

Hygiene Behavior and Its Influencing Factors among Primary School Children in Delanta District, North East Ethiopia

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Abstract

Background

Poor hygiene behaviours create a serious public health threat to school children. One of the major problems faced by school children are infections. The primary causes of infection are associated with poor water supply, poor sanitation, and poor hygiene behaviors, which can lead to decreased academic performance and increased likelihood of dropout; this, in turn, prevents children from attaining the numerous economic and health benefits associated with educational attainment. Thus, the study aims to assess hygiene behaviors and influencing factors among primary school children in Delanta District, North East Ethiopia, 2020.

Methods

An institution-based cross-sectional study was conducted among 407 primary school students of Delanta District, from February 1 to 29, 2020. The participants were selected using a systematic random sampling technique. Data were collected using pretested interviewer administered structured questionnaires. Descriptive statistics using frequency, proportion, and summary measures were done. Binary and multivariate logistic regressions were also done to identify independent variables associated with hygiene behaviors among primary school children. P value less than 0.05 and an adjusted odd ratio with 95% confidence interval noninclusive of one were considered as statistically significant.

Results

A total of 407 respondents were included with a response rate of 100%. The prevalence of positive hygiene behavior was 59.7% (95% CI 54.6%, 64.1%). Out of the total respondents, 205 (50.4%) had knowledge on water handling practices whereas 236 (58%) of the respondents had knowledge on latrine utilization but 258 (63.4%) of the respondents did not know the proper hand washing practices. In the multivariable logistic regression analysis, taking training on hygiene and sanitation (AOR 2.2; 95% CI 1.3, 3.6), having awareness on hand washing practices (AOR: 1.92, 95% CI (5.5, 15.7) and having knowledgeable on latrine utilization (AOR: 1.96, 95% CI 1.02, 2.67) demonstrated a statistically significant association with the hygiene behavior.

Conclusion

The overall findings revealed that the students had adequate knowledge on water handling and latrine utilization but poor knowledge on hand washing practices and a greater number of school children did not aware on water handling and hand washing practices. Therefore, focused strategies should be designed on promoting knowledge of school children on toilet use and hand washing practices.

Background

Poor hygiene means children are regularly ill and miss school, adults are not able to work to support their families, patients are at risk in healthcare environments, and people's dignity is compromised.

Forty percent of the world school-age children have faced worm infections. The primary causes of infection are associated with poor water supply, poor sanitation, and poor hygiene behaviors, which can lead to decreased academic performance and increased likelihood of dropout; this, in turn, prevents children from attaining the numerous economic and health benefits associated with educational attainment. And approximately 5,000 children die daily from water, sanitation and hygiene related diseases(1).

In the least developed countries, only 57% of schools had adequate drinking water facilities and 53% had adequate hygiene practices. In sub-Saharan Africa, diarrhea is the second most common cause of school child mortality which is prevented by effective and appropriate hand washing practice (2, 3).

In fact, as a result of unsafe water quality, sanitation, and poor hygiene behavior occurred that 842000 deaths annually and mostly in low-income countries account 361000 deaths of under five years of age children (4).

Studies have shown that the lack of adequate latrine facilities in primary schools can lead to high absenteeism and academic low performance in school children. Poor, inadequate, unhealthy latrine conditions, children are at risk for poor health, and they are unwillingness to be in school (5).

Millions of children are stunted and/or suffer from chronic illness due to lack of WASH. Half of all childhood malnutrition can be traced to WASH-related causes (6).

Each year, children lose 443 million school days because of water-related illnesses, of which 272 million are lost due to diarrhea alone. More than 40 percent of diarrhea cases in school children result from transmission in schools rather than homes (7).

Taking intervention measures on water, sanitation, and hygiene behaviours at school level improves the health of school students. Practicing safe water supply, proper hand washing, and latrine utilization in schools could also prevent diarrhea and gastrointestinal diseases.

In Ethiopia, 60% of schools lack access to water and the majority of the schools have traditional pit latrines which do not meet the minimum latrine standard. Moreover, the ratio of students to toilets is on average higher than national standards. Teachers and students who are unable to wash their hands or access clean and safe toilet facilities are exposed to health risks (8).

In Ethiopia, access to WASH has not resulted in higher education attainment. A significant number of students drop out of school; such that only 47% of students complete grade eight. This alludes to the

importance of WASH facilities to enhance student experience in schools and improve their learning environment(8).

Methods And Materials

Study area, period and design

An institution-based cross-sectional study was conducted from 1–29 February 2020 in Delanta District, South Wollo, Ethiopia. Delanta district is found 94 km west of Dessie, 322 km away east of Bahirdar, and 494 km North of Addis Ababa. According to 2012 Delanta district culture and tourism office report a total of 132,878 population of which 67,635 are males and 65,243 are females. Most of the population is engaged in agriculture, while some sections of the population are engaged in the Opal trade (9). There are 37 primary schools (eleven schools grades 1–4, 12 schools grades 1–6, and 14 schools grades 1–8). Generally, according to the 2012 academic year registration and class attendance, a total of 24,516(12,230 males and 12,286 females) students were attending their classes in 37 primary s schools.

Study participants, sample size determination and sampling procedure

All primary school children living in Delanta district were the source population. The Sample size was calculated based on the first specific objective was determined by using a formula for estimating a single population proportion by assuming a confidence level of 95%, a marginal error of 5%, and a 61.7% proportion of positive hygiene behavior among primary school children (10). Sample size for first objective was calculated using single population proportion formula and adding 10% non-response rate, the final sample size was 407. Out of the 37 primary schools found in the district, 10 primary schools were included in the study. The sample sizes were distributed to each school proportional to the average number of students. By assuming homogeneity between classes and grades, the participants were selected by using a systematic sampling technique after identifying an initial starting respondent by using a random method.

Data collection instruments and procedures

A standardized structured interviewer administered questionnaire was used to collect data. The questionnaire was translated to Amharic and then the pretest was done in a similar primary school in Delanta district which were not included in the study, prior to the actual data collection to assess the suitability of the questionnaire regarding duration, language appropriateness, content, validity, and question comprehensibility. Data collection was carried out by 2 clinical nurses and 3 B.Sc. environmental health professionals recruited from the health center and the health office. They received two days training on interview and sampling techniques by the principal investigator before three days of the actual study were done.

Data Quality management and analysis

The questionnaire was adapted from previous literatures (10). The questionnaire was translated in to Amharic version and then back to English to check for consistency. The data collectors and supervisors were trained for two days on interview and sampling techniques and common understanding was reached on the questionnaire. The instrument was Pre-tested on 5% of the sample from school, with the population having similar socio-demographic characteristics that were not included in the study. During the actual data collection, data was collected by trained health professional. The supervisors along with the principal investigator were checked for completeness of the collected questionnaires daily during the data collection period.

Data was entered into epi data version 4.6.2 software and was exported to SPSS version 24 for further analysis. Descriptive statistics was done using frequency, proportion, and summary measures. Binary logistic regression model was used to identify statistically significant associated factors with hygiene behaviour. First, bivariable analysis was made for each independent variable to the outcome variables. Those variables with P-value less than 0.3 were imported to the final model (multivariable analysis). In multivariable logistic regression analysis, variables with P-value less than 0.05 and 95% CI didn't cross one was considered as statistically significant variables. The fitness of the model was checked by Hosmer and Lemeshow goodness of fit test.

Ethical considerations

The ethical issues of this study was reviewed and approved by the Ethical review Committee of College of Medicine and Health Sciences, Wollo University. Permission letter was obtained from South Wollo Zonal Health Department and the respective districts and schools. Verbal informed consent was sought from all respondents' and teachers before the start of each interview. The right of the study participants to refuse participation or withdraw from the study at any time was respected.

Results

Socio-demographic characteristics of the respondents

A total of 407 respondents were participated in the study with a response rate of 100%. The majority (60.2%) of the respondents were male while 162 (39.8%) of the participants were female students. The mean age of the children was 14.9 years (± 0.52 SD). Most (58.5%) and (82.3%) of the respondents were in 15–19 age group and from rural residence. 100 (25.6%) of them missed the class in the past two weeks prior to data collection. 44 (44%) of the students who missed the class in the past two weeks due to diarrhea.

Table 1: Demographic factors of primary school students in Delanta district, Amhara region, North East Ethiopia, 2020.

characteristics		Frequency	Percent (%)
sex of student			
	Male	245	60.2
	Female	162	39.8
Residence			
	Urban	72	17.7
	rural	335	82.3
Maternal educational status			
	unable to read and write	257	63.1
	primary/secondary completed	139	34.2
	college and more	11	2.7
Father educational status			
	unable to read and write	210	51.6
	primary/secondary completed	178	43.7
	college and more	19	4.7
Parents occupational status			
	Farmer	203	49.9
	Merchant	168	41.3
	Government employee	38	9.3
Age Groups(years)			
	10-14	161	39.6
	15-19	238	58.5
	20-24	8	2
Missing class the past two weeks			
	yes	100	25.6
	no	307	74.4
Due to diarrhea disease			
	yes	44	10.8
	no	36	8.8

Predisposing factors of the respondents

In this study, 205 (50.4%) and 236 (58%) of the respondents had knowledge about water handling practices and latrine utilization, respectively. However, 258 (63.4%) of the respondents did not know the proper way of hand washing practices. 297 (73.0%) of the respondents were aware of latrine utilization, but the majority (86.2%) of them did not aware of water handling practices and more than half (55.8%) of the respondents were not aware of hand washing practices. According to the criteria defined in the methods part, children were grouped according to their positive or negative hygiene behaviour outcome, which permitted identifying factors affecting the hygiene behavior. 243 (59.7%) of the respondents had positive hygiene behaviour while 164 (40.3%) had negative hygiene behaviour. Among the school children who had adequate knowledge on water handling, 128 (62.4%) of them practiced positive hygiene behavior. In addition, among the students who had adequate knowledge on latrine utilization, 154 (65.3%) and 83(55.7%) had positive hygiene behavior on hand washing practices, respectively (Table3).

Among those who had awareness about latrine utilization, 199 (67.0%) of them practiced positive hygiene behavior, whereas 44 (40%) of the respondents who did not have awareness about latrine utilization had reported positive hygiene behavior. 128(52.7%) and 154(63.4%) of the respondents had

proper water handling and proper latrine utilization practices, respectively. 154 (63.4%) and 83 (34.2%) of the respondents properly practiced latrine utilization and hand washing practices respectively.

Table 2
Predisposing factors of primary school students in Delanta district, Amhara region, North East Ethiopia, 2020.

Characteristics	Frequency	Percent
Knowledge of water handling		
Know	205	50.4
do not know	202	49.6
Knowledge on latrine utilization		
Know	236	58.0
do not know	171	42.0
Knowledge of hand washing		
Know	149	36.6
do not know	258	63.4
Awareness of water handling		
Aware	56	13.8
Not aware	351	86.2
Awareness on latrine utilization		
Aware	297	73.0
Not aware	110	27.0
Awareness on hand washing		
Aware	180	44.2
Not aware	227	55.8

Multivariable analysis of factors influencing hygiene behavior

During multivariable logistic regression analysis, we had knowledge on latrine utilization 1.96 times (AOR: 1.96, 95%CI 1.02, 2.67) and had knowledge on hand washing 1.65 times (AOR: 1.65, 95%CI 1.02, 2.67) more likely to practice positive hygiene behavior compared to their counterparts respectively. Having awareness on hand washing practices 1.92 times (AOR: 1.92, 95%CI (5.5, 15.7), and on latrine utilization 4.5 times (AOR: 4.5, 95%CI 2.6, 7.9) was more likely to practice positive hygiene behavior compared to

their counterparts respectively. Receiving training on hygiene, sanitation was 2.2 times more likely to practice positive hygiene behavior compared to their counter parts (AOR 2.2; 95% CI 1.3, 3.6).

Table 3

final multivariable logistic regression model analysis of factors influencing hygiene behaviors of primary school children in Delanta district, North East Ethiopia, 2020

Characteristics	Hygiene behavior		COR(95% CI)	AOR(95%CI)
	Positive	Negative		
Knowledge of water handling				
know	128	77	1.26(0.85,1.87)*	1.05(0.63,1.74)
do not know	115	87	1	1
Knowledge on latrine utilization				
know	154	82	1.73(1.16,2.59)*	1.96(1.26,3.04)**
do not know	89	82	1	1
Knowledge of hand washing				
know	83	66	1.3(0.511,1.16)*	1.65(1.02,2.67)*
do not know	160	98	1	1
Awareness of water handling				
Aware	37	19	1.4(0.76,2.48)*	1.27(0.62,2.62)
Not aware	206	145	1	
Awareness on latrine utilization				
Aware	199	98	3.05(1.94,4.79)*	4.5(2.6,7.9)**
Not aware	44	66	1	1
Awareness on hand washing				
Aware	149	31	6.8(4.26,10.86)*	1.92(5.5,15.7)**
Not aware	94	133	1	1
Hygiene and sanitation training				
Yes	130	72	1.47(0.98,2.19)*	2.2(1.3,3.6)**
No	113	92	1	1
Presence of WASH club				
Yes	167	122	0.76(0.48,1.17)*	0.52(0.299,0.89)*
No	76	42	1	1

NB, * P < 0.05, **P < 0.01

Discussion

Poor sanitation, shortage of water, low water quality, and improper hygiene behaviors are the major causes of risk for the health of school children who spent long hours at the school compound. This study findings discussed based on the objectives outlined in the introduction and their influence on hygiene behavior among primary school children.

In this study, 59.7% of school children had positive hygiene behavior which is consistent with the study done in Angola, Ethiopia, and 52.3% of the participants practiced positive hygiene behaviour (11). The study was also consistent with the study conducted among school children in Tigray region, Ethiopia 61.7% of the participants had practiced positive hygiene behavior (10). This study is consistent with a study done in Kenya, the respondents reported that high knowledge, proper hygiene behavior and their institutions had appropriate WASH facilities were significantly less likely to report WASH related illness (12).

Knowledge may make a significant contribution to practicing positive hygiene behavior on latrine utilization 58% and hand washing practices 36.6% of the students. This finding is relatively comparable with a study done in 2016 in Oromia, Ethiopia, where 59% of the participants had good knowledge on hygiene behavior (13) and a study done in Tigray Region, Ethiopia showed that there is a significant difference on knowledge of latrine utilization 91.1% of the study participants did not know proper latrine but 71% of respondents had knowledge on hand washing practices in Tigray Region. This discrepancy might be large sample size (n = 528) in Tigray study (10). This finding was consistent with the study done in Hosanna, Ethiopia, where 69.9% of students had knowledge on hand washing practices (14).

These study findings revealed about 73.0% of respondents were aware on latrine utilization, and 55.8% of the respondents were not aware on hand washing practices. This result is higher than the study done in Tigray region, 80.5% of the respondents were not aware on latrine but 58.9% respondents were aware on hand washing practices (10). The variation might be the majority of the respondents in Delanta district visited model schools and trained on water, sanitation, and hygiene activities. The finding of this study is consistent with the study done in Kenya that school child awareness is one of the best ways to avoid getting sick and spreading illness (12).

From this research finding, the presence of hand washing facilities nearer to latrines had a significant influence on practicing positive hygiene behavior among school children. This study revealed 88.9% of school latrines did not have functional hand washing facilities. The research finding is consistent with a study conducted in Ghana, of 37 participating schools, 84% of them had not functional washing stations (15). The study was also consistent with the study done in North Shewa, Amhara, where 94% of primary schools lack functional hand washing facilities (16).

Getting water from protected sources in primary schools is a protective factor for poor hygiene behavior among primary school students. This study revealed that almost half of the schools (50%) access water from protected sources and students who have got water from protected sources, 72.3% of them are

more likely to practice positive hygiene behaviour than others. This finding is a different finding from a study conducted in Ginchi, Oromia, Ethiopia, where 96% of schools were not getting adequate water supply. This is might be mainly associated with budget differences and low awareness on the importance of the facilities (13).

Training on water, sanitation, and hygiene activities demonstrated a positive influence on the hygiene behavior of school children. This study revealed that 49.6% participants were trained on hygiene sanitation, and 64.4% of them had positive hygiene behaviors. The study finding was consistent with the study done in Tigray region, 60.3% in which students who were trained on hygiene sanitation practiced positive hygiene behavior counterparts (10).

This study found out that the presence of a hygiene sanitation club was significantly associated with practicing positive hygiene behaviour among school children.

Primary school clubs (WASH) in the district promote proper utilization, latrine, water handling, and hand washing practices. Similarly, School clubs (WASH) in Malawi promote the importance of clean water, good hygiene, and improved sanitation. Club members create their own songs, dramas, and games to communicate safe water and hygiene messages within their schools and communities (17). A study done in Tanzania shows that the top three activities conducted by school WASH clubs were latrine cleaning, promotion of hygiene behaviour, and practice through art, drama, and/or poetry either in the schools 63% or in the community 40% (18).

Strength and limitations of the study

Strength

It has never been done with similar studies in the study area before. Therefore, it can serve as a resource for those who want to work on this next study. Because the study was conducted on school children who are change agents, changing the hygiene behaviors of school children, it can also help to change the disease burden in students' families and their community at large.

Limitation

The short coming of this study was its cross-sectional nature of the study, which is unable to correctly demonstrate the way of relationship or association. Due to financial limitations, the study could not cover private schools. As a result, the finding is not generalized to all schools in the study area.

Conclusions And Recommendations

It is emerging evidence from this study that school students who had adequate knowledge or awareness on latrine utilization and hand washing practices were likelihood to practice positive hygiene behaviors.

Knowledge and awareness on latrine utilization and hand washing practices are influencing factors for practicing positive hygiene behaviours among primary school children.

According to the study findings, among the motivational factors trained on water, sanitation, and hygiene (WASH) activities was a significant indicator for practicing positive hygiene behaviors.

Obtaining water from protected sources and the presence of hand washing facilities near to toilets were the most enabling factors that had a significant influence on practicing positive hygiene behavior.

From the observation findings, latrines within the school compound were poor in quality, lacked cleanliness, not sex segregated, unable to ensure privacy, and the hand washing facilities were not functional. Hand washing after defecation and using soap during washing their hands were under reported practice. Unavailability of soap was the reason for not using soap during washing hands.

Recommendation

Operational recommendation

The Ministry of Education should develop a school curriculum with guidelines for hygiene practices. Such a curriculum, if well implemented, may result in improved hygiene behaviour which will lead to a reduction in diarrhea, morbidity, respiratory infections, and decreased WASH related illness dropout rates.

School directors should direct efforts towards promoting knowledge or awareness of school children on latrine utilization and hand washing practices, strengthening school WASH clubs, organizing and coordinating WASH training for students and teachers. They should also review the availability of water from protected sources provided in the schools with the aim of improving them so that students can use the water to drink and clean their toilets after use as a sign of their proper use.

Public primary school principals in the schools under study should regard hand washing facilities with water will also be located in these toilets, then the students will be in a position to wash their hands after visiting the toilets.

School management should try and improve on the privacy, type, and number of toilets in their schools but give more emphasis to the number of toilets. This will ensure that all students access the toilets without struggle.

In addition, parents should also be included in the activities and correct information regarding the use of sanitation facilities. It is important that schools, households, and communities work more closely together to change the hygiene behaviour of school children.

For research

Further research should be undertaken that incorporate a variety of methods to quantify the influencing factors of hygiene behaviors; to understand additional motivational issues, assess the impact of parental

health packages on children's hygiene behaviour. A similar study should be carried out in other counties in Ethiopia to compare the study findings with this one which was carried out in Delanta district.

Declarations

Authors' contributions:

All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Availability of data and materials:

All data generated or analyzed during this study are included in this article. The data that support the findings of this study are also available from the corresponding author upon reasonable request.

Ethics approval and consent to participate:

Ethical clearance was obtained from the Ethical Review Committee of Wollo University Research Ethics Review Committee reviewing the ethical acceptability of the research. Those study participants who were selected to participate were informed about the purpose of the study, the importance of their participation, and their ability to withdraw at any time. Written consent was obtained prior to data collection.

Consent for publication:

Not applicable.

Competing interests:

The authors declare that they have no competing interests

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