knowledge was known.

2.2 Location of the Study

The study was conducted in Gicumbi District, located in the Northern Province of Rwanda.

2.3 Target Population

The study was targeting student's primary and secondary schools who were selected in different classes from different schools.

2.4. Sample Size determination

Since the total population of students in the selected schools is unknown, the sample size for the quantitative component of the study was determined using the formula proposed by William G. Cochran (Ahmed, Sirwan Khalid, 2024).

The formula is expressed as:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

Where:

- **n** = required sample size
- **Z** = Z value corresponding to the desired confidence level (1.96 for 95% confidence level)
- **p** = estimated proportion of the population with the attribute of interest (0.5 is used when the proportion is unknown)
- **e** = margin of error (0.05)

Sample Size Calculation

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

$n = \frac{3.8416 \times 0.25}{0.0025}$

$n = \frac{0.9604}{0.0025}$

n= 384

3. RESULTS

3.1 Socio-Demographic Characteristics of Respondents

To establish a baseline statistic for the study results, the researcher examined the sociodemographic characteristics that were crucial to the participants. The age of respondent, sex, school level, grade level, type of school, parents, source of household income, and social category were among the socio-demographic factors. The findings are presented in table as follows:

Table 1: Socio-Demographic Characteristics of Respondents (Students=384)

Variables	Items	Frequencies	Percentages (%)
Age of respondent	10 - 12 Years	78	20.3
	13 - 15 Years	113	29.4
	16 - 18 Years	122	31.8
	19 - 21 Years	71	18.5
Sex	Male	178	46.4
	female	206	53.6
School level	Primary	148	38.5
	Secondary	236	61.5
Grade Level	P4	28	7.3
	P5	46	11.9
	P6	74	19.3
	S1	76	19.8
	S2	79	20.6
	S3	81	21.1
Type of school	Public/Government	308	80.2
	private	76	19.8
Live with Parents	Both parents	313	81.5
	Mother only	39	10.2
	Father only	8	2.1
	Guardian	24	6.2
Source of household income	Farming	332	86.5
	Formal employment	16	4.2
	Business	11	2.8
	Causal labor	25	6.5
Social category	Low	219	57.0
	Medium	137	35.8
	High	28	7.2

Source: Primary data, (2026)

Table 1 presents the findings of demographic characteristics of respondents such as age, sex, school level, grade level, type of school, parents, source of household income, and social category. Out of 384 respondents (students), on the age distribution, 20.3% were in range of 10 to 12 years, 29.4% were in range of 13 to 15 years, 31.8% were in range of 16 to 18 years, and 18.5% were in range of 19 to 21 years. On the sex, 46.4% were boys and 53.6% were girls. On the school level, 38.5% were in primary while 61.5% were in secondary school. On the grade level, 7.3% were in P4, 11.9% were in P5, 19.3% were in P6, 19.8% were in S1, 20.6% were in S2, and 21.1% were in S3. On the type of school, 80.2% were in public or government school and 19.8% were in private schools.

To the living with parents, 81.5% lived with both parents (mother and father), 10.2% lived with mother only, 2.1% lived with father only, 6.2% lived with guardian. To the source of household income, 86.5% were famers, 4.2% were formal employed, 2.8% were business families, and 6.5% were causal labors. On the social category, 57.0% were in low category, 35.8% were in medium, and 7.2% were in high category.

3.2 Presentation of Findings

The findings focus on the study objective of assessing handwashing practices among primary and secondary students in relation to handwashing critical moments in Gicumbi District, Rwanda.

3.2.1 Handwashing practices among primary and secondary students in relation to handwashing critical moments

This section presents the findings of first objective to assess the handwashing practices among primary and secondary students in relation to handwashing critical moments in Gicumbi District, Rwanda. The results are presented in table as follows:

Table 2: Handwashing Practices in Relation to Critical Moments

	Never		Rarely		Sometimes		Oftern		Always		Total		
Statement	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**N**	**Mean**	**Sd**
a) After using the toilet	0	0.0	0	0.0	85	22.1	117	30.5	182	47.4	384	4.25	.806
b) After cleaning the compound	0	0.0	0	0.0	0	0.0	213	55.6	171	44.4	384	4.44	.504
c) Before eating food	0	0.0	0	0.0	107	27.8	192	50.0	85	22.2	384	3.94	.715
Overall Mean												**4.21**	

Source: Primary data, (2026)

Table above displays the results of first objective to assess the handwashing practices among primary and secondary students in relation to handwashing critical moments in Gicumbi District, Rwanda. The data was analyzed, out of 384 participants, 22.1%% had had sometimes practice, 30.5% had often practice and 47.4% always wash hands after using the toilet. The 55.6% had often practice and 44.4% always wash hands after cleaning the compound. The 27.8% had sometimes practice, 50.0% had often practice, and 22.2% always wash hands before eating food. The overall mean score was 4.21, which falls in often to always, indicating that the students in Gicumbi District had the good practices in handwashing.

Table 3: Handwashing Practices

Variables	Items	Frequencies	Percentages (%)
9. What do you use to wash your hands most of the time?	Soap and water	159	41.4
	Water only	225	58.6
10. How long do you usually wash your hands?	Less than 10 seconds	119	31.0
	10-20 seconds	201	52.3
	More than 20 seconds	64	16.7
11. Do you know the proper steps of handwashing?	Yes	166	43.2
	No	218	56.7
12. Have you ever been taught about handwashing at school?	Yes	298	77.6
	No	86	22.4
13. How often do you wash your hands at school each day?	Once	129	33.6
	Twice	182	47.4
	Three times	73	19.0
	More three times	0	0.0
14. What motivates you most to wash your hands?	Teacher's advice	169	44.0
15.	Cleanliness	87	22.7
	a. Fear of disease	94	24.5
	Peer influence	34	8.8

Source: Primary data, (2026)

Table above presents the findings of the handwashing practices among primary and secondary students in Gicumbi District, Rwanda. Out of 384 participants, on what they use to wash their hands most of the time, 41.4% used the soap and water and 58.6% used the water only. On how long they usually wash their hands, 31.0% responded that they wash less than 10 seconds, 52.3% responded that they wash hands in 10-20 seconds, while 16.7% responded that they wash their hands in more than 20 seconds.

On knowing the proper steps of handwashing, 43.2% responded that they know and 56.7% responded that they did not know. On they have ever been taught about handwashing at school, the 77.6% responded yes and 22.4% disagreed. On how they often you wash their hands at school each day, 33.6% responded once, 47.4% responded twice, and 19.0% responded three times. On what motivates them most to wash your hands, 44.0% motivated by teacher's advice, 22.7% motivated by clearliness, 24.5% motivated by fear of disease, and 8.8% motivated by peer influence.

Table 4. Knowledge and Attitudes about handwashing practices among primary and secondary school students

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Total		
Statement	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**N**	**Mean**	**Sd**
Washing hands with soap is important to prevent diseases	0	0	0	0	0	0	238	61.9	146	38.1	384	4.38	.487
It is difficult to wash hands at school because soap or water is not available	0	0	0	0	32	8.4	255	66.5	97	25.2	384	4.17	.556
Teachers and school staffs remind us to wash hands regularly	116	30.3	79	20.6	37	9.7	152	39.4	0	0	384	2.58	1.284
I feel embarrassed washing hands in front other student	0	0	0	0	0	0	220	57.4	164	42.6	384	4.43	.496
I think washing hands with water alone is enough	0	0	0	0	0	0	198	51.6	186	48.4	384	4.48	.501
I think handwashing is important in Health	0	0	0	0	32	8.4	265	69.0	87	22.6	384	4.14	.540
When hands look clean, they do not need soap	0	0	40	10.3	32	8.4	193	50.3	119	31.0	384	4.02	.901
Overall Mean												**4.028**	

Source: Primary data, (2026)

The researcher analyzed the attitudes and knowledge about handwashing practices among primary and secondary school students. Data analysis was done on 384 participants. The results showed that 61.9% agreed and 38.1% strongly agreed that washing hands with soap is important to prevent diseases. Among those polled, 8.4% were not sure, 66.5% agreed, and 25.2% strongly agreed that it was difficult to wash hands at school because soap or water is not available. The 30.3% strongly disagreed, 20.6% disagreed, 9.7% were not sure, and 39.4% agreed that teachers and school staffs remind us to wash hands regularly.

The 57.4% agreed and 42.6% strongly agreed that they felt embarrassed washing hands in front other student. The 51.6% agreed and 48.4% strongly agreed that they think washing hands with water alone is enough. The 8.4% were not sure, 69.0% agreed, and 22.6% strongly agreed that they think handwashing is important in Health.

The 10.3% disagreed, 8.4% were not sure, 50.3% agreed, and 31.0% strongly agreed that when hands look clean, they do not need soap. The total mean score was 4.028, which falls between agree (4) and strongly agree (5), indicating that there was the significant attitudes and knowledge about handwashing practices among primary and secondary school students in Gicumbi District, Rwanda.

3.2.2 Multivariate Analysis of Factors Associated with handwashing practices

Logistic regression was used to identify the independent factors associated with handwashing practices. The significant variables at bi-variate analysis (age, school level, grade level, living with parents, and source of household income) were considered together in a multiple logistic analysis.

Table 5: Multivariate Analysis of Factors Associated with handwashing practices

Variables	COR(95%CI)	P-value	AOR(95%CI)	P-value
Age				
10-12	1.24(0.46-3.12)	0.163	1.08(0.39-3.8)	0.251
13-15	3.18(1.58-6.62)	0.014	3.65(1.68-7.90)	0.004
16-18	3.65(1.48-9.04)	0.000	2.72(1.03-7.39)	0.006
19-21	Ref		Ref	
School Level				
Primary	Ref		Ref	
Secondary	3.14(1.52-6.54)	0.013	3.62(1.63-7.52)	0.006
Grade Level				
P4	Ref		Ref	
P5	1.38(0.76-2.61)	0.287	0.94(0.52-1.86)	0.827
P6	1.38(0.76-2.61)	0.287	0.94(0.52-1.86)	0.827
S1	3.12(1.49-6.38)	0.017	3.51(1.56-6.89)	0.008
S2	3.14(1.51-6.54)	0.013	3.62(1.63-7.52)	0.006
S3	3.19(1.67-6.09)	0.000	3.67(1.83-7.25)	0.000
Live with parents				
Both parents	3.17(1.51-6.54)	0.002	3.65(1.67-7.93)	0.001
Mother only	3.61(1.47-9.03)	0.008	2.72(1.04-7.37)	0.019
Father only	3.69(1.51-9.07)	0.005	2.69(1.02-7.38)	0.047
Guardian	Ref		Ref	
Source of household income				
Farming	1.38(0.76-2.61)	0.287	0.94(0.52-1.86)	0.827
Formal employment	3.59(1.42-8.83)	0.012	2.71(0.79-7.26)	0.031
Business	3.15(1.52-6.54)	0.002	3.64(1.67-7.95)	0.001
Causal labor	Ref		Ref	

COR = Crude Odds Ratio; CI = Confidence Interval; AOR = Adjusted Odds Ratio

Source: Primary data, (2026)

Based on the findings, on the age group, the students aged between 10-12 were 1.08 times [AOR=1.08;95%CI=0.39-3.8, P-value=0.251], the students aged between 13-15 years were 3.65 times [AOR=3.65;95%CI=1.68-790, P-value=0.004], the students aged between 16-18 years were 2.72 times [AOR=2.72;95%CI=1.03-7.39, P-value=0.006] more likely to wash their hands. On the school level, the secondary level was 3.62 times [AOR=3.62;95%CI=1.63-7.52, P-value=0.006] more likely to the handwashing. On grade level, the students in S3 were 3.67 times [AOR=3.67;95%CI=1.83-7.25, P-value=0.000] more likely to handwashing. To the living with parents, students live with both parents were 3.65 times [AOR=3.65;95%CI=1.67-7.93, P-value=0.001] more likely to handwashing.

On the source of household income, students from farming family were 0.94 times [AOR=0.94;95%CI=0.52-1.86, P-value=0.827], the students from formal employment family were 2.71 times [AOR=2.71;95%CI=0.79-7.26, P-value=0.031], the students from business family were 3.64 times [AOR=3.64;95%CI=1.67-7.26, P-value=0.001] more likely to handwashing practices.

3.3 Discussion of Research Findings

The first objective of this study was to assess handwashing practices among primary and secondary school students in relation to critical handwashing moments in Gicumbi District, Rwanda. The findings revealed variations in students' handwashing practices, including the materials used, duration of handwashing, knowledge of proper handwashing procedures, and frequency of handwashing during important moments. Among the 384 participants, 41.4% reported using

soap and water to wash their hands most of the time, whereas 58.6% reported using water alone. Regarding the duration of handwashing, 31.0% reported washing their hands for less than 10 seconds, 52.3% for 10–20 seconds, and only 16.7% for more than 20 seconds. Furthermore, 43.2% of the respondents reported knowing the proper steps of handwashing, while 56.7% indicated that they did not know them. Despite these knowledge gaps, 77.6% of the students reported having received handwashing education at school.

Regarding the frequency and motivation for handwashing, 47.4% of the students reported washing their hands twice per day at school, while 44.0% identified teachers' advice as a motivation for practising handwashing. Concerning handwashing at critical moments, 30.5% of the students reported often washing their hands after using the toilet, while 47.4% reported always doing so. Similarly, 55.6% reported often washing their hands after cleaning the school compound, whereas 44.4% reported always doing so. Before eating, 50.0% of the students reported often washing their hands. The overall mean score for handwashing practices was 4.21, interpreted by the study as indicating practices ranging from often to always. Although this result suggests relatively frequent handwashing among the students, the findings on the use of soap, handwashing duration, and knowledge of proper procedures indicate that important gaps remain in the quality and consistency of hand hygiene practices.

These findings can be interpreted in relation to the Health Belief Model, which suggests that individuals are more likely to adopt preventive health behaviours when they recognize the benefits of the behaviour and perceive the risks associated with not practising it. In the school context, students may be encouraged to wash their hands by understanding its role in preventing the transmission of infectious diseases. The finding that teachers' advice motivated 44.0% of the respondents further highlights the potential importance of school-based health education and teacher encouragement in promoting handwashing. However, the high proportion of students who reported using water alone and the limited knowledge of proper handwashing procedures suggest that exposure to handwashing education does not necessarily translate into complete knowledge or consistent adherence to recommended practices.

The findings may be compared with those reported by Steiner-Asiedu et al. (2023), who examined handwashing practices among schoolchildren and reported that more than 90% practised handwashing with soap and water after using the restroom. Although both studies address hand hygiene among schoolchildren, the difference between the reported findings and those from Gicumbi District may reflect differences in the study populations, school environments, access to handwashing facilities, availability of soap, and health education practices. Nevertheless, the comparison emphasizes the importance of promoting handwashing with soap and water, particularly after using the toilet and before eating. The full bibliographic details of the cited study should be verified to ensure accurate referencing.

An important finding of the present study was the limited use of soap, particularly in relation to handwashing before eating. Although 50.0% of the respondents reported often washing their hands before eating, this figure does not establish whether they used soap during every handwashing occasion. The reported use of water alone by 58.6% of the participants suggests that handwashing may not always be performed using recommended materials. Washing hands with soap and water is an important preventive measure because it helps remove dirt and microorganisms that may contribute to the transmission of infectious diseases, including diarrhoeal illnesses. Therefore, handwashing education should emphasize not only the importance of washing hands at critical moments but also the correct technique, adequate duration, and use of soap.

The findings indicate that handwashing practices among primary and secondary school students in Gicumbi District were relatively frequent according to the reported mean score. However, the results also reveal gaps in the use of soap, knowledge of proper handwashing steps, and the duration of handwashing. These findings suggest that promoting effective hand hygiene requires more than encouraging students to wash their hands regularly. Schools should reinforce practical handwashing education, encourage consistent handwashing at critical moments, and ensure the availability of soap and functional handwashing facilities. Such measures could help improve adherence to recommended hand hygiene practices and contribute to the prevention of hygiene-related infections among schoolchildren.

4. CONCLUSION

This study assessed handwashing practices among primary and secondary school students in relation to critical handwashing moments in Gicumbi District, Rwanda. The conclusions were drawn based on the study's specific objectives and findings.

Regarding handwashing practices at critical moments, the findings indicated that students demonstrated generally good handwashing practices. However, continued efforts are necessary to promote consistent handwashing at all recommended critical moments.

Concerning environmental factors, the findings indicated that the availability, functionality, and accessibility of handwashing facilities, as well as the availability of water and soap, were significantly associated with students' handwashing practices.

Regarding socio-demographic and economic characteristics, age, school level, grade level, living arrangements (living with parents), and household income source were significantly associated with handwashing practices among students in Gicumbi District.

The study highlights the importance of improving the school handwashing environment and considering students' socio-demographic and household circumstances when designing interventions to promote appropriate handwashing practices at critical moments.

5. RECOMMENDATIONS

Based on the study findings, Gicumbi District authorities, local leaders, and school administrators should strengthen community-based awareness campaigns on the importance of handwashing at critical moments. Teachers, parents, and guardians should provide continuous health education to promote consistent handwashing practices among primary and secondary school students, both at school and at home.

Furthermore, school administrators and relevant education and health authorities should ensure the availability, functionality, and accessibility of handwashing facilities, with adequate water and soap. Regular monitoring and assessment of students' handwashing practices should also be conducted to identify gaps and guide appropriate interventions for sustainable improvement in handwashing practices among students in Gicumbi District.

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