

Knowledge, Attitude and Practices towards Oral Hygiene among Students of Medhanealem High School, Addis Ababa, Ethiopia

Buizayehu Abate

Kea Med College, Department of Nursing

Mahlet Ephrem

Kea Med College, Department of Nursing

Miskir Gebremariam

Kea Med College, Department of Nursing

Yodit Ayalew

Kea Med College, Department of Nursing

Tariku Shimels (✉ tarphar2008@gmail.com)

Saint Paul's Hospital Millennium Medical College

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Abstract

Background : poor oral health can affect a person's day today as well as overall quality of life. Discomforts from experience of pain, problems with eating and chewing, embarrassment about the shape, missing, discolored or damaged teeth can adversely affect peoples' daily lives and well-being. The aim of this study was to assess the knowledge, attitude and practice of oral hygiene among preparatory students of Medhanealem high School in Addis Ababa, Ethiopia.

Method : A cross sectional study design was conducted using a self-administered questionnaire from June to September 2019 in Medhanealem high school, Addis Ababa. Data was analyzed using SPSS V.20 and a descriptive statistics was employed to present results on knowledge, attitude and practices of high school students towards oral hygiene.

Result : A total of 320 students have participated in the study, of whom 207(64.7 %) were female. The study revealed that 201(62.8 %) of the respondents had poor knowledge with regard to oral hygiene, about half (52.1 %) of the students had negative attitude toward oral hygiene, and their oral hygiene practices were still low that 193 (60.4 %) of the students reported inadequate practice. The chewed stick (mefakiya) is the most common oral hygiene aid used for cleaning teeth which was adopted by 134(51 %) students.

Conclusions : The study showed that oral hygiene knowledge, attitude and practice among the secondary school students in Medanealem preparatory school were not satisfactory. The findings of this study suggest that awareness on the importance of oral hygiene needs to be enhanced along with regular education.

Background

Oral health is a key indication of overall health, wellbeing and quality of life. The World Health Organization (WHO) defines oral health as "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual capacity in biting, chewing, smiling, speaking and psychosocial wellbeing"[1].

Maintaining oral hygiene should not be underestimated in once everyday life. It can be conceived as the method of keeping oral cavity free from pathological conditions that affect mouth like gum diseases, cavities, mouth sores and ulcers. [2] Good oral hygiene is essential for the well-being of an individual. However lack of knowledge, negative attitude and poor oral hygiene practices may predispose to oral related diseases. [2, 3]. As oral health affect overall health of a child, it is therefore of paramount importance to maintain oral hygiene of school going children. If community-oriented oral health promotion programs are to be successful, the knowledge of the latest status of oral health of community is of vital importance [3]. This may ultimately contribute to the reduction of oral diseases with alarming

global burden [4] and associated cardiovascular diseases, respiratory infections, stroke and nutritional problems [5].

In Ethiopia, the practice of oral hygiene lacks proper attention and care whereby the habit of tooth brushing is found to a minimum [6, 7]. Studies conducted on primary and high school students indicate that there is a varying level of awareness to oral health ranging from 50 to 70% [8–10]. As a result, the prevalence of dental carry ranges between 20% and 75% in different setups [6, 7, 11, 12]. It was reported that tooth related problems such as; gum bleeding, dental plaques, tooth ache, and missing tooth were noted in a significant magnitude among college students [10, 12]. Studies also documented that dental carrying was associated with increased consumption of sweets, male gender and among those who do not regularly clean their teeth [7, 11, 13]. The studies published so far cover either on primary school children in regions of the country or college students. With two assessments [7, 12] conducted earlier in the community and marginalized children in Addis Ababa, information among high school students appears to be scanty and less addressed. The objective of this study was, therefore, to assess the knowledge, attitude and practice of high school students towards oral hygiene in an old high school of Addis Ababa.

Methods

Study area

The study was conducted in Medhanealem high school located in Gulele sub-city of Addis Ababa city administration, Ethiopia. Medhanealem preparatory school was established on 27 October 1924 E.C. It was named after Medhanealem in Orthodox Christianity which means “Mercy of the world” and assigned to the 27th date of the month. The school was primarily established for teaching handicraft and accounting. There was also various wood work and leather workshops. Then the school started teaching from grade one to twelve.

Once it was named “Bale Abat” meaning “of for the upper class or noble men” for about two years. After the Ethio- Italy war, the teaching process was discontinued and it became residence for Ras Hailu. After two years, it was renamed as Medhanealem and continued the teaching learning process. It started with 60 students for the first time.

It has been 87 years since the school was established. Since of 1996, the school has become a preparatory school, a school where pre-university 11th and 12th grade students will attend for preparation. Currently, it consists of 174 employees of which 120 are teachers (102 male and 18 female) and 54 are supportive staff and directors. The total number of students during the study period was 1704.

Study design and period

An institutional based cross sectional study was conducted from July to September 2019.

Source and Study Population

The source population was all high school students in Addis Ababa while Study Population was all regular preparatory students of Medhanealem high school.

Sample size determination

To attaining the maximum size, a single population proportion formula with 50% prevalence was used to obtain a final sample size of 384. Because total population was only 1704 in the study setting, a final sample of 336 was estimated by considering a final population correction factor and 5% non-response rate.

Sampling technique, data collection and quality control

Self-administered structured questionnaire was use for data collection. A simple random sampling method, based on students' roster, was employed to obtain sample recruits. In cases when students from the list were not available, the next student was recruited for inclusion. Prior to data collection, the questionnaire applied in this study has been pretested in the same school and grade students accounting to 10% of the required sample size. Appropriate changes were to the data collection instrument. Data collectors were trained on the importance of confidentiality, ethics and data collection procedures. Completeness and validity of the data collected was checked every day by the supervisors.

Variables

Dependent variable (s): The dependent variables in the present study included; knowledge, attitude and practice of high school students

Independent variables: The independent variables in the present study include; socio-demographic variables (gender, age, parents' education, grade, family income...), clinical characteristics (previous visit to a dental clinic, oral health, history of using drugs for chronic illness...), knowledge and attitude of students and parents (which the latest two might affect practice).

Operational Definitions

Good knowledge: those who answered $\geq 60\%$ of knowledge questions correctly.

Poor knowledge: those who answerers $< 60\%$ of knowledge questions correctly.

Positive attitude: given for interviewee who answered at least 60% of attitude question positively.

Negative attitude: given for interviewee who answered $< 60\%$ of attitude question positively.

Good practice: given for interviewee who answered at least 60% of practical question positively.

Poor practice: given for interviewee who answered < 60% of practical questions positively.

Ethical approval

Ethical approval for conducting the research was obtained from research and ethics committee of Kea-Med Medical College. An official letter of cooperation was obtained from department of nursing. Permission was, then, obtained from Medhanealem high school. Verbal consent was obtained from study participants. Confidentiality of information was assured by excluding any form of identification in the questionnaires and making aggregate analysis of data.

Data analysis and presentation

After collected data has been cleaned and coded, it was entered in to SPSS version 20.0 for analysis. Descriptive statistics was used to analyze quantitative data. Tables and charts were employed to present results.

Results

All the 320 respondents completed the questionnaire successfully. Among the participants, 207(64.7%) were females and 113 (35.3%) were males. The student's age ranged from 18 to 22 years where 283 (88.4) were in the 18-20 age group and 37(11.6) were in the 21-22 years age group.

Knowledge of students toward oral hygiene

Most of the student know that sweet (168 (52.5%)) and fizzy drinks (231 (72.2%)) affect oral health. However, only 58(18.1%) students know that regular dentist visit is necessary and 32(10%) know that they should replace tooth brush every 3-4 mounts. Majority of the participants (288(90%)) replied that they replace their tooth brush when it is destroyed. Only 43(13.4%) reported that tooth care is as important as care of any part of the body.

Only 59(18.4%) students knew that fluoride strengthens teeth or prevent dental decay while 229(71.6%) do not agree that fluoride strengthen teeth. Nonetheless, 32(10%) students do never know anything about fluoride. Most of the students (263(82.2%)) agreed that Carious/decayed tooth affects teeth appearance whereas 42(13.1%) did not agree with this idea. The major reason for brushing teeth was to remove dental decay as responded by 130 (40.6%) students (**Table 1**).

Table 1: Knowledge of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Oral hygiene Knowledge questions	Frequency	%
Eating too much sweets lead to:		
Affect the tooth health	168	52.5%
Affect the gum health	3	0.94%
Cause bad mouth odor	14	4.4%
All of the above	111	34.7%
Not affect oral health	12	3.8%
I don't know	12	3.8%
Do fizzy drinks affect the dental health?		
Yes		
No	231	72.2%
Don't know	63	19.7%
	26	8.1%
Are regular visits to dentist necessary?		
Yes		
No	58	18.1%
Don't know	168	52.5%
	94	29.4%
When you must replace your toothbrush?		
When it is destroyed		
After 3-4 months of use	288	90%
	32	10%
Do the dental diseases impact the general body health?		
Yes		
No	69	21.6%
Don't know	219	68.4%
	32	

		10%
<hr/>		
Care about teeth is important as any part of body?		
Yes		
No	43	13.4%
Don't know	170	53.1%
	107	33.4%
<hr/>		
How often you must visit the dentist?		
Every 6 months		
Occasionally	9	2.8%
During dental pain	9	2.8%
Never visited	39	12.2%
	263	82.2%
<hr/>		
Fluoride strengthens the teeth		
Yes	59	18.4%
No	229	71.6%
Don't know	32	10%
<hr/>		
Carious/decayed tooth affect teeth appearance		
Yes	263	82.2%
No	42	13.1%
Don't know	15	4.7%
<hr/>		
Brushing the teeth prevent dental decay		
Yes	130	40.6%
No	73	22.8%
Don't know	117	36.6%

Overall knowledge level of the students towards oral hygiene was low in this study. Majority (201(63%)) had low knowledge and 119(37%) had higher knowledge as shown in (**Figure 1**).

Figure 1: Level of knowledge among secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Attitude of students toward oral hygiene

Majority of the students (220 (68.7%)) answered that oral hygiene is not important for good oral health and well-being, while only 100(31.3%) students believe that it's important. About 130(40.6%) students reported that neither the parents nor the teachers showed concern about oral hygiene. A three fourth (75%) of the students thought that visiting a dentist is important and they would advise other students to perform at home oral hygiene practices. When given a chance, about a two third (70.6%) of the students would go for a checkup. As shown in table 4, about 263(82.2%) students have never visited a dentist in the past. Among those who have a history of dental visit, 9 (2.8%) had regular dental visit, 39(12.2%) visited a dentist only when in pain, and 9(2.8%) visited a dentist occasionally.

The reasons given for absence of regular dental visit were high cost (87(27.2%)), no nearby dental clinic (15(4.7%)), lack of time (100(31.3%)). Meanwhile, about one third (31.9%) of the students do not think it is important to visit a dental clinic (**Table2**).

Table 2: Attitude of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Oral hygiene attitude questions	Frequency	Percent
Do you think is your oral hygiene important to your oral health and general well-being?		
Yes		
No	100	31.3%
	220	68.7%
At home/ school are your parents or teachers concerned about your oral hygiene		
Yes	190	59.4%
No	130	40.6%
Do you think it is important for parents and teachers to be concerned with oral hygiene		
Yes	240	75%
No	80	25%
Have you visited a dentist before?		
Yes	57	17.8%
No	263	82.2%
If yes, then for what reason?		
Decay	5	8.8%
Pain	39	68.4%
Filling	3	5.3%
Extraction	10	17.5%
Any other specify	-	-
Do you think it is important to visit a dentist for check-up		

Yes	92	28.7%
No	26	8.1%
Don't know	202	63.1%

How often do you visit the dentist?

Regularly (every 6 month)	9	2.8%
Occasionally	9	2.8%
Only with dental pain	39	12.2%
Never visited a dentist	263	82.2%

What Do you think reason behind not visiting the dentist

High cost treatment	87	27.2%
No clinic near by	15	4.7%
No time	100	31.3%
Do not think it is important	102	31.9%
No specific reason	16	5%

Given the chance to visit a dentist now for check-up, would you go

Yes	226	70.6%
No	94	29.4%

Would you advice other students to go for the checkup

Yes	238	74.4%
No	82	25.6%

The overall attitude evaluation showed that about half (52 %) of the participants had a negative attitude and 153(48%) participants had positive attitude of oral hygiene (**Figure 2**).

Figure 2: Types of attitude of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Practice of students toward oral hygiene

Most (263(82.2%)) students clean their teeth. More than half (155(58.9%)) of the students brush their teeth with horizontal strokes while 69(26.2%) brush with vertical strokes. Few of the students (2.7%) use circular strokes to brush their teeth. Among students who do not brush their teeth, half (51%) reported that they did not think it was necessary.

The chewed stick (Amharic; Mefakiya) is the most common oral hygiene aid used for cleaning teeth, adopted by 134(51%) while 65(24.7%) of the students brushed their teeth with a tooth brush with tooth paste. However the use of dental floss was still not popular among the secondary school students as presented in this study. About a third (30.8%) of the students brushed their teeth at least twice per day or more compared to 119(45.2%) of the students who brushed at least once a day. Around 159(60.5%) of the students reported that they spent 2 minutes or more brushing their teeth. Only 32(12.2%) of the respondents changed their toothbrushes with in 3-4 months of use. A few number of students (2.7%) reported that the time of tooth brushing was before going to bed. In addition 24(7.5%) students did clean their tongue.

Among the reported sources of student's information about oral health practice, parents were the most popular (120(45.6%)) followed by friends (93(35.4%)). However, the role of parents in the supervision of their children's oral hygiene was poor accounted only by 35 (13.3%). About 107 (40.7%) parents advised but did not watch their children as they brushed their teeth, while the rest 121 (46%) indicated that they did not care to supervise their children's oral hygiene practice. On the other hand, 37(14.1%) students did not agree to stop cleaning if their gum bleeds when cleaning their teeth (**Table 3**).

Table 3: Practice of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Oral hygiene practice questions	Frequency	Percent
Do you brush (clean) your teeth? (n=320)		
Yes	263	82.2
No	57	17.8
In question 1, if you answer "I don't brush", what is reason for not brushing? (n=57)		
Doesn't think it's necessary	7	12.3
Could not afford	29	51
Other	21	36.8
In question 1, if you answer "I do brush", how do you brush your teeth? (n=263)		
Use horizontal strokes	155	58.9
Use vertical strokes	69	26.2
Both in horizontal and vertical directions	32	12.2
Circular strokes	7	2.7
Do you clean your tongue? (n=320)		
Yes	24	7.5
No	296	92.5
How often do you brush your teeth (frequency)? (n=263)		
Once per day	119	45.2
Twice a day	81	30.8
Same times	63	24
What tools do you use to clean your teeth?(n=263)		
Toothbrush and paste	65	24.7
Chewed stick (Mefakiya)	134	51
Both tooth brush and chewed stick	55	21

Dental floss	-	-
Toothpick	9	3.4
Who advise you to use the tool mentioned in question the above? (n=263)		
Parent/guardian	120	45.6
Teacher	3	1.1
A friend	93	35.4
A dentist	29	11
Other(specify)_	18	6.8
Role of family in supervising oral hygiene practice (n=263)		
Parents watch and advise	35	13.3
Parents advise but do not watch	107	40.7
Parents never care watch	121	46
When do you brush your teeth? (n=263)		
Morning	162	61.6
Noon(after lunch)	65	24.7
Before going bed	7	2.7
Before going to bed and Morning	29	11
How long do you brush your teeth? (n=263)		
Less than one minute	14	5.3
One minute	90	34.2
Two-five minute	159	60.5
You should change your toothbrush (n=263)		
After 3-4 months	32	12.2
After one year	29	11
When the bristles start to bend	105	39.9

When the bristles are getting discolored	97	36.9
If your gums bleed you should stop cleaning the teeth (n=263)		
Disagree	37	14.1
Agree	106	40.3
Do not know	120	45.6

* More than one response

This study showed that the overall oral hygiene practice among the high school students was inadequate (193 (60%)) (**Figure 3**).

Figure 3: Practice level of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

Discussion

Oral health is considered as one of the most important health issues worldwide. In Ethiopia, there is very little epidemiological data concerning oral hygiene and its implications. Today, oral hygiene including tooth brushing is considered as an easy and affordable procedure for people of different age groups. Adequate knowledge on the causes, prevention, and signs of dental disease depicts that students can retain their oral hygiene.

The rapid changes in the pattern of oral disease have been noted at the global level during the past decade [14]. Most people in the developed countries show great interest in oral hygiene and that 16-18% of boys in 32 countries in Europe and North America practiced tooth brushing more than once a day, whereas girls reported better compliance ranging from 26 to 89% [15].

This study evaluated the oral hygiene knowledge, attitudes, and practices of secondary school students found in Medhanealem preparatory school in Addis Ababa city. A total of 336 students have participated and fulfilled the required sample size making a 100% response rate.

The current study showed that 62.8% of the students had poor knowledge towards oral hygiene. This might be due to the lack of an organized and systematic oral health education program in the schools and the community at large. Lack of knowledge towards oral hygiene could reflect that the information on dental health is most likely limited to a certain level of understanding. This result is lower than the previous study done in Debre Tabor town where 60% students had good oral hygiene knowledge [8] and a finding from India [16] which reported about 90% level of knowledge.

On the other hand, the figure is higher compared to findings from India [17] and Saudi Arabia [18]. The fact that significant proportion of the students do not know that sweet and fizzy drinks affect health, only few have a history of visiting dental clinics and the fact that few knew that they should replace tooth brush every 3-4 months may show awareness gaps to be assisted by parents and schools. This finding is not in accordance with the results of a similar study conducted by Priya, et al. [19].

In the present study, the attitude scale showed that more than half (52.1%) of the participants had a negative attitude towards oral hygiene. This result is still lower than a figure by a previous study done in Debre Tabor town [8]. However, it is higher than a finding reported in Indian students which majority (79.8%) had a favorable attitude toward oral hygiene [16]. This is also explained by some proportion of students who did not agree that gums bleedings can be prevented by brushing teeth. The magnitude of such belief has shown a remarkable variation from other studies [8, 16, 20].

The level of practice to maintain proper oral hygiene practice is inadequate for majority of the students in the present study. The chewed stick (Mefakiya) is the most common oral hygiene aid used by half proportion of the respondents. These finding is lower than the figure by studies conducted in Nigeria and most African countries which traditionally used the stick for cleaning and strengthening the teeth [21, 22]. The choice of chewing sticks to be used in most cases depends on its cleansing action on the teeth, the therapeutic value, or preferred taste or flavor [23]. A lower figure of using the local chewed stick was documented by a study in Fitch town, in central Ethiopia [24].

Likely, 81(30.8%) students brushed their teeth at least twice per day while 119(45.2%) reported to have brushed at least once a day. Even though the overall estimate is measured by a stronger criteria (a 60% or more satisfactions of practice questions), the study shows that reasonable gap exists to implement oral hygiene among the students. Apart from knowledge and attitude issues, affordability of the materials was mentioned as one of the challenges. These findings are also supported by the studies conducted in Fitch preparatory school [24]. The result is higher compared to a finding in three regions of Ethiopia [25].

The difference, however, could most likely be due to time and socio-economic variations by the fact that the earlier survey was conducted many years back in different regions of the country [25].

Majority of the students reported that they change their tooth brushes when they get discolored or bended and, only a few proportion responded to changing them within 3 to 4 months. This shows proper practice is not in place to utilize tooth brushes. The American Dental Association (ADA) recommend using a tooth brush that has soft bristles and also people should change their toothbrush every 3 months or when the ends start to look destroyed [26].

In our study, reported sources of student's information about oral health practice parents were the most popular, followed by friends. This result is not in accordance with the finding from the similar studies conducted by Nigeria which showed that teachers, media (Television) and parents accounted descending ranks [21]. This may indicate that parents may account greater role in promoting family health whereas teachers' role is limited to assist with their students' healthy behavior in schools of the study area. The fact that students gain oral health experience through peer interaction is an important aspect built during their socialization process.

In the present study, only the practice of dental visit is poor. Among those (57 (18%)) students with a practice of dental checking, few (16%) reported to do it regularly while majority (68.4%) visited a dentist when only in pain. In addition to the inverse difference in proportion of adolescents who visit dental clinics, a study by Yusuf and Booyen [27] reported that the principal reason for brushing teeth was related to cosmetic purpose unlike prevention of dental health reported in our study. Yet, studies suggest that children and adolescents should see a dentist every 6 months to help prevent cavities while adults who practice good dental hygiene every day need to go less frequency [28].

More than half (58.9%) of the students in the present study reported to brush their teeth with horizontal strokes followed by about a quarter of them (26.2%) who brush with vertical strokes. This result is not in agreement with a finding from India [28] where majority used a combined technique of brushing. Likely, it was noted that most of the respondents do not clean their tongue and of those who clean their teeth, quite a few brush when going to bed. The result is lower to a report in India [28] and in disagreement to the ADA recommendation [26].

The current study reported that the use of dental floss was still not popular among the secondary school students. In contrast, the studies conducted in Nigeria, the use of dental floss was recognized by slightly more than a third of the students [21] and over a two third of adolescent pregnant women in Australian [30]. The latter higher figure could be due to population variation despite little existent of the practice in Ethiopian culture. This may be because the use of floss is to find less popularity and accessibility in our environment. The ADA recommends flossing once a day. Flossing is used to remove food particles or plaques lodged between teeth more efficiently than toothpicks [29].

This study is has tried to describe the current characteristics of high school students' knowledge, attitude and practices towards oral hygiene in Addis Ababa. Generalizability could not be drawn for all high

school students in other areas and recall biases might affect the magnitude of estimated reported. Further researches would be warranted with larger populations and robust analytic methods to find a more precise measurement and determinants of students' knowledge, attitude and practice.

Conclusions

The current study showed that 62.8% of students had poor knowledge toward oral hygiene. Similarly, more than half proportion of Medhanealem high school students had negative attitude towards oral hygiene. The level of practice to maintain proper oral hygiene practice was found inadequate among majority of the students. The chewed stick (Mefakiya) is the most common oral hygiene aid used by half proportion of the respondents.

Abbreviations

ADA- American Dental Association

DMFT- Decayed, Missing and Filled permanent Teeth

KAP-Knowledge Attitude and Practice

SPSS- Statistical Package for Social Sciences

WHO- World Health Organization

Declarations

Ethics approval and consent to participate

Ethical approval for conducting the research was obtained from the research and ethics committee of Kea-Med Medical College. An official letter of cooperation was obtained from department of nursing. Permission was, then, obtained from Medhanealem high school. Verbal consent was obtained from participants. Confidentiality of information was assured by excluding any form of identification in the questionnaires and making aggregate analysis of data.

Consent for publication

Not applicable.

Availability of data and material

The datasets during and/or analyzed during the current study are available from the corresponding author.

Competing interests

The authors declare that there are no competing interests.

Funding

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Authors' contributions

BA, ME, MG and YA conceptualized the study. All authors designed the proposal and were involved in the supervision of the data collection. BA and ME did the data entry while MG and YA completed the analysis and write up. TS supervised the whole job and revised interpretation of findings. All of the authors have read and approved the final manuscript.

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Figures

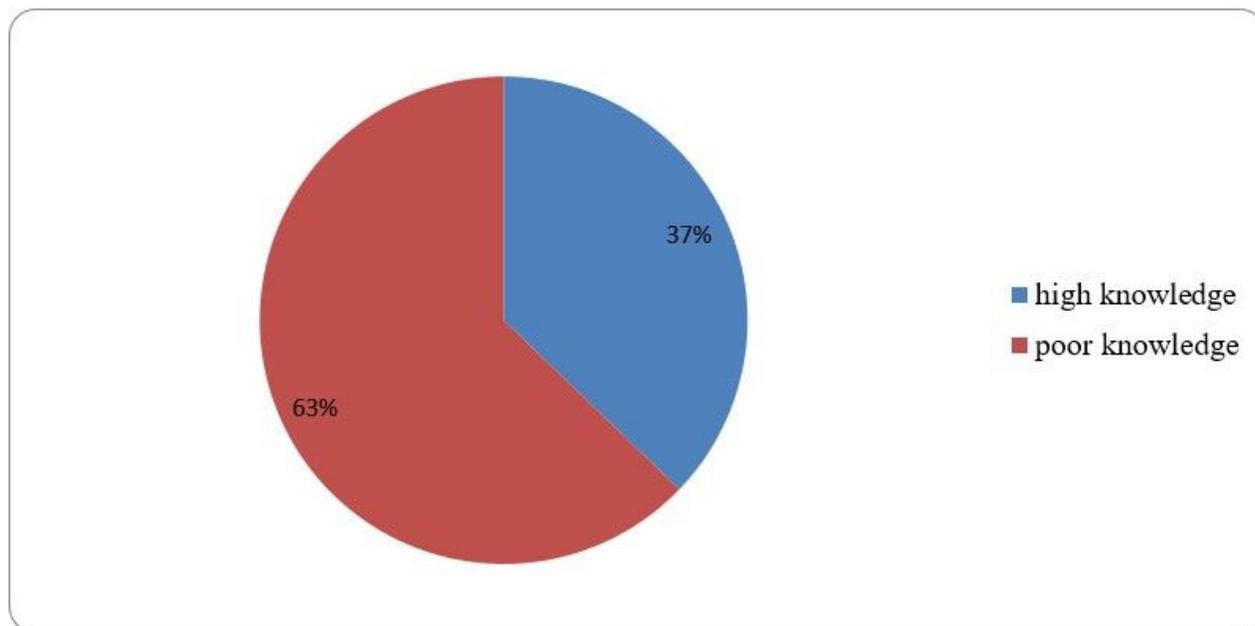


Figure 1

Level of knowledge among secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

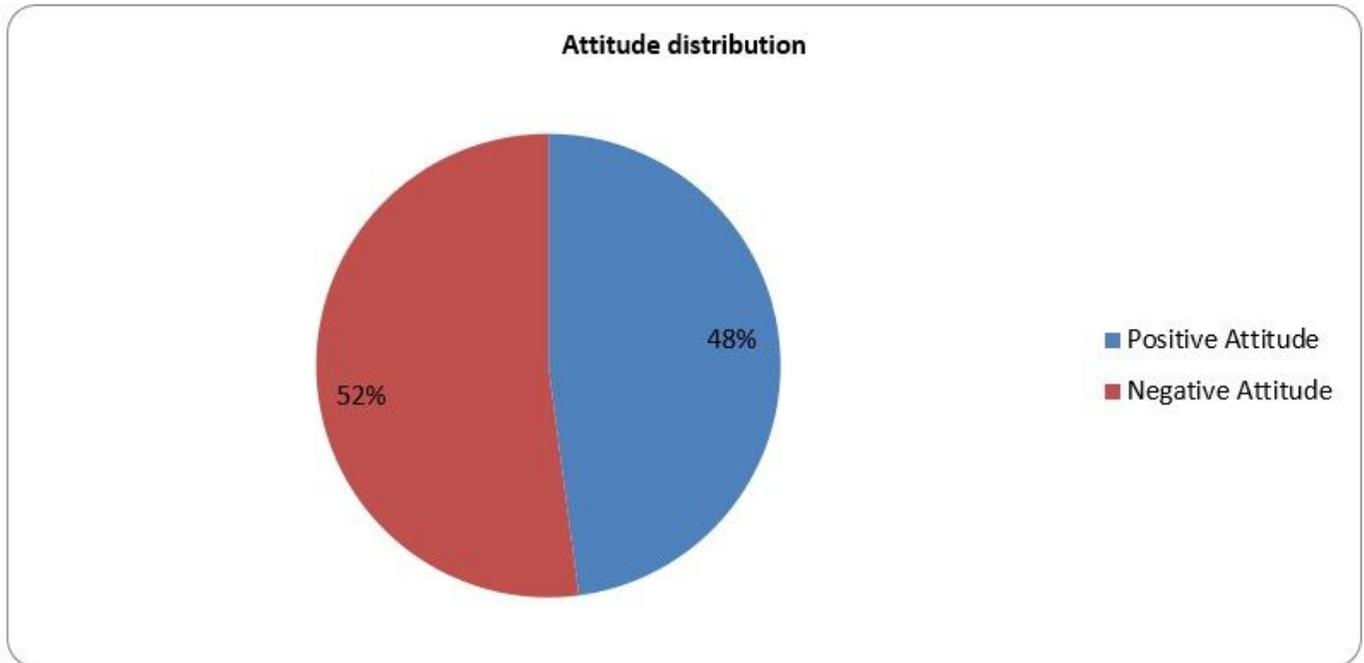


Figure 2

Types of attitude of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)

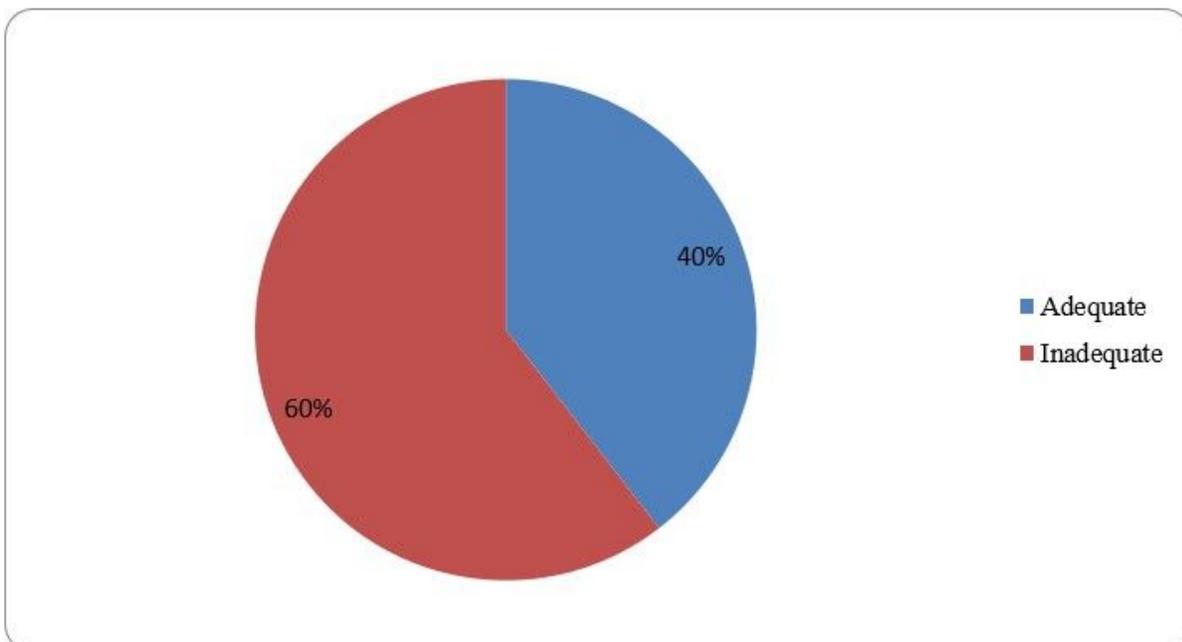


Figure 3

Practice level of secondary school students towards oral hygiene in Medhanealem High School, Addis Ababa, Sept 2019 (n=320)