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***FACTORS ASSOCIATED WITH PERSONAL HYGIENE PRACTICE AMONG
SCHOOL CHILDREN IN BODA PRIMARY SCHOOL AROUND GINCI TWON, WEST
SHOA, OROMIA, ETHIOPIA, 2016.***

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ACRONYMS/ABBREVIATIONS

1. **CI:** confidence interval
2. **G:** Grade
3. **OR:** Odds ratio
4. **PPS:** Proportionate to population size
5. **SPSS:** Statistical Package for Social Science
6. **SRS:** Simple random sampling
7. **Str.sm:** Stratified sampling method
8. **UNICEF:** United Nation children's fund (formerly united nation international children emergency fund).
9. **WHO:** World Health Organization

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ABSTRACT

INTRODUCTION: Poor personal hygiene creates a serious public health threat to school children. Due to poor personal hygiene practices, the increasing burden of communicable diseases among school children remains a concern on the public health agenda in developing countries.

OBJECTIVE: To assess the factors associated with personal hygiene practice among school children in Boda primary school around Ginci town, west Shoa, Oromia, Ethiopia, 2016.

METHODS: A school based cross-sectional study design supported by qualitative approach was conducted among school children in Boda primary school children from February to March 2016 among 354 school children through stratified sampling method to select the study subject. Data was collected using structured and pre-tested questionnaire face to face interview. Data entry, cleaning, editing and analysis were done using Epi info version 3.5 and SPSS statistical software version 21.0. To identify independent variables which had statistically significant association, bivariate and multivariate analysis using logistic regression was employed.

For qualitative method: Data was collected by principal investigator using in depth interview among school teacher and school director (selected by purposive sampling method) and data was analysed using thematic analysis.

RESULTS: About 59 % school children had good knowledge about personal hygiene and about 54.2% had poor personal hygiene practice. Factors significantly associated with personal hygiene practice at p value <0.05 were grade level(COR= 2.09 (95% CI(1.34,3.33)), age(COR=2.53 (95% CI(1.63, 3.93))), family occupation(COR =2.07(95% CI (1.12,3.84)) , maternal education status (AOR =2.74(95% CI(1.47,5.13))), being member of hygiene and sanitation club(COR=1.83 (95 % CI(1.01, 3.35))), availabilities of hygiene facilities (AOR=2.44(95% CI(1.35,4.42))) and knowledge about personal hygiene (AOR=2.76(95%(CI(1.48,5.17))).

CONCLUSION AND RECCOMENDATION: About 59 % school children had good knowledge and 54.2% had poor personal hygiene practice. Grade level, age, family occupation, family education status, being member of hygiene and sanitation club, availabilities of hygiene facilities and knowledge about personal hygiene were significantly associated with personal hygiene practice. Therefore, health education and promotion on personal hygiene is recommended as intervention in the rural primary schools.

Key words: Factors, personal hygiene practice, Boda primary school, Ginci town.

1. INTRODUCTION

1.1. Background

Personal hygiene is a personal care includes bathing, hand washing, cleaning of teeth, washing of the hair and clothes , finger nail trimming and washing foot. Personal hygiene helps to prevent the spread of germs and is also fundamental to the prevention of many diseases, particularly contagious diseases (1-3). Personal hygiene is a public health tool that is used for disease prevention and health promotion in individuals, families and communities (4). The most important measure in any infection control program is hand hygiene (5). Most of the infections disease occurred among children in developing countries were due to poor sanitation and hygiene practice (6, 7).

School is considered as a best setting for the positive health and prevention of diseases, awakening health consciousness in which the child grows and develops (8). Children are more receptive to learning and are very likely to adopt healthy behaviours at a younger age. Children are generally more receptive to new ideas and can more easily change their behaviour and promote improved practices within their families and among their communities. They can also be agents of change by spreading what they have learned in school to their family and community members (9, 10).

Proper personal hygiene especially hand washing with soap can prevent different communicable disease particularly diarrheal disease. Multifaceted interventions (which target hand washing with soap and include water, sanitation and hygiene promotion) are likely to provide the greatest opportunity to improve child health outcomes in remote communities. In remote communities, where high rates of disease among children reflect serious environmental contamination, the need for personal hygiene particularly hand washing with soap is much greater (11).

The focus of good personal hygiene is to prevent diseases, injuries and other health conditions through surveillance and the promotion of healthy behaviour in aspects relevant to human health and it may prevent health problems from happening or re-occurring. Majority of the problems affecting school children are preventable by promotion of hygienic practices. Proper personal hygiene particularly hand hygiene can prevent gastrointestinal illness (31%) and respiratory illness (21%) (12).

Good personal hygiene practice can decrease student dropout and absent from class due to communicable related disease, and also improve their learning skills. Improving school children hygiene practices are more able to integrate hygiene education into their daily lives, and can be effective messengers and agents for change in their families and the wider community (13).

Previous study done globally including our country was mainly focus on knowledge, attitude, practice and behaviour on personal hygiene but this research will focus on factors associated with personal hygiene practice among school children.

1.2. Statement of the problem

Schools, particularly those in rural areas, often completely lack drinking-water, sanitation and hand washing facilities. Schools with poor water supply, sanitation and hygiene condition are high-risk environments for children and staff, and exacerbate children's particular susceptibility to environmental health hazards (13). Poor personal hygiene, in combination with insanitary conditions and contaminated water, creates a serious public health threat to school children. Globally, 2.5 billion people had inadequate sanitation facilities and living with poor personal hygiene (14).

Due to inadequate sanitary conditions and poor personal hygiene practices, the increasing burden of communicable diseases among school children remains a concern on the public health agenda in developing countries (15). In many countries there exists a high prevalence of water and sanitation related diseases, causing many people, children in particular, to fall ill or even die (16). Majority of the problems affecting school children are preventable by promotion of hygienic practices through proper health education, however, personal hygiene among school children was poor (2).

One of the major problems faced by school children are infections. The primary causes of infections are contaminated water and poor sanitation, as well as poor hygienic practices. Diarrhoeal diseases, skin diseases, worm infestations and dental diseases are most commonly associated with poor personal hygiene (17). Poor personal hygiene is related to nutrition deficiencies, worm infestations and diarrhea. It adversely affects the attendance at school and learning process (18). Personal hygiene practice among school children was poor in different parts of world. A previous study done in Bangladesh (9), India (17) and Nigeria (15) revealed that the students had poor status regarding personal hygiene practices.

Providing health education on personal hygiene can increase the practice of personal hygiene (21) and quality health education on personal hygiene as a mean of primary prevention of illnesses in primary schools (1). Personal hygiene practice can be increased among school children through increasing their Knowledge and awareness on personal hygiene (19-20).

Previous studies have indicated that personal hygiene practice among rural primary school children in Ethiopia was poor (19-20). Globally including our country there is limited data that indicated the factors associated with personal hygiene practice among rural primary school children. Therefore, the aim of this study is to determine the factors associated with personal hygiene practice among rural primary school children which will give some clues to concerned body how to improve the practice of personal hygiene in order to reduce morbidity and mortality associated with communicable diseases that is related to poor personal hygiene among school children.

1.3. Significance of the study

The practice of Personal hygiene among rural primary school children in Ethiopia was poor (19-20). Therefore, determining the factors associated with personal hygiene practice among school children would help local school health services provider or the concerned body how to increase the practice of personal hygiene in order to reduce morbidity and mortality associated with communicable diseases that is related to poor personal hygiene among school children in the study area. The study result will be helpful as a baseline data for future school-based hygiene intervention programs in rural Ethiopian schools.

The study result will be helpful in planning and implementation of strategies to improve personal hygiene practice and useful in the development of future interventions aiming to improve personal hygiene practice among school children. Also the findings of this study can be used as a baseline data for policy makers in formulation, health of school children guideline to prevent disease that related to poor personal hygiene among school children .In addition to this, the result of this study will be helpful as a baseline data for further researchers.

2. LITERATURE REVIEW

2.1. Introduction

This section presents the result and idea taken from different studies that was reviewed from different literatures including journals, articles and others literature related to this topic that deals with personal hygiene ,impact of poor personal hygiene, knowledge on personal hygiene ,practice of personal hygiene and factors associated with personal hygiene practice among school children.

2.2. Personal hygiene

Personal hygiene involves all measures taken by the individual to preserve his or her own health. Personal hygiene is a personal care includes regular bathing, hand washing, cleaning of teeth, oral hygiene, washing of the hair and clothes, keeping cleanliness of the nail and foot. The aim of personal hygiene is to promote standards of personal cleanliness, within the setting of the condition where people live. Good personal hygiene, directly aids in disease prevention and health promotion. The most important aspect of maintaining good health is good personal hygiene (1).

Good personal hygiene practice in primary school children could be effective towards preventing infectious diseases. Good personal hygiene now forms part of primary health prevention strategy, this has been found to be effective by reducing morbidity and mortality in children. Hand washing habit with soap or ash before meals and after defecations, and keeping finger nails clean plays an important role in preventing children from infection of intestinal parasites (22).

Good hygiene is an important barrier to many infectious diseases, including the faecal–oral diseases, and it promotes better health and well-being. Proper hand washing is one of the most effective ways of preventing the spread of diarrhoeal diseases. Pathogens cannot be seen on hands, and water alone is not always sufficient to remove them. Soap and wood ash are both cleansing and disinfecting agents when used with water and can be used to kill pathogens on hands and utensils. Regular bathing and laundering prevents hygiene-related diseases such as scabies, ringworm, trachoma, conjunctivitis and louse-borne typhus (23).

2.3. Impacts of poor personal hygiene

Study done in India among rural school going children showed that Prevalence of intestinal parasitic infection was significantly high among children having poor personal hygiene particularly having dirty untrimmed nails and poor hand washing practices (24).

Inappropriate hygiene practice is one of the most important reasons for the transmission of infectious diseases (25). Study done in India showed that Diarrhoeal diseases, skin diseases, worm infestations, dental diseases, nutrition deficiencies are associated with poor personal hygiene. It adversely affects the attendance at school and learning process (17-18). Almost three-fourth of the primary school children (74.04%) were suffering from one or more morbidities related to poor personal hygiene. The most common morbidity reported by them was diarrhoea (56.73%), followed by fever with or without cough / cold (54.81%), passage of worms in stool (45.19%), head lice (40.38%), scabies (39.42%), dental caries (9.62%) and multiple boils (7.69%) (17).

Due to poor personal hygiene practice, Intestinal parasitic infections were highly prevalent health problem among school children in our country. Study done in Dagi primary school revealed that the overall prevalence of intestinal parasites infection among students of Dagi primary school was 77.9% and the prevalence of intestinal parasites was high among children with poor personal hygiene practice particularly poor hand washing habit before meals and after defecations, having unclean finger nails, and did not wear shoes(26).

2.4. Knowledge about personal hygiene

Study conducted in Bangladesh revealed that the students had poor status regarding knowledge of hygiene. Approximately 50-60% of students investigated did not know about the possible transmission of diseases through human waste (9).

A survey done in Palestine revealed that most students surveyed have good knowledge on personal hygiene particularly hand washing. On the importance of washing one's hands, students' answers are fairly satisfactory. Only half of students surveyed, however, are able to correctly identify all the important situations in which one should wash his hands. The vast majority of students know cleanliness is important for health and know how to contribute to the cleanliness of their school environment. Most students' primary source of information about cleanliness and hygiene is from their mothers and teachers (27).

Study conducted in South Africa indicated that knowledge about water related diseases and its prevention was actually poor, with $78.40 \pm 1.71\%$ of the respondents admitting that they had no idea on what was meant by water related diseases. There was disparity in the level of knowledge about waterborne diseases with $60.7 \pm 2.31\%$ of the respondents from urban schools were more knowledgeable about waterborne disease in comparison to $39.3 \pm 2.31\%$ of respondents from rural schools(28).

Study done in Nigeria revealed that the average correct knowledge score related to basic personal hygiene recorded among the school children was 74.6 % and 97.4 % of the children knew that keeping their finger nails trimmed and clean shows good hygiene, only 38.9 % of them knew that cleaning their teeth with chewing stick/toothpaste and brush freshens the breath(15).

In our country Knowledge on personal hygiene among primary school children was low. Study conducted in Northern Ethiopia showed that 65% had adequate knowledge on water handling but more than 91.1% do not have proper knowledge on latrine utilization and 71% had no adequate knowledge on hand washing (19).

A cross sectional study done in Angolela Primary School(rural Ethiopia) revealed that nearly half of the students (48%) were not having adequate knowledge of proper hygiene . The prevalence of parasitic infections was lower among students with adequate knowledge of proper hygiene (33.2%) than those without adequate knowledge (40.0%) (20).

2.5. Practice of Personal hygiene

Study conducted in Bangladesh revealed that the students had poor status regarding personal hygiene practices. Approximately, one-seventh of the students were reported not bathing regularly, that is they were within boundary line of poor hygiene practice. Similarly, approximately 16% kept long nail without trimming. About 95.76% of students reported that they washed their hands with water only and soaps were seldom used. Oral hygiene practice, 55.08% respondents preferred to brush teeth, 83.00% of respondents were in favor of keeping nails short and 14.83% of the students reported not taking bathing regularly (9).

A survey done in Palestine found that 86.7 per cent of students wash their hands with soap before eating, 84.4 per cent wash their hands with soap after going to the toilet and 78.4 per cent wash their hands after playing), but only 67.9 per cent report doing all three.

Hand-washing practice is slightly better among students that celebrated Global Hand washing Day at school. Almost 70 per cent of students surveyed bathe every two or three days. Only 60 per cent of them brush their teeth most of the days although not every day. About three-quarters of students clean their hair or take care of their head daily, clip their fingernails weekly and never spit (27).

Study done in rural India among school children indicated that hygienic practices for all the indicators of personal hygiene were not adequate among the study population. About 98 (94.23%) primary school children washed their hands after visiting toilet and 88 (84.62%) washed their hands before eating. Also, 50 (48.08%) primary school children combed their hair, 52 (50%) brushed their teeth, 80 (76.92%) trimmed their nails, 44 (42.31%) took daily bath, 58 (55.77%) wore shoes and only 13 (12.5%) wore clean clothes (17). Also Study conducted in Turkey showed that Hygiene practices and habituation of hand hygiene were inadequate. 88.3% of students expressed washing their hands after using the toilet and 43% of students are used to washing hands with only water (29).

Study done in Nigeria indicated that Personal hygiene practice among school children was low. The average knowledge and practice scores related to basic personal hygiene recorded among the school children studied were 74.6 % and 54.9 % respectively. The practices related to basic personal hygiene reported by the children was low and was not totally reflective of the high level of knowledge related to basic personal hygiene observed among the children ;29.4 %, 37.0 % and 46.3 % of them washed their hands after using the toilet, wash their uniform daily and wash their hands after playing respectively. The result of physical inspection of the children revealed that 17.9 %, 45.2 % and 57.4 % of them had dirty hair, dirty uniform and dirty nails respectively (15).

Study done in Northern Ethiopia among school children showed that 70% were not washing their hands after defecation and after eating. Even 87.7% reported they usually wash hands and 85.2% wash their hands the day prior the data collection, 97.2% of the school children reported that they did not use soap at critical time. Besides, the study reports that 78% of the participants they didn't practice the correct procedure of hand washing (19).

In our country personal hygiene practice among rural primary school children was poor. Study done in Angolela primary school revealed that approximately 34% of the students reported poor bathing practices and 21% reported poor hair washing practices. Approximately, one-third of the students reported not bathing for at least 14 days (i.e. poor

hygiene practice). Similarly, approximately 9%, 2%, 12%, and 21% reported not brushing their teeth, washing their feet, washing or changing their clothes, and washing their hair for at least 14 days, respectively (20).

2.6. Factors associated with personal hygiene practice

Socio demographic factors

There are cultural, educational, economic, institutional, environmental and psycho-social factors that could motivate people to adopt safe hygienic practices. Regular water supply, provision of sanitation facilities, stakeholder participation and improvement of consumer sanitation and knowledge are factors which can motivate people to adopt safe hygienic practices (30).

Good personal hygiene practices were exhibited in older children than in younger ones. Study done in Banki revealed that children that are advanced in age had better personal hygiene. Ability to comprehend and apply basic personal hygiene tips would be improved in older compared with younger children (1). Maternal education appears to have a direct relation with the practices of personal hygiene among the primary school children (17).

Predisposing factor associated with personal hygiene practice

Hygiene practices are heavily influenced by students' knowledge towards hygiene. A study conducted in Bangladeshi indicated that reasons given for not washing hands included stubbornness (not wanting to follow what adults say), laziness, the time it takes away from playing, and the dirt(9).

Study done in India revealed that the proportion of primary school children having correct practices regarding combing hair, brushing teeth, washing hands before eating and trimming nails was significantly lower compared to the proportion of primary school children having correct knowledge (17) .

Study done in Northern Ethiopia showed that Knowledge and awareness on personal hygiene are important predisposing factor to influence hygiene behaviour among school children. Who had adequate knowledge on hand washing, water handling, and latrine utilization; 71.1%, 68.8%, and 53.2% was with positive hygiene behaviour respectively. Positive hygiene behaviour among school children was fairly high in those who had adequate knowledge.

Among those who have awareness about water handling 71.6% had practiced positive hygiene behaviour and while 50.8% of those not aware had reported positive hygiene behaviour (19).

Previous study in our country revealed that Knowledge, attitude, and availabilities of hygiene facilities are factors associated with personal hygiene practice. Study done in Angolela (Ethiopia) found that the personal hygiene practice among students having proper knowledge of hygiene were more likely to have clean clothes. Personal hygiene practice specifically hand washing after defecation was negatively influenced by factors such as laziness, the rush to play with friends, or even the lack of hand washing facilities close to the latrines among school children (20).

Enabling factor associated with personal hygiene practice

Appropriate strategic interventions to ensure adoption of safe hygienic practices may include ensuring availability of regular water supply and related sanitation facilities (30). Study done in Turkey showed that availabilities of personal hygiene facility are factors associated with personal hygiene practice. Several important requirements for school toilets such as absence of hand drying material was noticed in 92% of toilets, soap was available permanently in 17%, no suitable area to wash hands were available in approximately 1/3 of toilets, which demonstrates the inadequate hygiene conditions of school toilets. Another predisposing factor for inappropriate hygiene practice was the inappropriate area of physical conditions of Schools (29).

Availabilities of personal hygiene facility are factors associated with personal hygiene practice. Study done in our country among primary school children showed that the low frequencies of hand washing with soap (36.2%) may be attributed to the lack of soap in school and at home. Hygiene practices which require the greatest amount of water result in lower rates of practice and high proportion of students in homes with limited access to piped water and the burden of carrying water from long distances(20).

Reinforcing (motivational/supportive) factors

Maternal educational status, student's grade level and gender are associated with personal hygiene practice. Study done in Turkey revealed that students whose mothers are university graduates had higher average scores in the general hygiene and personal hygiene dimensions, female students showed more positive behaviours in the general hygiene, home hygiene, food

hygiene, hand hygiene techniques dimensions. In terms of the general hygiene, home hygiene and food hygiene dimensions, 4th grade students had lower average scores than students with other grades(3).

Teachers, school health committees and environmental clubs have an important role to play in developing personal hygiene knowledge and practices in schools. Teachers can be encouraged to participate in activities that promote correct hygiene practices through the provision of incentives, the availability of sufficient materials at school, and training programs. More than half of teachers surveyed also say they need to be trained on personal hygiene and environmental health (27).

The parents and the school teachers, as constructive shapers of children's health behaviours, should play a responsible role in early education of children on personal hygiene. The role of parent-teacher associations in all the schools should be emphasized. Maternal education appears to have a direct relation with the practices of personal hygiene among the primary school children (17).

Previous studies revealed that Health education on basic personal hygiene and age of the children are factors associated with personal hygiene practice. Study done in primary school pupils in Banki community revealed that a large number of who were taught basic personal hygiene tips had good personal hygiene. It was also evident that good personal hygiene practices were exhibited in older children than in younger ones (1). Providing health education on personal hygiene can increase the practice of personal hygiene. Study done in India revealed that practice of personal hygiene and related factors significantly increased after health education intervention (21).

Previous study in our country showed that students have ever trained; being membership of hygiene and sanitation, visiting model school and parent's health package status and being trained on hygiene and sanitation, and teacher are factors influencing personal hygiene practice(19).

Generally the reviewed literature revealed that personal hygiene practice among school children was poor. Socio demographic factors, predisposing factor, enabling factor and motivation factors are factors associated with personal hygiene practice.

Conceptual framework of factors associated with personal hygiene practice.

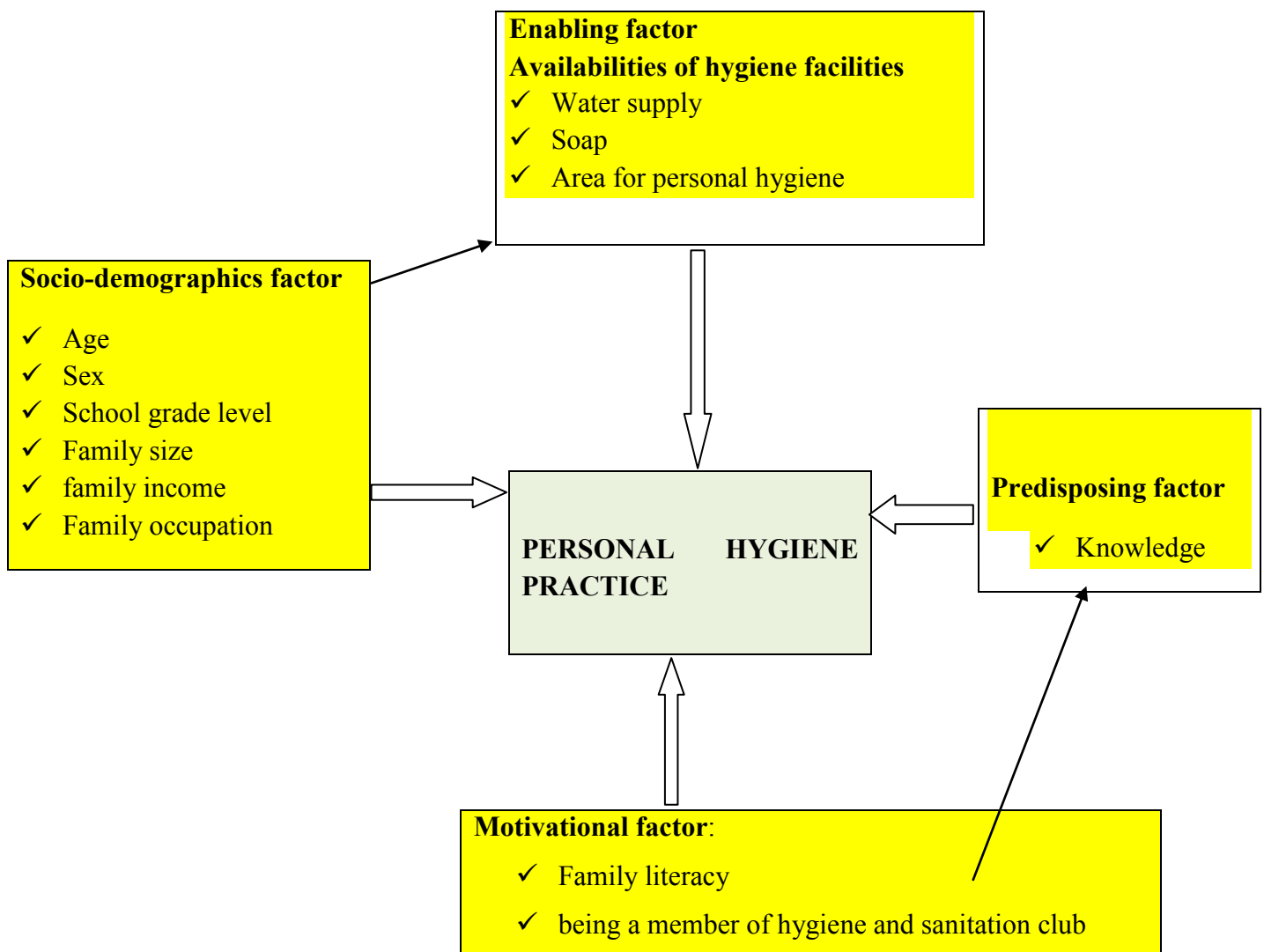


Figure 1: Conceptual framework of factors associated with personal hygiene practice among school children developed from literature reviewed (1, 3, 9, 15, 17, 19, 20, 27, 28, 29, 30).

3. OBJECTIVES

3.1. General objectives

To assess the factors associated with personal hygiene practice among school children in Boda primary school around Ginci twon, west Shoa, Oromia, Ethiopia, 2016.

3.2. Specific objectives

1. To assess the knowledge of personal hygiene among school children in the study area.
2. To assess the practice of personal hygiene among school children in the study area.
3. To identify the factors associated with personal hygiene practice among school children in the study area.

4. METHODS AND MATERIALS

4.1. Study design

School based cross sectional study design supported by qualitative approach was used.

4.2. Study area and study period

The study was conducted in Boda primary school, a government-owned institution that provides free education to children in grades 1-8 around Ginci town, Dandi wereda. Boda primary school has a total of 924 students. Boda is located in rural area around 21 km from Ginci town. Ginci is located at West Showa, Oromia regional state about 80 km away from Addis Abeba. The total population of Boda is 4777 where 2445 is male and 2332 is female. There is one health centre and two health extension in the kebele. Most of the people are Oromo in ethnicity and most of them are Christian in religion. Most of their occupation is farming. There is a shortage of water supply in this area.

Study period

The study was conducted from February to March, 2016.

4.3. Source and study population

The source population was all children in Boda primary school

Study population

The study population was school children grade 1-6 and age 6-14 that is included in sample.

4.4. Inclusion and exclusion criteria

A child was eligible for participation in the study if he/ she have met the following study inclusion criteria: Age 6 -14 years had no known underlying mental illness and had no known underlying learning difficulties. A child who refused to participate in the study, seriously ill and students absent during study period were excluded from the study.

4.5. Sample size determination

The sample size was calculated using the formula for estimation of single proportion using $n = Z^2 * P(1 - P) / r^2$. Where: Z value is 1.96. The level of practice of personal hygiene among school children for the study areas is little known from previous studies and also there was no accessed studies relatively similar characteristics with this study area that indicate the level of practice of personal hygiene among school children in our country. Therefore, the sample size was calculated by assuming that: P is the level of practice of personal hygiene among rural primary school children was assumed to be 50% and r is the margin error of estimation that was assumed to be 5% (0.05).

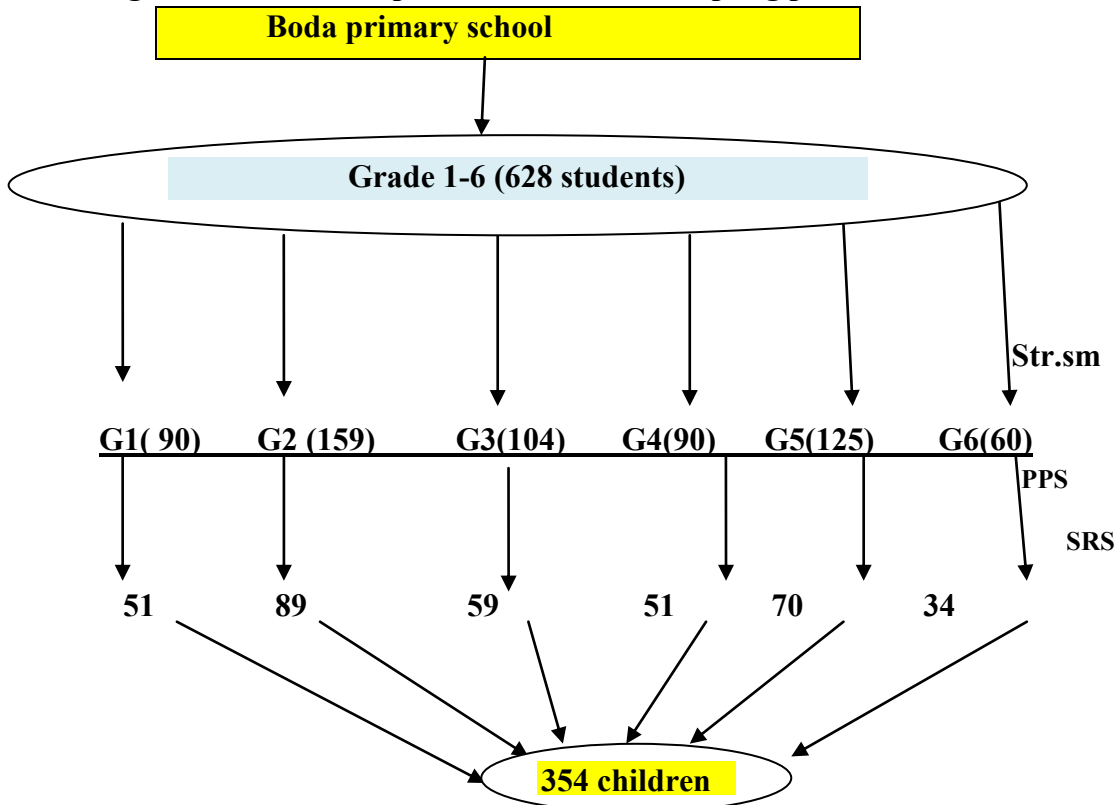
$$n = \frac{Z^2 * P(1 - P)}{r^2} = \frac{(1.96)^2 * 0.50 (1 - 0.5)}{(0.05)^2} = 384.16 \approx \mathbf{384 \text{ children.}}$$

However, the number of the source population is less than 10,000 ($n/N \geq 0.05$). Therefore, Correction formula was used, and to account for predicted 10% non- response rate, the **final sample size** was **354 children**.

4.6. Sampling procedure

Stratified sampling method was used (grade level as strata) then sample size was proportionally distributed according to number of students in each grade level. Finally, in each grade level, students were selected by simple random sampling (by random table) using list of students as sampling frame.

Figure 2: Schematic presentation of the sampling procedure



NB: Example For grade 1 ($354 * 90/628 = 51$)

Key: G: Grade

Str.sm: stratified sampling method,

SRS: Simple random sampling,

PPS: Proportionate to population size

4.7.Data collection tools and methods

Data was collected using structured questionnaire for quantitative method that was adopted and modified after reviewing relevant literatures to the subject to include all the possible variables that address the objective of the study(15, 17, 19, 20). The data collectors were 3 clinical nurse and supervisors (2 BSC Nurse).The questionnaire was prepared in Afan Oromo version and the questionnaire was consist of socio-demographic information, age, grade, sex, income, literacy status of both mother and father, knowledge questions , hygiene facilities and practice of personal hygiene were included. The questionnaire cover the following variables of personal hygiene, i.e. combing hair, brushing teeth, washing mouth after eating, washing hands before eating, washing hands after visiting toilet, trimming nails, taking bath and wearing clean clothes. Each study subject was observed thoroughly to assess his/her personal hygiene status, i.e. cleanliness of clothes, condition (clean and trimmed) of fingernails and condition (clean and combed) of hair. At the end of the study, health education session was also conducted for the students after completion of the study.

4.8. Study variable

Dependent variable: personal hygiene practice

Independent variables: sociodemographic factors (e.g. age, grade level, sex, income, family literacy status), predisposing factors (knowledge), enabling factors (availabilities of hygiene facilities like water, soap, area/place), motivational factors (maternal education, member of hygiene club).

4.9. Data quality assurance

The questionnaire was first prepared in English and then translated to Afan oromo (local language) and back translated to English to maintain the consistency of the contents of the instrument and its accuracy. Pre-test was conducted on 5% of the sample size (18 students) two weeks prior to actual data collection time in Okote Awash primary school which is about 25 km away from actual study area) that assumed to have similar characteristics to the study area to assess the suitability with regards to duration, language appropriateness, content validity, and question comprehensibility. Based on the result of pre-testing a necessary revision was undertaken. The data collectors and supervisors were trained for two days, mainly on the procedure of data collection, interviewing skills, content of the questionnaire, data quality and handling of ethical issues. Data collectors submitted the collected data to the supervisors on daily basis , and the supervisors were check daily the consistency and completeness of the collected questionnaires and re-interview conducted randomly in selected

5% of the students to check the data quality. Data coding and data entry was checked at the beginning and at the midway stage of the work. Data cleaning was conducted at the end of data entry.

4.10. Data processing and analyses

Data entry, cleaning, editing and analysis were done using Epi info version 3.5 and SPSS statistical software version 21.0. The frequency distribution of all variables was examined to check for data entry errors (e.g. unrecognized or missing codes, out of range values). Also to identify independent variables which had statistically significant association with the personal hygiene practice, bivariate and multivariate analysis using logistic regression were computed. Primarily variables that had p-value <0.2 at bivariate analysis was used to develop the logistic model in order to identify factors associated which more strongly linked with the personal hygiene practice. For each variable, frequencies, odds ratios (OR), 95% CI and p-value at 5% were computed. The data were described and presented using narrative text, tables, graphs and chart.

4.11. Operational definitions

Personal hygiene practice: Various self care measures of school children performed to maintain the good health like regular bathing(1-7 days), hand washing before eating and after visiting toilets, cleaning of teeth, washing of the hair and clothes regularly, finger nail trimming and washing foot daily.

School children: 6-14 years old children studying in government primary school.

Good knowledge: Those children who answered above the mean of the knowledge questions.

Poor knowledge: Those children who answered below the mean of the knowledge questions.

Good practice: Those children who able to answer above the mean of the practice questions.

Poor practice: Those children who able to answer bellow the mean of the practice questions.

Literate: who completed grade 8 and above

Illiterate: unable to read and write

Adequate hygiene facilities: Those children who get hygiene facilities above the mean of the availabilities of hygiene facilities questions.

Inadequate hygiene facilities: Those children who get hygiene facilities bellow the mean of the availabilities of hygiene facilities questions.

4.12. Ethical consideration

Ethical clearance was obtained from the Ethical Committee of Addis Abeba University, college of health science, department of Nursing and midwifery and letters for permission was gained from Ginci education Bureau and Boda primary school for the study. The study subjects, teacher and school director was informed about the objective of the study and each students take consent form to their home for their parents to take consent. The participants were allowed to consider their participation and given the opportunity to withdraw from the study at any point in the course of the study if they wished to do so. Additionally confidentiality of all the information was assured.

4.13. Result dissemination plan

The result of this study will be presented for Defence and after that submitted to Addis Abeba University College of health science, department of nursing and midwifery and school of graduate studies then disseminate it to library. Also the result will be submitted to Ginci education bureau, to the school director and woreda health office. Also, it will be disseminated to the Ministry of Health, and other concerned and interested organizations. Further effort will be made to present it on workshop and conference, and to publish it on different journals.

METHODOLOGY FOR QUALITATIVE METHOD

Participant: school teacher, school director of the school.

Thematic area for interview: The thematic areas to guide the interview are personal hygiene practice, the factors influencing the practice of personal hygiene and how to improve the practice of personal hygiene among primary school children.

Sample size: in depth interview was continue with key informants until information redundancy/saturation will occur.

Sampling procedure: A purposive sampling technique was applied.

Data collection tool and methods: data was collected using in-depth interview on key informants (teacher, director). Semi-structured questionnaire and open-ended questionnaires was used to guide the interview. In-depth interview was moderated by principal investigator, notes were taken and it was recorded using mobile recorder.

Data analysis method: The thematic analysis method was used to analysis the data gained from in depth interview

5. RESULTS

5.1. Socio-demographic characteristics of the respondents

A total of three hundred fifty four (354) school children in Boda primary school from grade 1-6 were participated in the study and the response rate was 100%. The study revealed that the mean age is $10.12 \pm (2.44)$ years . Also 184 (52%) were male and 170(48%) were females. Regarding family occupation most were farmers 305 (86.2%). Also family educational status most were illiterate, 246(69.5%) of mothers and 222(62.7%) of their fathers were illiterate. Also majority of them were not member of hygiene and sanitation club 125(35.3%) (Table 1).

Table 1: socio-demographic characteristics of school children in Boda primary school around Ginci town ,West Showa, Oromia, Ethiopia ,2016.

Characteristics	Frequency	Percent
Age of the child		
6-8	106	29.9
9-11	127	35.9
12-14	121	34.2
Sex of the child		
Female	170	48
Male	184	52
Grade level in school		
1-3	199	56.2
4-6	155	43.8
Family income as compared to neighbourhood		
No income	2	0.6
Good	249	70.3
Low	102	28.8
I don't know	1	0.3
family occupation		
farmer	305	86.2
Daily laborer	7	2
Merchant	30	8.5
Government Employee	12	3.4
mother educational status		
literate	108	30.5
not literate	246	69.5
father educational status		
literate	132	37.3
not literate	222	62.7
Family size		
3- 5	247	69.8
>5	107	30.2

Is there hygiene and sanitation club in your school?		
yes	205	57.9
no	149	42.1
If yes, are you a member of this club? *		
yes	78	22
no	125	35.3

** Numbers/percentages may not add up to the total number due to missing data.*

5.2. Availabilities of Personal hygiene facilities

Majority of them were not getting adequate water supply, 258 (72.9%) in their home and 340 (96%) in their school. Majority, 187(52.8%) of study subjects get water from pip/tap, followed by well/spring 160(45.2%). Almost all of the study participants had no adequate soap in their home and near toilets in the school (Table 2).

Table 2: Availabilities of personal hygiene facilities among school children in Boda primary school around Ginci town, West Showa, Oromia, Ethiopia, 2016

Variables	Frequency	Percent
Adequate water supply in your home		
No	258	72.9
Yes	96	27.1
Adequate water supply in the school		
No	340	96
Yes	14	4
Source of water in home		
Pipe / tap	187	52.8
well / spring	160	45.2
River / pond	7	2
Distance of water source		
near to home(< 30minute)	235	64.4
very far away (>30 minute)	119	33.6
Adequate soap in your home		
No	340	4
Yes	14	96
Is there soap for hand washing near toilets in school		
No	354	100
Yes	0	0
Designed area for bathing, hand washing and washing clothes in your home /surrounding		
No	348	98.3
Yes	6	1.7

Source of information about personal hygiene of the respondents

Almost, 344(97.2%) of the participants were heard about personal hygiene. Out of 344 students, most of their source of information 331(93.5%) was from teacher, followed by 37%, 36.7 %, 35.6% were radio, health worker and family respectively (**Figure 4**).

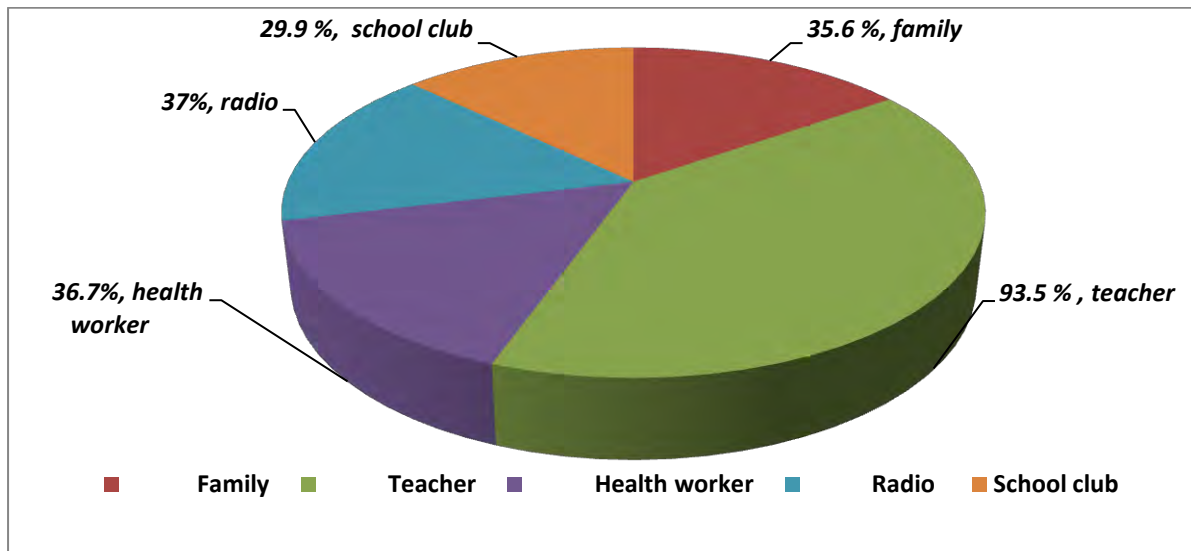


Figure 3: Source of information about personal hygiene of the respondents

5.3.Knowledge of the respondents about personal hygiene

Among 354 of the school children, 209(59%) had good knowledge and 145(41) had poor knowledge about personal hygiene. Almost all 348(98.3%) of the children knew that washing the hair regularly is Part of personal hygiene, followed by 340 (96%) knew that taking bath is part of personal hygiene, 318 (89.8%) knew that Personal hygiene is about general body cleanliness and 312(88.1%) of children knew that Poor personal hygiene may result water related disease like diarrhea, scabies etc. However, only 71(20.1%) of the children were know that hand washing is necessary after visiting toilets. About 136(38.4%) of children were know that Cleaning their teeth with chewing Stick/toothpaste and brush cannot prevents tooth decay and freshens the breath (**Table 3**)

Table 3: Knowledge of personal hygiene among school children in Boda primary school around Ginci town ,West Showa, Oromia, Ethiopia ,2016.

Characteristics	Frequency	Percent
Personal hygiene is about general body cleanliness		
Yes	318	89.8
No	36	10.2
Hand washing before eating and after defecation can prevent disease.		
Yes	278	78.5
No	76	21.5
When do you think it is necessary to wash hands?		
after eating	276	78
After visiting latrine	71	20.1
before eating only	307	86.7
Human feces contain germs		
Yes	277	78.2
No	77	21.8
Keeping your finger nails trimmed and clean shows good hygiene		
Yes	302	85.3
No	52	14.7
Keeping the hair well trimmed is Part of personal hygiene		
Yes	279	78.8
No	75	21.2
Washing the hair regularly is Part of personal hygiene		
Yes	348	98.3
No	6	1.7
Taking bath is part of personal hygiene		
Yes	340	96
No	14	4
Rinsing your mouth with water after meal is healthy for your teeth		
Yes	266	75.1
No	88	24.9
Cleaning your teeth with chewing Stick/toothpaste and brush prevents tooth decay and freshens the breath.		
Yes	218	61.6
No	136	38.4
Poor personal hygiene may result water related disease like diarrhea, scabies..etc.		
Yes	312	88.1
No	42	11.9
What happens if one does not practice personal cleanliness?		
may get sick and smell in class	309	87.3
Will smell in class only	5	1.4
will be punished by the teacher	40	11.3

5.4. Personal hygiene practice of the respondents

Among 354 of the school children, 192 (54.2%) had poor practice and 162(45.8%) had good practice in personal hygiene. All of them were washed their hands prior to the day of interview, 312(88.1%) before eating, 274(77.4%) after eating and only 21(5.9%) were washed their hands after using toilet. Only 15(4.2%) of the school children were used soap and water for hand washing.

Almost all, 351(99.2%) were wash their feet within 1-7 days and about 261(73.7%) of the children were wash their hair within 1-7 days. Also, 261(73.7%) were take bath within 7-14 days and 177(50%) of the children were wash or change their clothes within 7-14 days.

Among 354 children, about 268(75.7%) of the children were not brush their teeth, 163(46%) due to have no material to brush. Among 87children who brush their teeth, only 9(2.5%) of children were used tooth paste and others 50(14.1%) were used twigs (**Table 4**).

Table 4: Personal hygiene practice among school children in Boda primary school around Ginci town ,West Showa, Oromia, Ethiopia ,2016

Characteristics	Frequency	Percent
Have you Washed your hands yesterday?		
yes	354	100
No	0	0
When did you wash your hand?		
before eating	312	88.1
after eating	274	77.4
after using toilet	21	5.9
material used for hand washing		
water only	339	95.8
water and soap	15	4.2
How often do you Taking bath?		
1-7 days	73	20.6
7-14 days	261	73.7
>14 days	20	5.6
Do you brush your teeth?		
yes	86	24.3
no	268	75.7
How often do you brush your teeth? *		
1-7 days	79	22.3
7-14 days	8	2.3
What do you use to brush your teeth?		
1.Water only	28	7.9
2.Tooth paste	9	2.5
3.twigs	50	14.1
Why did not brush your teeth?		
no material	163	46
not important	35	9.9
no response	72	20.3
How often do you wash your hair?		
1-7 days	261	73.7
7-14 days	91	25.7
>14 days	2	0.6
How often do you wash or change your clothes?		
1-7 days	164	46.3
7-14 days	177	50
>14 days	13	3.7
How often do you wash your feet?		
1-7 days	351	99.2
7-14 days	3	0.8
> 14 days	0	0

** Numbers/percentages may not add up to the total number due to systemic missing.*

Objectively observed personal hygiene characteristics of the study subject

Regarding the objectively observed personal hygiene characteristics, Majority of them, 226(63.8%) was observed as poor personal hygiene. About 256(72.3%) of children, their finger nail were dirty, 248(70.1%) were not washed and comber their hair, 230(65%) were not trimmed their finger and 213(60.2%) were wear dirty uniform. However, 250 (70.6%) of the school children were observed as clean face (**Figure 4**).

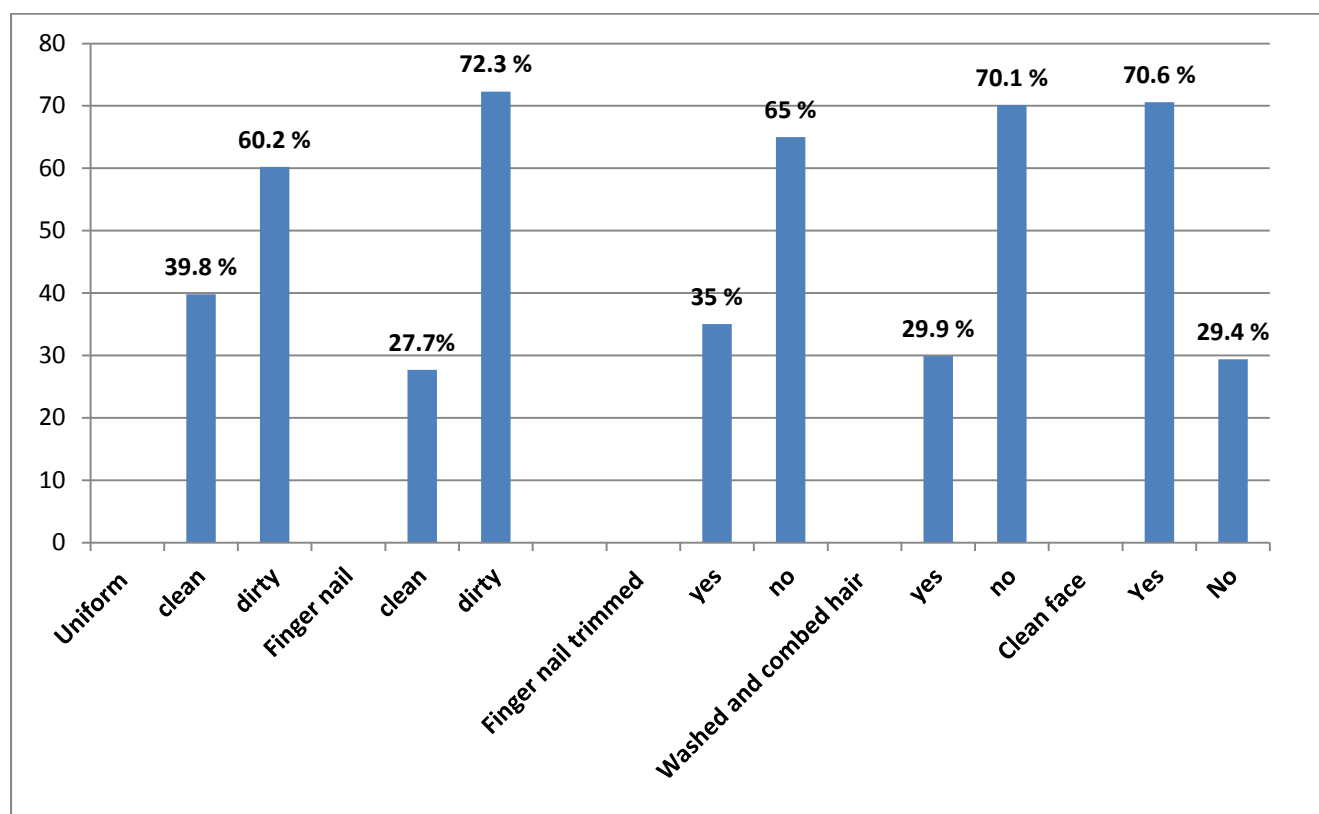


Figure 4: Objectively observed personal hygiene among school children in Boda primary school around Ginci town, West Showa, Oromia, Ethiopia, 2016.

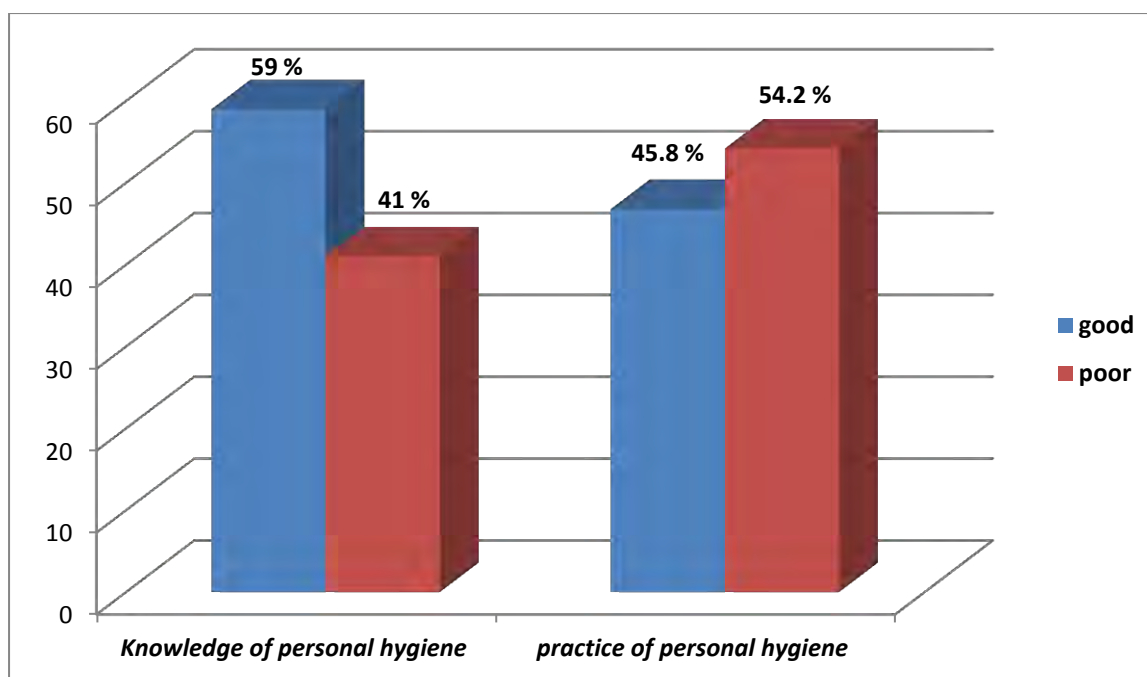


Figure 5: knowledge and practice of the respondents on personal hygiene among school children in Boda primary school around Ginci town, West Showa, Oromia, Ethiopia, 2016.

5.5. factors associated with personal hygiene practices

5.6.1 Bivariate analysis on factors associated with personal hygiene practices

Crude analysis on binary logistic regression showed that age, grade level, family occupation, availabilities of hygiene facilities and knowledge about personal hygiene were all significantly associated with general personal hygiene practice at p value <0.05 (**Table 5**). Also family education status, and being member of hygiene and sanitation club were significantly associated with objectively observed personal hygiene practice. On the other hand, sex, family income and family size did not show statistical association with personal hygiene practice at p value <0.05(**Table 6**).

Individual with age 6-9 years old were about two and more than half less likely in personal hygiene practice than age 10-14 years old children(COR=2.53 (95% CI(1.63, 3.93)).

A children in grade 1-4 were two times less likely in personal hygiene practice than grade above 4 (COR= 2.09 (95% CI(1.34,3.33)). The study also showed that a children whose family occupation were farmer about two times less likely than other in personal hygiene practice (COR =2.07(95% CI (1.12, 3.84)) (**Table 5**).

Regarding family education status, a children whose mother were illiterate about three times less likely than literate in practicing personal hygiene (COR=3.26(95% CI(1.72, 6.19) and children whose father were illiterate about one and half times less likely than literate in practicing personal hygiene(COR= 1.62(95% CI (1.04,2.52)). The study also revealed that a children who were not a member of hygiene and sanitation club in their school were about two times less likely than children who were a member of hygiene and sanitation club in personal hygiene practice (COR=1.83 (95 % CI(1.01, 3.35)) (**Table 6**).

Moreover, concerning availabilities of hygiene facilities (water, soap ...) and knowledge about personal hygiene were shows statically significant difference. After classifying the hygiene facilities in to adequate and inadequate based on mean score, those children who were not get adequate hygiene facilities were about two and half times less likely in personal hygiene practice than children who get adequate hygiene facilities(COR= 2.36(95% CI(1.53, 3.64)). Also the study showed that a children who have poor knowledge about personal hygiene were about four and half times less likely in personal hygiene practice than children who have good knowledge about personal hygiene (COR=4.6(95% CI (2.88,7.34)) (**Table 5**).

5.6.2. Multivariate analysis on factors associated with personal hygiene practices

Regarding multivariate analysis on factors associated with personal hygiene practices, maternal education status, availabilities of hygiene facilities and knowledge about personal hygiene were shows statically significant. On the other hand, age, grade level, family occupation, and being member of hygiene and sanitation club did not show statically significant at p value <0.05(**Table 5 and 6**).

A children who have poor knowledge about personal hygiene were about two and half times less likely in personal hygiene practice than children who have good knowledge about personal hygiene (AOR=2.76(95%(CI(1.48,5.17)) . Also the study showed that those children who were not get adequate hygiene facilities were about two and half times less likely in personal hygiene practice than children who get adequate hygiene facilities (AOR=2.44(95% CI(1.35,4.42)) (**Table 5**). Moreover, a children whose mother were illiterate were about two and half times less likely in practicing personal hygiene than children whose mother were literate (AOR =2.74(95% CI(1.47,5.13))(**Table 6**).

Table 5: factors associated with personal hygiene practices of school children in Boda primary school around Ginci town ,West Showa, Oromia, Ethiopia ,2016.

Characteristics	Personal hygiene practice		Crude OR (95 % CI)	Adjusted OR (95% CI)
	Good (%)	Poor (%)		
Age of the children				
6-9	48(13.56%)	99(27.97%)	2.53(1.63, 3.93)*	1.04(0.45,2.43)
10-14	114(32.2%)	93(26.27%)	1	1
Sex				
Female	86(24.29%)	84(23.73%)	1	1
Male	76(21.46%)	108(30.5%)	1.45(0.96,2.22)	1.52(0.83,2.80)
Grade				
1-4	45(12.82%)	149(42.1%)	2.09(1.34,3.33)*	0.82(0.41,1.64)
> 4	61(33.05%)	101(28.37%)	1	1
Family income as compared to their neighbourhood				
Good	116(33.05%)	33(37.9%)	1	1
Low	45(12.82%)	57(16.24%)	1.11(0.69 ,1.76)	1.03(0.51,2.05)
Family occupation				
Farmer	132(37.29%)	173(48.87%)	2.07(1.12,3.84)*	0.56(0.21,1.51)
Other*	30(8.47%)	19(5.37%)	1	1
Mother educational status				
Literate	57(16.1%)	51(14.4%)	1	1
Illiterate	105(29.66%)	141(39.83%)	0.66(0.42,1.05)	1.22(0.59,2.52)
Father educational status				
Literate	68(19.21%)	64(18.08%)	1	1
Illiterate	94(26.55%)	128(36.16%)	1.45(0.94,2.23)	1.27(0.66,2.43)
Being member of hygiene and sanitation club				
Yes	45(22.17%)	33(16.26%)	1	1
No	66(32.5%)	59(29.06%)	1.22(0.69,2.16)	0.89(0.46,1.72)
Family size				
3-5	114(32.2%)	133(37.6%)	1	1
>5	48(13.56%)	59 (16.67%)	0.95(0.60,1.49)	0.91(0.47, 1.77)
Availabilities hygiene facilities				
Adequate	108(30.51%)	88(24.86%)	1	1
Inadequate	54(15.25%)	104(29.38%)	2.36(1.53, 3.64)*	2.44(1.35,4.42)**
Knowledge of personal hygiene				
Good	126(35.56%)	83(25.45%)	1	1
Poor	36(10.17%)	109(30.8%)	4.6(2.88,7.34)*	2.76(1.48,5.17)**

Family occupation, other *(daily labour, merchant, government employee)

* Statistically associated at p<0.05

** Statistically associated at p value 0.001(knowledge), p value 0.003(hygiene facility)

Table 6: Factors associated with Objectively observed personal hygiene of school children in Boda primary school around Ginci town, West Showa, Oromia, Ethiopia ,2016.

Variables	Objectively observed personal hygiene		Crude OR (95 % CI)	Adjusted OR (95% CI)
	Good	Poor		
Age 6-9 10-14	35(9.88%) 93(26.27%)	112(31.64%) 114(32.2%)	1 2.61(1.64,4.17)*	1 0.95(0.39,2.30)
Grade 1-4 >4	75(20.34%) 53(14.97%)	175(49.43%) 51(14.4%)	1 2.43(1.52,3.88)*	1 0.85(0.42,1.72)
Hygiene facilities Adequate Inadequate	92(25.99%) 36(10.17%)	104(29.38%) 122(34.46%)	1 2.99(1.88,4.78)*	1 2.21(1.20, 4.06)**
Mother educational status Literate Illiterate	56(15.82%) 72(20.34%)	52(14.69%) 174(49.15%)	1 2.6((1.63, 4.15) *	1 2.74(1.47,5.13)**
Father educational status Literate Illiterate	57(16.1%) 71(20.06%)	75(21.19%) 151 (42.65%)	1 1.62(1.04,2.52)*	1 1.24(0.64,2.41)
Being member of hygiene club Yes No	41(20.2%) 51(25.12%)	37(10.45%) 74(36.45%)	1 1.61 (1.01, 3.35)*	1.72(0.87,3.38)

* Statistically associated at $p < 0.05$

** Statistically associated at p value 0.002(mother educational status) , p value 0.011 (hygiene facilities).

RESULTS OF THE IN-DEPTH INTERVIEW

The in-depth interview was conducted among school teacher and school director in the study area. A total of 4 teachers and 1 school director were participated in the in-depth interviews.

Most of them explained that personal hygiene is keeping own hygiene from head to toe. For example, hand washing, washing clothes, bathingetc. .Almost all of them explained that personal hygiene is very important to keep one's own health and to prevent different communicable disease. *A participant of the in depth interview, said that "personal hygiene is keeping own hygiene from head to toe. For example, hand washing, washing clothes, bathing, finger trimming.....etc. It is important for health and to prevent different communicable disease".*

All of them were not taken training on personal hygiene but they get information about personal hygiene from different media and through education experience. Most of them said that student's personal hygiene practice was low. They put the main reason for this low personal hygiene practices are shortage of water supply in the study area, lack of knowledge and low family follow up. A participant of the in depth interview (teacher of grade 1-4), *"personal hygiene status of the children in this school is 50% is good and 50% is poor".* Also other participant of the in depth interview (teacher of grade 1-4), *said that "personal hygiene status of the students depend on environment and follow up of family their children".*

Most of them were not teach any topic on personal hygiene because of the subject they teach. A teacher of environmental science in grade 1-4, were teach about personal hygiene because there is some topic relating with personal hygiene in this subject. All of them explained that to teach personal hygiene as a separate course in primary schools is very important. A participant of the in depth interview, *"to teach personal hygiene as a separate course in primary schools is very important. This play a great role in human being and important for every individual. Also important for improving their personal hygiene status and a model for other children, for his brother, sister and family".*

Factors associated with personal hygiene practice

The data from the in-depth interviews showed that availabilities of hygiene facilities were one factor which contributes for personal hygiene practice. The participants of the in-depth interviews, *"lack of adequate water supply in this areais one factor that makes students not practice the personal hygiene"*. Also Personal hygiene practice is associated with the student's awareness/knowledge. The participants of in-depth interview (school director) said that *"poor personal hygiene practice is related with lack of awareness about personal hygiene and the students were come from uneducated society"*.

There is a great difference among grades less than 4 and above 4 in personal hygiene practice. One of the participants of the in-depth interviews said that *"there is low personal hygiene practice in grade 1-3 than above grade 4"*. Also the participants said that attitudes of the family and income of the family are the factor that makes the students not keeps their personal hygiene. Participants of the in-depth interview, *"factor that makes the students not keep their personal hygiene are attitude of the family for children in rural area, and low income of the family, that the family may not buy adequate soap and clothes "*.

Suggested ways from in-depth interview participants to improve personal hygiene practice among school children were:

- ✓ Incorporating the topic about personal hygiene in course/subject,
- ✓ health education from health worker,
- ✓ short training for students and teachers,
- ✓ strengthens their awareness and
- ✓ Forming different club related with hygiene in the school.

6. Discussion

In this study of school children grades 1-6, the study assessed the knowledge, practices and associated factors with personal hygiene.

The study result showed that about 59% had good knowledge. This finding is relatively comparable with study done in 2010 in Angolela ,Ethiopia, (52%)(20). However, this finding is low as compared with study done in 2012 in Nigeria (74.6 %), this difference might be due to health education was given in primary school in Nigeria (15). Also this study revealed that only 20.1% of the children knew that hand washing is necessary after visiting toilets. This result is low as compared to study done in Angolela primary school; this discrepancy might be due to large sample size (669 students) in Angolela study (20).

The study revealed that about 54.2% had poor personal hygiene practice. About 5.9% were washed their hands after using toilet and 4.2% of the school children were used soap and water for hand washing. About 75.7% of the children were not brush their teeth and only 2.5% of children were used tooth paste and 14.1% were used twigs. Regarding the objectively observed personal hygiene characteristics; majority of them, 63.8% were observed as have poor personal hygiene. Over all this findings are consistent with previous studies that have documented knowledge and practices of hygiene among school children in different countries (Banki ,Nigeria, India ,Northern Ethiopia and Angolela (1, 15, 17,19 and 20). This result also supported by qualitative data. A participant of the in depth interview (teacher of grade 1-4), *“personal hygiene status of the children in this school is 50% is good and 50% is poor”*.

This poor personal hygiene practice among school children in the study area might be due to lack of hygiene facilities and lack knowledge about personal hygiene. Therefore, education on personal hygiene education and development of comprehensive personal hygiene intervention programs among rural primary school in Ethiopian is needed in order to prevent the communicable disease related to poor personal hygiene among school children.

Individual with age 6-9 years old were about two and more than half less likely in personal hygiene practice than age 10-14 years old children and children in grade 1-4 were two times less likely in personal hygiene practice than grade above 4. This finding is similar with Study done in Banki (2013) revealed that good personal hygiene practices were exhibited in older children than in younger ones (1) and study done in Turkey(2011) showed that there is significant difference between grade level about personal hygiene(3). Also this finding is

supported by qualitative result. One of the participants of the in-depth interviews said that “*there is low personal hygiene practice in grade 1-3 than above grade 4*”.

Maternal education appears to have a direct relation with the practices of personal hygiene among the primary school children (17). In this study, most mothers (69, 5%) were illiterate, and statistically significant association was observed between practices of personal hygiene among primary school children and literacy status of their mother. A children whose mother were illiterate were about two and half times less likely in practicing personal hygiene than children whose mother were literate. This finding is similar with study done in Angolela(2010) and India (2014) (20, 21). An illiterate or uneducated mother may be less knowledgeable about teaching her children proper hygiene practices. In light of these observations, future school-based personal hygiene health education programs should include strategies to involve family members, particularly mothers.

The study also revealed that children who were not a member of hygiene and sanitation club in their school were nearly about two times less likely than children who were a member of hygiene and sanitation club in personal hygiene practice. It is known that through hygiene and sanitation club in the school, information about personal hygiene may be disseminated to children and they have good awareness about personal hygiene that predispose the children to practice personal hygiene. Therefore, to improve personal hygiene status of the school children, we should form and active participation in the hygiene and sanitation club is one way to improve awareness about personal hygiene. This finding is similar with study done in Northern Ethiopia (19).

Appropriate strategic interventions to ensure adoption of safe hygienic practices may include ensuring availability of regular water supply and related sanitation facilities (30). In this study, majority of them were not getting adequate water supply (72.9%) in their home and 96% in their school. Also the study showed that those children who were not get adequate hygiene facilities were about nearly two and half times less likely in personal hygiene practice than children who get adequate hygiene facilities.

This finding is consistent with study done in Angolela(Ethiopia)(2010) and India(2014) revealed that lack of proper resources, i.e. soap and water may negatively affect personal hygiene practices (20, 21). Also this finding is supported from finding from qualitative part. One of the participants of the in-depth interviews said that, “*lack of adequate water supply in this areais one factor that makes students not practice the personal hygiene*”.

This study revealed that children who have poor knowledge about personal hygiene were about two and half times less likely in personal hygiene practice than children who have good knowledge about personal hygiene. This study is consistent with study in India, Northern Ethiopia and Angolela. Study done in India(2014) revealed that the proportion of primary school children having correct practices regarding combing hair, brushing teeth, washing hands before eating and trimming nails was significantly lower compared to the proportion of primary school children having correct knowledge (17).

Positive hygiene behaviour among school children was fairly high in those who had adequate knowledge (19). Study done in Angolela (2010) found that the personal hygiene practice among students having proper knowledge of hygiene were more likely to have clean clothes (20). Also this finding is supported from finding from qualitative part. The participants of in-depth interview (school director) said that *“poor personal hygiene practice is related with lack of awareness about personal hygiene.....”*.

This indicates that enhancement of knowledge about personal hygiene is necessary among primary school children. In this regard, the school teachers, parents and other family members could play a vital role. Even, children can also be the agents of change subsequently by spreading what they have learned in school to their family and community members (17).

7. Strength and limitation of the study

Strength of the study

- ✓ Quantitative and as well as qualitative data collection methods were utilized to triangulate the quantitative result.
- ✓ Objective measures of students' personal hygiene characteristics were included to reduce bias on over reporting the proper hygiene practice
- ✓ Most of the personal hygiene indicator were assessed in this study
- ✓ The response rate was 100%.

Limitation of the study

- ✓ The cross-sectional study design makes determining causality impossible.
- ✓ Morbidity pattern related to personal hygiene of the children was not assessed.

8. Conclusion

It can be concluded from the present study that knowledge and practice of personal hygiene among the primary school children in the study area was not satisfactory. About 41 % had poor knowledge about personal hygiene and about 54.2% had poor personal hygiene practice. Grade level, age, family occupation, family education status, being member of hygiene and sanitation club, availabilities of hygiene facilities and knowledge about personal hygiene were significantly associated with personal hygiene practice at p value <0.05.

9. Recommendation

On the basis of the findings of this study, the following recommendations are proposed:

- Teachers should teach students about personal hygiene through forming and making actively participation of students in hygiene club.
- Woreda health Bureau should develop health intervention program through health promotion and education about personal hygiene in the primary school.
- The woreda health Bureau in partnership with education Bureau should organize the training for primary school teachers which is the motivation of reminding the school children to do the proper personal hygiene.
- Woreda administration in collaboration with education bureau, infrastructural development for proper maintenance of personal hygiene along with necessary resources and facilities.
- The Ministry of health through health communication centre to use all available means of information dissemination about personal hygiene.
- Ministry of education should prepare the course of personal hygiene and inserted in the curriculum of primary school children.

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ANNEX

Annex 1: QUESTIONNAIRE- ENGLISH VERSION

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF NURSING AND MIDWIFERY

Information sheet and consent form

INTRODUCTION:

My name is -----, I am working as data collector in a survey conducted by the Nursing and midwifery department, college of health science, of Addis Ababa University. We are interviewing school children here about personal hygiene and associated factors with personal hygiene practice in order to generate information necessary for the planning of appropriate strategies (interventions) to improve the practice of personal hygiene to prevent morbidity and mortality by communicable disease that are related to poor personal hygiene practice in this area and the country. To attain this purpose, your honest and genuine participation by responding to the question prepared is very important & highly appreciated.

CONFIDENTIALITY AND CONSENT

The informed consent (accent for child) was obtained from each child and their parents.

I would like you to answer some personal questions and about personal hygiene. Your answers are completely confidential. There is no risk or harm will occur being study subject. Your name will not be written on this form. You do not have to answer any question if you don't want to and you can stop the interview at any time. However your honest answer to these questions will help us to better understand the practice of personal hygiene among school children. I would greatly appreciate your help in responding to this study. The interview will take about 10-15 minutes. Would you be willing to participate?

If yes, proceed

If no, thank and go to the next child.

QUESTIONNAIRE FOR QUANTITATIVE METHOD

IDENTIFICATION DATA

001. Interviewer's code: _____

002. Supervisor's code: _____

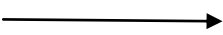
PART I: SOCIO-DEMOGRAPHIC INFORMATION

SNo	Questions	Response	Skip to
101.	Age of the child	_____	
102.	Sex of the child	1. Female 2. Male	
103.	Grade level in school	_____	
104.	Family income as compared to neighbourhood	No income Good Low I don't know	
105.	What is your family occupation?	1. farmer 2. Daily laborer 2. Merchant 3. Government Employee 4. other(specify)_____	
106.	What is your mother educational status?	1. literate (≥ 8 grade) 2. not literate(can't read and write) _____	
107.	What is your father educational status?	1. literate 2. not literate	
108.	How many people's live in your home	_____	
109.	Is there hygiene and sanitation club in your school	1. yes 2. no →	201
110.	If yes, are you a member of this club?	1. yes 2. no	

PART II: PERSONAL HYGIENE FACILITIES INFORMATION

SNO.	Questions	Response	Skip to
201.	Are you getting adequate water supply in your home?	1.No 2. Yes	
202.	Are you getting adequate water supply in the school for hand washing after defecation near toilet?	1. No 2. Yes	
203.	What is the main source of water for drinking and personal hygiene in your home?	1. Pipe / tap 2. well / spring 3. River / pond 4. Rain water	
204.	What is the distance of water source from your home and time it take in one trip?	1.near to home(< 30minute) 2. very far away (>30 minute)	
205.	Are you getting adequate soap for washing your face, hand, body and clothes in your home?	1. No 2. Yes	
206.	Is there any bar/liquid soap for hand washing near toilets in school?	1. No 2. Yes	
207.	Is there designed area for bathing, hand washing and washing clothes in your home or surrounding?	1.No 2. Yes	

PART III: KNOWLEDGE OF PERSONAL HYGIENE INFORMATION

SNO.	Questions	Response	Skip to
301.	Have you heard about personal hygiene?	1. Yes 2. No 	304
302.	If yes, What is your source of information about personal hygiene?	1. Family 2. Teacher 3. Health worker 4. Radio 5. School club 6. Others(specify)_____	
303.	What is personal hygiene includes?	1.hand washing 2. washing clothes 3. cleaning teeth 4. bathing 5. nail trimming 6. caring for foot 7. washing and combing hair 8. others(specify)_____	

304.	Personal hygiene is about general body cleanliness	1. Yes 2. No 3. Don't know	
305.	Hand washing before eating and after defecation can prevent disease.	1. Yes 2. No 3. don't know	
306.	When do you think it is necessary to wash hands?	1. after eating 2. after visiting latrine 3. before eating only	
307.	Human feces contain germs	1. Yes 2. No 3. don't know	
308.	Keeping your finger nails trimmed And clean shows good hygiene	1. Yes 2. No 3. don't know	
309.	Keeping the hair well trimmed is Part of personal hygiene	1. Yes 2. No 3. don't know	
310.	Washing the hair regularly is Part of personal hygiene	1. Yes 2. No 3. don't know	
311.	Taking bath is part of personal hygiene	1. Yes 2. No 3. don't know	
312.	Rinsing your mouth with water after meal is healthy for your teeth	1. Yes 2. No 3. don't know	
313.	Cleaning your teeth with chewing Stick/toothpaste and brush prevents tooth decay and freshens the breath.	1. Yes 2. No 3. don't know	
314.	Poor personal hygiene may result water related disease like diarrhea, scabies..etc.	1. Yes 2. No 3. don't know	
315.	What happens if one does not practice personal cleanliness?	1. may get sick and smell in class 2. Will smell in class only 3. will be punished by the teacher	

PART IV: PERSONAL HYGIENE PRACTICE INFORMATION

SNO.	Questions	Response	Skip to
401.	Have you Washed your hands yesterday?	1.yes 2.No →	404
402.	When did you wash your hand?	1.before eating 2.after eating 3.after using toilet	
403.	What material you used for hand washing?	1.water only 2. water and soap	
404.	Why did not wash your hand?	1.no water 2. not important 3. no time	
405.	How often do you take bath?	1. 1-7 days 2. 7-14 days 3. >14 days	
406.	Do you brush your teeth?	1.yes 2. no →	408
407.	How often do you brush your teeth?	1. 1-7 days 2.7-14 days 3. >14 days	
408.	What do you use to brush your teeth?	1.Water only 2.Tooth paste 3.twigs	
409.	Why did not brush your teeth?	1.no material 2. not important 3. no response	
410.	How often do you wash your hair?	1.1-7 days 2. 7-14 days 3. >14 days	
411.	How often do you wash or change your clothes?	1.1-7 days 2.7-14 days 3. >14 days	
412.	How often do you wash your feet?	1.1-7 days 2.7-14 days 3. >14 days	

Objectively observed personal hygiene characteristics

413.	Uniform	1.clean 2.dirty
414.	Finger nail	1. clean 2. dirty
415.	Finger nail trimmed	1.yes 2. no
416.	Washed and combed hair	1.yes 2. no
417.	Clean face	1.yes 2. no

THANK YOU!!!

Annex 2: GUIDING QUESTIONS FOR IN DEPTH INTERVIEW

RESPONDENT: Teacher and school director

INTRODUCTION: Good morning! I am Endashaw Fantaye, I came from Addis Ababa University. I am here today to interview school pupils about personal hygiene among school children in this school. All comments, both positive and negative, are welcome. I would like to have many points of view. With your permission, I will use a tape recorder to ensure accuracy of the data Collection. I would like to confirm that all your comments are confidential and will be used for research purpose only. Are you willing to participate in the interview? Thank you for your willingness.

SECTION I. IDENTIFICATION DATA

1. Position of respondent: _____
2. Which classes do you teach? -----
3. Which subjects do you teach? -----

SECTION II: INTERVIEW GUIDING QUESTIONS

- Q1.** What is personal hygiene? Give example.
- Q2.** What is the importance to keep one's personal hygiene?
- Q3.** Have you ever taken training on personal hygiene? Yes or no.
- Q4.** What is the personal hygiene status of your students in general?
- Q5.** Do you teach any topic on personal hygiene? Yes or no
- Q6.** Do you think it is important to teach personal hygiene as a separate course in primary schools? WHY?
- Q7.** What do you think the factors influences/associated with the personal hygiene practices among primary school children?
- Q8.** How to improve the personal hygiene practices among school children?

Annex 3: QUESTIONNAIRE: AFAN OROMO VERSION

YUNIVERSITII FINFINNEE, KOLLEJJI FAYYAA

SEENSA:

Maqaan koo_____jedhama. Ani kan dhufe qorrannoo yuniversity Finfinne, kollejjii fayyaatiif oolu ilaalchise daataa funaanachufi. Odeeffannoo funaanus dhimma qulqullina dhuunfaa eegachuu fi wantoota isaan walqabatan ta'a. Kunis tarsiiimoo dhukkuboota daddarboo (qulqullina dhuunfaa eegachuu dhabuu irraa dhufan) ittisuuf naannootti fi biyyattii keessatti fayyadan beekuuf gargaara.

ICCITI ODEEFFANNOO FI WALIGALTEE

Uunki kun kan guutamu dursa fedhiin gaaffii deebisuuf qabu erga mirkanaa'ee booda, Maatiin isaa/ishee mallattoosaanitin mirkaneessu. Itti aansuun gaaffilee waa'ee qulqullina dhuunfaa eeggachun walqabatan tokko tokko gaafatamu. Deebiin kennamus dhoksaan kan qabatamu taha. Gaaffii kana deebisuun miidhaama tokkollee sirratii hin fidu. Maqaan kee asirratti hin barreeffamu. Gaaffii gaafataman keessaa kan deebisu hin barbanne yoo jirate dhiisuu dandeessa. Akkasumas yeroo barbaaddetti addaan kutuun mirga keeti. Gaaffii sirrii ta'e deebisuun garuu qorrannoo kanaaf gahee guddaa taphata. Gaaffii hundaa deebisuuf tilmaaman dheerina daqiiqaa 10-15 ni fudhata. Qorrannoo kana keessaatti hirmaachuu keetif guddaa si galateeffadha. Itti hirmaachuuf fedhii keetii?

1. Yoo **tole** jette itti fufi.
2. yoo **lakkis** jette dhaabi.

GALATOOMI !!!

Koodii namaa oddeffanno funaanu _____

Koodii supaayizaraa _____

Kutaa I: Odeeffannoo waa'ee hawaassummaa fi dhunfaa

lakk.	Gaffii	Debii	darbii
101.	Umriin isaa/shee	_____	
102.	saala	1. Durba 2. Dhiira	
103.	kutaa meeqaffaa baratti/barata	_____	
104.	Galiin maatii keessanii yommuu ollaa keessan wajjiin ilaaltan maalfakkaata?	1. Galii hin qabnu 2. Gaariidha 3. Xiqqoodha 3. Hin beeku 4. Debiin hin jiru	
105.	Hojiin maatii keessanii maali?	1. qotee bulaa 2. Hojii guyyaa 3. Daldalaa 4. Hojii motummaa 5. Kan bira _____	
106.	sadarkaan barnootaa kan haadha keeti maali?	1. Baratee jirti(kutaa 8 ol) 2. Hin baranne(barreessu fi dubbisuu hin dandeechu)	
107.	sadarkaan barnootaa kan abbaa keetii maali?	1. Baratee jirti(kutaa 8 ol) 2. Hin baranne(barreessu fi dubbisuu hin dandeechu)	
108.	Baayyinni maatii keessanii meeqa?	_____	
109.	Gumiin qulqullinna manaa baruumsaa keessan keessaa ni jiraa?	1. Eyyee 2. Lakki	
110.	Yoo eyyee jette, ati gumii kana keessa ni jirtaa?	1. Eyyee 2. Lakki	201

Kutaa II: Odeeffannoo waa'ee Meeshaalee qulqullinnaa dhunfaa eeggachuuf

Barbaachiisan

lakk.	Gaffii	Debii	darbii
201.	Bishaan gahaa mana keessanitti ni argattuu?		
202.	Mana barumsaa keessatti mana fincaaniitii ennaa debitaan bishaan gahaa harkaan dhiqattan ni argattu?	1. Eyyee 2. Hin jiru	
203.	Bishaan dhuugaatii fi qulqullinna ofiif oolu eessaa argattuu?	1. Boombaa keessaa 2. Burqaa 3. Laga/malkaa 4. Bishaan roobaa 5. kan biraa_____	
204.	Fageenyi bishaan argachuuf mana keessan irraa altokko deemtan hammami?	1. kaluudha(daqqiqa 30 gadi) 2. Baayyee fagoodha(daqqiqa 30 oli)	
205.	Mana keessanitti saamuunaa gahaa tahe; fuula,harka, qamaa fi wayyaa dhiqachuuf argattuu?	1. Eyyee 2. hinjiiru	
206.	Mana barumsaa keessaan keessaa, saamuunaan mana fincaanii cinaatti harka dhiqaatuuf ni argattuu?	1. Eyyee 2. hinjiiru	
207.	Mana keessanitti iddoo/bakka harka, qaamaa fi wayyaa dhiqachuuf qoophaa'ee jiraa?	1. Eyyee 2. Hinjiiruu	

Kutaa III: waa'ee qulqullinaa ofii eeggaachuu irrattii beekumsa qaban ilaalchisee

lakk.	Gaffii	Debii	darbii
301.	waa'ee qulqullinna ofii eeggaachuu irrattii odeeffannoon dhageechee jiraa?	1. Eyyee 2. Lakki	→ 304
302.	yoo eyyee jette, odeeffannoo kana eessaa argatte? (tokkoo ol deebisuun ni danda'ama)	1. maatii koo irraa 2. Barsiisaa irraa 3. Hojjeettota fayyaa irraa 4. Raadiyoo 5. Gumii manaa barnootaa irraa 6. Kan biraa	
303.	Qulqullinna ofii eeggaachun , maalfaa qabata? (tokkoo ol deebisuun ni danda'ama)	1. harka dhiqachuu 2. Uffata miiccachuu 3. Ilkaan qulqulleessu 4. Qaama dhiqachuu 5. Qeensa murachuu 6. Luka dhiqachuu 7. Mataa dhiqachuu fi filachuu 8. Kan bira	
304.	Qulqullinna ofii jechuun, qulqullinnaa qaama keenya hundumaa jechuudhaa?	1. Eyyee 2. Lakki 3. Hin beeku	
305.	Harka nyaata duraa fi mana fincaanitii yoo deebinu dhiqachuudhaan dhukkuba ittisuu ni dandenyaa?	1. Eyyee 2. Lakki 3. Hin beeku	
306.	306. harka dhiqachuun yeroo kam barbaachisa jettee yaadda? (tokkoo ol deebisuun ni danda'ama)	1. Nyaata booda 2. Mana fincaanii yoo debinu 3. Nyaata dura	
307.	Sagaraan namaa jermoota qabaa?	1. Eyyee 2. Miti 3. Hin beeku	
308.	Qeensa qubaa murachuu fi qulqulleessuun qulqillinnaaf gaariidha?	1. Eyyee 2. Miti 3. Hin beeku	
309.	Rifeensa mataa sirritti murachuun qulqullinna ofii eeggachu kessaa isaa tokko.	1. Eyyee 2. Miti 3. Hin beeku	

310.	Mataa yeroodhaan dhiqaatuun, qulqullinnaa ofii eeggaachuu keessaa isa tokko.	1. Eyyee 2. Miti 3. Hin beeku	
311.	Qaama ofii dhiqachuun, qulqullinna ofii eeggaachuu keessaa isa tokko.	1. Eyyee 2. Miti 3. Hin beeku	
312.	Nyaata erga nyaannee booda afaan lulluqqachuun, fayyaa ilkaan kenyaaf gaariidha.	1. Eyyee 2. Miti 3. Hin beeku	
313.	Ilkaan ofii rigaa yookan samuunaa ilkaaniin qulqullessuun, tortoruu ilkaanii fi foolii afuuraa balleessuu ni dandeenyaa.	1. Eyyee 2. Miti 3. Hin beeku	
314.	Qulqullinna ofii sirnaan yoo hin eegganne, dhukkuboota bishaaniin dhufan kan akka garaa kaasaa/ baasaa, cittoo fi kan kana fakkaatan fiduu danda'a.	1. Eyyee 2. Miti 3. Hin beeku	
315.	Yoo qulqullinna ofii eeggachuu dhiisne, maaltu nu muddaachuu danda'a?	1. dhibamuu fi kutaa keessatti ajaa'uu 2. kutaa keessatti ajaa'uu qofa 3. Barsiisaan nu adabuu danda'a	

Kutaa IV: Odeeffannoo waa'ee Qulqullinna ofii eeggachuu irratti

lakk.	Gaffii	Debii	darbii
401.	Harka kee kaleessaa dhiqaattee jirtaa?	1. Eyyee 2. Hin dhiqanne →	404
402.	402. Yeroo kam harka kee dhiqatta? (tokkoo ol deebisuun ni danda'ama).	1. Nyaata nyaachuun dura 2. Erga nyaadhee booda 3. Mana fincaaniitii yoon deebii'uu.	
403.	Harka kee yoo dhiqattuu maal fayyadamtaa?	1. Bishaan qofa 2. Bishaan fi saamunaa	
404.	Maaliif harka kee dhiqachuu dhiistee?	1. Bishaan hin jiru 2. Barbaachisaa miti 3. Yeroo hin qabu	
405.	Qaama kee al meeqa dhiqaatta?	1. Guyyaa 1-7 2. Guyyaa 7-14 3. Guyyaa 14 ol	
406.	Ilkaan kee ni qulqulleesitaa?	1. Eyyee 2. Lakki →	409
407.	Al meeqa Ilkaan kee qulqulleesitaa?	1. Guyyaa 1-7 2. Guyyaa 7-14 3. Guyyaa 14 ol	
408.	Ilkaan kee yommuu qulqulleesitu maal fayyadamtaa?	1. Bishaan qofa 2. Saamuunaa ilkaanii 3. Rigaa mukaa	
409.	maaliif ilkaan kee riguu/dhiquu dhiistee?	1. Meshaa hinqabuu 2. Barbaachiisaa miti 3. Debiin hin jiruu	
410.	Al meeqa dabbasaa mataa dhiqqatta ?	1. Guyyaa 1-7 2. Guyyaa 7-14 3. Guyyaa 14 ol	
411.	Al meeqa wayya kee miiccitaa/ jijjiirrattaa?	1. Guyyaa 1-7 2. Guyyaa 7-14 3. Guyyaa 14 ol	

412.	Al meeqa miila/luka kee dhiqatta?	1. Guyyaa 1-7 2. Guyyaa 7-14 3. Guyyaa 14 ol	
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Wanttoota ijaan ilaalaman waa’ee qulqullinna dhunfaa eeggachuu ilaalchisee

Lakk.	Wanttoota ijaan ilaalaman	Wantii ilaalte
413.	Uniiformiin;	1. Qulqulluudha 2. Xuraayee jira
414.	Qeensii harkaa kessii isaa;	1. Qulqulluudhaa 2. Xuuraayee jira
415.	Qeensa muratee jiraa?	1. Eyyee 2. Miti
416.	Dabbasaa mataa dhiqatee fi filatee jiraa?	1. Eyyee 2. Miti
417.	Fuulli qulqulluudhaa?	1. Eyyee 2. Miti

GALATOOMI!!