

Prevalence of Aphthous Ulcer in Students of Ras Al Khaimah College of Dental Sciences*

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ABOUT ARTICLE

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ABSTRACT

Purpose.

Recurrent aphthous ulceration (RAU) is a common oral mucosal disease. RAU are painful ulcerations in the oral cavity that can cause bad breath and typically cause craters in the mouth. They are the most common type of lesions found in the oral cavity. The etiological involves in genetics, vitamin deficiencies, trauma, immune dysfunction and stress. This study was to explore the related risk factors of recurrent aphthous ulceration among dental college students.

Material and Methods.

We conducted a questionnaire survey among 80 students from the Ras Al Khaimah College of Dental Sciences (RAKCODS). The information collected includes report the prevalence, knowledge, experience and risk factors of aphthous ulcer in a sample of RAKCODS students.

Results.

The overall prevalence of RAU is 33 (41.25%) students reported of ever experiencing of RAU, however 47 (58.75%) students reported of never having had any experience.

Conclusion.

According to the results, there are many predisposing factors of RAU including sex, a positive family history and stress. Some measures should be taken to control the incidence of RAU which consist of prompting a correct way of living habits, paying attention to the health conscious diet, strengthen physical exercise, self-decompression and keeping good mentality.

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Introduction

Aphthous ulcers are painful ulcerations in the oral cavity that can cause bad breath and determined effect on speech, nutrition and social interaction. The term *aphthous* has been derived from a Greek word *aphtha* which means ulceration. The multifactorial etiologic factors have already been implicated in the promotion and/or exacerbation of aphthous ulcer; these include positive family history, local trauma (Figs 1, 2), nutritional deficiency, food hypersensitivity, immune disturbance, smoking, and psychological stress [1]. The aim of this study to carry out the research among bachelor of dental surgery (BDS) students to add some knowledge related to the distribution, high frequency of aphthous ulcer by finding underlying etiology which is essential for better management of these cases.

Review of the Literature

Recurrent aphthous ulcer (RAU) is the most common inflammatory ulcerative condition of the oral mucosa. RAU occur in the non-keratinized areas such as lips, tongue, buccal mucosa and soft palate. They are usually painful, shallow round ulcers with an erythematous halo covered by a yellowish-gray fibro membranous layer. Many suggestions have been proposed but the etiology of recurrent aphthous ulcer is still controversial and its occurrence is related to a range of factors, precipitated factors include stress, physical or chemical trauma, food sensitivity, and genetic predisposition [2, 3].

The still unclear etiology has resulted in treatments that are largely empiric and aimed at symptom reduction. These ulcers may be associated with systemic conditions such as Behçet syndrome/HIV AIDS [4]. There are three major categories of aphthous ulcers – major, minor and herpetiform aphthous ulcers. Aphthous minor; commonly encountered painful, small, superficial ulcers of the oral glad bearing mucosa that occur episodically in clusters of one to five lesions. During an attack, new lesions may continually appear for a 3-4 week period with each lesion lasting 10-14 days. The floor-of-mouth and soft palate are common

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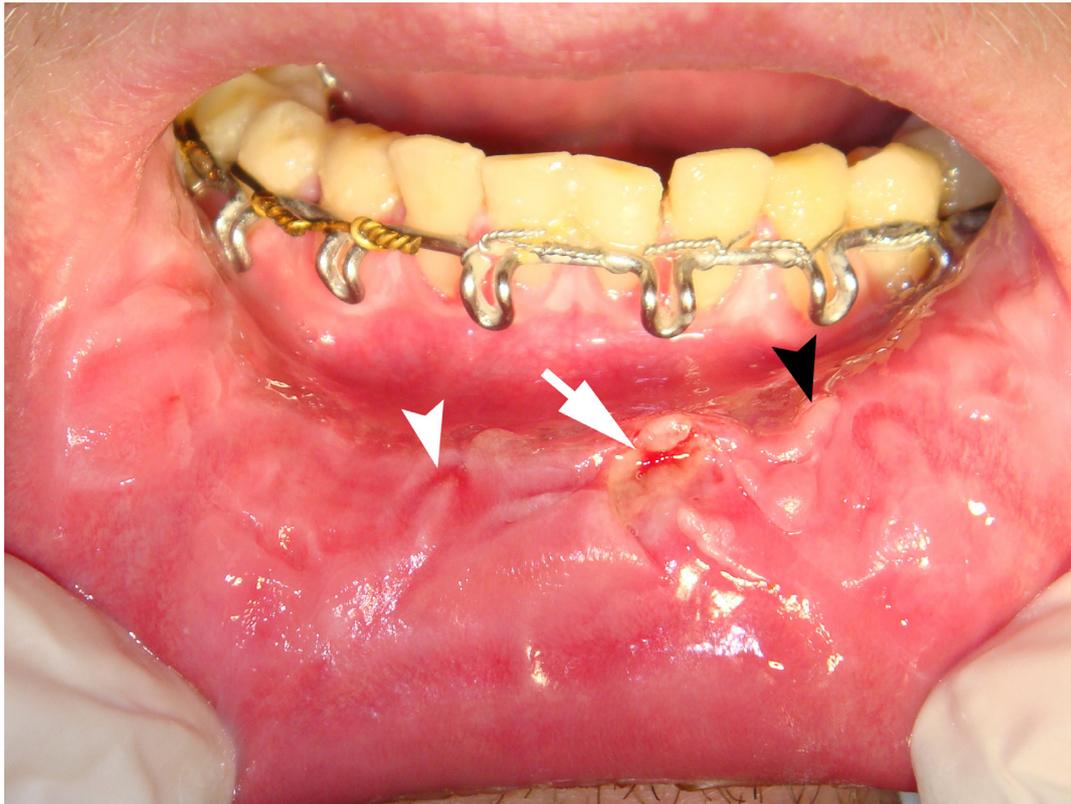


FIGURE 1. 35-year-old man with aphthous ulcer (*arrow*) on the lower lip mucosa caused by trauma with arch bar at 21st day of the treatment of mandibular fractures. Notes impressions (*white arrowhead*) and hyperplasia (*black arrowhead*) of the lip mucosa at the points of contact with arch bars. Image of **Figure 1** are courtesy of Ievgen I. Fesenko, *PhD, Assis Prof*; PHEI "Kyiv Medical University", Kyiv, Ukraine.



FIGURE 2. 28-year-old gentleman with aphthous ulcer (*arrow*) of the buccal mucosa caused by permanent trauma with upper wisdom tooth. Noted erythema and swelling (*asterisk*) of the mucosa around the ulcer. Image of **Figure 2** are courtesy of Ievgen I. Fesenko, *PhD, Assis Prof*; SCIEDECE – Scientific Center of Dentistry & Ultrasound Surgery, Kyiv, Ukraine.

locations for the minor sores which are typically small and shallow. They spare attached gingiva, hard palate and dorsum of tongue. Aphthous major; one or two uncommon large superficial painful ulcers, usually appear on labial mucosa and soft palate. They are larger than aphthous minor, they are around 5-20 mm in size, crater form and takes up to 6 weeks to heal. Scars are more likely to occur with the major ones which are larger and deeper. Herpetiform aphthous ulcers are the most numerous and intense [5, 6].

Aphthous ulcers (canker sores) are associated with local pain and discomfort. Symptoms usually last 2-10 days with minor and herpetiform ulcers and as long as 30 days with major ulcers. Most cases are self-limited and heal without sequel in 7-14 days; however, major ulcers heals slowly (10-30 days or longer) [6-9].

The primary morbidity with any type of aphthous ulcer (canker sore) in the pediatric population is dehydration due to poor oral intake. People are more likely to get them on a regular basis if they have a positive family history of cancer sores. These ulcers mostly occur from age of 10 years onwards but children as young as 2-years-old can get them. Most of them are first noted in adolescence or young adulthood and decrease in severity after menopause [10].

The frequency of occurrence is variable, ranging from several weeks to several years between episodes. The etiology of recurrent aphthous stomatitis (RAS) is not entirely clear, and aphthae are therefore termed idiopathic. RAS may be the manifestation of a group of disorders of quite different etiology, rather than a single entity. Despite many studies trying to identify a causal microorganism, RAS does not appear to be infectious, contagious, or sexually transmitted [11-15]. Immune mechanisms appear to play in persons with a genetic predisposition to oral ulceration [16].

There is no curative therapy to prevent the recurrence of ulcers and all available treatment modalities can only reduce the frequency or severity of the lesions. Vitamin supplements in people who are B12, folic acid deficient. Avoid spicy food, if caused by another illness, they will clear up when the illness is treated. Some herbs like *Aloe vera* and tea tree oil have been known to relieve pain and inflammation which is caused by the aphthous ulcers [17].

Therefore, the aim of the study is to explore the prevalence of aphthous ulcer in Dental College students (RAKCODS students).

Materials and Methods

INCLUSION AND EXCLUSION CRITERIA

Ras Al Khaimah College of Dental Sciences (RAKCODS) RAK Medical & Health Sciences University UAE students (80 persons) from 2nd, 3rd, 4th, and 5th year. 1st year students were excluded due to unavailability and limited knowledge.

STUDY DESIGN

Cross sectional by a questionnaire study.

DATA COLLECTION AND ANALYSIS

Data collection was done using a questionnaire. The questionnaires were distributed by the investigator and collected immediately after being filled with the help of class representatives. Among the variables in the questionnaire were; the students age, gender, ethnical background and presence or absence of familial history of aphthous ulcers. The data was analyzed using MS Excel computer programs. The information gotten from the data collected was presented in the form of graphs and frequency tables.

A questionnaire containing a total of 12 questions in which 4 questions giving the personal details of the students which included name, age, sex and smoker/nonsmoker were recorded. The names of these students were kept confidential. Whereas 8 questions related to aphthous ulcerations (which included whether patients has any history of AU or no, if they had history of RAU then what are the triggering factors, whether it is related to exam/stress or not, duration of the ulcer present, number of days took for healing, any medication patient taking for the same problem, during their visit whether they had any ulcer in the mouth, and any related comments) were recorded.

ETHICAL CONSIDERATIONS

This study is approved by local Ethical Committee. The permission was obtained from the responders and the responders were assured of confidentiality. All the information obtained in this study will be used for academic purposes.

Results

This study was conducted in order to find out the knowledge, experience and risk factors of oral aphthous ulcers (RAU) among BDS students. The study sample was 80 students (Tables 1-10 and Figs 3-12).

RESULT 1 [EXPERIENCE OF APHTHOUS ULCER] (Table 1 and Fig 3)

TABLE 1. Experience of aphthous ulcer

Answers	Number of Students	Total
Yes	33	
No	47	
		80

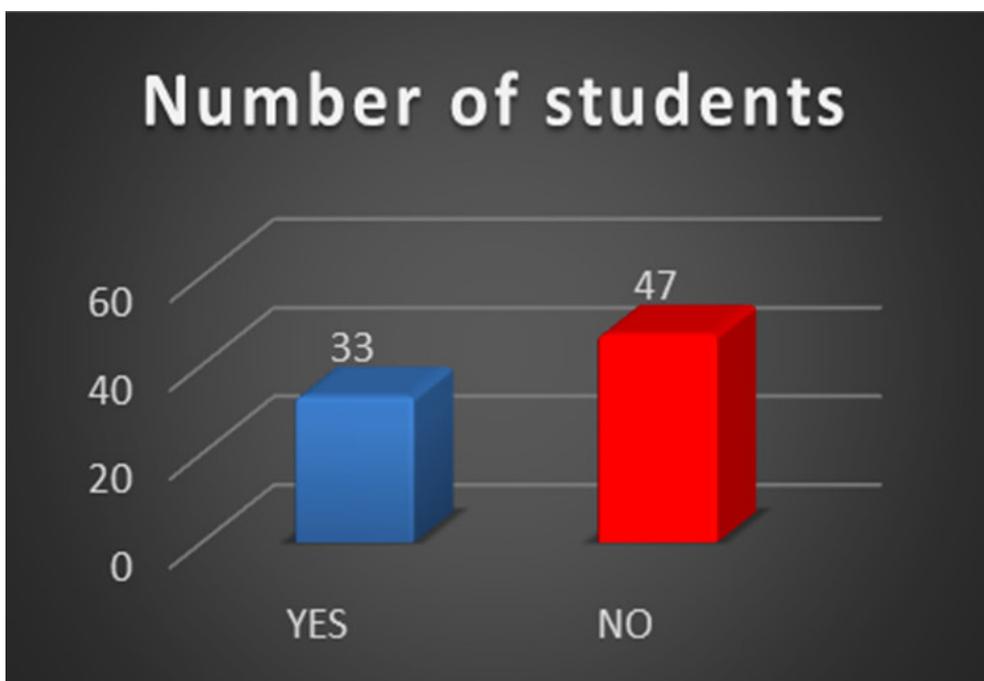


FIGURE 3. Graphic depicts experience of AU: (left axis) total number of students, (column in blue) "yes" answers, (column in red) "no" answers.

The study sample was 80 students. In total, 33 (41.25%) students reported of ever experiencing aphthous ulcer. 47 (58.75%) students reported of never having had any experience.

RESULT 2 [AGE DISTRIBUTION OF RESPONDENTS] (Table 2 and Fig 4)

TABLE 2. Age distribution of respondents

Age	Number of Respondents	Total
18-19	15	
20-21	20	
22-23	40	
Less than 30	5	
		80

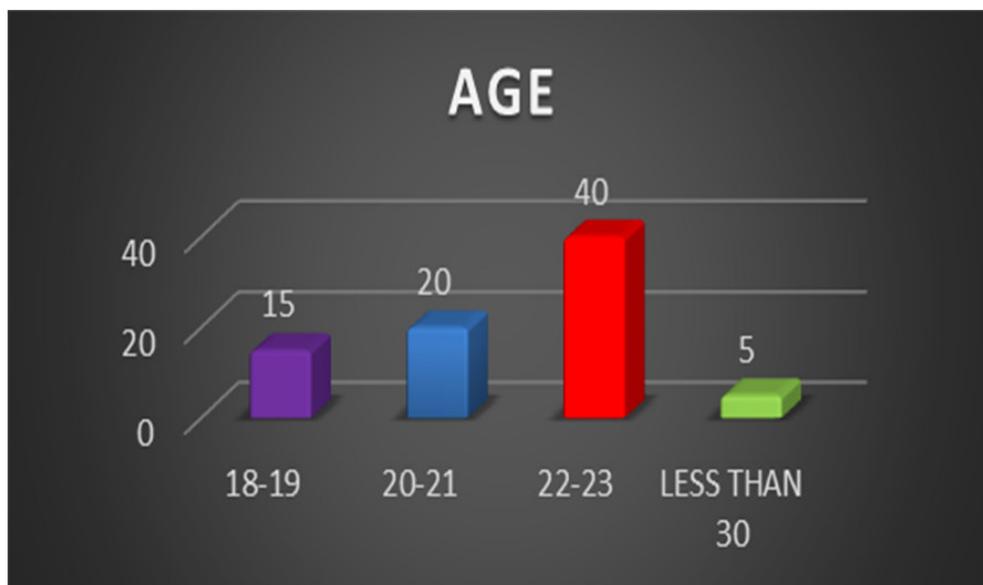


FIGURE 4. Graphic depicts the age distribution of respondents: (left axis) total number of students, (column in purple) 18-19-years-old age, (column in blue) 20-21-years-old age, (column in red) 22-23-years-old age, (column in green) less than 30-years-old age.

In total, 40 students age range between 22-23 years, 20 students age range between 20-21 years, 15 students age range between 18-19 years, and 5 students who are above 23 and below 30.

RESULT 3 [GENDER] (Table 3 and Fig 5)

TABLE 3. Gender

Gender	Number of Students	Total
Female	22	
Male	11	
		33

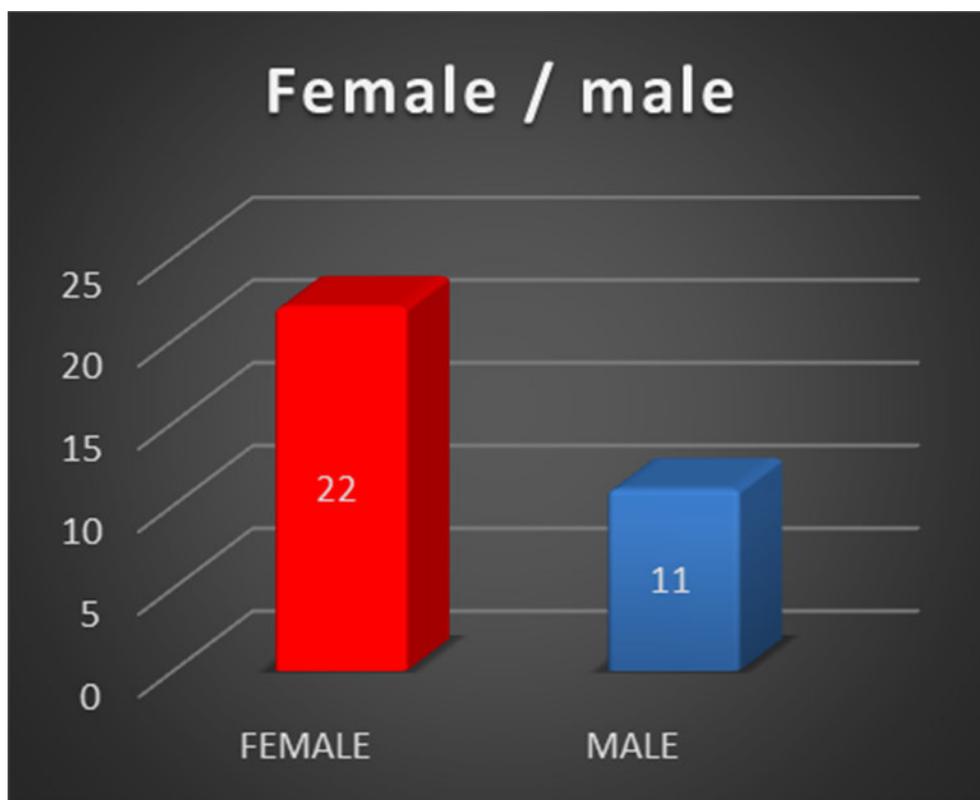


FIGURE 5. Graphic depicts the gender: (left axis) total number of students, (column in red) female, (column in blue) male.

In 33 (41.25%) students reported of ever experiencing aphthous ulcer. Of these, 22 (66.7%) students were female and 11 (36.4%) male.

RESULT 4 [CAUSES OF APHTOUS ULCER] (Table 4 and Fig 6)

TABLE 4. Causes of aphthous ulcer

Causes	Number	Total
Eating spicy food	6	
Trauma	11	
Vigorous brushing tooth	4	
Type of toothpaste	None	
Stress	12	
		33

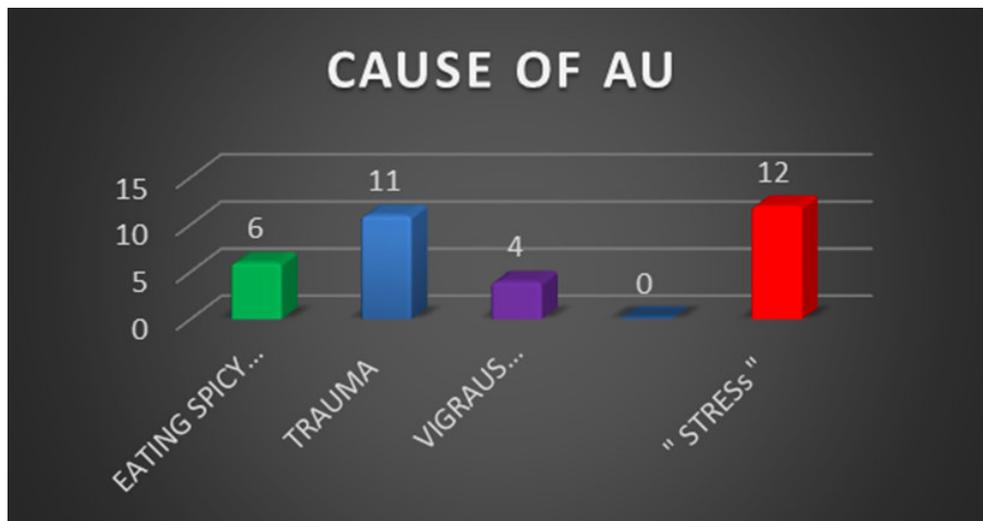


FIGURE 6. Graphic depicts the causes of AU: (left axis): total number of students, (column in green) eating spicy, (column in blue) trauma, (column in purple) vigorous brushing tooth, (column in dark blue) type of toothpaste, (column in red) stress.

In 33 (41.25%) students who reported of having experience on aphthous ulcer. Of these, 12 (36.35%) students said that stress is the cause of RAU. 11 (33%) students said that trauma is the cause. 6 (18%) students said that spicy food is the cause, and 4 (12.1%) students said that hard brushing tooth is the cause.

RESULT 5 [LAST EXPERIENCE OF APHTHOUS ULCER] (Table 5 and Fig 7)

TABLE 5. Last experience of AU

Months	Number of Students	Total
< 6 months	12	
6-12 months	5	
1-1 years ago	6	
> 2 years	10	
		33



FIGURE 7. Graphic depicts the last experience of AU: (left axis): total number of students, (column in purple) < 6 months, (column in blue) 6-12 months ago, (column in red) 1-2 years ago, (column in yellow) > 2 years.

In total, 33 (41.25%) students reported of ever experiencing AU. Of these, 12 (36.4%) students inform that the last experience of AU was < 6 months. 10 (30.3%) students inform that the last experience of aphthous ulcer was > 2 years.

RESULT 6 [LOCATION OF APHTHOUS ULCER] (Table 6 and Fig 8)

TABLE 6. Location of aphthous ulcer

Locations	Number	Total
Buccal mucosa	21	
Dorsum of tongue	6	
Palate	3	
Floor of mouth	2	
Other	1	
		33

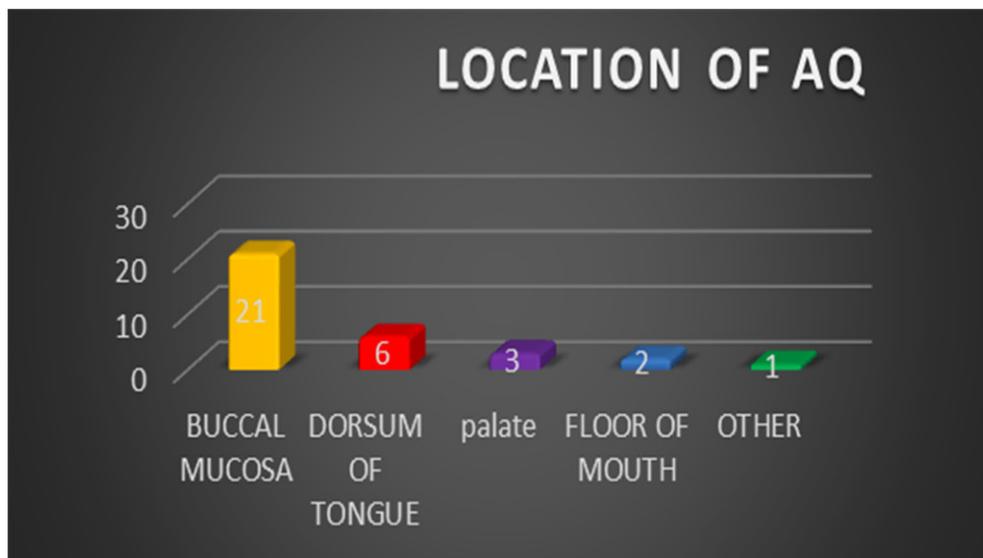


FIGURE 8. Graphic depicts the location of AU: (left axis) total number students, (column in yellow) buccal mucosa, (column in red) dorsum of tongue, (column in purple) palate, (column in blue) floor of mouth, (column in green) other.

In total, 33 (41.75%) students reported of ever experiencing AU. Of these, 21 (63%) students reported of having AU in buccal mucosa.

RESULT 7 [TYPE OF APHTHOUS ULCER] (Table 7 and Fig 9)

TABLE 7. Type of aphthous ulcer

Types	Number	Total
Major "large ulcer"	3	
Minor "small ulcer"	29	
Many small ulcers	1	
Other	None	
		33

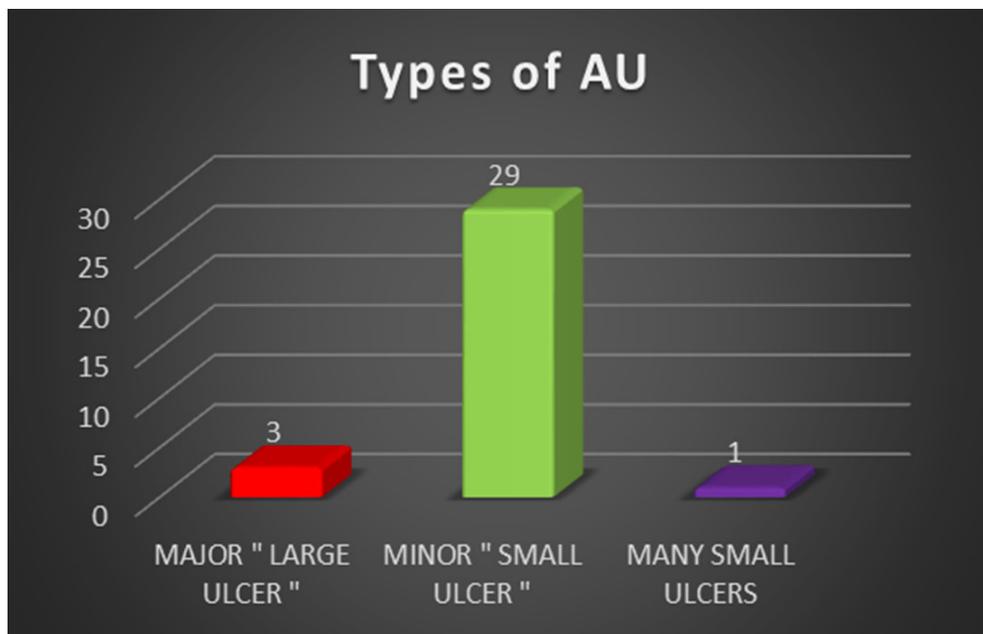


FIGURE 9. Graphic depicts the types of AU: (left axis) total number of ulcers, (column in red) major ulcer, (column in green) minor ulcer, (column in purple) many small ulcers.

In total, 33 (41.75%) students reported of ever experiencing AU. Of these, 29 (87.8%) students reported that they had "minor" type of AU.

RESULT 8 [SMOKING AS A RISK FACTOR] (Table 8 and Fig 10)

TABLE 8. Smoking as a risk factor

Answers	Number	Total
Yes	20	
No	60	
		80

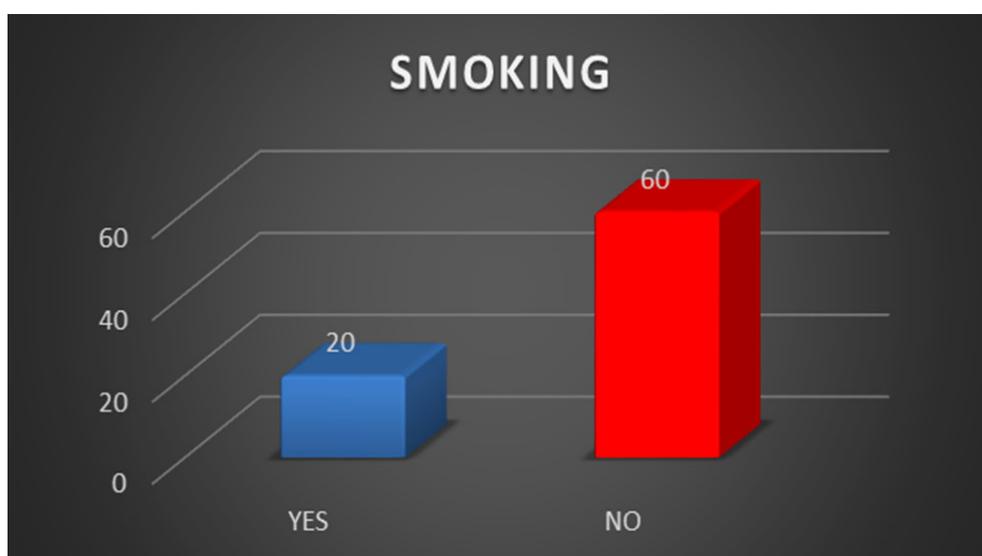


FIGURE 10. Graphic depicts the smoking as a risk factor: (left axis) total number of students, (column in blue) "yes" answers, (column in red) "no" answers.

The total student sample (80 students), 20 (25%) students were smokers whereas 60 (75%) students nonsmokers.

RESULT 9 [TAKING MEDICINES FOR THE TREATMENT OF AU] (Table 9 and Fig 11)

TABLE 9. Taking medicines for the treatment of AU

Answers	Number of Students	Total
Yes	5	
No	28	
		33

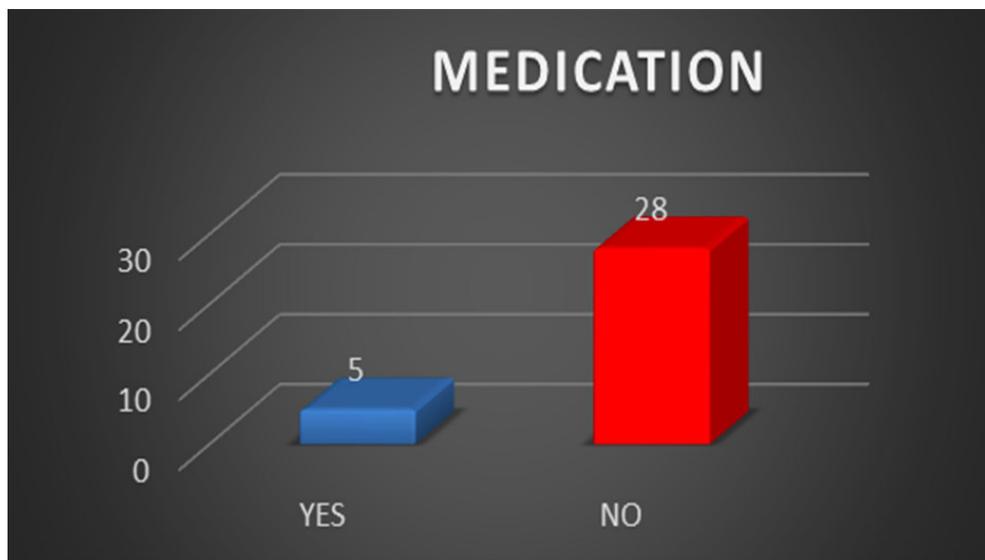


FIGURE 11. Graphic depicts the taking medicines for the treatment of AU: (left axis) total number of students, (column in red) "yes" answers, (column in blue) "no" answers.

In total, 33 (41.75%) students reported of ever experiencing AU. Of these, 28 (84.8%) students did not take any medication for the aphthous ulcer whereas 5 (15.2%) students took medication for the AU.

RESULT 10 [HISTORY OF AU IN OTHER FAMILY MEMBERS] (Table 10 and Fig 12)

TABLE 10. History of AU in other family members

Answers	Number of Family Members	Total
Yes	8	
No	25	
		33

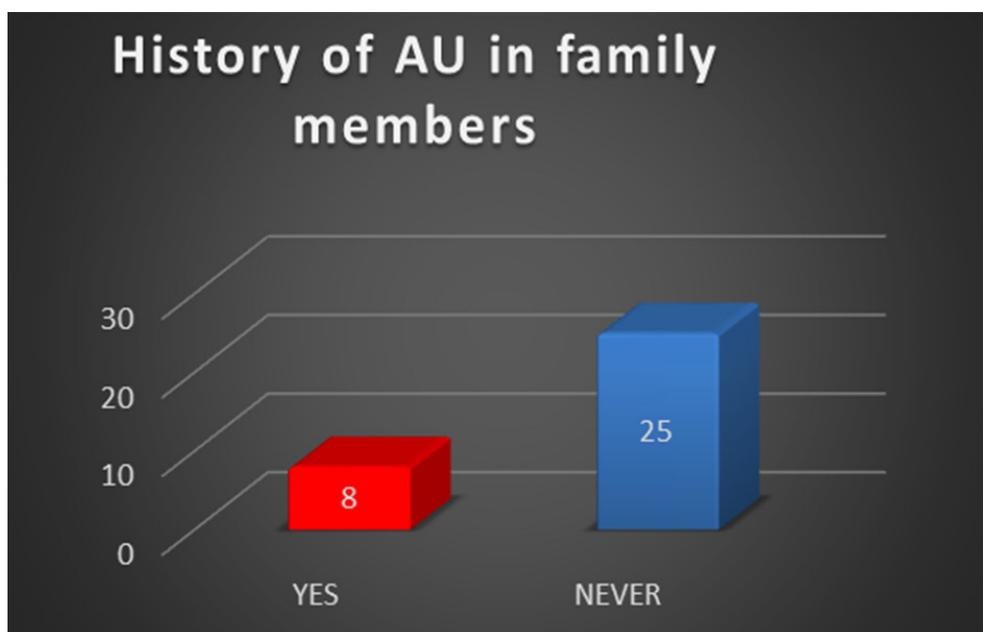


FIGURE 12. The history of AU in other family members: (left axis) total number of family members, (column in red) "yes" answers, (column in blue) "no" answers.

In total, 33 (41.75%) students reported of ever experiencing AU. Of these, 8 (24.2%) students said that other people in their family have had AU whereas 25 (75.8%) students said that no one else in the family has ever experienced AU.

Discussion

Recurrent aphthous ulcers are painful oral lesions with many predisposing factors and no proven effective treatment. A definitive cause of these ulcerations still remains elusive. This study was designed to evaluate the prevalence of RAU in BDS RAK Dental College Students. A total of 80 students participated in the research, and responded to the questionnaires provided. In total, 33 (41.25%) students reported of ever experiencing aphthous ulcer and 47 (58.75%) students reported of never having had any experience.

In our results as shown of the 33 students who reported of ever experiencing aphthous ulcer 29 (87.8%) students reported that they had "one small ulcer." This unlike Lelei Priscilla (2009) [1] who found that most of their students got the "many small ulcers."

Approximately 87% of patients with recurrent aphthous ulcerations were exhibiting minor type in our study. This finding in agreement with Field and Allan (2003) [18]. Also in the study of Naito *et al* (2014) [21]. Female BD patients with two or more RAU had almost double the risk for a subnormal score than did their male counterparts. This difference was agreed with our results which showed that higher occurrence in females during their second decade of life. This unlike Kaimenyi and Guthua [5] who found that occurrence in male is more than female.

Prabha *et al* in 2012 are agreed with our results as in results were shown. It is believed that psychological stress maybe a significant contributor of all students who had experienced aphthous ulcer, 12 (36.35%) students said that stress is the cause of RAU. This finding also is in agreement with a research done by Lelei Priscilla in 2009 [1], and Gavic *et al* in 2014 [20].

The recurrence rates of RUA at the interval of 3-monthes are as high as 50% and these results obtained from Byahatti in 2013 [21, 22] and these are in agreement with our results. Safadi in 2009 [8] in his study of students of Jordanian dental students observed that 92% of subjects reported pain and two – thirds of subjects noticed that ulcers lasted for less than week whereas a minority of participants felt the duration extended beyond two weeks. The observations were evident of our results which indicated same results and suitability to recurrence in total of 33 (41.25%) students reported over experiencing.

Of the 33 students who reported of ever experiencing aphthous ulcer, 21 (63%) students reported of having AU in buccal mucosa as was shown in the our study. This finding is in agreement with a research done by Lelei Priscilla in 2009 [1] and Zhou [23]. The high percentage of AU on the buccal mucosa could be due to trauma during mastication.

In present study 20 (25%) students were smoking whereas 60 (75%) students were nonsmokers which have shown in results and this most probably agreed with Grady

et al in 1992 and Chaopadhyay *et al* in 2007 which were reported that majority of the students reported not using tobacco. This is not completely reliable as the students may not have revealed the correct information for fear of scurvy by faculty. Also it has been suggested that cigarettes smoking prevents aphthous ulcers by causing increased keratinization of the oral mucosa [24, 25].

Regarding certain drugs have been associated with development of RAU; in our study in total of 28 (84.8%) as shown in our study that the students reported that didn't take any medications for AU whereas 15.2% took medication for relieve the pain. These associated with the results of Natah *et al* in 2004 which agreed in their study small percentages of patients used pain medications and antihypertensive drugs [22].

Present study revealed in the our study that students whose parents suffer from RAU more prone to RAU multivariate logistic regression analysis showed that genetic factors are risk factors of recurrent oral ulcers, which are similar to the findings of Koybasi *et al* in 2006 [26]. Family history was the most important factor for RAU among the investigated ones. Occur among sibling may be parents RAU status [27] with increased risk in children of two affected parents (67-90%), and correlation between the incidence of RAU and identical twins was found [28].

However, the etiology of RAU still remains unclear and the currently available therapy remains inadequate. On the other hand, many factors have already been implicated in the promotion and/or exacerbation of RAU. The study may have its limitations in that the data collected was based on subject recall of ulcer experience.

Conclusions

Based on the findings of this study, the following was concluded: 1) The occurrence of AU in female is more than male; 2) There is a direct relationship between stress and occurrence of AU; 3) AU has an effect on speech, nutrition, and social interaction. Early detection and management of these patients by finding the cause is essential for better management of these cases.

Perceived benefits: 1) the information obtained will be used to design preventive programs against ulcers among dental students, 2) the information obtained will be sensitize the clinical BDS students level III and IV and V on need to screen for and educate their patients on risk factors and prevention of aphthous ulcer.

Recommendations: 1) educational programs on stress and their effects on RAU experiences should be carried out to inform dental students as this will be important especially for BDS year 3, 4 and 5 who deal with patients, 2) introduction of stress management programs, this will minimize occurrence of RAU especially during examination, 3) public health programs to be developed in order to educate the public about the ulcers for the well being of the public at large.

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Funding

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Conflict of Interest

The authors declare that they have no conflict of interests.

Ethical Approval

Approval was obtained from the Ethical Committee of the RAK College of Dental Sciences. RAK Medical & Health Sciences University. Ras Al Khaimah, UAE.

Patient Consent

The permission was obtained from the responders and the respondents were assured of confidentiality.

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