

APHTHOUS ULCERATION – RISK FACTORS AMONG DENTAL STUDENTS AT KHYBER COLLEGE OF DENTISTRY, PESHAWAR

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ABSTRACT:

OBJECTIVES:

The aim of this study was to assess the risk factors of aphthous ulceration (AU) among dental students.

METHODOLOGY:

This cross-sectional study was conducted at Khyber College of Dentistry, Peshawar in March 2021 among dental students of all four professional years. It was a questionnaire-based study. Questionnaire comprised of demographics and questions about aphthous positivity, risk factors. Risk factors were stress, family history, menstruation (hormonal changes), food allergy, gastrointestinal diseases and medication. Most questions were closed ended. Hospital Anxiety, and Depression Scale (HADS) was used to assess anxiety and depression.

RESULTS:

Total of 245 dental students responded to questionnaire. Out of 245 dental students, 117 (47.8%) gave a positive history of AU. Mean age in AU positive subjects was 23±1.5 years. AU was seen in males (48.7%) and females (51.3%) with no association between them. Among risk factors, 69 (28.2%) had positive family history, 93 (38%) had stress and 8 (3.3%) reported menstruation. Present study included spice (3.7%), fast food (0.4%), sweets (0.4%), dry fruit (0.4%) and walnut (0.4%) as food allergies related to AU. Only 13 (5.3%) reported a gastrointestinal disease. Medication like NSAIDS and antihypertensive were not involved in any AU case. Anxiety and depression was present in 65% and 38.5% with AU positivity.

CONCLUSION:

Stress was the most common risk factor and positive family history turned out to be the second common risk factor for AU among dental students.

KEYWORDS: *Aphthous Ulceration, Risk Factors, Dental Students, HAD Scale*

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INTRODUCTION:

Aphthous is derived from a Greek word "aphthall" meaning ulceration. Aphthous ulcer AU is the most common oral ulcer. It has a prevalence of 25% out of 4% of all oral ulcers¹. Epidemiological data suggests that AU affects 2-66% of population worldwide². Recurrent and self-limiting nature with involvement of only non-keratinized oral mucosa is the classic clinical presentation of AU³. They appear as small, round ulcers with well-delineated margins and are associated with moderate to intense pain⁴. Aphthous ulcer AU is categorised into 3 types as minor, major and herpetiform on basis of size. Minor AU accounts for greater than 80% of all 3 types⁵. Major AU can lead to scarring⁶. AU, which is often initiated during childhood, involves both genders evenly while some research shows a female predominance⁷. The largest study on AU included 10,000 young individuals from 21 different countries, which showed that 38.7% males and 49.7% females get AU during their lifetime⁸. A multifactorial aetiology is suggested for AU, but exact aetiology remains largely unknown⁷. Factors such as diet, hypersensitivity, medications, hormones, smoking, trauma, and psychological stress are considered as risk factors⁸. Genetics is also linked to AU, many DNA polymorphisms (NOD-like receptor 3, toll-like receptor 4, interleukin 6, E-selectin, IL-1 β and TNF- α genes), in particular⁹. In addition to this, evidence of Immune dysfunction as a causative factor also exists⁸. Scholars have suggested that dietary control can lead to AU

remission due to its close relation to diet. In previous studies assessing AU relation to diet, some have shown spicy and fried food as risk factor, while some have verified allergic food for AU¹⁰. AU occurs at a higher frequency at times of stress. In Indian population, stress turned out to be the most common risk factor leading to recurrent AU¹¹. A negative correlation of tobacco with AU is concluded by Axell and Henricsson study due to leukoedema that prevents penetration of antigens into epithelium⁸. Less data is available about risk factors of AU among dental students. Identification of common risk factors for dental students will allow better control of the AU by avoiding the trigger/risk factor altogether, thus improving quality of life and performance of dental students as AU can hamper smooth running of daily routine by affecting speech, food intake and mastication. Also, AU is sometimes source of unnecessary worry and stress, which leads to development of more aphthous ulcers. The aim of this study was to assess the risk factors of AU among dental students.

METHODOLOGY:

This cross-sectional study was conducted at Khyber college of Dentistry, Peshawar in March 2021. Convenience sampling method was used. Sample included students of all four professional years of BDS (Bachelor of Dental Surgery). House officers, postgraduate residents and faculty were excluded from this survey. A formal ethical approval was sought from the concerned institute before conducting the survey. Questionnaire, validated from Ajmal M et al study⁶, was distributed among participants of study. Questionnaire comprised of demographics of age, gender, and professional year. After providing a very brief description of AU, a question with a yes or no for AU occurrence was asked in section 1. Further questions regarding presence of risk factors of AU were put forward in section 2, which must be filled only by those with aphthous positivity. Risk factors that might be related to AU were family history, stress (professional, exam, emotional, social etc),

menstruation (hormonal changes), food allergy, concomitant gastrointestinal GIT illness (Crohn, celiac disease, ulcerative colitis, Helicobacter H. Pylori, peptic ulceration) and medications. History of smoking was also sought in AU positive subjects only. Closed ended questions were used. Allergic food item, GIT disease and medication, if any, had to be mentioned separately. Last section of questionnaire was HAD scale to assess stress. HAD-A and HAD-D with a score greater than 7 depicted significant anxiety and significant depression. Data was analysed in SPSS version 25.0. Mean and standard deviation was calculated for quantitative variable like age. Frequency and percentages were calculated for qualitative variables like gender, positive history of AU and risk factors including anxiety and depression. Associations between categorical variables (AU vs. gender, risk factors) were tested using chi-square test. Statistical significance was set at $P < 0.05$ for all associations.

RESULTS:

Total of 245 dental students responded to questionnaire. Among them 109 (44.5%) were males and 136 (55.5%) were females. Mean age of the participants was 22.1 ± 1.8 years. Minimum age was 18 and maximum 26 years. Out of 245 dental students, 117 (47.8%) gave a positive history of AU. Among risk factors, 69 (28.2%) had positive family history, 93 (38%) had stress and 8 (3.3%) reported menstruation (hormonal changes). Different food allergies seen were spice 9 (3.7%), dry fruit 1 (0.4%), fast food 1 (0.4%), rice 1 (0.4%), walnut 1 (0.4%), sweets 1 (0.4%) and noodle 1 (0.4%). Peptic ulceration was found in 6 (2.4%), H. pylori in 3 (1.2%), irritable bowel syndrome IBS in 4 (1.6%) and ulcerative colitis in 1 (0.4%). Medications reported were non-significant like anxiolytics, flaggy, mobeverine HCL, omeprazole each with a frequency of 1 (0.4%). Figure 1 showing risk factors below.

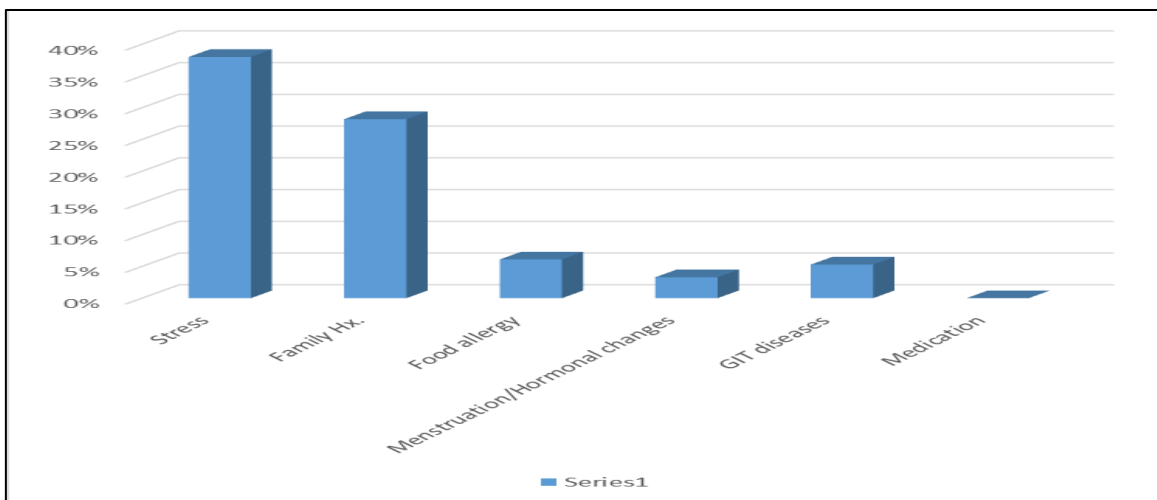


Figure 1: Frequency of Risk Factors of AU in Dental Students

Anxiety was found in 143 (58.4%) dental students whereas depression was seen in 82 subjects (33.5%) as depicted by HAD scale. Gender distribution of subjects with AU is shown in Table 1. Mean age in AU positive subjects was 23 ± 1.5 years. There were 7 (6%) AU positive students who smoked as well. Frequency of anxiety and depression among dental students with AU positivity is depicted in Table 2 and Table 3.

Table 1: Gender Distribution in AU Positive Students

| Gender | N | % |
|--------------|------------|------------|
| Male | 57 | 48.7 |
| Female | 60 | 51.3 |
| Total | 117 | 100 |

Table 2: AU Positive Students with Anxiety

| Anxiety | N | % |
|---------|-----|-----|
| Yes | 76 | 65 |
| No | 41 | 35 |
| Total | 117 | 100 |

Table 3: AU Positive Students with Depression

| Depression | N | % |
|------------|-----|------|
| Yes | 45 | 38.5 |
| No | 72 | 61.5 |
| Total | 117 | 100 |

No association between AU positivity and gender was found ($p=0.20$). AU positivity and family history showed a significant relationship ($p=0.00$). A significant relation of AU with stress and anxiety was depicted ($p=0.00$, $p=0.04$, respectively).

DISCUSSION:

Prevalence of AU can range between 5-60%, according to the group examined⁸. Among dental students, an increased prevalence of AU has been reported in several studies⁷. This study showed a frequency of 47.8%, which is quite like 44% prevalence seen in dental students of Rathod U study¹. Similarly, Prithi R research study³ reported a 50% incidence among dental students, which is again close to our finding. On the contrary, Al-Johani K⁷ concluded a low positive history of 21.7%. Dental students are under stress of vast academic syllabus and tough clinical, which can predispose them to greater AU incidence as seen in this study. This study found not much difference of AU occurrence in males (48.7%) and females (51.3%) with no association found between them. In contrast, participants of George S study¹² reported a higher incidence in females. Sharma M et al findings were same with females affected more than male counterparts¹³. This may be due to lower threshold of females for stress, an important risk factor of AU. Another factor can be presence of hormonal changes due to

menstruation and pregnancy. Despite high prevalence seen in females, Leonardo, Ship, Chattopadhyay failed to demonstrate a relation between AU and gender, which is corroborating this study⁵. In an observational study by Complito et al in adult subjects, AU was more common at 38 years of age¹³. In this study too, AU positivity increased with increasing age with a minimum of 0.9% at 18 years. Mean age with SD for aphthous ulcer AU positivity was 23 ± 1.5 years. Usha R et al results, on the other hand, showed 19-20 years as prevalent AU age group¹. With increasing age, stressors of life also increase. As the age increases, professional year also increases which ultimately results in greater workload, greater fear of failure, and more thoughts for future job. Stress was the most common risk factor (38%) in the present study with 65% anxiety and 38.5% depression. A significant association of AU was found with stress and anxiety in this study. Al-Johani K results showed stress as the most frequent risk factor⁷ (53%), which is in accordance with this result. About association, a positive correlation of AU with stress was also stated in Sharma M et al study¹³. Ajmal M et al study similarly depicted an association between anxiety and AU⁸. Stress hormone, cortisol, is at a higher level in saliva of patients with AU. Depression was not related to AU significantly in the current survey ($p=0.11$), which is very much in accordance with Soto-Araya results⁸. Stress and anxiety among dental students can be multifactorial from professional exam stress to Covid-19 related stress and anxiety. Covid-19 related stress could be more in dental students as compared to others as most of the dental procedures involve aerosols, thereby elevating the risk of contracting the disease. Positive family history increases susceptibility to AU⁹. Present study revealed a positive family history as the second common risk factor (28.2%), which depicted a statistically significant relationship. Similarly, a significant association of AU with a positive family history was found in George S et al study¹². But Jabar SK et al reported positive family history in 60%,¹⁴ which is greater than results of this study. It has been postulated that more severe AU with an onset at an early age is seen in patients with a positive

family history¹⁵. Another study showed 40% of patients with a family predisposition¹⁴ whereas in this study, it is 28.2%. Positive family history marks the genetic predisposition of AU. Menstruation was reported in 8(3.3%) like Maged A findings of 2%¹⁶. Ajmal et al found a relation between AU and menstruation whereas most of the other studies have not established an association between the above two⁸. A small percentage of menstruation as risk factor can be due to its association with females only whereas males do not exhibit any obvious event of monthly hormonal changes. Present study, with low frequency, included spice (3.7%), fast food (0.4%), sweets (0.4%), dry fruit (0.4%) and walnut (0.4%) as food allergies related to AU. In this study, total 6.1% students with AU reported food allergy. In Ajmal et al study, 11.8% students had food allergy as risk factor⁸. Lakdawala study exhibited association of AU with spicy food⁵. Sweet and acidic intake can cause AU by changing pH inside oral cavity. Nuts can reduce AU due to the lubrication of oral mucosa by their unsaturated fatty acids¹⁰. Only 13 (5.3%) students reported a gastrointestinal disease (H. pylori, peptic ulceration, ulcerative colitis, IBS). Similarly, no association was shown between AU and systemic diseases like celiac, Crohn's in Queiroz study¹⁷. H.pylori was positive in 3 students (1.2%), which according to Al-Amad study¹⁸ is not associated with AU. In this study, medication like NSAIDS and antihypertensive, which are commonly notorious for AU, were not mentioned in any AU case. This may indicate that medication is not a common and important risk factor for AU.

Smoking was present in 6% of participants with aphthous positivity contrary to the fact that smoking is protective against AU. This can be attributed to co-existence of other risk factors like stress and family history simultaneously with smoking. This is in accordance with 6% smoker patients in Maged A et al study but two of them reported decreased frequency of AU after starting smoking¹⁶.

CONCLUSION:

Stress, the most common risk factor for AU among dental students, is significantly related

to AU. Educational and public health programmes on AU and stress can help increase this awareness. This could be the way forward for dental students to improve quality of life against AU by either tackling their stress levels themselves or seeking psychological/psychiatric help whenever required.

LIMITATIONS:

This study did not include post-graduate dental students which if included would have helped in validating the results even further.

CONFLICT OF INTEREST: None

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