



Assessment of Media impact on changing oral health behaviors among university students in Kurdistan Region-Iraq

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Article info	Abstract
<p>Original: 20 January 2018 Revised: 28 February 2018 Accepted: 13 March 2018 Published online: 20 March 2018</p> <p>Key Words:</p> <p><i>Media, Health programmes, Oral health, Behaviour, University students.</i></p>	<p>Background: Media campaigns are generally used to deliver health messages to high number of populations through various types of Media. The Media is used in all aspects of public issues with the expectation of three influences; providing exact health information and relevant data, health behaviours and its value changes, and building new healthier behaviours. This study focused on the outcomes of massive Media campaigns and their effects on different hazardous oral.</p> <p>Aims of the study were: to determine the level of awareness and knowledge of people about oral health, evaluate the role of Media on oral health behaviours and promotion, and assessment of the peoples` practice towards oral health awareness.</p> <p>Methods: This cross-sectional study was applied on 1223 Students from different classes at Kurdistan Region universities who were interviewed by well-trained researchers. A questionnaire was used which included information about demographic distribution; source of health information; awareness about Media campaigns regarding health programs. Statistical package for Social Sciences (SPSS, version 19.0) was used to present the analysis.</p> <p>Results: Fifty two point nine percent (N= 893) of the students used internet particularly as the most common source of getting oral health information ($P \leq 0.05$), highest percentage of the students 54.8% (N=670) reported to have knowledge on oral health Media campaigns.</p> <p>Conclusion: The study revealed that social media had an important role in changing oral health behaviours among the studied sample. Oral hygiene practices of the sample noticed to be higher compared to similar age groups in the neighbouring countries.</p>

Introduction

The Media been used for changing health behaviours in the communities over past years. Production and spreading of booklet, hand-outs, newspapers, and audio-visual programs were heavy burden on both community and governments. These Media are utilized at all levels of public health with the expectation of three impacts: the learning right health data and information, changing health behaviours and values, and creation of new health behaviour. Media campaigns have for some times been an instrument for public health promotion [1], it generally used to expose high percentage of people to explore right messages. Mass Media campaigns including numerous points and target groups have been carried out for decades.

Classic Media campaigns covers large number of audiences such television and radio, however, exposure to classic Media messages is not easy nowadays as the result of routine use of Media. Novel technologies incorporate several campaigns (e.g. smart phones, internet, and social Media) which enhanced delivery of information and purposeful messages at universal level [2].

Media campaigns have basically designed to modify awareness, knowledge, attitude and, supporting healthy behaviours and believes. The theory of the campaigns is besides other preventive health actions, communication campaigns are intended to decrease unhealthy behaviours if messages are supported by different means [3, 4].

Health education and promotion should include some roles and accountabilities incorporation with Media such as; collecting, presenting and analysing health themes supported by the assistances of experts nearby who guide people inside the target settings and population.

With the combined efforts from public and private sectors, national and international organizations for advising and instructing communities in order to make a supportive setting, these individuals are more ready to change their attitude and behaviours. Health promotion endeavors can be coordinated toward need of health conditions including a wide range of population and encouraging various interventions. This issue-based approach will work best if improved by settings-based outlines. The settings-based designs can be objectified in schools, working environments, markets, local locations, and to address need medical issues by considering health determinants [5].

Health promotion is more important nowadays than any other time to solve public health issues. The health condition is positioned at remarkable crossroads as the world is encountering enormous diseases created by the incomplete plan of infectious and communicable diseases, reoccurrence of illness, and unusual rising of non-communicable chronic illnesses. Changes in globalization, urbanization, easiness of traveling in worldwide are among factors that contributed in advocating this situation [6, 7].

It is broadly acknowledged that oral health is perceived to be similarly energetic as general health [8]. Moreover, oral health status relies upon dynamic interchange of many elements, including the individual's behaviours, attitudes, practices and interpretations. On the other hand, oral health practices and behaviours are likewise impacted by parents in early years of life and they also expect the real oral health status [9, 10]. The most famous hotspots for accepting oral health data are multi-Media, scientific publications, campaigns composed by dental specialists [11]. School-based and college-based oral hygiene and health instruction programs positively affect oral health habits [12]. Statistics are limited about public behaviour, attitude and knowledge learning about oral diseases. A few recent studies stressed the oral wellbeing behaviour and practices of adolescents' and the connection between their behaviour and practices and their dental or oral status [13].

In Kurdistan region, no scientific article founded to highlight the role of Media in changing the oral health behaviours, This study focuses on the influences of messages that given to people and also the most effective Media to enhance oral health promotion.

To the best of our understanding, no existing study has evaluated the role of Media campaigns to change the health behaviour among university students in Kurdistan region- Iraq.

Material and methods

A. Setting

This cross-sectional study was conducted from December- 2016 to May- 2017 in all governorates of Kurdistan region- Iraq. Samples were randomly chosen from university students in these cities (Erbil, Duhok, and Sulaimani) including both public and private sectors.

B. Study Population

A total number of 1223 university students (660 males and 563 females) who accepted to be a part of the survey from different classes with their age ranged from 18 to 25 years were included in the research.

C. Ethical consideration

Formal Ethical approval was obtained from the included institutes and universities in addition to the verbal consents from the participating subjects. The confidentiality of the information was ensured by the researches regarding the given information.

D. Application Process and research tools

A total number of twelve well trained interviewers carried out the data collection. The required information regarding the subjects and their awareness, knowledge, behaviour and practice of oral health measures beside the source of information were recorded in a specially designed questionnaire for this study. The questionnaire was self-administered type; the questions were first drafted in English, and then translated to Kurdish language.

A pilot study with an inter-examiner calibration was conducted at Sulaimani Polytechnic University/ Health Technical College which included 50 students to test the efficiency of the interviewers, content validity and question clearness.

E. Questionnaire and Variable Specification

The questionnaire consisted of, demographic data (gender orientation), types of depending Media to gain health information, awareness of Media campaigns regarding health programs, then questions were asked towards attitude and behaviours of the undergraduates with the source of information on tooth brushing and the most common oro-dental topics as dental caries, dental implantation, oro-dental diseases, periodontal diseases, orthopaedic and prosthetic; dental caries factors and visiting dentist, communicable diseases transmission during oro-dental procedures, types of communicable diseases transmitted during oro-dental procedures; systemic chronic diseases linkage with dental; relation of smoking with oral health problems, and healthy diet.

F. Data analysis

Collected data were scored by giving code number according to the answer of the questionnaire, and then the codes were transferred to Microsoft Excel database. Statistical analysis was carried out using SPSS (version 19.0) to present the tables and frequencies. The frequencies were displayed to measure the role of Media to change health habits and oral health. Chi-square test with and P value set for ≤ 0.05 as degree of confidence to determine the significance of the results.

Results and discussions

Throughout the six months of data collection, total number of (1223) participating students in this study was carefully interviewed. Figure 1 shows gender and class of the participated students, approximately 54% (N=660) male and 46% (N=563) females included in this study from class 1 to 4, aged 18-25 years old (mean age=21.2). Figure 2 demonstrates that 52.9% (N= 893) of the students used internet particularly as the most common source of getting information on health campaigns, whereas 35.5% (N=599) of the undergraduate students followed TV health campaign to gain health information.

Furthermore, 54.8% (N=670) of the participated students reported having awareness about the Media campaigns (those students pointed as first group) as showed in Table 1, however, 25.9% (N=317) of the students stated unawareness about the campaigns (those undergraduates pointed as second group) as presented in Table 2, in addition, 19.3% (N=236) of the students answered by sometimes awareness of the campaigns (those entitled third group) (Table 3).

According to the results, 72.2% (N= 484) of the first group (Aware group) were aware of scientific techniques of tooth brushing (Table 1), followed by 47% (N= 111) in the third group (table 3), while only 30% (95) of the students who depended on media campaigns for their source of information had knowledge about tooth brushing techniques, (Table 2). Eighty eight percent (N= 590) in the first group, 81.4 (N=192) in the last group and 75.7% (N=240) in the second group found dental caries as the most common oro-dental topic from campaigns and health programs, with statistically significant difference when P value ≤ 0.05 .

The undergraduate students in the first group by 45.2% (N=303) and around 38.1% (N=90) within the last groups identified irregular tooth brushing as the main cause of dental cavitation. 33.2% (N=105) in the second group emphasized that sweets cause dental caries.

Transmissions of Communicable diseases during oro-dental procedures stated by highest number of participants in the first group 75.1% (N= 503) and 66.9% (N= 158) in the third group, but the lowest percentage 36% (N=114) of the second group focused on diseases transmission occasionally as a result of such mentioned procedures. University students in all groups, with different percent, 71.9% (N=482) in the first group, 47.3% (N=150) in the second group & 56.8% (N=134) in the third group reported their awareness of HBV and HCV diseases transmission.

The frequency of changing the tooth brush was reported by all participants with different occasions, the first group 56.1% (N=376) and 46.2% (N=109) of the third group stated, every six months due to the health programmes, however, 42.3 % (N= 134), of the second changed their tooth brush once a year. The data analysis showed a statistically significant difference within the groups (P value \leq 0.05).

More than half of the undergraduate students 50.3% (N= 337) of the first group and the respondents of the third group admitted practicing dental floss after meals, however, 25.9% (N=82) of the second group confirmed using dental floss once a week, despite the non-significance of the results (P value $>$ 0.05).

Concerning the assumption of sugar as a causative factor of dental caries, about 87% (N=489) in the first group, 81.8% (N=193) in the third group and 70% (N=222) in the second group agreed with the concept that sugar leads to dental caries (P value \leq 0.05). Students assumed different amount of sugar consumption during daily life, lowest number of the students with high daily sugar consumption found in the first group by 49.7% (N=317) whereas the other two groups approximately 55.5% (N=176) and 56.8% (N=134) exceeded the usual amount of sugar intake.

Mouth washes as an oral hygiene practice was performed by some of the participants, 64.5% (N=432) in the first group, 44.5% (N=141) in the second group mentioned that they rinse their mouth after meals, whereas 53.4% (N=126) in the third group used mouth wash occasionally. Less than half of the students 45.7% (N=306) in the first group used mouth wash solution on a regular base, however, 41% (N=130) & 53.8% (N= 137) in the other groups (second and third group respectively) used mouth wash solution on rare occasions.

Regarding the positive relationship between gingival bleeding and poor oral hygiene, the number of students found in the first group by 89.4% (N=599), followed by the third group 61.4% (N=145) and the second group 49.8% (N=158).

Almost all students in all groups of the university students admitted having no knowledge about first aid related to oro-dental trauma, 91.4% (N=613) in the first group, 96.5% (N=306) in the second group and about 97% (N=229) in the last group, the results were statistically not significant except for the first group (P value $>$ 0.05).

Finally, Tongue brushing as a healthy behaviour for preventing oral diseases reported by the first and third group respectively by 85.1% (N= 570) and 71.6% (N=169), while only about half of the students in the second group reported the necessity of tongue brushing as a preventive measure.

Furthermore, majority of the students 83.7% (N=561) in the first group, 65% (N= 206) in the second group and about 67% (N=158) in the third group believed that smoking causes oral diseases. Majority of the student 80.4% (N=539) in the first group and about 63.6% (N= 150) in the third group stated vaccination reduces oral health diseases. Concerning the importance of fruits and vegetables for oral health, highest percentage of the students found in the first group 68.7% (N=460) and third group 50.4% (N=119), however, smaller number in the second group 44.2% (N=140) were agreed with the statement.

Findings of this study came in line with other studies which indicated that internet used as a popular source to gain oral health knowledge, this is because internet services are widely and rapidly become affordable with attracting topics among the community members, particularly in recent years and it contains a plenty of always available oral health information [14].

The present study showed that 54% of the studied sample had knowledge on health campaigns and this finding was in tune with other studies that stated around 60% of the undergraduate students were aware about the healthcare system in some developed countries which can be attributed to the educational level of the studied sample [15]. Scientific techniques of tooth brushing were well known by 72% of the students because of the influences of Media to enhance the oral health promotion. Furthermore, majority of the undergraduates in all groups stated that dental caries is the most common topic of the campaigns; this is because of the high prevalence of dental caries among students in both developed and developing countries that made Media focuses on this disease and its prevention [16].

Earlier studies explained the importance of educating people about the oral diseases and prevention of transmission to improve the quality of life, in this survey, most of the university students have been informed by health promotion programs that diseases are transmitted in oro-dental procedures, majority of the participants knew that HBV and HCV transmit very easily during oro-dental treatments[17].

Majority of the students of all groups thought that, some types of the chronic diseases such as Diabetes mellitus change the dental procedures and subsequently affect their life style, and they cannot get the same dental services compared to other patients without these debilitating diseases [17].

Half of the participating students, changed their tooth brush every six months, and students who aware about the campaigns, reported that, using the dental floss after eating is essential for oral health, this indicates the impact of the available Media on the sample to follow this scientific concept [18-20].

It is believed by majority of the students that sweets are linked to tooth cavitation; they stated that having too much sweet increases the chance of tooth cavities. The students learned from the Media that, consuming less sugar decreases the chance of the diseases. Majority of the undergraduates rinsed their mouth with water after eating [19, 21]. High percentage of them reported that, bleeding is the primary sign of poor oral hygiene and it might affect general health as well [22].

Conclusion

Social Media through internet as a type of Media was found to be the most effective, popular, and affordable source in providing oral health information among university students which had impact on their oral health behavior.

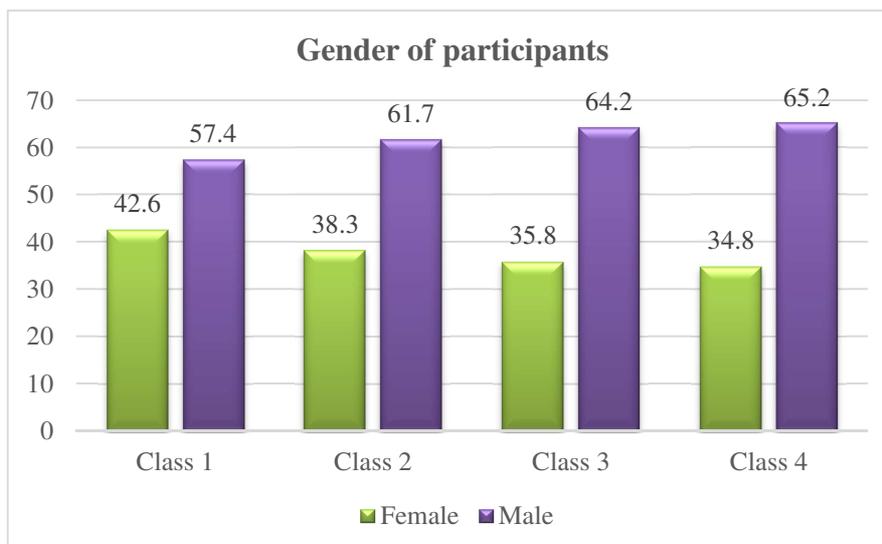


Figure 1: Gender and class distribution of the students

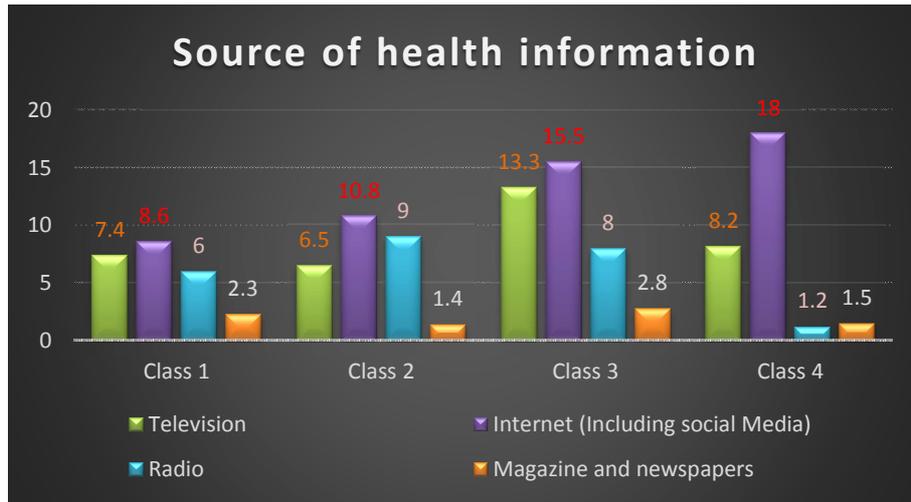


Figure 2: The common source of health information according to the respondents

Table 1: Attitude and behavior of those students who aware about the campaigns among university students

Attitude/ behaviour	Total N (%)	Class 1 N (%)	Class 2 N (%)	Class 3 N (%)	Class 4 N (%)	X ²	P value
1. Did you hear about scientific techniques of tooth brushing?							
A- Yes	484 (72.2)	88 (77.2)	137 (72.8)	162 (65.3)	97 (80.8)	18.6	0.005
B-No	89 (13.3)	12 (10.5)	30 (16)	42 (17)	5 (4.2)		
C- Sometimes	97 (14.5)	14 (12.3)	21 (11.2)	44 (17.7)	18 (15)		
2. What are the most common Oro-dental topics that you heard on Media?							
A- Dental caries	590 (88.1)	103 (90.4)	152 (80.9)	238 (96)	52 (43.3)	90.5	0.00001
B- Dental implant	348 (51.9)	53 (46.5)	88 (46.8)	109 (35.5)	98 (81.7)		
C- Oro-dental surgery	395 (59)	49 (43)	112 (59.6)	152 (61.3)	82 (68.3)		
D- Gum infection and diseases	342 (51)	52 (45.6)	109 (58)	139 (56)	42 (35)		
E-Dental replacement	449 (67)	71 (62.3)	107 (57)	172 (69.4)	99 (82.5)		
F-Tooth brace	549 (81.9)	93 (81.6)	161 (85.6)	199 (80.2)	96 (80)		
3. Your opinion about the dental caries factors?							
A-Genetic	105 (15.7)	13 (11.4)	20 (10.6)	31 (12.5)	41 (34.2)	69.5	0.00001
B-Sweets	213 (31.8)	34 (28.8)	78 (41.5)	81 (32.7)	20 (16.7)		
C-Irregular tooth brushing	303 (45.2)	56 (49.1)	71 (37.8)	131 (52.8)	45 (37.5)		
D-Irregular visiting dentist	49 (7.3)	11 (9.7)	19 (10.1)	5 (2)	14 (11.6)		
4. Do you believe that communicable diseases transmit during oro-dental procedures?							
A- Yes	503 (75.1)	71 (62.3)	113 (60.1)	228 (91.9)	91 (75.8)		

B- No	79 (11.8)	19 (16.6)	32 (17)	7 (2.8)	21 (17.5)	79	0.00001
C-Sometimes	88 (13.1)	24 (21.1)	43 (22.9)	13 (5.2)	8 (6.7)		

5. Information about transmission of Communicable diseases via dental treatment

A- HIV	409 (61)	89 (78.1)	121 (64.4)	152 (61.3)	47 (39.2)		
B-HBV and HCV	482 (71.9)	84 (73.7)	142 (75.5)	147 (59.3)	109 (90.8)	42.5	0.00001
C-HSV	342 (51)	73 (64)	93 (49.5)	132 (53.2)	44 (36.7)		
D-TB	365 (54.5)	90 (78.9)	128 (50.5)	95 (38.3)	52 (43.3)		

6. Did you think that chronic diseases change oro-dental treatments?

A-Yes	616 (91.9)	102 (89.5)	179 (95.2)	225 (90.7)	110 (91.7)		
B-No	18 (2.7)	2 (1.7)	4 (2.1)	11 (4.4)	1 (0.8)	11.4	0.07
C-Sometimes	36 (5.4)	10 (8.8)	5 (2.7)	12 (4.8)	9 (7.5)		

7. Have you heard which type of chronic diseases change the oro-dental treatments?

A-Diabetes Mellitus	585 (87.3)	100 (87.7)	156 (83)	214 (86.3)	115 (95.8)		
B-Hypertension	446 (66.6)	87 (76.3)	96 (51.1)	190 (76.6)	73 (60.8)		
C-AIDS	253 (37.8)	60 (52.6)	72 (38.3)	81 (32.7)	40 (33.3)	55.9	0.00001
D-HBV and HCV	507 (75.7)	96 (84.2)	112 (59.6)	201 (81)	98 (81.7)		
E-TB	105 (15.7)	33 (29)	12 (6.9)	23 (9.3)	37 (30.8)		
F-Others	40 (6)	7 (6.1)	10 (5.3)	14 (5.6)	9 (7.5)		

8. How often do you change your toothbrush?

A-Every month	41 (6.1)	3 (2.6)	10 (5.3)	21 (8.5)	7 (5.8)		
B-Every 6 months	376 (56.1)	70 (61.4)	103 (54.8)	127 (51.2)	76 (63.3)		
C- Every year	175 (26.1)	19 (16.7)	39 (20.7)	88 (35.5)	29 (24.2)	49.3	0.00001
D- When it breaks	78 (11.6)	22 (19.7)	36 (19.2)	12 (4.8)	8 (6.7)		

9. How often do you use dental floss?

A- After tooth brushing	49 (7.3)	14 (12.3)	8 (4.2)	20 (8.1)	7 (5.8)		
B- After eating	337 (50.3)	42 (36.8)	77 (41)	157 (63.3)	61 (50.8)		
C- Once a day	121 (18)	25 (21.9)	55 (29.3)	29 (11.7)	12 (10)	80.1	0.00001
D- Once a week	91 (13.6)	19 (16.7)	26 (13.8)	30 (12.1)	16 (13.3)		
E- Rarely	42 (6.7)	9 (7.9)	19 (10.1)	4 (1.6)	10 (8.3)		
F- Never	30 (4.5)	5 (4.4)	3 (1.6)	8 (3.2)	14 (11.7)		

10. Do you think sugar causes dental caries?

A-Yes	489 (87)	88 (77.2)	167 (88.8)	234 (94.4)	94 (78.3)		
B-No	38 (5.7)	9 (7.9)	13 (6.9)	10 (4)	6 (5)	45.5	0.00001
C-Sometimes	49 (7.3)	17 (14.9)	8 (4.3)	4 (1.6)	20 (16.7)		

11. How often do you consume sugar during the day?

A-High, 3 times or more	317 (49.7)	70 (61.4)	105 (55.9)	142 (57.3)	16 (13.3)		
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B-Medium, twice a day	220 (32.8)	26 (22.8)	45 (23.9)	89 (35.9)	60 (50)	122.6	0.00001
C-Low, once a day	80 (11.9)	11 (9.7)	23 (12.2)	7 (2.8)	39 (32.5)		
D-Rarely	37 (5.5)	7 (6.1)	15 (8)	10 (4)	5 (4.2)		

12. Students who had consumed sugary items (once or twice) the day before the interview

A- Tea with sugar	498 (89.2)	89 (78.1)	170 (90.4)	239 (96.4)	100 (83.3)		
B-Sweets	89 (21.2)	25 (21.9)	18 (9.6)	46 (18.5)	53 (44.2)		
C- Ice-cream	121 (18.1)	16 (14)	8 (4.3)	73 (29.4)	24 (20)	84.9	0.00001
D-Soda drinks	72 (10.7)	19 (16.7)	12 (6.4)	17 (6.9)	24 (20)		
E- Biscuits	19 (2.8)	2 (1.8)	4 (2.1)	10 (4)	3 (2.5)		

13. Do you rinse your mouth after meals?

A-Yes	432 (64.5)	71 (62.3)	128 (68.1)	131 (52.8)	102 (85)		
B-No	76 (11.3)	28 (24.6)	14 (7.4)	16 (6.5)	18 (15)	103.1	0.00001
C-Sometimes	162 (24.2)	15 (13.2)	46 (24.5)	101 (40.7)	0 (0)		

14. Do you use a mouth wash solution?

A-Yes	306 (45.7)	52 (45.6)	29 (15.4)	131 (52.8)	94 (78.3)		
B-No	146 (21.8)	38 (33.3)	74 (39.4)	25 (10.1)	9 (7.5)	156.9	0.00001
C-Rarely	218 (32.5)	24 (21.1)	85 (45.2)	92 (37.1)	17 (14.2)		

15. What type of mouth wash solution do you use?

A-Prescribed by dentist	124 (18.5)	14 (12.3)	31 (16.5)	40 (16.1)	39 (32.5)		
B- Salt and water	262 (39.1)	41 (36)	90 (47.9)	101 (40.7)	30 (25)	30.9	0.00001
C- Any type of mouthwash exists in pharmacy	284 (42.4)	59 (51.7)	67 (35.6)	107 (43.1)	51 (42.5)		

16. Have you heard that bleeding is a primary sign of poor oral hygiene?

A-Yes	599 (89.4)	101 (88.6)	174 (92.5)	225 (90.7)	99 (82.5)		
B-No	42 (6.3)	3 (2.6)	8 (4.3)	19 (7.7)	12 (10)	20.7	0.001
C-Sometimes	29 (4.3)	10 (8.8)	6 (3.2)	4 (1.6)	9 (7.5)		

17. Do you know the first aid tips for someone who has oro-dental trauma?

A-Yes	8 (1.2)	0 (0)	1 (0.5)	3 (1.2)	4 (3.3)		
B-No	613 (91.5)	108 (94.7)	172 (91.5)	237 (95.6)	96 (80)		
C-Rarely	49 (7.3)	6 (5.3)	15 (7.9)	8 (3.2)	20 (16.7)	29.8	0.001

18. Do you think tongue brushing is essential for oral health?

A-Yes	570 (85.1)	93 (81.6)	177 (94.1)	217 (87.5)	83 (96.2)		
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B-No	23 (3.4)	2 (1.7)	5 (2.7)	10 (4)	6 (5)	45.4	0.00001
C-Sometimes	77 (11.5)	19 (16.7)	6 (3.2)	21 (8.5)	31 (25.8)		

19. Do you consider that smoking causes oral health problem?

A-Yes	561 (83.7)	78 (68.4)	160 (85.1)	223 (89.9)	100 (83.3)		
B-No	10 (1.5)	1 (1.8)	3 (1.6)	2 (0.8)	4 (3.3)	31.4	0.00001
C-Sometimes	99 (14.7)	35 (29.8)	25 (13.3)	23 (9.3)	16 (13.3)		

20. Vaccination is safe and effective to reduce the oral diseases?

A-Yes	539 (80.5)	72 (63.2)	160 (85.1)	214 (86.3)	93 (77.5)		
B-No	25 (3.7)	7 (6.1)	4 (2.1)	4 (1.6)	10 (8.3)	38.2	0.00001
C-Sometimes	106 (15.8)	35 (30.7)	24 (12.8)	30 (12.1)	17 (14.2)		

21. Do you believe that having Fruits and Vegetables are important to oral health?

A-Yes	460 (68.7)	45 (39.5)	158 (84)	179 (72.2)	78 (65)		
B-No	88 (13.1)	40 (35.1)	16 (8.5)	26 (10.5)	6 (5)	98.1	0.00001
C-Sometimes	122 (18.2)	29 (25.4)	14 (7.5)	43 (17.3)	36 (30)		

Table 2: Attitude and behavior of those students who did not aware about the campaigns among university students

Attitude/ behavior	Total N (%)	Class	Class	Class	Class	X ²	P value
		1	2	3	4		
		N (%)	N (%)	N (%)	N (%)		

1. Did you hear about scientific techniques of tooth brushing?

A- Yes	95 (30)	49 (38.9)	12 (22.6)	7 (10.4)	27 (38)		
B-No	129 (40.7)	44 (34.9)	32 (60.4)	33 (49.3)	20 (28.2)	30.8	0.00001
C- Sometimes	93 (29.3)	33 (26.2)	9 (17)	27 (40.3)	24 (33.8)		

2. What are the most common Oro-dental topics that you heard on Media?

A- Dental caries	240 (75.7)	83 (65.9)	51 (96.2)	40 (59.7)	66 (93)		
B- Dental implant	124 (39.1)	37 (29.4)	46 (86.8)	7 (10.4)	34 (47.9)		

C- Oro-dental surgery	127 (40.1)	32 (25.4)	52 (98.1)	6 (8.9)	37 (52.1)	49.3	0.00001
D- Gum infection and diseases	86 (27.1)	23 (18.2)	30 (56.6)	12 (17.9)	21 (29.6)		
E-Dental replacement	120 (37.8)	41 (32.5)	27 (50.9)	11 (16.4)	41 (57.7)		
F-Tooth brace	186 (58.8)	47 (37.3)	49 (92.4)	39 (58.2)	51 (71.8)		

3. Your opinion about the dental caries factors?

A-Genetic	104 (32.9)	25 (19.8)	31 (58.5)	19 (28.3)	29 (40.8)		
B-Sweets	105 (33.2)	47 (37.3)	9 (17)	32 (47.8)	17 (23.9)	49.8	0.00001
C-Irregular tooth brushing	72 (22.9)	43 (34.1)	8 (15.1)	11 (16.4)	10 (10.1)		
D-Irregular visiting dentist	36 (11)	11 (8.8)	5 (9.4)	5 (7.5)	15 (21.1)		

4. Do you believe that communicable diseases transmit during oro-dental procedures?

A- Yes	111 (35)	30 (23.8)	18 (34)	25 (37.3)	39 (54.9)		
B- No	92 (29)	52 (41.3)	19 (35.8)	6 (8.9)	11 (15.5)	42.4	0.0001
C-Sometimes	114 (36)	44 (34.9)	16 (30.2)	36 (53.7)	21 (29.6)		

5. Information about transmission of Communicable diseases via dental treatment

A- HIV	54 (17)	7 (5.6)	21 (39.6)	10 (14.9)	16 (22.5)		
B-HBV and HCV	150 (47.3)	50 (39.7)	36 (67.9)	19 (28.4)	45 (63.4)	29.7	0.0005
C-HSV	8 (2.5)	2 (1.6)	4 (7.5)	0 (0)	2 (2.8)		
D-TB	68 (21.4)	13 (10.3)	22 (41.5)	23 (34.3)	10 (14.1)		

6. Did you think that chronic diseases change oro-dental treatments?

A-Yes	135 (42.6)	36 (28.6)	20 (37.7)	45 (67.2)	34 (47.9)		
B-No	102 (32.2)	50 (39.7)	17 (32.1)	10 (14.9)	23 (32.4)	41.4	0.0001
C-Sometimes	80 (25.2)	40 (31.7)	16 (30.2)	12 (17.9)	14 (19.7)		

7. Have you heard which type of chronic diseases change the oro-dental treatments?

A-Diabetes Mellitus	201 (63.4)	76 (60.3)	35 (66)	41 (61.2)	49 (69)		
B-Hypertension	129 (40.7)	14 (11.1)	24 (45.2)	58 (86.6)	33 (46.8)		
C-AIDS	62 (19.6)	9 (7.1)	5 (9.4)	17 (25.4)	31 (43.8)	80.7	0.00001
D-HBV and HCV	67 (21.1)	16 (12.7)	23 (43.4)	11 (16.4)	17 (23.9)		
E-TB	26 (8.2)	5 (4)	4 (7.5)	9 (13.4)	8 (11.3)		
F-Others	17 (5.4)	0 (0)	2 (3.8)	8 (11.4)	7 (9.9)		

8. How often do you change your toothbrush?

A-Every month	9 (2.8)	1 (0.8)	3 (5.7)	1 (1.5)	4 (5.6)		
B-Every 6 months	111 (35)	40 (31.8)	19 (35.8)	33 (49.3)	19 (26.8)	25.2	0.003
C- Every year	134 (42.3)	56 (44.4)	15 (28.3)	23 (34.3)	40 (56.3)		
D- When it breaks	63 (19.9)	29 (23)	16 (30.2)	10 (14.9)	8 (11.3)		

9. How often do you use dental floss?

A- After tooth brushing	49 (15.5)	9 (6.4)	10 (18.9)	18 (26.9)	12 (16.9)		
B- After eating	34 (10.7)	15 (12.7)	5 (9.4)	8 (11.9)	6 (8.4)		

C- Once a day	80 (25.2)	29 (23)	14 (26.4)	16 (23.9)	21 (29.6)	27.1	0.3
D- Once a week	82 (25.9)	34 (27)	12 (22.6)	14 (20.9)	22 (31)		
E- Rarely	43 (13.6)	26 (20.6)	4 (7.5)	6 (9)	7 (9.9)		
F- Never	29 (9.2)	13 (10.3)	8 (15.1)	5 (7.5)	3 (4.2)		

10. Do you think sugar causes dental caries?

A-Yes	222 (70)	78 (61.9)	44 (83)	41 (61.2)	59 (83.1)		
B-No	34 (10.7)	16 (12.7)	2 (3.8)	14 (20.9)	2 (2.8)	77.2	0.00001
C-Sometimes	61 (19.2)	32 (25.4)	7 (13.2)	12 (17.9)	10 (14.1)		

11. How often do you consume sugar during the day?

A-High, 3 times or more	176 (55.5)	98 (77.8)	29 (54.7)	21 (31.3)	28 (39.4)		
B-Medium, twice a day	72 (22.7)	17 (13.5)	11 (20.8)	25 (37.3)	19 (26.8)	67.8	0.00001
C-Low, once a day	45 (14.2)	8 (6.3)	3 (5.6)	14 (20.9)	20 (28.2)		
D-Rarely	24 (7.6)	3 (2.4)	10 (18.9)	7 (10.5)	4 (5.6)		

12. Students who had consumed sugary items (once or twice) the day before the interview

A- Tea with sugar	298 (94)	120 (95.2)	49 (92.4)	66 (98.5)	63 (88.7)		
B-Sweets	142 (44.8)	43 (34.1)	40 (75.5)	32 (47.8)	27 (38)		
C- Ice-cream	42 (13.3)	18 (14.3)	9 (17)	11 (16.4)	4 (5.6)	18.8	0.09
D-Soda drinks	87 (27.5)	28 (22.2)	20 (37.7)	15 (22.4)	24 (33.8)		
E- Biscuits	34 (10.7)	10 (7.9)	6 (11.3)	7 (10.4)	11 (15.5)		

13. Do you rinse your mouth after meals?

A-Yes	141 (44.5)	45 (35.7)	26 (49.1)	36 (53.7)	34 (47.9)		
B-No	70 (20.1)	28 (22.2)	11 (20.7)	16 (23.9)	15 (21.1)	9.6	0.1
C-Sometimes	106 (33.4)	53 (42.1)	16 (30.2)	15 (22.4)	22 (31)		

14. Do you use a mouth wash solution?

A-Yes	89 (28.1)	21 (16.7)	19 (35.8)	25 (37.3)	24 (33.8)		
B-No	98 (30.9)	43 (34.1)	18 (34)	11 (16.4)	26 (36.6)	22	0.001
C-Rarely	130 (41)	62 (49.2)	16 (30.2)	31 (46.3)	21 (29.6)		

15. What type of mouth wash solution do you use?

A- Prescribed by dentist	26 (8.2)	5 (4)	5 (9.4)	6 (8.9)	10 (14.1)		
B- Salt and water	154 (48.6)	44 (34.9)	40 (75.5)	30 (44.8)	40 (43.7)	41.9	0.00001
C- Any type of mouthwash exists in pharmacy	137 (43.2)	77 (61.1)	8 (15.1)	31 (46.3)	21 (42.2)		

16. Have you heard that bleeding is a primary sign of poor oral hygiene?

A-Yes	158 (49.8)	48 (38.1)	37 (69.8)	34 (50.8)	39 (54.9)		
B-No	60 (18.9)	24 (19)	10 (19.7)	11 (16.4)	15 (21.10)	22	0.001
C-Sometimes	99 (31.2)	54 (42.9)	6 (11.3)	22 (32.8)	17 (23.9)		

17. Do you know the first aid tips for someone who has oro-dental trauma?

A-Yes	3 (0.9)	1 (0.8)	0 (0)	0 (0)	2 (2.8)		
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B-No	306 (96.5)	124 (98.4)	51 (96.2)	64 (95.5)	67 (94.4)	6.7	0.3
C-Rarely	8 (2.5)	1 (0.8)	2 (3.8)	3 (4.5)	2 (2.8)		

18. Do you think tongue brushing is essential for oral health?

A-Yes	177 (55.8)	66 (52.4)	32 (60.4)	28 (41.8)	51 (71.8)		
B-No	38 (12)	15 (11.9)	8 (15.1)	10 (14.9)	5 (7)	15.2	0.01
C-Sometimes	102 (32.2)	45 (35.7)	13 (24.5)	29 (43.3)	15 (21.1)		

19. Do you consider that smoking causes oral health problem?

A-Yes	206 (65)	79 (62.7)	41 (77.4)	35 (52.2)	51 (71.8)		
B-No	12 (3.8)	3 (2.4)	5 (9.4)	2 (3)	2 (2.8)	19.7	0.003
C-Sometimes	99 (31.2)	44 (34.9)	7 (13.2)	30 (44.8)	18 (25.4)		

20. Vaccination is safe and effective to reduce the oral diseases?

A-Yes	159 (50.2)	51 (40.5)	32 (60.4)	30 (44.8)	46 (64.8)		
B-No	69 (21.8)	30 (23.8)	10 (18.9)	18 (26.9)	11 (15.5)	14.8	0.02
C-Sometimes	89 (28.1)	45 (35.7)	11 (20.7)	19 (28.3)	14 (19.7)		

21. Do you believe that having Fruits and Vegetables are important to oral health?

A-Yes	70 (22.1)	28 (22.2)	12 (22.6)	9 (13.4)	21 (29.6)		
B-No	107 (33.8)	29 (23)	12 (22.6)	31 (46.3)	35 (49.3)	31.8	0.00001
C-Sometimes	140 (44.2)	69 (54.8)	29 (54.7)	27 (40.3)	15 (21.1)		

Table 3: Attitude and behavior of those students who aware the campaigns sometimes among university students, 2017

Attitude/ behavior	Total N (%)	Class	Class	Class	Class	X ²	P value
		1	2	3	4		
		N (%)	N (%)	N (%)	N(%)		
1. Did you hear about scientific techniques of tooth brushing?							
A- Yes	111 (47)	32 (50.8)	44 (53)	10 (29.4)	25 (44.6)		
B-No	64 (27.1)	11 (17.5)	25 (30.1)	10 (29.4)	18 (32.1)	12.8	0.05
C- Sometimes	61 (25.9)	20(31.7)	14 (16.9)	14 (41.2)	13 (23.2)		
2. What are the most common Oro-dental topics that you heard on Media?							
A- Dental caries	192 (81.4)	51 (80.9)	67 (80.7)	29 (85.3)	45 (80.4)		
B- Dental implant	146 (61.9)	39 (61.9)	49 (59)	18 (52.9)	40 (71.4)		
C- Oro-dental surgery	110 (46.6)	41 (65.1)	25 (30.1)	15 (44.1)	29 (51.8)	38.7	0.0007
D- Gum infection and diseases	113 (47.9)	21 (33.3)	38 (45.8)	20 (58.8)	34 (60.7)		
E-Dental replacement	132 (55.9)	52 (82.5)	31 (37.3)	13 (38.2)	36 (64.3)		
F-Tooth brace	179 (75.9)	56 (88.9)	73 (89.9)	26 (76.5)	24 (42.9)		
3. Your opinion about the dental caries factors?							
A-Genetic	27 (11.4)	8(12.7)	10 (12)	5 (14.7)	4 (7.1)		
B-Sweets	83 (35.2)	20 (31.7)	34 (40)	10 (29.4)	19 (33.9)	5	0.8
C-Irregular tooth brushing	90 (38.1)	24 (38.1)	27 (32.5)	13 (38.2)	26 (46.4)		
D-Irregular visiting dentist	36 (15.2)	11 (17.5)	12 (14.5)	6 (17.6)	7 (12.5)		
4. Do you believe that communicable diseases transmit during oro-dental procedures?							
A- Yes	158 (66.9)	44 (69.8)	59 (71.1)	23 (67.6)	32 (57.1)		
B- No	28 (11.9)	5 (7.9)	13 (15.7)	3 (8.8)	7 (12.5)	8	0.2
C-Sometimes	50 (21.2)	14 (22.2)	11 (13.2)	8 (23.5)	17 (13.4)		

5. Information about transmission of Communicable diseases via dental treatment

A- HIV	86 (36.4)	26 (41.3)	30 (36.1)	13 (38.2)	17 (30.4)		
B-HBV and HCV	134 (56.8)	31 (49.2)	43 (51.8)	26 (76.5)	34 (60.7)	13.5	0.1
C-HSV	52 (22)	12 (19.1)	15 (18.1)	17 (50)	8 (14.3)		
D-TB	96 (40.7)	20 (31.7)	30 (36.1)	15 (44.1)	31 (55.4)		

6. Did you think that chronic diseases change oro-dental treatments?

A-Yes	180 (76.3)	46 (73)	73 (88)	24 (70.6)	37 (66.1)		
B-No	21 (8.9)	6 (9.5)	4 (4.8)	2 (5.9)	9 (16.1)	13.3	0.04
C-Sometimes	35 (14.8)	11 (17.5)	6 (7.2)	8 (23.5)	10 (17.9)		

7. Have you heard which type of chronic diseases change the oro-dental treatments?

A-Diabetes Mellitus	175 (74.1)	57 (29.8)	67 (80.7)	20 (58.8)	31 (55.4)		
B-Hypertension	149 (63.1)	51 (25.5)	49 (59)	15 (44.1)	34 (60.7)		
C-AIDS	80 (33.9)	25 (39.7)	20 (24.1)	8 (23.5)	27 (48.2)	31	0.009
D-HBV and HCV	137 (58.1)	44 (69.8)	42 (50.6)	21 (61.8)	30 (53.6)		
E-TB	77 (32.6)	21 (33.3)	14 (16.9)	19 (55.9)	23 (41.1)		
F-Others	7 (3)	0	2 (2.4)	2 (5.9)	3 (5.4)		

8. How often do you change your toothbrush?

A-Every month	8 (3.4)	2 (3.2)	1 (1.2)	2 (5.9)	3 (5.4)		
B-Every 6 months	109 (46.2)	26 (41.3)	45 (54.2)	20 (58.8)	18 (32.1)	25.6	0.004
C- Every year	80 (34.7)	20 (31.7)	31 (37.3)	11 (32.4)	18 (32.1)		
D- When it breaks	39 (16.5)	15 (23.8)	6 (7.2)	1 (2.9)	17 (30.4)		

9. How often do you use dental floss?

A- After tooth brushing	27 (11.4)	4 (6.3)	6 (7.2)	6 (17.6)	11 (19.6)		
B- After eating	90 (38.1)	26 (41.3)	33 (39.8)	14 (41.2)	17 (30.4)		
C- Once a day	55 (23.3)	18 (28.6)	15 (18.1)	7(20.6)	15 (26.8)	20.9	0.1
D- Once a week	39 (16.5)	11(17.5)	15 (18.1)	2 (5.9)	11 (19.6)		
E- Rarely	15 (6.6)	3 (4.8)	8 (9.6)	3 (8.8)	1 (1.8)		
F- Never	10 (4.2)	1 (1.6)	6 (7.2)	2 (5.8)	1 (1.8)		

10. Do you think sugar causes dental caries?

A-Yes	193 (81.8)	51 (81)	72 (86.8)	25 (73.5)	45 (80.4)		
B-No	16 (6.8)	5 (7.9)	4 (4.8)	1 (2.9)	6 (10.7)	8.5	0.2
C-Sometimes	27 (11.4)	7 (11.1)	7 (8.4)	8 (23.5)	5 (8.9)		

11. How often do you consume sugar during the day?

A-High, 3 times or more	134 (56.8)	40 (63.5)	52 (62.7)	16 (47.1)	26 (46.4)		
B-Medium, twice a day	69 (29.3)	16 (25.4)	22 (26.5)	9 (26.5)	22 (39.3)	13.9	0.1
C-Low, once a day	28 (11.9)	6 (9.5)	7 (8.4)	9 (26.5)	6 (10.7)		
D-Rarely	5 (2.1)	1 (1.6)	2 (2.4)	0 (0)	2 (3.6)		

12. Students who had consumed sugary items (once or twice) the day before the interview

A- Tea with sugar	202 (85.6)	60 (95.2)	69 (83.1)	25 (73.5)	48 (85.6)		
B-Sweets	78 (33.1)	31 (49.2)	21 (25.3)	12 (35.3)	14 (25)		
C- Ice-cream	35 (14.8)	11 (17.5)	7 (8.4)	5 (14.7)	12 (21.4)	10.8	0.5
D-Soda drinks	32 (13.6)	10 (15.9)	8 (9.6)	3 (8.8)	11 (19.6)		
E- Biscuits	10 (4.2)	2 (3.2)	3 (3.6)	1 (2.9)	4 (7.4)		

13. Do you rinse your mouth after meals?

A-Yes	89 (37.7)	20 (31.8)	14 (16.9)	24 (70.6)	31 (55.4)		
B-No	21 (8.9)	4 (6.3)	5 (6)	1 (2.9)	11 (19.6)	57.1	0.00001
C-Sometimes	126 (53.4)	39 (61.9)	64 (77.1)	9 (26.5)	14 (25)		

14. Do you use a mouth wash solution?

A-Yes	82 (34.7)	14 (22.2)	11 (13.3)	16 (47.1)	41 (73.2)		
B-No	27 (11.4)	5 (7.9)	7 (8.4)	3 (8.8)	12 (21.4)	82.9	0.000001
C-Rarely	127 (53.8)	44 (49.8)	65 (78.3)	15 (44.1)	3 (3.4)		

15. What type of mouth wash solution do you use?

A-Prescribed by dentist	19 (8.1)	7 (11.1)	1 (1.2)	2 (5.9)	9 (16.1)		
B- Salt and water	89 (37.7)	31 (49.2)	30 (36.1)	10 (29.4)	18 (32.1)	17.9	0.007
C- Any type of mouthwash exists in pharmacy	128 (54.2)	25 (39.7)	52 (62.7)	22 (64.7)	29 (51.8)		

16. Have you heard that bleeding is a primary sign of poor oral hygiene?

A-Yes	145 (61.4)	40 (63.5)	35 (42.2)	22 (64.7)	48 (85.7)		
B-No	28 (11.7)	2 (3.2)	16 (19.3)	5 (14.7)	5 (8.9)	34.4	0.00001
C-Sometimes	63 (26.7)	21(33.3)	32 (38.5)	7 (20.6)	3 (5.4)		

17. Do you know the first aid tips for someone who has oro-dental trauma?

A-Yes	5 (2.1)	2 (3.2)	0 (0)	1 (2.9)	2 (3.6)		
B-No	229 (97)	61 (96.8)	83 (100)	32 (94.1)	53 (94.6)	6.5	0.4
C-Rarely	2 (0.9)	0	0 (0)	1 (2.9)	1 (1.8)		

18. Do you think tongue brushing is essential for oral health?

A-Yes	169 (71.6)	43 (68.3)	62 (74.7)	24 (75.6)	40 (71.4)		
B-No	11 (4.7)	5 (7.9)	3 (3.6)	1 (2.9)	2 (3.6)	2.5	0.9
C-Sometimes	56 (23.7)	15 (23.8)	18 (21.7)	9 (26.5)	14 (25)		

19. Do you consider that smoking causes oral health problem?

A-Yes	158 (67)	37 (58.7)	50 (60.2)	25 (73.5)	46 (82.1)		
B-No	14 (5.9)	1 (1.6)	6 (7.2)	3 (8.8)	4 (7.1)	17.4	0.008

C-Sometimes 64 (37.3) 25 (39.7) 27 (32.5) 6 (17.6) 6 (10.7)

20. Vaccination is safe and effective to reduce the oral diseases?

A-Yes 150 (63.6) 45 (71.4) 41 (49.4) 30 (88.2) 34 (60.7)

B-No 11 (4.7) 5 (7.9) 3 (3.6) 2 (5.9) 1 (1.8) 19.4 0.004

C-Sometimes 75 (31.8) 13 (20.6) 39 (47) 2 (5.9) 21 (37.5)

21. Do you believe that having Fruits and Vegetables are important to oral health?

A-Yes 78 (68.7) 31 (49.2) 25 (30.1) 22 (64.7) 41 (73.2)

B-No 6 (13.1) 5 (7.9) 8 (9.6) 2 (5.9) 6 (10.7) 31.9 0.00001

C-Sometimes 36 (18.2) 27 (42.9) 50 (60.2) 10 (29.4) 9 (16.1)

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