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PREVALENCE OF APHTHOUS ULCER AMONG DENTAL STUDENTS: A QUESTIONNAIRE-BASED STUDY

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ABSTRACT: Aphthous Ulcer or Recurrent Aphthous Stomatitis is one of the most common mucosal diseases of the mouth. The precise etiology of aphthous ulcer is uncertain, however, triggered factors encompass strain, trauma, food sensitivity, and genetic predisposition. Previous research has advised that stress and anxiety have a role in the onset and recurrence of aphthous ulcers. This study aims to estimate the prevalence of Aphthous ulcers among Dental college students and find out its association with stress.

Key Words: **Recurrent Aphthous Stomatitis, Dentistry, Stress.**

I. INTRODUCTION :

Recurrent Aphthous Stomatitis (RAS) or Aphthous ulcers are common inflammatory lesions of the oral mucosa. The estimated prevalence of oral ulcers worldwide is 4%, with aphthous ulcers being the most common, affecting as many as 25% of the population worldwide [1].

RAS occurs predominantly in the non-keratinized areas like labial mucosa, buccal mucosa, floor of the mouth, and soft palate[2]. They are usually painful, shallow round ulcers with an erythematous halo covered by a yellowish-gray fibromembranous layer [3]. Stanley classified RAS into 3 types [4] Minor,Major and Herpetiform ulcers. 80% of RAS are minor/mild aphthous ulcers. They are small ulcers of 8-10mm size, 1 to 5 in number, affecting the nonkeratinized oral mucosa and heal in 10-14 days without scarring [5]. Major aphthous ulcers (10-15% of RAS) are larger than minor ones (>1cm) and may involve the keratinized oral mucosa such as the hard palate. It can take up to 6 weeks for them to recover and they often leave a scar. There are groups of small ulcers with a diameter of 1-3mm in Herpetiform ulceration, which could number up to 100. These ulcers may coalesce to form large ulcers and last for about 10-14 days and most of them heal without scarring even though they have the potential to scar[3]. The pathogenesis of RAS is unknown, but genetic and environmental factors have been hypothesized. The precipitating factors include stress, physical or chemical trauma, infection, allergy, genetic predisposition, or nutritional deficiencies [6]. Studies reveal an increased prevalence of RAS in students with a higher level of education. This finding supports the idea that stress and anxiety have a role in the development of RAS in educated patients, particularly during examinations. The exact mechanism through which stress causes RAS is unknown.

It has been suggested that increased levels of salivary cortisol or reactive oxygen species in the saliva initiate the lesions [7,8]. A genetic alteration of pathways linked to stressful responses may also be involved [8]. RAS has also been linked to immune system changes, namely the modifications that affect multiple immune system components like the distribution, proliferation and activity of lymphocytes and natural killer cells, phagocytosis, and production of cytokines and antibodies which may partially explain the role of stress in the etiology of RAS [9,10]. The exact mechanism through which stress causes RAS is unknown. Increased amounts of salivary cortisol or reactive oxygen species in the saliva are involved in the pathogenesis of the lesions [11].

The term “STRESS” describes external demands (physical or mental) on an individual's physical and psychological well-being, leading to a deleterious effect on academic performance [12]. Dental education can be a significant source of stress among dental students, and studies have observed higher levels of stress among dental students than in the general population [13]. Admissions, vast dental curriculum, preclinical & clinical assessment, examinations, lacking time management skills and financial obligation might be the sources of stress affecting dental students. This Study was aimed to estimate the prevalence of Recurrent Aphthous ulcer among Dental students and to find out its association with stress.

II. MATERIALS AND METHODS:

A cross sectional study on 350 Dental students was carried out. It is a questionnaire-based study. The questionnaires had two sections. Personal information and questions about aphthous ulcers, such as ulcer experience, number of episodes in the previous year, and number of ulcers in each episode, duration of each episode, site of ulcer, symptoms and remedial measures, associated conditions, self–reported periods of stress and family history were included in the first section.

The second part dealt with 10 questions about perceived stress using a modified perceived stress scale (PSS) by Cohen [14]. It consists of four positively stated items (items 4, 5, 7, and 8), the responses of which are reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 = 0) and they are added to the responses of the rest of the items which gives an overall stress score. Stress levels were examined in people with and without aphthous ulcers.

III. STATISTICAL ANALYSIS:

Statistical analysis was done using SPSS 26. Student t-test and chi-square test were used and a p-value of <0.05 was taken as significant.

IV. RESULT:

Study was carried out in 350 Dental students out of which 267 (76.3%) students reported that they had experienced oral ulceration. Among those who complained of ulcer episodes, 73 (20.9%) were suffering at the time of the study, 93 (26.6%) of them had ulcer 1 month back, 59 (16.9%) of them between 3 months and 102 (29.1%) of them had more than 6 months back. Frequency of ulceration was once in 6 months for 157 (44.9%) students and the rest used to experience it on once in a month to once in 3 months duration. 294 (84%) of them were having a 1-2 ulcer during each episode and 173 (49.4%) of them had it lasting for 1-3 days. Predominant area of occurrence was 125 (35.7%) in buccal mucosa followed by 79 (22.6%) in labial mucosa. 105 (30%) of the participants used both medications and home remedies, whereas a good proportion of 72 (20.6%) had used home remedies and 66 (18.9%) of them used vitamins and topical gels. Positive family history was reported by about 55 (15.7%) of the study participants which was statistically very significant (p=0.05). Out of the 267 (76.3%) participants who experienced ulcer, 199 (74.5%) were females and 68 (25.5%) were males.74 students (21.1%) were under high stress according to perceived stress scale out of which 60 (80%) were with ulcer. 267 students (76.3%) had moderate stress, but among them were 203 (76.03%) with ulcer and 64 (23.97%) without ulcer.

V. DISCUSSION:

In present study the prevalence of aphthous stomatitis was 76.3%. Similar studies have been reported from India as well as other countries. Among the participants, females had higher RAS prevalence compared to males, which is similar to study reported by Handa *et al*., where females are more commonly affected than males [15]. In this study the Mean stress scores of females were more compared to males, which is similar to study reported by Singh et a in which female nursing students perceived more stress than male students[16].

Recurrent aphthous ulcers occur commonly on areas like the buccal mucosa and labial mucosa, floor of the mouth, ventral surface of the tongue and soft palate [17]. Majority (84%) were having 1-2 ulcer during each episode and lasting for 1-3 days (49.4%). Similar findings were found in a study by Safadi on Jordanian dental students (2009), who discovered that two-thirds of the subjects had ulcers that lasted less than a week [18]. In Majority of the participants (79), the ulcer was observed on the buccal mucosa (35.7%). In our study,85 (30.6%) of them did not receive any treatment. However, a significant number of participants (18.9%) used vitamin supplements and topical gels, which the majority of clinicians prescribe during episodes of ulcer, and a good proportion (20.6%) had used home remedies.

In this study 74 students (21.1%) were under high stress and 267 students (76.3%) were under moderate stress as indicated by the PSS score (**fig-1**). There are a number of studies suggesting association of anxiety, depression, and psychological stress with RAS [9]. On the contrary study of Pedersen A in 1989 found no association between stress and RAS and concluded that standardized circumstances are needed to demonstrate such associations using increased keratinization of the oral mucosa [19]. As our study population was Dental students, we can attribute this high prevalence rate of aphthous ulcer in this study to stress because compared to other professional courses dental students are more prone to be stressed. Students suffer from stress because of the academic pressure whereby they are involved in tackling very difficult assignment, also parents and teachers exert a lot of pressure on student to perform better. This compels them to work endlessly, resulting in a stressful environment. Some students are reluctant to change they find it hard to accept the fact that they need to move out of their home town to pursue higher education which makes them homesick. Many find it tiresome to move out of their comfort zone to achieve their dream which makes them vulnerable to stress. Time mismanagement is another factor that causes stress among the college students. Poor sleeping habit is a common indicator of stress among students. Dental curriculum is vast, during the first two years students are trained in basic dental sciences and preclinical work, while the last two years of dentistry focuses on clinical practice and management. Students always appear to be under some stress due to the fear of impending exams or compulsion to complete assignments given.

There was a significant difference in experiencing stress among different years, higher class individuals experience more stress compared to juniors (**fig-2**), which was in concordance with study reported by Handa et al. [15] In this study final year students tend to suffer more stress due to the peer pressure to study 8 subjects and to complete assignments and quota on time. Measures should be taken to reduce the stress levels among dental students which not only reduces their suffering but will also improve their academic performance.

APHTHOUS ULCER EXPERIENCE		PERCENTAGE
Frequency of ulceration	Once in a month	11.7
	Every 2 weeks	2.6
	Once in 2 months	14.9
	Once in 3 months	19.7
	Once in 6 months	44.9
No. in each episode	1-2	84
	3-5	6.6
	>6	3.1
Duration of the ulcer	1-3 days	49.4
	4-7 days	34.9
	7-10 days	6.6
	>10 days	2.9
Area of occurrence	Lips	22.6
	Cheek	35.7
	Tongue	12.3
	Multiple areas	22.9
	None	6.6
Medication	a. Gels, medications	18.9
	b. Home remedy	20.6
	Both a &b	30
	None	30.6
Associated with any condition	Fever	11.4
	Gastric ulcer	19.7
	Premenstrual symptoms	8.6
	Trauma	30.9
	None	29.4
Family history	Yes	15.7
	No	84.3

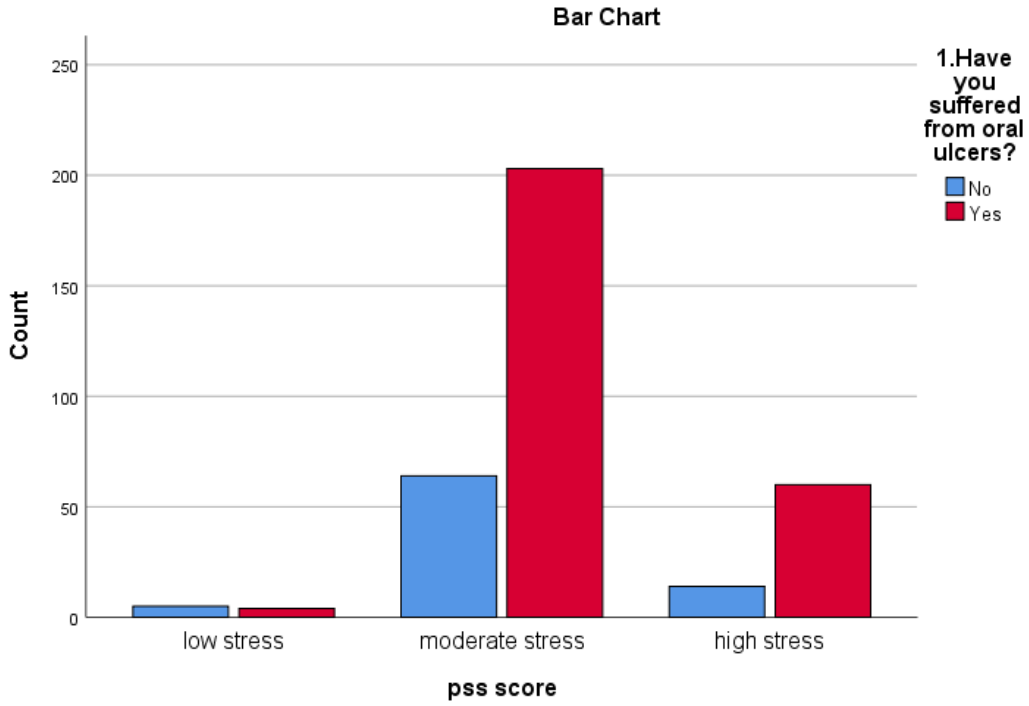

Figure-1- Relation between Aphthous Ulcer and Stress according to PSS score

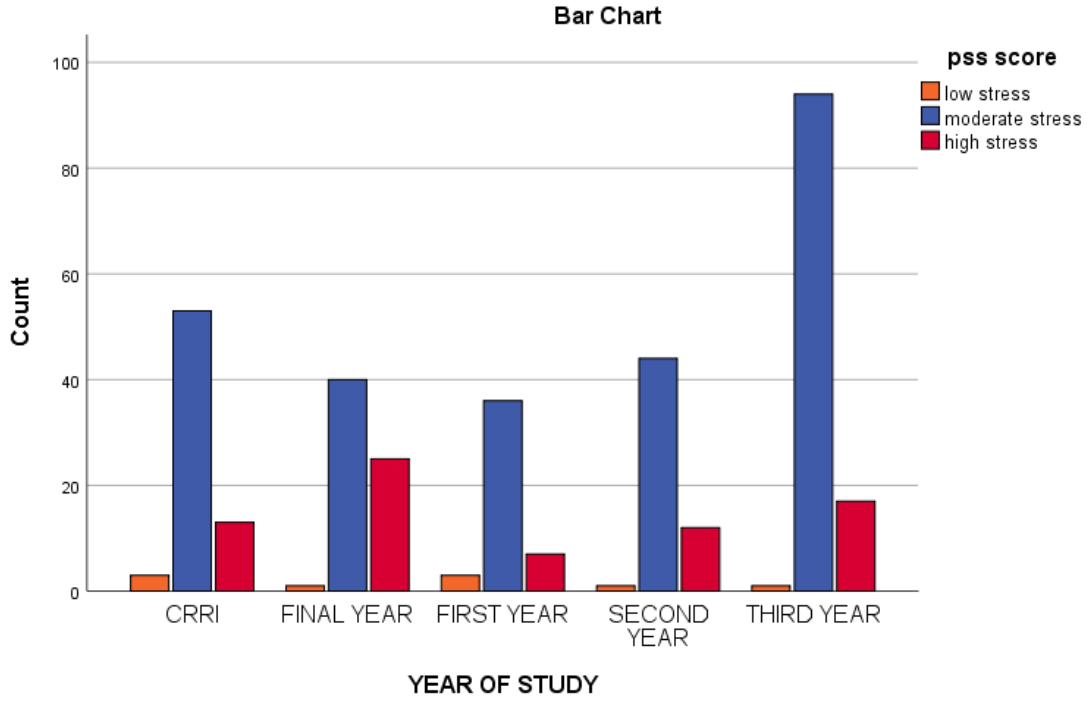

Figure-2- Relationship between year of study and stress according to PSS score

VI. CONCLUSION:

Dental students are more prone to Aphthous ulcers. Study revealed that they are exposed to stress which is more in the ulcer experienced group which indicates that stress may be the precipitating factor for aphthous ulcer in the vulnerable group. In this study we found that prevalence of aphthous ulcers was high among dental students and the self-reported stress was also very high among them. A significant association between stress and aphthous ulcer were found on evaluation with perceived stress scores (PSS) confirming the above said finding. It is clear about the fact that there is high stress among dental students, therefore some interventions are required in the curriculum to reduce the stress levels among dental students which would not only alleviate their suffering but also improve their academic performance.

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