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**PREVALENCE OF APTHOUS ULCERS AND ITS ASSOCIATION WITH  
STRESS AMONG UNDERGRADUATE STUDENTS IN A DENTAL  
COLLEGE – A CROSS SECTIONAL STUDY**

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**ABSTRACT**

**Introduction:-** Aphthous ulcer is a common pathologic condition characterized by the repeated occurrence of benign and non-contagious oral ulcers.

**Aim and Objectives-** To assess the prevalence of aphthous ulcers among undergraduate students and to estimate stress level among undergraduate students. The present study was conducted to find the association between aphthous ulcers and perceived stress among the undergraduate students.

**Materials and Method-** A total of 234 undergraduate students aged 18- 27 years were finalized for study. The data were collected using questionnaire in two sections- Part 1 included 11 questions

related to aphthous ulcer. Part 2 included 14 questions from Perceived Stress Scale. Statistical analysis was done using SPSS 20. Student t – test and Pearson’s chi-square test were applied.

**Results-** The prevalence of aphthous ulcers among 235 undergraduate students was high 160(68%). Majority of undergraduate students i.e. 234(91.6%) showed moderate stress, only one had severe stress and no undergraduate student had low stress.

**Conclusion:** The study revealed that there was a significant association between stress and aphthous ulcers as was observed in undergraduate dental students who were under constant pressure.

**Keywords:** Aphthous Ulcers, Association, Stress, Dental Students, Perceived Stress Scale

## INTRODUCTION

The term aphthous comes from the Greek word “aphtha”, meaning ulcer [1]. Within the oral cavity, non-keratinizing epithelial surfaces in the mouth are commonly affected. Aphthous ulcers appears as recurrent, multiple, small, round or ovoid ulcers, with circumscribed margins and surrounded by erythematous haloes, present first in childhood or adolescence. The etiology of aphthous ulcer is unknown, but precipitated factors include stress, trauma, food sensitivity etc. [2].

Aphthous ulcer is a common pathologic condition characterized by the repeated occurrence of benign and non-contagious oral ulcers. The onset is often during early adolescence, and the condition usually lasts for several months before it resolves. Aphthous ulcers appear periodically and heal completely without scarring. Mostly, the

ulcers last about 6–8 days, and ulceration episodes occur 3–6 times/ year [3].

Symptoms are minor irritation to functional disability. It is interfering with eating and drinking sometimes. Stress has been emphasized as a major risk factor in Aphthous Ulcer [4]. Until recent past, the proposed hypothesis was that stress may induce parafunctional habits such as tongue, lip or cheek biting, and thus cause trauma to oral soft tissues, and this trauma may predispose to ulceration [5].

Medical and dental students are more susceptible to numerous stressors. Their curriculum is multitasking due to tough and vast study syllabus and student’s first exposure to patients. This exposure comes as early as in 3rd year in their medical and dental curriculum in India. The most commonly reported factors were grade competition, heavy workload and patient’s expectation.

Investigators reported that transition periods such as preclinical to clinical training, were considered the most stressful times for dental students. There is an inadequate of knowledge in prevalence of aphthous ulcers and its relation to stress in dental students [6].

Hence, this study was conducted to assess the prevalence of aphthous ulcer and its association with stress among undergraduate students in dental college.

### MATERIALS AND METHOD

A cross-sectional study was carried among 234 undergraduate students of K. D Dental College, Mathura aged 18- 27 years who were present on the day of study and willing to participate in study. Students who were not willing, suffering from systemic diseases and taking medicine like steroids were excluded. The ethical clearance was taken from the Ethical Review Committee of K.D Dental College. An informed consent was obtained from all the willing participants. The data was collected by sampling technique i.e.. convenient sampling. The study was carried out in the month of July 2022. The data was collected using questionnaire which was used for content validity. Performa was distributed to undergraduate students having demographic details (name, age, gender, batch and family income) and questionnaire in two sections- Part 1 included 11 questions related

to aphthous ulcers. Part 2 included 14 questions from Perceived Stress Scale (14 Item Cohen *et al* ). Modified BG Prasad scale April 2021 (In Rs. / month) was used to assess family income per capita. Statistical analysis was done using IBM SPSS version 20.0. Chi-square test was applied. The level of significance was set at  $p \leq 0.05$ .

Prior to being finalised, the questionnaire was pilot tested on 10 students out of which 5 students were aged between 18-22 years and 5 students were between 23- 27 years to ensure its validity and reliability. Questionnaire was reviewed for content validity. The Cronbach's alpha value for the questionnaire was 0.78, indicating a good internal reliability of the questionnaire. The questionnaire was filled by the undergraduate students and the data collection was supervised by the investigator. The scale included a number of direct queries about current levels of experienced stress. The items were easy to understand and the response alternatives were simple to grasp. The questions in the Perceived Stress Scale asked about feelings and thoughts. Perceived Stress Scale (14 item) answers varied from never to sometimes, fairly often and very often on the basis of the occurrence. Scores were obtained by reverse scoring the positively stated items (4, 5, 6, 7, 9, 10, and 13) i.e.. (eg. 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 =

0) and then summing the scores across all 14 items. The scale produced a single score with high and low scores indicating higher and lower levels of stress. The PSS-14 had a probable range from 0 to 56 scores.

## RESULTS

In our study maximum study subjects i.e., 128 (54.5%) were aged between 18 – 22 years followed by 107 (45.5%) subjects who were

aged between 23-27 years. Majority of participants in this study were females i.e. 194(82.6%). Majority of study subjects i.e. 150 (63.8%) were belonging to I (upper class) followed by class II (upper middle class) i.e. 68 (28.9%) & class III (middle class) according to Modified BG prasad scale April 2021 (In Rs. / month) family income per capita (**Table 1**).

**Table 1: Sociodemographic Details Of Study Subjects**

<u>Sociodemographic Details</u>	<u>Frequency (n=235)</u>	<u>Percent (100%)</u>
<u>Gender</u>		
Males	41	17.4
Female	194	82.6
<u>AGE</u>		
18-22	128	54.5
23-27	107	45.5
<u>Income</u>		
>7008	150	63.8
3504-7007	68	28.9
2102- 3503	17	7.2

Study revealed that 160 (68%) were suffering with aphthous ulcers and 75 (32%) did not experience aphthous ulcers. Out of 160 undergraduate students, 48 (30%) participants experienced ulcers at the time of study for more than 6 months i.e. (23.75%). Frequency of ulceration was once in a month seen in 14(8.75%), once in 3 months for 33(20.62%), 24(15%) once in a year, majority i.e. 89 (55.62%) undergraduate students had experienced ulcers in 6 months. Majority of undergraduate students i.e. 86 (53.75%) presented with 3-6 ulcers. Majority of ulcers lasted for 0-2 days in 88 (55%) undergraduate

students. The most common area involved was tongue in 85 (53.12%) followed by multiple areas in 30 (18.75%), lips in 23 (14.37%), gums in 13 (8.12%) and least involved was in cheeks i.e. 9 (5.62%) undergraduate students. Majority of the undergraduate students i.e. 118 (73.75%) took medication vitamin whereas 22(13.75%) took home remedy and 20 (12.5%) did not take any medication. Majority of undergraduate students had ulcer association without any condition. Only 65 (40.62%) undergraduate students had family history of ulcers. Majority of undergraduate students i.e. 52(32.5%) had

stress which was associated with multiple reasons, 40 (25%) with exams, 30(18.75%) with other issues, 22(13.75%) with loss of near ones and 16 (10%) with change in food. All results were found to be statistically significant ( $p \leq 0.001$ ) (Table 2).

In the present study among all undergraduate student's majority of undergraduate students had moderate stress i.e. 234 (99.6%), only 1(0.4%) undergraduate student had high stress and no undergraduate students had low stress (Table 3).

Among total study subject's females had mean stress score of  $29.20 \pm 3.13$  and males had  $28.39 \pm 3.47$ . No statistically significant results were found ( $p \leq 0.001$ ) (Table 4).

In our study, among 235 (100%) total undergraduate students, 160 undergraduate students had experienced aphthous ulcers out of which 159 (99.3%) had moderate stress and only 1 (0.7%) had high stress while among 75 undergraduate students who had not experienced aphthous ulcers, all of them had moderate stress (Table 5).

Table 2: Distribution of ulcer related characteristics among study subjects

Questions	Response Rate	N (%)	$\chi^2$ (chi-square value)	p-value
1) Did you suffer an Aphthous ulcer?	1. Yes 2. No	160 (68%) 75 (32%)	13.961	<0.001*
2) Time of last ulcer	1. Presently 2. 1 month 3. 3 month 4. 6 month 5. > 6 month	48 (30%) 19 (11.8%) 26 (16.25%) 29 (18.12%) 38 (23.75%)	17.01	0.002*
3) Frequency of ulceration	1. One month 2. Three month 3. Six month 4. Once year	14 (8.75%) 33 (20.62%) 89 (55.62%) 24 (15%)	85.605	<0.001*
4) No. of ulcers in each episode	1. 1 2. 3-6 3. > 6	55 (34.37%) 86 (53.75%) 19 (11.87%)	44.111	<0.001*
5) Duration of the ulcer	1. 0-2 days 2. 3-5 days 3. 6-10 days	88 (55%) 59 (36.87%) 13 (8.12%)	55.593	<0.001*
6) Area of occurrence	1. Lip 2. Cheeks 3. Gums 4. Tongue 5. Multiple areas	23 (14.37%) 9 (5.62%) 13 (8.12%) 85 (53.12%) 30 (18.75%)	123.432	<0.001*

7) Medication	1.Vitamin 2.Home remedy 3.No medication	118 (73.75%) 22 (13.75%) 20 (12.5)	87.704	<0.001*
8) Associated with any condition	1.Fever 2.Cutaneous problems 3.Gastric ulcer 4.Recurrent infections 5.Vitamin deficiency 6.Other conditions 7.None	37(23.12%) 4 (2.5%) 7 (4.3%) 3 (1.8%) 15 (9.3%) 14 (8.7%) 80 (50%)	209.086	<0.001*
9) Family history	1.Yes 2. No	65 (40.62%) 95 (59.37%)	9.000	<0.001*
10) Kind of stress	1.Yes 2. No	49 (30.62%) 111(69.37%)	30.494	<0.001*
11) Type of stress	1.Exam 2.Loss of near one 3. Change in food 4. Others 5. Multiple reasons	40 (25%) 22 (13.75%) 16 (10%) 30 (18.75%) 52 (32.5%)	25.882	<0.001*

Table 3: Distribution of stress levels among subjects

Stress level	Frequency	Percent	Chi square value	P-value
Low	0	0	231.017	< 0.001
Moderate	234	99.6%		
Severe	1	0.4%		
Total	235	100%		

Table 4: Gender wise comparison of mean stress scores

Gender	N	Mean± SD	t value	P- value
Male	41	28.39± 3.47	-1.46	.144
Female	194	29.20± 3.13		

Table 5: Association between Aphthous ulcers and stress levels among study subjects

Stress levels	Apthous Ulcer Response				Total	Chi Square Value	P value
	Yes		No				
	n	%	n	%			
Low	0	0	0	0	0	11.953%	<0.001
Moderate	159	99.3%	75	100	234(99.6%)		
High	1	0.7%	0	0	1(0.4%)		
Total	160	100%	75	100%	235(100%)		

## DISCUSSION

In the present study, among 235 (100%) total study participants, 160 (68%) suffered aphthous ulcers and 75 (32%) did not experience aphthous ulcers. Similar study was conducted by Dr. Manjari C Thevara *et al* [1], and Maheswaran *et al* [9] which showed that prevalence of ulcers was 61% among dental students. Also, study conducted by Shiny George & Biju [2] showed similar prevalence of 62.3%. In our study, out of 160 (68%), 48 (30%) participants were suffering at the time of study which was similar to study conducted by Shafia Nisar Kakroo *et al* [4], 21.6% participants experienced ulcers at the time of study and in study conducted by Dr. Pratibha *et al.*, [7] only 7% participants were suffering oral ulcers at that time.

Frequency of ulceration was experienced least in once in a month i.e. 14(8.75%) and highest i.e. 89 (55.62%) in 6 months. Similar result was found in study conducted by Shafia Nisar Kakroo *et al* [4] in which minimum participants i.e. 14(23.3%) experienced ulcers within month and maximum study subject i.e. 34(56.6%) experienced once in 6 months. Also, study conducted by Shiny George, Biju [2], majority i.e. 71% experienced once in 6 months followed by 15% participants who experienced it once in a 3 months and 14% experienced once in 3 months duration.

Majority of undergraduate students i.e. 55 (34.37%) presented with 1 ulcer followed by 3-6 ulcers in 86 (53.75%) and more than 6 ulcers were present in 19(11.87%) students. Similar study done by Shafia Nisar Kakroo *et al.*, [4] observed that 80 % presented with single ulcer and Shiny George & Biju [2] showed that majority i.e. 56 % were having a single ulcer during each episode.

Majority of ulcers lasted for 0-2 days in 88 (55%), 3-5 days in 59 (36.87%) and 6-10 days in 13(8.12%) of undergraduate students. Similar study done by Shafia Nisar Kakroo *et al* [4], concluded that majority of ulcers lasted for 3-5 days (73.3%), 0-2days in 21.6% and 6-10 days in 10% of participants. Safadi AR [11] conducted a study on Jordanian dental students and it was observed that in two – thirds of the subjects, ulcers lasted for less than a week.

The most common area involved was tongue in 85(53.12%) participants followed by multiple areas in 30 (18.75%), lips in 23 (14.37%), gums in 13 (8.12%) and least involved cheeks i.e. 9(5.62%). Similar study was conducted by Shafia Nisar Kakroo [4] in which the most common area involved was cheek/ buccal mucosa constituting 41.6%, followed by lips in 21.6%, gums in 20%, multiple areas in 13.3% and least involved was tongue in 3.33% subjects. Singh *et al* [10]

showed that majority of participants i.e. 41.6% had ulcer on buccal mucosa/ cheeks followed by lips in 21.6% subjects.

Majority of the undergraduate students i.e. 118 (73.75%) took medication vitamin whereas 22(13.75%) had used home remedy and 20 (12.5%) did not take any medication. Similar study conducted by Shafia Nisar Kakroo *et al* [4] in which majority of the participants i.e. 53.3% did not take any medication whereas a good proportion i.e. 36.6% had used vitamins (B complex) and topical gels (Tosti gel) and very few i.e. 10% had sought some home remedies (turmeric). In similar study conducted by Shiny George & Biju<sup>2</sup>, majority of the participants i.e. 73.6% did not take any medication, 18.9% used vitamins and topical gels and very few 7.5% took home remedies. Some medical conditions and medications are important factors in the occurrence of the ulcers.

Majority of undergraduate students had ulcer association without any condition, 37 (23.12%) with fever, 15(9.3%) with vitamin deficiency, 14(8.7%) with other condition, 7(4.3%) with gastric ulcer and 4 (2.5%) with cutaneous problem. In study conducted by Shafia Nisar Kakroo *et al* [4], among 30 (50%) none of the condition was associated with ulcer, only association with vitamin deficiency in 23 (38.3%), fever & Gastric

ulcer in 3(5%) each, trauma in 1(1.6%) and there was no association with recurrent infections, Diabetes mellitus and other conditions.

Only 65(40.62%) undergraduate students had positive family history of ulcer and 95 (59.37%) did not have family history of ulcer. Similar study was conducted by Shafia Nisar Kakroo in which positive family history was reported by about 26.6%. and study by Shiny George & Biju [2] showed that majority of patients i.e. 73.3% had no family history of ulcers.

Majority of undergraduate students i.e. 111 (69.37%) had stress which was associated with multiple reasons in 52(32.5%), 40 (25%) with exams, 30(18.75%) with other issues, 22(13.75%) with loss of near ones and 16(10%) with food change. In study conducted by Shafia Nisar Kakroo *et al* [4], majority of students i.e. 81.6% had stress which was associated with exams and other issues like food change, separation from loved ones. Dr. Pratibha PK *et al* [7] concluded that in this study majority of participants were associated with sharp teeth / cheek bite / tooth brush injury in 28.3% followed by 13.7% with spicy food, 12.5% with multiple reasons, 11.5% with gastric ulcers, 5.3% with vitamin deficiency, 2.7 % with fever, 0.9 % with skin problems, 1.8% with hormonal changes, 1.3%

with orthodontic treatment and 21.2% were associated without any condition. As the result of stress habits such as lips and cheek biting might develop injury to the oral mucosa and cause oral ulcers.

Majority of undergraduate students in our study had moderate stress, only one undergraduate student had high stress and no undergraduate students had low stress. In contrast to study conducted by Dr. Manjari C Thevara [1], majority i.e. 41% had severe stress, 39% had moderate stress and 20% had low stress while Shiny George & Biju [2] showed that majority i.e. 46.2% had severe stress, 37.7% had moderate stress and 16.1% had low stress. The reason for moderate stress among dental students might be because all students are under constant pressure due to vast curriculum.

In our study, among 235 (100%) total undergraduate students, 160 undergraduate students had experienced aphthous ulcers out of which 159 (99.3%) had moderate stress and only 1 (0.7%) had high stress while among 75 undergraduate students who had not experienced aphthous ulcers, all of them had moderate stress. However, in study conducted by Dr. Manjari C Thevara *et al* [1], 61% experienced aphthous ulcers out of which 57.4% had severe stress, 42.6% had moderate stress and no one had low stress, and also in

study done by Shiny George & Biju [2], 62.3% experienced aphthous ulcers out of which 46.2% had severe stress, 53.8% had moderate stress and no one have low stress.

## CONCLUSION

The present study was a questionnaire based study, the patients might have under reported the facts, which was the main drawback of questionnaire-based studies. Severity of the aphthous ulcers was also not considered. Stress levels for different study years among the dental students were not taken separately. The present study assessed impact of psychological factors such as anxiety, stress and depression among dental students. Hence in order to reduce these factors, it is recommended that the students must engage themselves in outdoor activities like sports, adopt healthy eating habits, practice yoga & meditation as alternatives to enhance quality of life.

The study revealed that there was a significant association between stress and aphthous ulcers as was observed in dental students who are under constant pressure as compared to other professional students.

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**CONFLICT OF INTEREST**

Authors declare that there are no conflicts of interest in this study.

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