

## ORAL HEALTH AND PERIODONTAL DISEASES KNOWLEDGE AMONG UNIVERSITY STUDENTS IN CAIRO: A CROSS-SECTIONAL STUDY

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### ABSTRACT

Oral and periodontal health play a crucial role in the overall well-being of individuals, yet it is often overlooked, particularly among university students. This demographic, characterized by high stress levels, irregular schedules, and dietary changes, is at a heightened risk for oral health issues. Understanding the significance of oral and periodontal health is essential for this group, as it impacts academic performance, social interactions, and long-term health outcomes. Poor oral health can lead to distractions and discomfort, affecting concentration and attendance, while also influencing self-esteem and social dynamics. Additionally, there is a well-established link between oral health and systemic conditions such as cardiovascular disease and diabetes, making preventive care critical. Economically, maintaining oral health can reduce the need for costly treatments and align with students' often limited budgets. Forming good oral hygiene habits during university years is also important for lifelong health practices. Therefore, integrating oral health education and accessible care into university settings is crucial for supporting students' overall health, academic success, and future professional development.

**KEYWORDS:** Oral cancer, oral health knowledge, periodontal disease

### INTRODUCTION

Periodontitis is a chronic inflammatory disease of the periodontium surrounding teeth followed by deterioration of the tooth-supporting structures. When the condition is left untreated it may result in

tooth loss (Tonetti et al., 2018). Along with dental caries, both disease entities are the most widespread oral diseases globally (Raitapuro-Murray et al., 2014). There is an estimate that 20–50% of the population worldwide suffers from periodontal

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disease (Sanz et al., 2010). Comparing residents of developing countries to those of developed countries, it became evident that the former are more likely to develop periodontal diseases due to the widespread lack of awareness and improper oral hygiene practices. Other contributing factors include the unaffordability of the dental care service for large sectors of the populations with lower socioeconomic status (SES) (Page & Beck, 1997).

Oral cancer is the sixth most common malignancy worldwide (Warnakulasuriya, 2009). Oral cancer carries a considerable mortality rate, being mainly dependent on the stage of the disease at admission (van der Waal, 2013). It has long been believed that tobacco consumption including smokeless tobacco and heavy alcohol consumption are the principal etiologic factors for the development of oral cancer ((Perry et al. 2015).

Among the main causes of mortality in oral cancer conditions are lack of patient's and physician's knowledge about oral cancer. The cancer in its initial presentation is mainly painless and asymptomatic and patients didn't show any concern to it. Moreover dentists and physicians neglect examination of the oral mucosa and don't pay attention to the primary signs of cancer. These are the core reason of delayed detection of oral cancers (Tadbir et al., 2013)

Research on knowledge, attitude and oral health behaviors (KAB) has been conducted in several countries among university students. The oral health behavior of undergraduate university students from various disciplines has been studied in 26 countries categorized as low- and middle-income countries as well as countries with high-income (Peltzer & Pengpid, 2014). The results showed that university students in many of the African and Asian cultures as well as the Americas had deficient dental care. Another study investigated dental students and compared them with undergraduates from other

faculties. As expected, dentistry students scored better when compared with non-dental students (H. Kumar et al., 2017). A recent study focused on the knowledge, attitude and oral health behaviors of health and non-health-related students studying at faculties of King Khalid University in Saudi Arabia. The study suggested that comprehensive oral health-related education should be incorporated in the university curriculum to improve the KAB especially for non-health-related students since benefit will not be limited to students as they can aid in the dissemination of preventive knowledge and promotion of health among their families and the community (Kandasamy & Almeleebia, 2023).

To the best of our knowledge, no prior research has been conducted to investigate the level of oral health and periodontal disease knowledge among students currently studying at different faculties of Cairo University.

## METHODS

This study used an anonymous web-based questionnaire as part of a cross-sectional design for surveying Oral health (OH) and periodontal diseases (PD) awareness among Cairo University students. Research Ethics Committee of the Faculty of Dentistry, Cairo University approved the study protocol (Approval number: 25-6-24). Using Google Forms, the survey was formulated then the link was distributed on platforms such as Facebook and Instagram. This study included voluntary participants who met the following inclusion criteria: Undergraduate students at Cairo University with the age range of 21-24 years including students from the health sector (e.g., Pharmacy, Dentistry, Medicine, Nursing) and non-health departments (Computer Science, English, Engineering, and Business Management). Any response from non-Egyptian students studying in Cairo University was excluded.

On the title page of the questionnaire, students were presented with an informed consent and given the option to sign or withdraw. Parts of a validated questionnaire were developed by (Abdulbaqi et al., 2020) was used. The first two questions of the questionnaire covered demographic data including type of education and presence of close family members who work as healthcare professionals. The evaluation of the participant’s awareness was performed utilizing three main parts; the first part till question number 5 was designed for evaluating OH awareness while the second part till question number 7 was dedicated to evaluating PD awareness. The last three questions covered knowledge about oral cancer (Tadbir et al., 2013). The questionnaire included a variety of oral health-related topics, such as frequency and duration of brushing and use of interdental aids.

The minimum required sample size was 113 individuals using a 95% confidence interval, a 0.5 standard deviation (SD), and a 5% margin of error.

Results were described using frequencies and percentages.

**RESULTS**

A total of 220 participants responded to our questionnaire survey. Respondents from health-related faculties (Dentistry, Medicine, Nursing, Pharmacy) represented 54.5% of respondents (n=120) while non-health-related faculty participants (e.g., English, Maths, Computer Science, and Engineering) represented 45.5% of respondents (n= 100) as shown in Table 1. Participants having a close family member working as a healthcare professional were n= 117, while those who did not have a close family member in the healthcare sector were n=103.

TABLE (1) Demographic characteristics of the participants (n= 220)

Variable	Frequency	Percentage (%)
<b>Type of education</b>		
Health related faculty	120	54.5
Non-health related faculty	100	45.5
<b>Close family member</b>		
Healthcare professional	117	53
Non-healthcare professional	103	46.8

The correct frequency of toothbrushing was reported by 53% of participants (n=117). The correct duration of brushing and use of interdental aids were reported by 44% of participants and 36% of participants respectively.

TABLE (2) Frequencies and percentages (%) for oral health practices among the study participants

Variable	Frequency	Percentage (%)
<b>How often do you brush your teeth</b>		
Twice a day regularly	117	53
Once a day regularly	69	31
Once or twice irregularly	28	12.7
Sometimes	6	2.7
<b>How long do you spend brushing your teeth?</b>		
Less than a minute	29	13.2
One minute	84	38.2
2-3 minutes	90	
More than 4 minutes	17	7.7
<b>Do you use any type of interdental aids?</b>		
No	53	36
Yes	78	35.5
Sometimes	88	40

Most participants (92%) reported that periodontal health could affect general health while only 47% of participants were aware that gum bleeding necessitates arranging a dental appointment.

TABLE (3) Frequencies and percentages (%) for the answers to questions about periodontal disease and oral cancer knowledge

Question (Correct answer)	Frequency	Percentage (%)
Do you think that gum bleeding during tooth-brushing necessitates arranging a dental appointment? (Yes)	103	47
Do you think that periodontal health could affect general health? (Yes)	202	92
Do you think that Alcohol drinking can increase the risk of oral cancer? (Yes)	176	80
Do you think that Smoking can increase the risk of oral cancer? (Yes)	211	96
Do you think that a painless persistent (chronic) oral ulcer can be the first sign of oral cancer? (Yes)	143	65

The vast majority (80%) of participants (n=176) were aware that alcohol drinking increases the risk of oral cancer while nearly all participants (96%) responded that smoking increases the risk of oral cancer. Regarding chronic oral ulcers, 75% of participants confirmed their awareness that it can be an early sign of oral cancer.

## DISCUSSION

Maintenance of oral health is strongly related to the level of knowledge regarding oral hygiene practices (Kandasamy & Almeleebia, 2023). Studies have indicated that subjects acquire oral health knowledge from various sources such as parents, school, friends and media (Abdulbaqi et al., 2020). Social media is widely used by the population and facilitates rapid sharing of information (Boyd & Ellison, 2010). University students are regarded as future leaders of their surrounding communities; therefore, it is of prime importance to teach them the significance of maintaining oral health (Kandasamy & Almeleebia, 2023). The current study utilized online platforms to disseminate the questionnaire through social media websites including Facebook and Instagram.

Toothbrushing has a direct relationship with oral health (Naser et al., 2023). A systematic review by (Lertpimonchai et al., 2017) confirm this finding and advise that tooth brushing twice a day together with the use of appropriate interdental aids serve as suitable methods to prevent periodontal disease. Slightly more than half of our sample (53%) positively responded to the correct frequency of tooth brushing but not to the regular use of interdental aids with only 36% of the sample confirming their use of interdental aids regularly. The current study findings agree with studies conducted in Iraq and Saudi Arabia where half of the sample correctly responded to the frequency of tooth brushing (Abdulbaqi et al., 2020) (Kandasamy & Almeleebia, 2023). In another study conducted in Jordan, 34 % responded that they brush their teeth twice daily (Naser et al., 2023). Furthermore, the results of an Indian study reported that 30.5% of the sample brushed their teeth twice daily (S. Kumar et al., 2011).

Regarding the duration of brushing, 44% of participants brushed correctly. The results of the current study are similar to the results of (Azodo et al., 2012) (Kandasamy & Almeleebia, 2023) with 40% of students brushing for the correct duration of time.

Gingival bleeding on brushing represents a sign of periodontal disease, of which 47% of participants were aware. Our findings agree with the findings of another study which showed that over 50% of students were aware of this association (Kandasamy & Almeleebia, 2023).

Investigating how well the fact is known that general health is influenced by oral health, most respondents (92%) correctly acknowledged it. This lies in agreement with the study of (Kandasamy & Almeleebia, 2023) with most participants correctly responding to the question about the possible adverse effect on the general health while 49 % responded correctly in a study by (Naser et al., 2023). In contrast, a study conducted in India reported that 62% of participants believed that no association exists between oral health and general health (Gambhir et al., 2015).

It is noteworthy that the vast majority (80%) of participants were aware that alcohol drinking increases the risk of oral cancer while nearly all participants (96%) responded that smoking increases the risk of oral cancer. This is in accordance with a study conducted in Tanzania with a large portion of students equipped with good knowledge of the connection between cigarette smoking and mouth cancer (Carneiro et al., 2011). In addition, half of the sample had adequate knowledge of the association between smoking and oral cancer in the study of (Kandasamy & Almeleebia, 2023).

Regarding chronic oral ulcers, 65% of participants confirmed their awareness that it can be an early sign of oral cancer along with a study conducted by (Kakoei et al. 2009) which showed that more than 30% of participants responded that a chronic ulcer might be a sign of oral cancer. In contrast, a study conducted by (Pakfetrat et al. 2010) stated that 90% of contributors did not have any information regarding the clinical representations of oral cancer and only 6.6% have information about ulcer as a sign of oral cancer.

The current study has several limitations. The cross-sectional survey design represents a constraint

to our ability to prove a causal relationship between study variables. In addition, the nature of online-based questionnaire limits the participation to those who have internet access which introduces bias. Within the limits of the current study, our results suggest a higher level of knowledge regarding oral health, periodontal disease and oral cancer risk factors compared to early signs of oral cancer, which requires improvement among university students. This discrepancy may be explained by the fact that information was probably learnt from the media, which rarely discusses alarming signs and symptoms not to spread fear and anxiety.

We recommend that oral health-related information shall be delivered in the form of educational seminars and may be included in the university curriculum to enhance the level of awareness.

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