Prevalence of Oral health care and problems among Rift Valley university health sciences students in Adama, South East, Ethiopia

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ABSTRACT:

Objective: Oral hygiene's is the practice of keeping the mouth healthy and clean by brushing and flossing to prevent teeth decay and gum disease. Oral diseases are directly associated with poor practices of oral hygiene and bad breath. In Ethiopia there is no documented studies conducted on the knowledge and practices of oral health among health sciences students.

Methods: A quantitative facility -based cross sectional study was employed among 422 health science students that were selected by systematic random sampling from registry. Data entry, cleaning was made using Epi Data version 3.1 and analysis was performed by using SPSS 16.

Results: The study showed that 93.1% reported experience of the participants clean their teeth. Of which only 49.5% brushed with tooth pastes. About 80.3% of the participants experienced oral problems in their life. 43.8% had gum bleeding, 31.5% had dental plaques. Among 40.8% who had tooth ache, 31.5% of them had tooth decay, 68% had lost one of their tooth due to illness. This study indicated that risk of dental caries was higher for male 38% (95% CI=31, 45.7) than female 26 %(95% CI=20.8, 32.4). Predictors of dental caries were eating chocolate, being male and presence of dental plaques.

Conclusion: This study indicated that oral health problems were common among study participants. This need appropriate health information dissemination in all schools that provide academic services in Ethiopia.

KEYWORDS: dental caries, oral care practices, rift valley university, ethiopia

INTRODUCTION: Oral Health problems are related to behaviour, and the prevalence of oral health problems are increasing in developing Particularly in Africa [1,2]. In developed countries periodontal disease and dental caries has declining with improvements in oral hygiene and a decrease in the consumption of sugar products , alcohol, substance abuse, cigarette smoking, poor oral care practices and inadequate health service utilization[2,3]. In Ethiopia, it has been shown that significant portions of the population do carry out oral hygiene procedures. However, the methods used for oral hygiene include chewing sticks (mefakia in most part of Ethiopia, siwak in eastern part and Rigga in Afan Oromo, prepared from a variety of plant stems, twigs and roots), plant stems with charcoal powder, use of fingers, or toothbrushes with or without toothpastes [4]. A study in Israel [5], showed that 57% of Ethiopian immigrants had a bad health status of their teeth, 56% had gum problems, and 60% suffered from tooth ache. Studies in Gondar indicated that 36.3% of school children had dental caries[6]. Similarly study conducted among adolescents in Addis Ababa revealed 47.4% had dental caries, 35.4% had periodontal disease 4.4% reported bad mouth odour [7]Oral hygiene's is the practice of keeping the mouth healthy and clean by brushing and flossing to prevent teeth decay and gum disease. Dental health has received limited attention in many countries in sub-Sahara Africa and also in Ethiopia. Hygiene is the single most significant factors when it comes to the prevention of oral diseases. In the future, today's students of health will provide oral care services as the number of dentists in Ethiopia were very low specially will be responsible for public oral health education. Little is known about oral health problems and care behavior of students of health sciences trainee in Ethiopia, particularly in Adama. The aim of this study is to determine magnitude of oral health problems and oral health care behaviours among health science

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trainee students, which are undergraduate auxiliary health sciences students learning in faculty of health science in Rift Valley University.

METHODS

This study is conducted in Adama town 100km away from Addis Ababa, capital city of Ethiopian, on the south east direction. Rift Valley University has more than 20 branches all over the countries and is among top private University that provide educational services in Adama town and surrounding community in different fields of studies. Among the facilities this particularly study is focused on students of health sciences who currently second year and above years in their respective departments. These students were considered a pool sample with equal knowledge in the field of oral health and also because they are attended some health courses and visited health institution for practices. This study was conducted from January 16 to June 2014 by using cross sectional community based design. The source population were all students enrolled in Rift Valley University in 2014 and second year above in faculty of health sciences who were systematically selected from student registry and included in the survey. Year one students were excluded from the survey purposely as most of them did not took health related coursed during the survey.

Sample size was determined by using single population proportion formula with the estimated prevalence of oral health problems of 50% (because no study were conducted in similar study groups.) and margin of error of 0.05, the samples size were 422 including 10% of non-response rate.

Sampling technique and procedure

The students were selected systematically from departments of public health officers, nursing, and midwives batches (the 2nd, 3rd years and 4th year) proportional to the number of students in each class and years. After identifying the sample size and number of students enrolled in each departments, the samples were distributed to each departments based on population proportions to sample size to each school. Samples were selected by systematic random sampling method from registry of students.

Data were collected using structured self-administered questionnaire and the questionnaire was prepared based on the literature. The questionnaire was first prepared in English and then translated to Afan Oromo and Amharic version and data collection were supervised by fluent speaker of both languages.

Data quality management

Two day Training was given for data collectors and supervisors and pretest were done among 5% of participants out of study area and corrections were made based on the results before final survey. Finally data were collected by properly designed data collection instrument developed and under supervision of investigators. Every day the collected data were reviewed and checked for completeness and consistency. Data were collected on general information about their sociodemographic background, Oral health knowledge on matters like causes and prevention of dental caries and gum disease, dental health information on oral health and its treatment. Similarly their attitude toward the prevention of oral diseases, importance of dental care was assessed and their Oral hygiene practices, mainly brushing and rinsing habits, dental visits and services.

Oral examination conducted for those who reported had dental caries and recorded as being present when a lesion in a pit or fissure or on smooth tooth surface had a detectable softened floor, undermined enamel or softened wall. A filled tooth also included in this category when it contains one or more restorations and one or more areas that are decayed. When any doubt existed, caries was not recorded as present. Tooth was considered missing because of caries if a person gave a history of pain and/or presence of cavity prior to extraction.

Data processing and analysis

Data were double entered into Epi Data version 3.1 and after data entry data were cross checked for completeness and consistency after transferred to SPSS version 16 and Stata 11 for analysis. Descriptive statistics using frequencies, proportions and table was used to present the study results. Odds ratio and 95% confidence interval was used for checking the strength of associations between dependent and independent variables, bivariate analysis was used to identify factors associated with nutritional status. Variables that was found significantly associated ($p<0.2$) in the bivariate analysis was entered into the final binary logistic regression model to adjusting confounding.

Ethical Consideration

Prior to starting the work the commencement of actual

data collection process, the study proposal protocol was approved by Rift valley University College of Health Science and the Institutional Research Ethics Review Committee. Information regarding the study was explained to the participant, including the procedures, potential risks and benefits of the study. The respondents were informed that they can refuse not to participate in the study. Participant's confidentiality of information was assessed by excluding names and identification in the questionnaire and will assure them that the information will be used only for research purpose.

RESULTS

A total of 422 students were studied of whom 183 (43.4 %) were males and 239(56.6) were females and the response rate was 100%. The majority, 233(55.2) were Muslim. The ethnic composition of the sample was 234 (55.5%) Oromo and followed by Amhara 23% (Table 1). Majority of the students were from public health officer department (50%) from second year students (46.7%)

Table 1: socio-demographic characteristics of the study participants, Rift Valley health sciences student, 2014

Variables	Category	N	%
Age	20-25	334	79.1
	>25	88	20.9
Sex	Male	183	43.4
	Female	239	56.6
Religion	Muslim	233	55.2
	Orthodox	106	25.1
	Protestant	74	17.5
	Others	9	2.1
Ethnicity	Oromo	234	55.5
	Amhara	100	23.7
	Sumale	14	3.3
	Tigiray	21	5
	Gurage	33	7.8
	Others	20	4.7
Departments	Public Health officers	211	50.0
	Nurse	116	27.5
	Midwives	95	22.5
Academic years	2nd year	197	46.7
	3rd year	144	34.1
	4th year	81	19.2
Marital status	Married	103	24.4
	Single	201	71.3
	Divorced	4	0.9
	Z 14	3.3	
Monthly income of	Less than 500	336	79.6
Students	500-1000	86	20.4

Oral health care practices

Of the study participants, 93.1% of them reported they had experiences of cleaning their mouths regularly. But only 49.5% uses rush and pastes (used fluoride toothpaste), while 43.6% uses pick (local Mefekiya, Siwak/ Rigga) and 6.8% uses water. Of those who reported to clean their mouth only 46.0% brushes their teeth twice a day or more often. 69.7 % of the participants brush their tooth in the morning before breakfast, 42.4% brush after breakfast 20.9% brush after lunch and only 16.6% brushes after dinner. The proportion of females brushing was higher across all time of brushing. Regarding reported length of brushing 78.6% of the participants reported brushed less than recommended three minutes (Table 2). Regarding perception of their Oral cleanness, 59.0% were satisfied/happy with their oral health conditions while the rest (41%) reported it need improvements. 51.9% of the respondents have good feeling about their tooth condition and remaining (48.1) had bad feeling about their oral condition they stated it need management (Table 2).

Table 2: Oral health care practices among study participants by sex

Variables	Category	Overall		Sex	
		N	%	Male	Female N%)
Tooth brushing materials	brush and pate	209	49.5	74(17.5)	135(32)
	Pick	184	43.6	96(22.7)	88(20.8)
	Water	29	6.8	13(3)	16(3.7)
Clean mouth	Yes	393	93.1	172(94.0)	221(92.5)
	No	29	6.9	11(6.0)	18(7.5)
Cleaning Frequency in a day	Once daily	190	45.0	86(20.4)	104(24.6)
	more than one times in a day	194	46.0	97(23)	135(32)
Length of brushing tooth for paste users	Less than three minutes	165	78.6	55(73.3)	110(81.5)
	=three minute	45	21.4	20(26.7)	25(18.5)
Perception about their oral cleaners	Satisfied	249	59.0	110(60.1)	139(58.2)
	Should be improve low	173	41.0	73(39.9)	100(41.8)
Feeling about their tooth condition	Very happy	219	51.9	100(54.6)	119(49.8)
	Not happy	203	48.1	83(45.4)	120(50.2)
	Morning before breakfast	294	69.7	140(47.6)	154(52.4)
	Morning after breakfast	99	42.4	80(80.8)	19(1(.2)
Time cleaning brushing their mouth	After lunch	88	20.9	58(65.9)	30(34.1)
	After dinner	70	16.6	48(68.6)	22(31.4)

*Data have multiple responses

Prevalence of dental health problems

Among study participants, 80.3% of them reported they had at least one kind of dental health problems (dental decay, gum bleeding or bad odour), 31.0% reported had dental plaques, 21.8% had bad odour, 43.8% had gum bleeding and 40.8% had tooth ache. Among reported dental decay (31.5%), 61.7% had one, 30.8 had one to five and 7.5% had reported greater than six deciduous teeth(Table 2). One third (33%) of the students visited dentists recently (in the last 12 months), of which 30.9%, 30.2% 20.9% and 10% had got managements of follow up, tooth extraction, cleaning and filling respectively (Table 3).

Table 3: prevalence of dental health problems among study participants by sex, 2014

Variables	Category	Overall		Sex		X^2 test	
		N	%	Male	Female N%	X^2	p-value
The management sought in your last visit (N=139)	Follow up and cleaning	72	51.8	37(49.3)	35(54.7)	1.00	1.00
	Filling	14	10.1	8(10.7)	6(9.4)	0.16	0.69
	Tooth extraction	42	30.2	21(28.0)	21(32.8)	0.002	0.89
	Others	11	7.9	9(12.0)	21(32.8)	3.58	0.86
Experience dental problems	Yes	339	80.3	147(80.3)	192(80.3)	0.0	0.99
	No	83	19.7	36(19.7)	47(19.7)		
Tooth plague (n=131)	Yes	131	31.0	55(30.1)	76(31.8)	0.14	0.70
	No	291	69.0	128(69.9)	163(68.2)		
Bad breath(n=137)	Yes	137	32.5	55(30.1)	82(34.3)	0.86	0.36
	No	285	67.5	128(69.9)	157(65.7)		
Tooth ache(n=172)	Yes	172	40.8	82(44.8)	90(37.7)	2.2	0.14
	No	250	59.2	101(55.2)	149(62.3)		
Experience gum bleeding(n=185)	Yes	185	43.8	90(49.2)	95(39.7)	3.74	0.53
	No	237	56.2	93(50.8)	144(60.3)		
Do you have decayed teeth	Yes	133	31.5	70(38.3)	63(26.4)	6.8	0.009
	No	289	68.5	113(61.7)	176(73.6)		
Number of deciduous teeth(N=133)	No	289	68.5	113(61.7)	176(73.6)	1.00	1.00
	1	82	19.4	43(23.5)	39(16.3)	4.66	0.03
	2-5	41	9.7	25(13.7)	16(6.7)	7.06	0.007
	=6	10	2.4	2(1.1)	8(3.3)	1.49	0.022

Factors associated with dental health problems

The proportion of oral care practices using tooth paste were higher among female compared to male (17% vs 32 in male % in female) and the association is scientifically significant (X^2=11.2, P=<0.001). While significant proportion of male participants had deciduous tooth and were visited dental clinics recently compared to female. The proportion of students who visited dentist were higher among male student compared to female student and it is statistically significant (x^2=4.8, p=0.028). Similarly Male had more decayed tooth (38.3%) than to female (26.4%) X^2= 6.9, p=0.009) (Table 2). Marital status, age current residence family size, father and maternal educations, ethnicity academic years monthly income and watching Television did not showed significance association in binary logistic regression and then removed from the models. Among factors associated with dental caries in binary logistic regression, Presence of dental plaques had collinearity with dental caries and was furtherly removed from the model. Finally, sex, had bad mouth odour and eating chocolate at least one times per week had significant association with dental caries after controlling for confounding. The odd of having dental cares were 2.2 times higher among male student compared to female students (95% CI=1.37, 3.4). Those who eating chocolate at least one times per week were significantly developed dental caries compared to others who never eat chocolate (COR=2.1, 95% CI=1.14-3.79)(Table 3). Similarly participants who had reported bad odour had more likely to had dental caries than had better off and who have good feeling

about their oral health are protected from dental caries but loss significant in final model.

Table 3: Factors associated with dental caries among health sciences students

Variables	Responses	Dental caries		COR (95% CI)	AOR (95% CI)
		Yes	No		
Religion	Muslim	84	149	1.6(1.06-2.45)*	1.4(0.88-2.21)
	Others	49	140		1.00
Mouth odour	Bad	53	84	1.62(1.05-2.49)*	1.4(0.88-2.27)
	Not Bad	80	205		1.00
Dental plaques	Yes	73	58	4.8(3.1-7.6)*	4.8(2.9-7.6)**
	No	60	231		1.00
Visited Dentists	Yes	49	62	2.14(1.4-3.4)*	1.3(0.78-2.24)
	N0	84	227		1.00
Feeling about their oral	Happy	59	164	0.64(0.43-0.98)*	0.8(0.5-1.3)
	Not happy	74	129	1.00	1.00
Sex	Male	70	113	1.73(1.14-2.62)	2.2(1.37-3.40**
	Female	63	176		1.00
Eat chocolate IX/weeks	Yes	28	38	1.76(1.03-3.02)	2.1(1.14-3.79)*
	No	105	251		

*Only factors significantly associated with dental caries in binary models were shown in the final model

DISCUSSION

This study showed that 80.3% the study participants had at least one type of oral problems. About 49.5% of the participants uses tooth pastes and 46.0% of the participants clean their mouth as recommended by WHO. The major predictors of dental caries were eating chocolate, sex of the respondents and presence of dental plaques. This study shows that oral health problems were highly prevalent in the sample of young adolescents in Rift Valley University faculty of health science students in Adama branch. This finding is greater than study conducted in Addis Ababa **47.4%** [7] and 74% among marginalized children [8]. This finding call for attention for oral health among this segment of population. It is also worthy to recall that the interpretation of this study should be by bearing in mind that this students were attended college of health science that they are supposed to give education and treatment for the public after graduation where most of graduates will be assigned in remote public health services that do not accesses to dentists. However, oral health problems may occurs before they joined the health college. This study indicated that only 49.5% of the participants were brushed their mouth with tooth pastes. This finding is lower than bank workers in Addis Ababa[9] but higher than children from in Addis Ababa [7]. So we expect this student to have good knowledge and practices about their oral health than other segments of the community which need services from them. We expect that health beliefs models and practices to ward oral health must go beyond this finding. It is believed that all students will learn at least the concept of health personal hygiene and infection prevention. With this in mind the proportion of students who attend care of their oral hygiene is considered low. On the other hand it should be reminded that user of this data should consider the occurrences oral health problems among this study participants may be a long standing problems that may happened to them before joining the health college. This study showed that prevalence of dental caries was 31.5%. This finding is less than a cohort of Ethiopian immigrants to Israel 57% [5] and finding from children north west part of Ethiopia (36.3%) [10] and Adolescents of Addis 47.7% [7]. The difference in the finding may be due to socio demographic factors and the profession of the student may reduce the risk of dental caries of the participants, only 26.3% of them had visited a dentist during the last 12 months, which is a lower than that found in the

survey of the Kuwaiti population (60%) [11].This should need to encourage the health seeking behaviours of that teach them about the importance of oral health in the curriculum of health departments.

About 93.1%, of students had experiences of clean their mouth but only 46.0% brushing their tooth twice a day recommended. This finding is greater than health sciences students in Kuwait (33%) [11] and Turkey(25%) [12], but less than study in Lebanon college students (65%).this variation may be associated sociodemographic characteristics of the participants. Students who ate chocolate were more likely to have dental cares compared to counterparties. This is due to increasing in consumption of sugary beverages in urban areas could be attributed to increasing prevalence of oral health problems and mechanism for teeth destruction has been well established [13, 14]. The bacteria then convert glucose, fructose, and most commonly sucrose (table sugar) into acids. If left in contact with the tooth, these acids cause demineralization of the hard tissues of the teeth[15]. The current consumption of sweet beverage with poor practices of oral health may be one of the determinants of high prevalence of dental caries in the study area.

Some of the limitations of this study is the participants were health faculty students ranging from second year to fourth, therefore their knowledge may affect their practices that indicated higher proportion of oral care that might not found in the real community.

Conclusion

In conclusion, this study identified that majority of the study participants had oral health problems and only about half of them were cleaning their tooth appropriately. To tackle this problems it is important to strategically introduce oral health education and awareness to inform the proper techniques and effective means of maintaining good oral hygiene. Furthermore, health sector actors and policy makers should aware of the problems and include into school curriculums to introduce awareness into school children as part of their daily hygiene.

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