



## APHTHOUS ULCERATION: AN OBSERVATIONAL STUDY ON DENTAL STUDENTS' SAMPLE

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### ABSTRACT

**Background:** The most prevalent ulcerative disorder affecting the oral mucosa is aphthous ulcer. Its etiology is associated with a number of etiological factors. Twenty-five percent of people get aphthous ulcers. Numerous studies have now shown its link to stress. A sample of Iraqi dentistry students was the subject of an observational research.

**Materilas and Method:** By distributing a questionnaire, 790 dental students participated in a cross-sectional study. A statistical study that was both descriptive and inferential was conducted.

**Results:** Aphthae ulcers were most frequently observed on the buccal mucosa and demonstrated a strong correlation with the stress experienced throughout the examination.

**Conclusion:** The current study highlighted the connection between aphthae ulcers and exam-related stress as a significant contributing factor to the development of this kind of ulcer in dentistry students.

**Keywords:** ulcerative disorder, Aphthous, ulceration, observational study, Stress

### 1.INTRODUCTION

Disorders affecting the soft tissues and mouth mucosa are together referred to as oral mucosal disorders. Oral ulcers are among the common disorders of the oral mucosa<sup>1</sup>.

The most prevalent ulcerative condition of the oral mucosa, aphthous ulcer (AU), is characterized by a number of small, symmetrical, painful ulcers on non-keratinized mucosa that have an erythematous rim and a yellowish-gray pseudomembranous center. About 25% of adults get aphthous ulcers, and women are more likely to get them than men<sup>2</sup>.

One or more shallow round ulcerations that typically develop in non-keratinized tissues such the lips, ventral surface of the tongue, floor of the mouth, buccal mucosa, and soft palate are the hallmark of aphthous ulcer (AU), a type of chronic inflammatory sickness of the oral cavity<sup>3</sup>.

AU is clinically classified into two types based on wound healing time and clinical characteristics: simple (which has the more prevalence and the quik healing) and complex (which has hard pain and a long healing period), despite the fact that it is

morphologically divided into three types: minor (the most common form), major, and herpetiform<sup>1,4</sup>.

Despite all the attempts, the actual etiology of AU is still unknown, and both hereditary and environmental variables are thought to be suggested, the triggering factors include stress, physical or chemical trauma, allergies, infection, medications or nutritional deficiencies. Stress is known to be a major risk factor for AU. It was claimed that negative life events increased psychological stress, which in turn aided in the development of AU. There is consistent evidence linking AU to stress<sup>5,6,7</sup>. In addition to directly increasing the incidence of AU by influencing the immune system and making the oral mucosa more susceptible to inflammation, stress also indirectly contributes to the development of AU by inducing the sympathetic nervous system, which increases the sensitivity of the oral mucosa to trauma and causes local problems due to decreased saliva and dry mouth<sup>8,9</sup>.

Despite the fact that stress and anxiety have been identified in some earlier research as significant contributors to the development of AU<sup>4,10,11</sup>, their

relationship is still debatable. However, some investigations have found no significant correlation between AU and the severity of psychiatric variables<sup>8,12,13</sup>. The aim of the current study was to evaluate the prevalence of AU in various oral sites due to various etiological variables and its association with exam time in dentistry students at Al-Kafeel University, Annajaf, Iraq, in light of the conflicting results of earlier research.

**2.MATERIALS AND METHODS**

A descriptive cross-sectional study was carried out on (790) dentistry students out of (1010) reflecting the total number of students for academic year 2024-2025 at college of dentistry at Al-Kafeel University, Annajaf, Iraq.

Dental students from five different classes who have attended the courses regarding aphthous ulcers were the participants in this study. The Al-Kafeel University ethics committee gave its approval to the project (202446).

Following a thorough examination of the literature, the researcher created a questionnaire. There are two sections in the questionnaire. Participants' personal details, including age, gender, and class, are questioned in the first section. The questions in the second half focused on the history of aphthous ulceration, its etiology (diet, stress, hormones, and family history), and the oral cavity ulceration site.

Regardless of whether the AU occurred or not, everyone who completed the study's questionnaire was included. Students who did not provide their informed consent were excluded.

**Statistical Analysis**

The distribution of aphthous ulceration was processed and represented by python 3 program. The data were analyzed by using SPSS version 28. Chi-square test was applied to find the level of association of the number of dental student, the exam. status and gender type with aphthous ulcer. ANOVA test was used to show the level of differences among the five classes of dental students who showed aphthous ulceration. Pearson correlation test was performed to assess the correlation of the etiological factors with aphthous ulceration. The level of significance was fixed at  $p < 0.001$  for all statistical analysis.

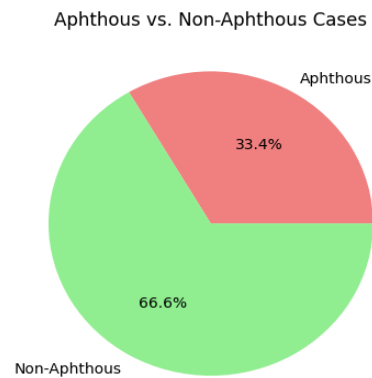
**3. RESULTS**

The number of dental students who participated was 790 aged between 19-24 yrs. Among these 790 students: 510 were female and 280 were male at college of Dentistry, university of Alkafeel, Annajaf , Iraq. The numbers of student that take part in the study according to the five classes were (Class 1 = 90 , Class 2= 230 , Class 3 = 210 , Class 4= 110 ,Class 5 =150).

Table 2 show the number of dental students with AU was 264 (33.4%), (Males = 104 and Females = 160), while those with no AU were 526 (66.6%). **Chi-square test showed** highly significant association ( $p < 0.001$ )

**Table 1. Comparison Aphthous vs. Non-Aphthous**

<b>Aphthous</b>	264	33.4%
<b>Non-Aphthous</b>	526	66.6%
<b>Total</b>	790	100%
<b>Chi-square</b>	$p < 0.001$	



**Table 2. Gender-Based Comparison**

<b>Gender</b>	<b>Count</b>	<b>Percentage</b>
<b>Male</b>	104	39.4%
<b>Female</b>	160	60.6%
<b>Total</b>	264	100%
<b>Chi-square</b>	$p < 0.001$	

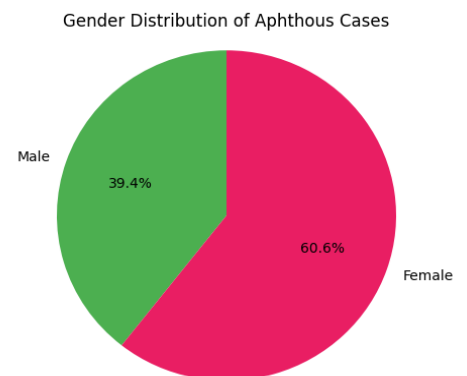


Table 3 show the number of dental students with AU during exam time 175 (66.3%) while those in non-Exam time 89 (33.7%) with statistically significant association

**Table 3. Aphthous Distribution by Exam Period**

Class	Count	Percentage
C1	73	27.7%
C2	41	15.5%
C3	30	11.4%
C4	39	14.8%
C5	81	30.7%
<b>Total</b>	<b>264</b>	<b>100%</b>
<b>ANOVA</b>	<b>p &lt; 0.001</b>	

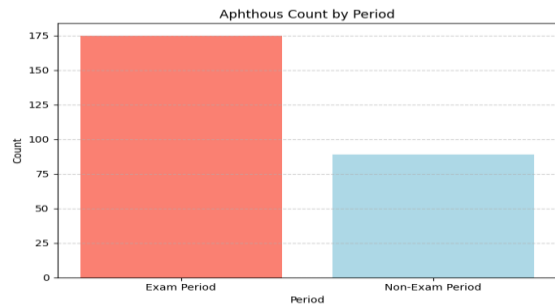
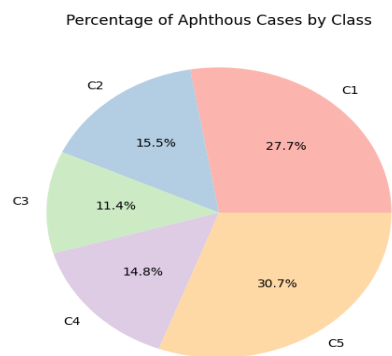


Table 4 showed the distribution of dental students with AU according to classes (C1=73, C2=41, C3=30, C4=39, C5=81). There was a significant difference across classes p < 0.001 as reported by ANOVA test. Highest prevalence: C5 (30.7%), followed by C1 (27.7%) and the lowest prevalence: C3 (11.4%).

**Table 4. Aphthous Distribution by Class**

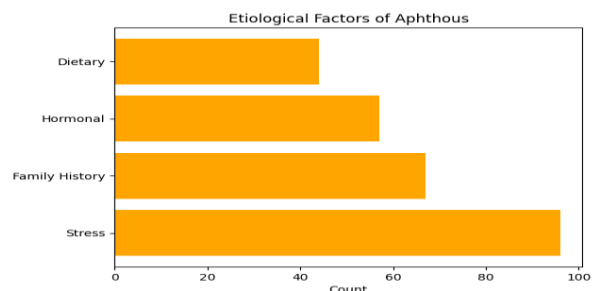
Period	Count	Percentage
Exam Period	175	66.3%
Non-Exam Period	89	33.7%
<b>Total</b>	<b>264</b>	<b>100%</b>
<b>Chi-square</b>	<b>p &lt; 0.001</b>	



According to the etiological factors, the numbers and percentages of dental students with AU were: **Stress:** 96 (36.4%), **Family history:** 67 (25.4%), **Hormonal factors:** 57(21.6%), **Dietary factors:** 44(16.7%). Pearson correlation suggests a moderate positive correlation of etiological factors with aphthous ulcer cases and stress represented the highest value (p < 0.001) as in Table 5.

**Table 5. Etiological Factors of Aphthous**

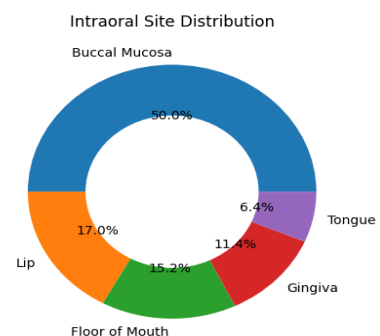
Factor	Count	Percentage
Family History	67	25.4%
Dietary Factors	44	16.7%
Stress	96	36.4%
Hormonal	57	21.6%
<b>Total</b>	<b>264</b>	<b>100%</b>
<b>Chi-square</b>	<b>p &lt; 0.001.</b>	



Intraoral Site Distribution of AU cases were: Buccal mucosa; 132 (50.0%), Lip; 45 (17.0%), Floor of mouth; 40(15.2%),Gingiva;30 11.4%) and Tongue;17 (6.4%) showed in Table 6.

**Table 6**

Site	Count	Percentage
Lip	45	17.0%
Gingiva	30	11.4%
Tongue	17	6.4%
Floor of the Mouth	40	15.2%
Buccal Mucosa	132	50.0%
<b>Total</b>	<b>264</b>	<b>100%</b>



## 4. DISCUSSION

Furthermore, it disrupts swallowing and nutrition, which impacts day-to-day activities<sup>14,15</sup>. According to several studies, the non-keratinized mucosa where AU are most frequently observed include the buccal mucosa, floor of the mouth, tongue, the gingiva, and the labial mucosa<sup>16-19</sup>. About (25%) of the general population suffers from aphthous ulcers, while the incidence varies from (5% to 50%) depending on the socioeconomic group. It has been reported to occur as frequently as (50% to 60%) in other categories, such as medical and dentistry students<sup>20</sup>. Although aphthae can affect people of any age, it is more prevalent in the second decade of life. The age range in our study is also 19–24 years old.

Due to variations in size of sample, study design, and the geographical place, it is important to use attention when comparing the current findings with those from earlier research. About one-third of the sample in this study had aphthous ulcers, which is a comparatively high percentage that would suggest a significant prevalence in the academic setting. In line with other earlier studies, the female displayed a higher number of AU because she was experiencing emotional feelings. Hormonal considerations and the menstrual cycle may possibly be significant determinants<sup>23-25</sup>.

The percentage of dentistry students who experienced AU at exam time was higher, which could be related to stress, which also had larger percentages than other contributing factors. This is consistent with numerous studies that suggested the primary cause of aphthous ulcers in dental students was stress related to exams and work deadlines. It has been demonstrated that among dentistry students, the presence of exam stress, an increase in workload, and a fear of failing are significant factors<sup>26-28</sup>.

Only dental students at Al-Kafeel University in najaf, Iraq, having AU, reflecting the study's findings. That being said, there is no reason to think that this particular cohort of students is any different from other Iraqi dental students. Dental students who had the courses in their program and who had AU served as the study's subjects. As a result, they were sufficiently familiar with the condition's symptoms. They were therefore the ideal participants for this research and its design.

However, the present study showed that the prevalence of AU was higher in C15 (30.7%) followed by C1 1 (27.7%) among dentistry students classes. These results can be explained as the 5th class passed through many examinations with increasing stress and the students should finish a lot of requirements in different subjects and they fear from the deadline of time. The same stress felt by 1st class duo to new situation of students in dental college while other classes feel more comfortable and have relaxation by

time in college and this may be beneficial in reducing AU. For the majority of people, AU is an idiopathic illness. Stress and trauma in the area are the most likely causes. Systemic disorders, nutritional variables, and genetic predisposition are additional factors that are linked to this<sup>23,24,29</sup>. This was in line with the current findings, which indicated that the higher percentages of stress factor other than the remaining etiological factors were more prevalent among dentistry students.

The literature has already identified psychological stress as a trigger for AU, and it is commonly seen during stressful times<sup>30</sup>, including during exam periods<sup>31</sup>. recurrent aphthous ulceration were more likely to have it than those whose parents did not, according to Shi et al.<sup>14</sup>. These findings were consistent with the current findings, which show that the second-highest percentage of etiological variables for AU was family history. According to research by Gallo et al., psychological stress causes parafunctional oral behaviors such biting lips and cheeks, and in vulnerable people, those physical traumas may start the ulcerative process<sup>26,33</sup>. These are consistent with the current study's findings, which indicated that the buccal mucosa had the highest percentages of AU, followed by the lip mucosa.

## 4.CONCLUSION

Aphthous ulcer is a commonly occurring condition of the oral cavity. It frequently affects quality of life of individuals due to painful nature of AU. A significant number of the studied dental students sample was affected by AU with female tendency. The present study showed an important relation between AU and stress that appear more pronounced in exam time, fifth and first classes and this is a characterized factor behind the episodes of AU in dental students. Buccal mucosa and lips were frequently affected intraoral sites.

## DECLARATIONS

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Not Applicable

### No funding

No funding was received from any financially supporting body, and there was no associated grant number.

### Consent for publication

Informed consent was obtained from every participant for documentation and examination.

### Competing interests

The authors declare no competing interests.

### Ethical approval

Ethical approval was granted by the Institutional Human Ethical Committee

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