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Prevalence Of Poor Oral Health Practices And Problems Among Students In Ajman, UAE

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ABSTRACT

Introduction: Oral health is fundamental to general health. Limited data are coming from UAE regarding oral health practices and problems among students.
Objectives: To assess the prevalence of poor oral health practices and common oral problems (dental caries, gingivitis oral hygiene and malocclusion) among students' in Ajman, UAE, and to identify their determinants.
Methods: A cross sectional study included randomly selected students from schools in Ajman. Validated questionnaire that incorporate 13 practice items and scoring system to identify poor practice participants. Oral examination and reporting of caries index, plaque Index, gingival Index and angle classification of malocclusion were done. Ethical approval and inform consent were obtained. SPSS was used, Chi- square, Fishers' Exact and logistic regression tests were used to analyze data.
Results: A 395 students were included, 82.5% had poor practice. The prevalence of dental caries, gingivitis, undesirable oral hygiene and malocclusion were 50.4%, 47.6%, 54.4% and 5.8% respectively. Poor practice (P=0.001) and larger family size (P=0.005) increase dental caries risk. Higher risk for gingivitis (P<0.002) , undesirable oral hygiene (<0.0001) and malocclusion (<0.0001) were found among students with poor dental practices. Dental insurance reduces the risk of gingivitis (P=0.001) and undesirable oral hygiene (p<0.0001). Higher risk for malocclusion were found among older student (P<0.0001).
Conclusion: Oral problems and poor oral health practices are common among students in UAE. Poor dental practice and social factors determine the risk of oral problems, while dental insurance reduces the risk of these problems

Keywords: Dental caries, Gingivitis, Oral Hygiene, Malocclusion

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INTRODUCTION

Oral health is fundamental to general health and wellbeing and has significant impact on quality of life. Traditionally, adolescence is considered as a period with little dental needs[1]. However, data indicates that adolescents can have several oral health problems, and the most common problems considered by many researchers are dental caries, gingivitis and malocclusion[2]. Literatures showed that despite the reduction in dental caries rates, it is still a problem among adolescent and according to CDC, USA data, the rate was 57% for the period 2011-2016[3]. According to the available data, the prevalence of untreated caries in permanent teeth peaks at ages 15–19 years[4]. Children's Dental Health Survey in England, Wales and Northern Ireland, showed that nearly 46% of 15 year- old and 34% of 12 year- old had dental caries in their permanent teeth[5]. A study from Nairobi, Kenya[6] showed that among the 292-school student, aged 12 years surveyed, caries prevalence was 50.3 %. Another study in Qatar[7] demonstrated that the prevalence of dental caries among children aged 12–14, was 85%. Literatures also demonstrated high prevalence of gingivitis among school students. In Brazil[8], the percentage of gingivitis in 15 to 19-year-old adolescents was 78.5%. While in Kenya[6], the prevalence was 77.7% among 12- year- old students. A survey in Southern & Central Jordon[9], among school children, aged 12 and 15 years showed that gingivitis is present in 31.4% of the 12 year- old and 52.6% of the 15 - year- old students.The prevalence of malocclusion and orthodontic needs of adolescents were studied by many researchers. A study from Brazil,[10] showed that among 13 - 17 year-old students, the prevalence of malocclusion was 58.1%. In Kuwait[11] the prevalence of moderate to severe malocclusion among young Kuwaiti adolescents was71%. Studies documented variability in the oral health practices of school students. A study from Sweden showed that majority of the students (89.9%) reported that they brush their teeth regularly with a total of 74.4% brushed their teeth twice or more than twice a day[12]. While in another study[13] 53.7% of the studied adolescents brushed their teeth once daily. The risk for oral health problems among adolescents can be determined by many factors. A study from KSA demonstrated that dental caries Index (DMFT) of studied participants was determined by gender, inadequate brushing practices and dental visits [14]. While other sociodemographic and lifestyle variables like parent educations and occupation, citizenship, residence and smoking were not significant factors. Few studies are coming from the UAE regarding the prevalence and factors related to oral problems. Identification of these factors is very essential to develop oral health education program for school students. the present study was conducted with the aims to identify the prevalence of common oral problems (dental caries, gingivitis and malocclusion) in school students grade 7-12, in Ajman, UAE. and to identify determinants of these oral health problems.

MATERIALS AND METHODS

A cross sectional study design was used. The study included students in Ajman public and private schools from grade 7- 12. Four schools were selected randomly from a list of all private and governmental schools in Ajman, (2 public and 2 private) to be the site of data collection. Sampled participants were selected randomly from list of students in these 4 schools. Sample size was calculated using the equation, $n=Z^2 pq/d^2$, the estimated population proportion was based on a study done in Qatar[7]. The study included students who are in grade 7 -12, willing to participate and their parents accepted and signed informed consent. A validated self-administered questionnaire was used. The questionnaire was validated by 3 experts in the field of dentistry. The questionnaire included socio-demography information and 13 practice questions items. Scoring system was used to assess the practice in which a +1 and zero scores were given for correct and incorrect response respectively with a maximum score of 13. Students were identified to have poor practice if their scores were less than 50% of the maximum score. Oral examination was done for each participant. to increase validity of clinical examination data, two well qualified assessors (first and third authors) undertook the examinations and consensus of clinical findings were reached and reported for each student. Assessment of Caries was performed using the Decayed, Missing, Filled Teeth Index [(DMFT), permanent dentition]. Students who had zero were considered to have a caries free state [15]. Löe and Silness criteria for Plaque Index (PI) were used to assess plaque deposition, whereas Gingival Index was used to assess gingival status [16,17]. The PI was used as indicator for oral hygiene. According to aforementioned indicators, the subject's plaque status was assigned as follows: excellent (<0.1); good (0.1-0.9); fair (1.0-1.9); and poor (2.0-3.0). While for the GI score, the subject's gingival health was assigned as no inflammation (<0.1); mild inflammation (0.1-1.0); moderate inflammation (1.1-1.9); and severe inflammation (2-3). Assessment of Malocclusion was done by using "Angle classification of malocclusion" [18] into normal occlusion, Class I, Class II and Class III. The examination was done using Disposable Dental Examination Kits that contain mirror, explorer and tweezer.The study was approved by the Gulf Medical University (GMU) Institution Research Board (IRB) on 04.06.2017. Also, approval from Ministry of Education was obtained on (June 22nd 2017) before the data collection started. The study was initiated after obtaining the official approval from the principles in the four schools was obtained data collection was between November 1st 2017- May 1st 2018. Organized activities to facilitate data collection at each site was done in collaboration with the selected school managements. Data collection was done, that included distributing the questionnaire to be filled. Researchers were available at time of data collection to clarify doubts. Data was analyzed using SPSS version 24. Results are displayed in descriptive and inferential statistics. Chi square test and Fishers' Exact test were used, as appropriate, to find the association between variables. Simple and multiple logistic regression analysis were used to find determinants of oral health knowledge and attitudes.

RESULTS

The study included 395 students. Most of the participants were 13 year old or less (71.6%), females (64.3%), UAE national (63.0%), having family size less than5 (73.4%), their father and mother levels of education were college and above (56.5% and 54.4% respectively). The percentage of respondents who had no dental insurance was 91.0%. Distribution of participates by practice score level showed that 82.5% of respondents had poor practice and only 17.5% have adequate practice level. Figure 1. Shows the percentage of correct responses in practice questions. Although most of the respondents were brushing their teeth (93.4%), however, many of them have incorrect practice concerning brushing of teeth after each meal (95.9%), the time takes to brush the teeth (64.8%), the type of tooth brush (84.1%), and many of them were not using dental floss (81.5%) or visiting dentist within the last 6 months (70.8%) and were not consulting dentist for teeth alignment in students who perceived having a problem with teeth alignment (79.0%). Distribution of participates by practices score level showed that 82.5% (n=326) of the respondents were having poor oral health practice

Please insert fig1

Analysis of the association between practice scores and socio-demographic characteristic of participants showed a higher percentage of poor practice scores among younger age group (≤13 year) compared to younger group(>13 years) (84.8% vs. 76.8%), among females compared to males (89.9% vs.69.5%), and among UAE national compared to students having other nationality (83.5% vs. 80.8%). Considering "students' grade", analysis showed that the percentage of poor practice scores was 88.9%, 84.7%, 77.5% and 69.4% for students in grade 7, 8, 9 and 10 respectively. Concerning the family size, a higher percentage of poor practice scores was noticed among students having smaller (≤5 members) compared to larger size families (>5 members) (87.6%vs 68.6%). While for parent's education, the results showed higher percentage of poor practice scores among students whose parents were having lower level of education (≤Secondary education) compared to higher education level (≥ College) for both fathers (87.2 % vs. 78.9%) and mothers (87.2 %vs. 78.6%). Students who were not having dental insurance demonstrated higher percentage of poor practice score compared to their counterpart who were not having the insurance (84.2% vs 65.7%). Significant associations were found between low practice scores and gender(P<0.0001), grade (P=0.034), family size (P<0.0001), father and mother education (P=0.032 and 0.025 respectively)The association between dental caries (DMFT Index), gingivitis, Oral Hygiene (based on PI), malocclusion and sociodemographic characteristics of participants are shown in table 1, 2 and 3 respectively. For dental caries, oral examination showed that 196 (49.6%) participants were caries free (DMFT=zero) and 199 students (50.4%) had various levels of dental caries. In Table 1, the proportion of dental caries was significantly higher among junior students, participants who had larger family size, lower education level parents and poor oral health practice and having dental insurance. For gingivitis, oral examination showed that 207 students (52.4%) were gingivitis free, while 67(17%), 104(26.3%), and 17(4.3%) students had mild, moderate and severe gingivitis (total n=188, 47.6%). Having gingivitis at any level was analyzed as one group. The mean gingival Index was 0.552(SD, 0.612).

Please insert Table 1

In Table 2. The proportion of students who had gingivitis was significantly higher among students who were having larger family size and poor oral health practice.Regarding oral hygiene, oral examination showed that 136 students (34.4%) had no plaque. Considering the level of plaque index, analysis showed that 175(44.3%), 5 (1.3), 197

(49.9%) and 18 (4.5%) students had excellent, good, fair and poor PI scores respectively. Students who had fair and poor PI scores were considered to have "undesirable oral hygiene" (54.4%) and analyzed as one group Vs those who had "desirable" oral hygiene (excellent/ good PI scores, 45.6%). The mean Plaque Index was 0.642 (SD,0.60).

Please insert Table 2

Table 3 shows that the proportion of students who had undesirable oral hygiene was significantly higher among younger age participants, national students, those who were having, lower education level parents, poor oral health practice and were not having dental insurance. Concerning malocclusion, oral examination showed that 372(94.2%), 21(5.3%) and 2(0.5%) students were having normal occlusion and Class2 (malocclusion) division1and 2 respectively. The proportion of malocclusion was 5.8% (n=23)

Please insert Table 3

Table 4 shows that the proportion of students who had malocclusion was significantly higher among older age participants, Non-national students, those who were having larger family size, higher education level parents, having dental insurance and adequate oral health practice Logistic regression analysis for determinants of dental caries, gingivitis, undesirable oral hygiene and malocclusion are shown in table 5 and 6, which showed that after controlling for all variables included in the models the significant determinant for the risk of dental caries were poor dental practices, and having dental insurance. The risk for gingivitis was significantly higher among students who had poor dental practices, while having dental insurance reduce the risk of gingivitis. Also, higher risk for undesirable oral hygiene was found among students having poor dental practice scores. To have dental insurance was found to be associated with reduction of the risk for having undesirable oral hygiene. While for malocclusion, higher risk was identified among older age students. Older age students have 9.6 times higher risk for having malocclusion compared to younger age students unexpectedly student who had poor practice scores showed a reduction in the risk.

Please insert Table 4, 5, 6

DISCUSSION

DENTAL PRACTICE

In this study the prevalence of poor dental practice was very high and only 17.5% had adequate practice. This is lower than what is seen in Wahengbam et al study [19], which showed that70.4% of the studied adolescents had adequate dental practice. In our study, although 93.4% of participant admitted brushing their teeth, however, only 4.1% of the students were brushing their teeth after each meal. Similar finding was also reported in Gao et al study [20], where 3.2% of the studied adolescents brushed their teeth at least twice daily. The current results showed that 18.5% of the students reported to use dental floss and 62.5% of them use mouth wash, this is higher compared to a survey Blaggana et al study[21], which revealed that about 17% of the students reported using dental floss and 20% of them had used either mouthwash or tongue cleaner as adjuncts cleaning aids. In this study females have significantly higher percentage of adequate practice (20.5%) compared to males (12.1%) this is similar to Wahengbam et al study in which females have significantly higher oral care practice scores than males[19]. We observe that poor dental practices increased the risk for dental caries, gingivitis, and undesirable oral hygiene. This is supported by a study from Saudi Arabian [22]

PREVALENCE OF ORAL HEALTH PROBLEMS

In this study the prevalence of dental caries was 50.4%. This is in agreement with another survey in UAE with a reported prevalence of 54% among studied adolescents[23]. Higher prevalence was reported in another studies in Sana'a City, Yemen (95.9%) [24] and in Jordon (94.8%)[9]. Concerning prevalence of gingivitis, in this study 47.6% had gingivitis this is comparable with a survey in Jordan with a reported prevalence of 52.6% and 31.4% among 15 -year- old and 12 year- old students respectively[9]. However, our result is lower than the recorded 78.5% in Brazil [8] and 77.7% in Nairobi, Kenya[6]. The present results showed that 34.4% of the students were plaque free on examination, this is higher than another study from Saudi Arabian (12.1%)[22]. The prevalence of undesirable oral hygiene among the studied students was 54.4% this is comparable with that reported from Iran (53.8%)[25]. Concerning malocclusion, the present study showed that the proportion of malocclusion was 5.8%, this is lower than reported data from Saudi Arabian (17.5%)[26] and Brazil (17.8%)[27].

DETERMINANTS OF ORAL HEALTH PROBLEMS

Several sociodemographic factors have been investigated in this study. Family size and parent education were studied as socioeconomic variables. The present results showed that larger family size was a significant predictor of gingivitis and undesirable oral hygiene. Few studies had investigated the risk of larger family size on children health. A study from Nigeria found that having small size family (0-2 sibling) significantly reduce the risk of having caries among 5-12 years old children when compared to children who have three or more siblings[28]. The authors in aforementioned study explain the finding by the possible economic burden of having larger size family on parent select of toothpaste (fluoridated toothpaste) that can protect the teeth. Similar finding was also reported by a study from India with a reported 40% increase in the risk of caries among children with higher number of siblings [29]. Other researchers failed to find associated between family size and child health [30] and suggested more studies to uncover the social impact of family characteristics on child health.Parents education in the present analysis was not found to be a significant predictor of oral health problems. This is in agreement with a study from Saudi Arabia for dental caries and gingival health [31]. However, our finding disagrees with another studies from Italy with a reported higher risk for dental caries among participants with lower education level parents [32].Gender was not found to be significant predictor of any of the studied oral health problem despite the observed differences between males and females in the rate of theses problems. Literatures showed mixed finding. A study from Saudi Arabia [31] observe that although males compared to females had significantly higher DMFT scores >7 rates (43.3% vs. 26.8%), however, they showed significantly higher desirable oral hygiene scores than females (33.7% and 13.6%). Similar finding was reported in a study from Jordan[9] with significantly higher average DMFT scores among boys compared to girls. On the other hand, a study from Lithuania [33] find the opposite, with a higher DMFT score among girls compared to boys.The present data showed that age was not a significant predictor of the studied oral health problem except that for malocclusion, by which older age participants express higher risk

compared to younger group. The later finding is support by earlier study from Zambia with reported prevalence of malocclusion of 27% vs. 36% among students age 12 and 14 years respectively [34].For other health problem, our study showed that younger age adolescents tend to have higher rates of dental caries, gingivitis and undesirable oral hygiene compared to younger age, and the differences were statistically insignificant. This disagree with other researchers who found that older age adolescents tend to have significant higher rate of dental caries and gingivitis compared to younger age group[9].The present study demonstrated that dental caries, gingivitis, un desirable oral hygiene were prevalent among adolescence in Ajman. Further studies are suggested to find the effect of unhealthy lifestyle on oral health of adolescents. Oral health education should be part of the curriculum and dental insurance should be available for all adolescents.Limitation: of this study is that we cannot generalize our finding for all adolescents in UAE, because we have taken the samples participant from one state (Ajman)In CONCLUSION: the present study showed that the prevalence of dental caries, gingivitis, undesirable oral hygiene and malocclusion were 50.4%, 52.4%, 54.4% and 5.8% respectively. The prevalence of mild, moderate and severe gingivitis was 17%, 26.3%, and 4.3% respectively. The proportion of students who had excellent, good, fair and poor plaque index scores were 44.3%, 1.3%, 49.9% and 4.5% respectively. Majority of the participants (82.5%) had poor dental practice which was a significant determinant for dental caries, gingivitis, and oral hygiene and associated with an increased risk for these problems. The risk for having malocclusion is increased by age. Large size family increase the risk for gingivitis.

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TABLES

Table 1. Association between dental caries (DMFT Index Scores) and socio-demographic characteristic of participants

Variable	**Groups**	DMFT Index Scores				**Total No. (100%)**	**P value**
		Caries (DMFT>zero)		Caries free (DMFT=zero)			
Age (Years)	<=13	146	51.6	137	48.4	283	0.444
	>13	53	47.3	59	52.7	112	
Gender	Male	71	50.4	70	49.6	141	0.994
	Female	128	50.4	126	49.6	254	
Nationality	UAE	124	49.8	125	50.2	249	0.763
	Others	75	51.4	71	48.6	146	
Grades	7	37	82.2	8	17.8	45	<0.0001
	8	115	44.1	146	55.9	261	
	9	23	57.5	17	42.5	40	
	10	24	49.0	25	51.0	49	
Family size	Not large (≤5)	135	46.6	155	53.4	290	0.011
	Large (>5)	64	61.0	41	39.0	105	

Father Education Level	≤ Secondary education	97	56.4	75	43.6	172	0.036
	≥ College	102	45.7	121	54.3	223	
Mother Education Level	≤ Secondary education	101	56.1	79	43.9	180	0.037
	≥ College	98	45.6	117	54.4	215	
Dental insurance	Yes	21	60.0	14	40.0	35	0.233
	No	178	49.4	182	50.6	360	
Practice Score	Poor	175	53.7	151	46.3	326	0.004
	Adequate	24	34.8	45	65.2	69	

Table 2. Association between Gingival Index and socio-demographic characteristic of participants

Variable	**Groups**	**Gingival Index (GI)**				**Total No. (100%)**	**P value**
		Gingivitis (GI≥0.1)		Gingivitis Free (GI <0.1)			
Age (Years)	<=13	142	50.2	141	49.8	283	0.102
	>13	46	41.1	66	58.9	112	
Gender	Male	69	48.9	72	51.1	141	0.691
	Female	119	46.9	135	53.1	254	
Nationality	UAE	127	51.0	122	49.0	249	0.076
	Others	61	41.8	85	58.2	146	
Grades	7	25	55.6	20	44.4	45	0.638
	8	124	47.5	137	52.5	261	
	9	18	45.0	22	55.0	40	
	10	21	42.9	28	57.1	49	
Family size	Not large (≤5)	132	45.5	158	54.5	290	0.169
	Large (>5)	56	53.3	49	46.7	105	
Father Education Level	≤ Secondary education	90	52.3	82	47.7	172	0.098
	≥ College	98	43.9	125	56.1	223	
Mother Education Level	≤ Secondary education	93	51.7	87	48.3	180	0.138
	≥ College	95	44.2	120	55.8	215	
Dental insurance	Yes	5	14.3	30	85.7	35	<0.0001
	No	183	50.8	177	49.2	360	
Practice Score	Poor	165	50.6	161	49.4	326	0.009
	Adequate	23	33.3	46	66.7	69	

Table 3. Associations between socio-demographic characteristic of participants and oral hygiene

Variable	Groups	Oral Hygiene (PI)				Total No. (100%)	P value
		Undesirable (PI <1)		Desirable (PI>1)			
Age (Years)	<=13	165	58.3	118	41.7	283	0.014
	>13	50	44.6	62	55.4	112	
Gender	Male	69	48.9	72	51.1	141	0.102
	Female	146	57.5	108	42.5	254	
Nationality	UAE	150	60.2	99	39.8	249	0.002
	Others	65	44.5	81	55.5	146	
Grades	7	25	55.6	20	44.4	45	0.149
	8	151	57.9	110	42.1	261	
	9	18	45	22	55	40	
	10	21	42.9	28	57.1	49	
Family size	Not large (≤5)	156	53.8	134	46.2	290	0.673
	Large (>5)	59	56.2	46	43.8	105	
Father Education Level	≤ Secondary education	112	65.1	60	34.9	172	<0.0001
	≥ College	103	46.2	120	53.8	223	
Mother Education Level	≤ Secondary education	115	63.9	65	36.1	180	0.001
	≥ College	100	46.5	115	53.5	215	
Dental insurance	Yes	6	17.1	29	82.9	35	<0.0001
	No	209	58.1	151	41.9	360	
Practice Score	Poor	192	58.9	134	41.1	326	<0.0001
	Adequate	23	33.3	46	66.7	69	

Table 4. Associations between malocclusion and socio-demographic characteristic of participants

Variable	Groups	Malocclusion				Total No. (100%)	P value
		Present		Absent			
Age (Years)	<=13	7	2.5	276	97.5	283	<0.0001
	>13	16	14.3	96	85.7	112	
Gender	Male	9	6.4	132	93.6	141	0.723
	Female	14	5.5	240	94.5	254	
Nationality	UAE	10	4.0	239	96.0	249	0.045
	Others	13	8.9	133	91.1	146	
Grades	7	3	6.7	42	93.3	45	0.258
	8	12	4.6	249	95.4	261	
	9	5	12.5	35	87.5	40	

	10	3	6.1	46	93.9	49	
Family size	Not large (≤5)	15	5.2	375	94.8	302	0.359
	Large (>5)	8	7.6	97	92.4	93	
Father Education Level	≤ Secondary education	5	2.9	167	97.1	172	0.030
	≥ College	18	8.1	205	91.9	223	
Mother Education Level	≤ Secondary	9	5.0	171	95.0	180	0.523
	≥ College	14	6.5	201	93.5	215	
Dental insurance	Yes	4	11.4	31	88.6	35	0.138
	No	19	5.3	341	94.7	360	
Practice Score	Poor	13	4.0	313	96.0	326	0.001
	Adequate	10	14.5	59	85.5	69	

Table 5. Multiple logistic regression Analysis for predictors of Dental Caries and Gingivitis

Predictors of Undesirable Oral Hygiene (based on PI)								
		N	COR	95% CI	P	AOR	95% CI	P
Age (Years)	≤13	283	1.734	1.115-2.695	0.014	1.302	0.801-2.116	0.286
	>13	112	1			1		
Father Education level	≤ Secondary	172	2.175	1.444 -3.275	<0.0001	2.030	0.615-6.699	0.245
	≥ College	223	1			1		
Mother Education level	≤ Secondary	180	2.035	1.357-3.052	0.001	1.108	0.330-3.725	0.868
	≥ College	215	1			1		
Dental insurance	Yes	35	0.149	0.061-0.369	<0.0001	0.182	0.072-0.462	<0.0001
	No	360	1			1		
Dental Practice Score	Poor	326	2.866	1.658-4.952	<0.0001	3.767	2.044-6.944	<0.0001
	Adequate	69	1			1		
Predictors of Malocclusion								
Age (Years)	≤13	283	1	2.624-16.457	<0.0001	1	3.175-29.228	<0.00001
	>13	112	6.571			9.643		
Father Education level	≤ Secondary	172	1	1.066-8.065	0.037	1	0.780-8.209	0.122
	≥ College	223	2.933			2.531		
Dental Practice Score	Poor	326	0.073	0.029-0.185	<0.0001	0.04	0.013-.0.118	<0.00001
	Adequate	69	1			1		

Predictors of Dental Caries (based on DMFT Index)

		N	COR	95% CI	P	AOR	95% CI	P
Family size	Not large (≤5) Large (>5)	290 105	1 1.792	1.137-2.825	0.012	1 2.156	1.258 -3.696	0.005
Father Education level	≤ Secondary ≥ College	172 223	1.534 1	1.028-2.289	0.036	1.374 1	0.449-4.205	0.578
Mother Education level	≤ Secondary ≥ College	180 215	1.526 1	1.025-2.273	0.037	0.812 1	0.259- 2.541	0.720
Dental Practice Score	Poor Adequate	326 69	2.173 1	1.265-3.733	0.005	2.704 1	1.500-4.873	0.001
Predictors of Gingivitis (based on GI)								
Dental insurance	Yes No	35 360	0.161 1	0.061-0.425	<0.0001	0.178 1	0.067-0.474	0.001
Dental Practice Score	Poor Adequate	326 69	2.050 1	1.188-3.537	0.010	2.492 1	1.379-4.503	0.002

Table 6. Multiple logistic regression Analysis for predictors of Undesirable Oral Hygiene and Malocclusion

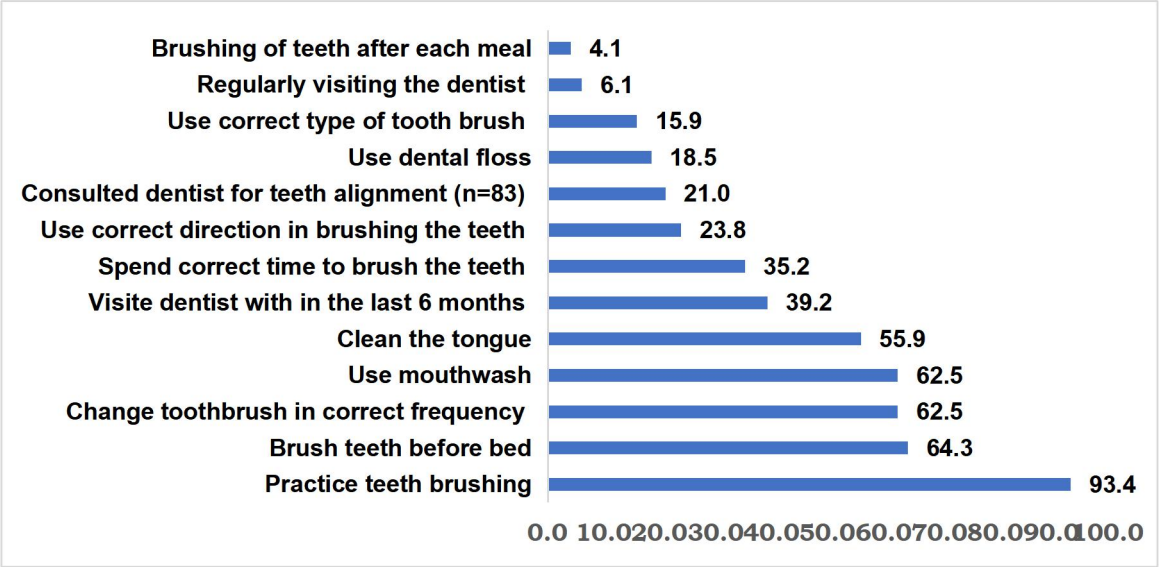

Figure1. The Percentage of correct responses in practice questions (n=395)