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Research Article

Hand Washing Practice and Its Determinants Among Primary School Children in Sodo Zuria District, Southern Ethiopia[4]

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Abstract

Introduction: In Ethiopia, hand washing is still being practiced to a very low extent even in critical moments such as before eating and after using a toilet. Despite its ample health benefit, many people do not practice hand washing.

Objective: This study aimed to assess the practice of handwashing and its determinants among primary school children in Sodo Zuria woreda, Southern Ethiopia, 2020.

Methods: Institution-based cross-sectional study was employed with a sample size of 673. A structured and pretested data collection tool was used to collect the data. Data were entered using Epi Data 3.2 exported to SPSS 20 for further analysis. Then bivariate analysis and multivariable analysis were employed. Statistical significance was declared at P-value < 0.05 with 95% CI.

Result: The overall level of practice of handwashing among students was found to be 43.8%. And only 12.5% of students had reported washing their hands with soap before a meal. Knowledge of hand washing, attitude toward handwashing, required time to fetch water from water source, soap/ash & water present for handwashing at home, availability of hygiene and sanitation club in school and celebrating handwashing day in school have a positive association with handwashing practice.

Conclusion: This finding showed that level of handwashing practice was low. Practice of the study participants was affected by attitude towards hand washing, availability of water, access to school clubs and mini - media working on hygiene and sanitation. Coordinated effort is expected from stakeholders to change the existing situation.

Key words: Knowledge, Attitude, Hand Washing Practice, Soddo Zuria Woreda

Background

Hand washing has been globally acknowledged and accepted as a low-cost, simple & effective technique in preventing communicable diseases [1]. It is the single most preventive measure to reduce the spread of contagious diseases. Despite this fact, people do not engage in handwashing at a critical time, such as after using the toilet, before eating and cooking food [2,3]. Hand washing is the single most effective way to prevent the spread of communicable diseases [4]. Hand hygiene is a better option for disease prevention than any single vaccine. It prevents diarrheal diseases and pneumonia, which together are responsible for the majority of child deaths globally [5].

Nearly 80% of the world's communicable diseases are transmitted by a mere touch of unhygienic hands [6]. Globally about 400 million children are infected with worms which causes malnutrition and impaired learning capacity [7]. In Ethiopia, more than 250,000 children die annually from sanitation and hygiene-related diseases. Some 60% of the disease burden is related to poor sanitation and hygiene in the country [8]. Globally about 443 million school days are lost each year due to water-related illnesses, making it a leading factor for school absenteeism in the developing world [9]. School-aged children suffer from debilitating diseases like diarrheal and respiratory infections, hepatitis A, urinary tract infections and intestinal worms that cause suffering and reduce the effectiveness of education [10].

Even though students have good knowledge and information about proper hand washing practices, their practice is low, which indicates minimal knowledge translation into significant behavior change [11-14]. But evidence confirmed that students with a positive attitude were more likely to practice proper handwashing [14-16]. Most schools in Ethiopia and other sub-Saharan African countries do not meet the minimum standard for hand hygiene facilities [16,17]. Regular access to soap and clean water at schools is very low [11,12].

School children did not practice proper handwashing with soap, both in school and at home due to unavailability and inaccessibility of handwashing facilities such as soap, towels and clean running water [12].

School children's handwashing practice can be related to socio-demographic characteristics such as sex, age, residence, grade, and mother's education level [13]. I can also be affected by referent pressure, media advert and community hygiene promotion activities [14]. Policy environment, resources, and availability of sanitation facilities are important determinants [3].

This study will provide insight on personal, social and institutional factors that influence hand washing practice. Information obtained from this study will help local planners, policymakers and other stakeholders in implementing school-based health programs. Therefore, this study is aimed to assess the knowledge, attitude, and practice of handwashing and its associated factors among primary school children in Soddo Zuria woreda, Southern Ethiopia.

Methods

Study Design and Setting

Institution based cross-sectional study was conducted in Sodo Zuria district, Wolaita Zone, SNNPR, from April 1-30, 2020. Sodo is located 327, to south of the capital Addis Ababa. The total population of the district is 117,884, of which 24,897 are students. The water supply coverage of the woreda is 46%.

Source and Study Population

The source population of this study included all selected primary school (5-8 grades) students of Sodo Zuria woreda.

Sample Size Determination

The sample size was calculated using single population proportion formula based on the following assumptions: proportion of knowledge of hand washing (P= 72.57) [14], D=5%, design effect of 2. The final sample size was calculated to be 673.

Sampling Technique

Multistage sampling method was used to select study participants. From total (25 primary) school in Sodo Zuria woreda, 8 were selected by simple random sampling. Then, the sample was proportionally allocated to each school according to their student number. Finally, the required number of students was selected by using the simple random sampling technique from the list (roster) obtained from the selected schools.

Data Collection Procedure

Interviewer administrated questionnaire with observation was used to obtain information. The questions in the questionnaires include multiple choice questions which address: socio demographic characteristics, knowledge, attitude and practice of hand washings, and availability of hand washing facility at school. The questionnaire is adopted from previous related literatures and Ethiopian demographic and health survey, 2016.

Data were collected by six experienced health professionals (environmental health, public health nurse) who have good communication skill. Three environmental health experts supervised the data collection process on daily basis. Data collectors had informed the students about all details of the research purpose and procedures and what is expected from them, potential risks and benefits to encourage accurate and honest responses. And also the way how the information had handled and also responds to any questions raised by study participants.

Operational Definition of Terms

Hand Washing At Critical Times

Washing hands with soap at critical times (after using the toilet and before eating, before preparing food, before feeding children and after cleaning child buttock).

Good Practice

Those students who scored above mean score in practice questions.

Poor Practice

Those students who answer below mean score of practice questions.

Hand Washing Facilities

This includes running water, washing stations (stands/sinks/ basis toilets and soap.

School Children

Are young children attending primary education, usually still under the care/guidance of parent or guardians.

Positive Attitude

Those students who could answer/score above mean score from the questions that measure attitude.

Negative Attitude

Those students who could answer/score below mean score from the questions that measure attitude.

Good Knowledge

Those students who scored above mean score in knowledge questions.

Poor Knowledge

Those students who scored below mean score in knowledge questions.

Data Quality Assurance

Before data collection, the questionnaires were first prepared in English and translated into Wolayttato doonaa (local language) by language experts and back to English by another person to keep the internal consistency of the questionnaires. Cronbach's alpha was calculated to check for the consistency of questions. Three days training was given to data collectors and supervisors by the principal investigator before data collection. A pre-test was conducted in another schools on 5% of the total sample size which are not included in the main study area. Based on the pretest, questions were revised, edited and the necessary corrections were made accordingly. The overall data collection process was coordinated and supervised by three supervisors. Student leaders were participated accordingly in issues that need their involvement.

Data Analysis Technique

Data were checked for completeness, edited manually, coded and then entered into Epi Data version 3.0 and exported into SPSS version 20 for clearance and analysis. Descriptive analysis was employed to compute percentage mean, median, standard deviation and interquartile range. Independent variables which have association with the outcome variables during bivariate logistic regression and those with p-value of less than 0.25 was considered as candidate for multivariate logistic regression. The multivariable analysis was performed following bivariable analysis to adjust for possible confounders and to come up with significant predictors of the outcome variable. Both crude and adjusted odds ratios with 95% confidence interval were reported. Multicollinearity tests were conducted using the variance inflation factor (VIF) and tolerance test. Hosmer and Lemeshow goodness of fit test was used to check for model fitness. Variables with a p-value of less than 0.05 were considered as statistically significant.

Ethical Consideration

The ethical clearance was obtained from the Ethical Review Committee of the Pharma College of Health Sciences, Hawassa. After the approval, the official letter of cooperation was written to respective bodies then permission letters were obtained as needed before data collection. Informed consent was collected from each respondent before data collection to maintain privacy and confidentiality. The participants were told they had the right to refuse to participate totally or at any time if they are not comfortable.

Result

Socio-Demographic Characteristics

In this study, 664 students volunteered to participate, yielding a response rate of 98.6%. The median age of the respondents was 14 years (IQR=3), and the majority (63.6 %) were male. More than a fourth 186(28%) of them were in fifth grade, and majority (91.1%) were from rural residence (Table 1).

Socio-Demographic Characteristics of Parents of the Study Participants

The median of family size of the respondents was 7.0 with IQR = 3.0. Regarding parents' level of education, majority of mothers (44.6%) do not attended formal education while only one fourth of fathers do not attended formal education. Moreover, majority of the mothers (77.4%) were housewives, and 471(70.9%) of fathers were farmers (Table 2).

Knowledge, Attitude and Practice of Hand washing Among Study Participants

Nearly two third 417(62.8%) of the study participants have adequate knowledge. From the respondents 299 (45%) had good attitude toward hand washing. Only less than half 291(43.8%) of study participants have good practice of hand washing among students.

Table 1: Socio-demographic characteristics of the study participants.

Variable	Category	Hand washing practice		COR (95%CI)	P-value
		Poor	Good		
		Count (%)	Count (%)		
Sex	Male	302(45.5%)	120(18.1%)	0.360(0.259-0.500)	0
	Female	115(17.3%)	127(19.1%)	1	
Grades	Fifth	121(18.2%)	65(9.8%)	0.525(0.341-0.808)	0.003
	Sixth	120(18.1%)	44(6.6%)	0.885(0.573-1.367)	
	Seventh	80(12%)	72(11%)	0.831(0.531-1.295)	
	Eighths	96(14.5%)	66(10%)	1	
Religion	Orthodox	50(7.5%)	49(7.4%)	1.877(1.219-2.890)	0.004
	Catholic	6(0.9%)	0(0%)	2327(0.0000-0.278)	
	Protestants	361(54.4%)	198(29.8%)	1	
Residence	Urban	18(2.7%)	41(6.2%)	1.873(1.052-3.335)	0.033
	Rural	399(60.1%)	206(31%)	1	

Table 2: Socio-demographic characteristics of parents of the study participants.

Variable	Category	Hand washing practice		COR (95% CI)
		Poor	Good	
Mothers' education	No formal education	220(33.1%)	76(11.45%)	0.822(0.491-1.376)
	Grade 1-4	51(7.68%)	64(9.64%)	1.427(0.794-2.562)
	Grade 5-8	70(10.54%)	51(7.68%)	1.630(0.912-2.912)
	Grade 9-12	45(6.78%)	11(1.66%)	1.935(0.962-3.896)
	Above 12	31(4.67%)	45(6.78%)	1
Mothers' occupation	Housewife	354(53.31%)	160(24.1%)	1.432(0.894-1.935)
	Farmer	18(2.71%)	19(2.86%)	0.987(0.732-1.542)
	Employed	39(5.87%)	68(10.24%)	0.761(0.576-1.007)
	Daily laborer	6(0.9%)	0(0%)	1
Fathers' education	No formal education	134(20.18%)	35(5.27%)	0.568(0.356-0.905)
	Grade 1-4	47(7.08%)	44(6.63%)	0.809(0.472-1.385)
	Grade 5-8	119(17.92%)	85(12.8%)	0.917(0.590-1.424)
	Grade 9-12	37(5.57%)	33(4.97%)	0.820(0.457-1.469)
	Above 12th	80(12.05%)	50(7.53%)	1
Fathers' occupation	Farmer	350(52.71%)	121(18.2%)	0.545(0.378-0.784)
	Employed	12(1.81%)	0(0%)	0.764(0.236-2.474)
	Daily laborer	19(2.86%)	5(0.75%)	
	Merchant	36(5.42%)	121(18.2%)	1

Institution Related Factors for Student's Hand Washing Practice

Regarding to the availability of hand washing facility, more than half of the study participants reported that unavailability of hand washing facility in school while less than half were reported as having at home. Moreover, only 15% had reported the presence of water and soap, and 33% had reported having of gender separated hand washing facility in school (Table 3).

Table 3: Institution related factors for hand washing in primary schools in Sodo Zuria, South Ethiopia may, 2020.

Variable	Category	Hand washing practice	
		Poor	Good
Hand washing facility in school	Available	157	141
	Not available	216	150
Hand washing facility at home	Available	197	155
	Not available	176	136
Availability of Water & soap/ash	Yes	74	26
	No	299	265
Availability of separate sex hand washing facility	Yes	206	115
	No	167	176
Time required to fetch water from water source	<15min	71	55
	15-30min	64	124
	>30min	238	112
Presence of Soap/ash and water at home?	Yes	231	200
	No	142	91

Social Factors for Participants of the Study for Hand Washing

Regarding to referents for hand washing, 88.7% and 82.7% had reported on pressure from parent and teacher respectively, while 58.3% from friends. Despite more than half had reported on availability of hygiene and sanitation club in school, only 13.6% had reported on the school celebrates hand washing day (Table 4).

Table 4: Indicates social factors for student's hand washing in primary schools in Sodo Zuria, South Ethiopia may, 2020. n = 664.

Characteristics		Hand washing practice	
		Poor	Good
Pressure from parents to wash your hands	Yes	344(51.8%)	245(36.9%)
	No	29(4.37%)	46(6.9%)
Pressure from friends to wash your hands	Yes	259(39.0%)	157(23.6%)
	No	114(17.2%)	134(20.2%)
Pressure from teachers to wash your hands	Yes	352(53.0%)	233(35.1%)
	No	21(3.16%)	58(8.73%)
Pressure from health workers to wash hands	Yes	367(55.3%)	257(38.7%)
	No	6(0.9%)	34(5.12%)
Availability of hygiene and sanitation club	Yes	199(29.9%)	164(24.7%)
	No	174(26.2%)	127(19.13%)
The club broadcast hand washing promotion through mini-media	Yes	159(23.9%)	126(18.98%)
	No	214(32.2%)	165(24.85%)
The school celebrates Hand Washing Day	Yes	26(3.92%)	36(5.42%)
	No	347(52.3%)	255(38.4%)

Factors Associated with the Level of Handwashing Practice

Multivariate binary logistic regression analysis identified six independent factors affecting handwashing practice of students: knowledge of handwashing (AOR:1.86(95%CI:1.23,2.81), attitude towards hand washing, (AOR:1.80(95%CI:1.20,2.70) availability of hygiene and sanitation club in school (AOR:1.57(95%CI: 1.11,2.24), required time to fetch water from the water source (AOR:1.71(95%CI:1.11,2.62), presence of soap/ash and water for handwashing at home (AOR:1.89(95%CI:1.28,2.78), and the school celebrates handwashing day (AOR: 2.32(95%CI:1.41,3.82).

The odds of having good practice of handwashing was about 2 times [AOR: 1.86; 95% CI: 1.23, 2.81] higher among students who have adequate knowledge when compared to those who had inadequate knowledge of handwashing practice. The odds of good practice of handwashing was about 2 times [AOR: 1.80; 95% CI: 1.20, 2.70] higher for those students who had positive attitude while compared to their counterparts. The level of good practice of handwashing was significantly associated with availability of school hygiene and sanitation club. The odds of having good practice of handwashing was 1.5 times [AOR: 1.57; 95% CI: 1.11, 2.24] higher among students who had reported availability of hygiene and sanitation club in their school compared to their counterparts.

The time required to fetch water was significantly associated with the level of practice of handwashing. The odds of good practice of handwashing was about 2 times [AOR: 1.71; 95% CI: 1.11, 2.62] higher for those who had required 15-30 minutes to fetch water compared to those required more than 30 minutes. Availability of soap/ash and water at home showed a positive association with practice of hand washing among students. Students who had reported the presence of soap/ash and water in the family were about 2 times [AOR: 1.89; 95% CI: 1.28, 2.78] more likely practice hand washing when compared to their counterparts.

Students from schools that celebrates hand washing days were about 2 times [AOR: 2.32; 95% CI: 1.41, 3.82] more likely to practice hand washing compared to those students whose schools do not celebrate hand washing day (Table 5).

Table 5: Bivariate and Multivariate logistic regression analysis of factors associated with practice of hand washing in primary schools in Sodo Zuria, South Ethiopia may, 2020. (n = 664).

Respondents characteristics	Category	Respondents practice		COR(95%CI)	AOR(95%CI)
		Poor	Good		
Age				1.06(0.97,1.15)	1.06(0.97,1.16)
Sex	Male	244	178	1.36(0.96,1.90)	1.10(0.73,1.66)
	Female	129	113	1	1
Residence	Urban	18	41	0.65(0.36,1.15)	0.90(0.46,1.77)
	Rural	399	206	1	1
Mothers education	No formal education	220	76	1	
	Primary	51	64	0.62(0.42,0.8 9)	0.71(0.45,1.10)
	Secondary	70	51	0.69(0.43,1.12)	0.69(0.39,1.21)
	Above secondary	45	111	0.82(0.48,1.41)	0.96(0.51,1.97)
Mothers occupation	Housewife	31	45	1	1
	Farmer	354	160	1.5(0.80,2.79)	1.40(0.61,3.19)
	Employed	18	19	0.50(0.31,0.81)	0.88(0.47,1.64)
Fathers education	No formal education	134	35	1	
	Primary	47	44	1.03(0.69,1.53)	
	Secondary	119	85	0.65(0.39,1.06)	
	Above secondary	37	33	1.14(0.69,1.87)	
Fathers occupation	Farmer	80	50	1	1
	Employed	350	121	1.05(0.63,1.74)	1.12(0.64,1.96)
	Merchants	19	5	0.56(0.37,0.85)	0.71(0.42,1.20)
Knowledge of hand washing	Inadequate	274	143	1	1
	Adequate	99	148	2.30(1.59,3.33)	1.86(1.23,2.81)*

Attitude toward hand washing	Negative	249	116	1	1
	Positive	124	291	1.82(1.32,2.50)	1.80(1.20,2.70)*
Hand washing facility in school	Available	157	141	0.97(0.71,1.34)	
	Not available	216	150	1	1
Hand washing facility at home	Available	197	155	0.83(0.61,1.14)	
	Not available	176	136	1	
water & soap/ash available in school	Yes	74	26	1.09(0.70,1.69)	
	No	299	265	1	
Availability of gender separated hand washing facility	Yes	206	115	1.23(0.88,1.71)	0.98(0.66,1.45)
	No	167	176	1	1
Required time to fetch water from water source	<15 min	71	55	0.56(0.35,0.87)	0.48(0.30,0.78)
	15-30 minutes	64	124	0.98(0.68,1.41)	1.71(1.11,2.62)*
	>30 minutes	238	112	1	1
Soap/ash & water Present for hand washing at home	Yes	231	200	1.72(1.22,2.42)	1.89(1.28,2.78)*
	No	142	91	1	1
Pressure from parents	Yes	344	245	0.72(0.44,1.18)	0.81(0.47,1.39)
	No	29	46	1	1
Pressure from teachers	Yes	259	157	1.30(0.94,1.80)	1.40(0.88,2.22)
	No	114	134	1	1
Pressure from friends	Yes	352	233	1.25(0.84,1.86)	
	No	21	58	1	
Availability of hygiene and sanitation club in school	Yes	199(29.9%)	164	1.87(1.35,2.57)	1.57(1.11,2.24)*
	No	174	127	1	1
The school celebrates Hand Washing Day	Yes	26	36	2.27(1.45,3.55)	2.32(1.41,3.82)*
	No	347	255	1	1

Discussion

According to this study, level of knowledge of the hand washing among the students was 62.8% (95%CI: 59.8-72.9)) which was in line with study done in Arba minch (72.5%), and Hossana (69.9%). This might be due to majority of the study participants who had good knowledge had positive attitude toward hand washing (53.5%). The level of good practice of hand washing was 43.8% (95%CI: 40.4, 48.3). This finding was higher than study conducted in Arba Minch [14], and Sebeta town Oromia region [11] whereas lower than study which was done in Hossana town [15]. This might be due to variation in study period, availability of hygiene and sanitation club, and its functionality. In addition, lower level of good practice in this study when compared to Hossana town was due to variation in study area that means the former one was conducted in urban area. This might be due to lack of hand hygiene resources in our countries and there may be lack of knowledge about Hand washing compliance. Furthermore, in this study, the level of hand washing practice at critical time was varying through components of hand washing practice.

Student's level of knowledge of hand washing was associated with level of practice of hand washing in this study. Students who had good knowledge on hand washing were more likely had practice hand washing in good manner. This might be due to students who were well informed with critical times, benefits, and consequences of not washing their hands were practice hand washing properly [16]. Availability of soap/ash and water was significantly associated with hand washing practice. Students who had reported the presence of hand soap/ash and water in home was more likely practice handwashing properly. This finding was in line with a study conducted in Arba Minch [14]. The possible reason might be due to the promotion of the importance of soap/ash and water through health extension program at community level [17].

The presence of hygiene and sanitation club in school was significantly associated with hand washing practice of the students. The likelihood of hand washing practice was higher for students

who had reported on the presence of hygiene and sanitation club in the school. This finding implies that the government should strengthen the existing strategies which focused on availing the sanitation club. Another interesting finding in this study was the association between good practice of hand washing and celebration of hand washing day in the school. Students who were from schools which had celebrated hand washing day were more likely practice hand washing properly when compared to their counterparts. This finding implies that schools should promote hand washing day through min-media and inform the scheduled day to hygiene and sanitation clubs. The strengths of the study were it covered large sample size with a higher response rate. Since this is a cross sectional study, it is difficult to know the cause and effect. Moreover, over reporting of desirable practices due to social desirability bias can be considered as limitations of the study.

Conclusion

The result of this study showed that hand washing practice was low. The level of practice was determined by knowledge of hand washing, attitude toward hand washing, availability of hygiene and sanitation club in school, required time to fetch water from water source, presence of soap/ash and water for hand washing at home, and the school celebrates hand washing day. Stakeholders have to focus on efforts like building hygiene and sanitation facilities in school, leading behavior change communication campaigns and strengthening and establishing sanitation clubs.

Consent

Informed consent was taken from a parent of the study participants after informing them the aim of the study and they have been told as they can withdraw from the study at any step if they feel so as well as confidentiality was granted.

Data Availability

It is available on request from corresponding author.

Conflict of Interest

The authors declare that they have no competing interests.

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