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## Study On Prevalence of Recurrent Aphthous Ulcer Among College Students.

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### ABSTRACT

Recurrent aphthous stomatitis (canker sores) is a chronic inflammatory, ulcerative condition of the oral mucosa. An enhanced immunologic response occurs to some triggering factors which may include nutritional deficiencies, local trauma, stress, hormonal influences, allergies, genetic **predisposition**, bacterial and viral antigens. These ulcers occur periodically and heal completely between attacks. These ulcers have a significant negative impact on the oral health, affecting the quality of life. This study aims to analyse the prevalence of recurrent aphthous ulcer among college students. A total of 300 individuals were taken for the study. Individuals were interviewed and asked to fill questionnaires related to the history, size, shape, duration, treatment details for aphthous ulcer. The individuals were provided with questionnaire to fill up. The result of the study was that, out of 300 individuals, **females were 71.3%** and **males were 30.6%** affected by aphthous ulcer. The recurrence rate in **female was 47.6%** and **male was 21.3%**. The commonly affected site was buccal mucosa 45% and labial mucosa 33%. Triggering factors like stress 38% and nutritional deficiency 25% were mentioned mostly. Affected individuals preferred treatment with topical gels 24% and a greater number preferred self healing 62.6% of the ulcer. Recurrent aphthous ulcer was found to be a common problem among the college students. RAU frequently affects patient quality of life. It has a detrimental effect on speech, nutrition, and social interaction. Students often get stressed during exam sessions due to which their anxiety levels increase and simultaneously their nutritional levels are also affected, all these could lead to recurrence of RAU. Early detection and management of these individuals by finding underlying etiology is essential for better management of these cases.

**Keywords:** young individuals, stress, nutritional deficiency, inflammatory condition, ulcer

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## INTRODUCTION

The term "aphthous" has been derived from a Greek word "aphtha" which means ulceration[1]. Recurrent aphthous ulceration is reported as the most common inflammatory ulcerative condition of the oral mucosa[2]. The classic clinical presentation of RAU is recurrent, self-limiting ulcers that mainly affect nonkeratinized oral mucosa. A prodromal burning sensation lasting 24 to 48 hours can often precede the onset of ulcers. The lesions are initiated by an inflammatory foci in the form of painful erythematous macules. Within hours, keratolysis mediated by cytokines leads to a shallow, rounded or oval, well-defined ulcer, with a raised inflammatory halo in which microscopically one can observe a large numbers of neutrophils, lymphocytes, and monocytes. These present clinically as multiple, small, round, or ovoid ulcers, with circumscribed margins, covered by a yellowish or gray-white fibrinous exudate and surrounded by an erythematous halo, and present first in childhood or adolescence [2]. Aphthous ulcers are classified on the basis of ulcer size into major, minor or herpetiform [3]. Minor aphthous ulcers also known as Mikulicz's aphthae are small (less than one cm in diameter), well defined, shallow, and heal within two weeks without scars. Major ulcer is also known as periadenitis mucosa necrotica recurrens or Sutton's disease are bigger, deeper, and take up to six weeks to heal leaving a scar behind. They are very painful and may significantly disturb speaking and swallowing. Herpetiform ulceration is characterized by recurrent crops of small, numerous ulcers; may be up to 100 in number of 1-3mm in diameter[2,3]. A diagnosis of recurrent aphthous ulceration depends mainly on history and clinical examination. The prevalence of aphthous varies greatly among different populations and in different age groups with a range from 5-66% among different nations [9-11]. Patients with mild recurrent aphthous ulceration usually do not require any treatment for the lesion. However topical corticosteroids therapy may be used to reduce the frequency and severity of attacks[4].

## METHODS AND MATERIALS

A questionnaire containing a total of 18 questions in which 4 questions giving the personal details of the individual which included name, age, sex, and occupation were recorded. The names of these students were kept confidential. Whereas 14 questions related to aphthous ulceration, which included whether the individual had any history of RAU or no, if they had history of RAU, triggering factors, size of ulcer, number of ulcers, number of days that took for healing, medication for the same problem, during their visit whether they had any ulcer in the mouth were recorded. Among a total of 600 dental students (studying in various phases of 1st, 2nd, 3rd and final year BDS and Interns and Postgraduates at Chennai) 300 (50%) of them (who were volunteers) were selected in the study group. The objective of the study was explained to all of them and the questionnaire regarding information about the occurrence of RAU was distributed for further collection of information. Inclusion of all of those who were willing to participate in the study, irrespective of the occurrence of the RAU was carried out. Collected data were analyzed using a software package SPSS program version. The frequency distribution of recurrent aphthous ulceration was calculated. Chi-square test was also used to compare the prevalence of recurrent aphthous ulceration between categories of age, gender, education, occupation and family history of recurrent aphthous ulceration.

## RESULTS

The study consists of sample size of 300 in total. Out of 300, 150 individuals were classified under non occurrence group, while the remaining 150 is grouped under occurrence group. Each group was divided based on the age ranging from 17-30yrs of age, this was further divided into two groups 17-23yrs (undergraduates & interns) and 24-30yrs (postgraduates). Also in each group the male and female count was taken and categorized under the two age groups respectively. Among 150 individuals, 104 cases reported recurrence of aphthous ulcer of which 72 (47.6%) were females (Table 3), 32 (21.3%) were male (Table 3). Information on the features of the aphthous ulcer were also recorded. Out of 150 individuals, 39 (26%) reported family history (Table 4) of ulcer in mouth, while 111 (74%) reported no family history (Table 4). Based on site of ulcer, 67 (45%) (Table 5) occurred at buccal mucosa, 50 (33%) on labial mucosa (Table 5), 13 (9%) base of tongue (Table 5) and 2 reported other regions like palate, alveolar mucosa (Table 5). Based on triggering factors, 38% reported stress (Table 6), 25% reported nutritional deficiency (Table 6), 9% dental appliances (Table 6), 4% infection (Table 6), 4% drugs (Table 6), 3% hormonal changes (Table 6) and other factors such as brushing technique, climate, lip bite were reported to be 17% (Table 6). Treatment preference were also recorded, topical gel 24% (Table 7), Vitamin-B supplements 6.6% (Table 7), others like butter, milk, salt were also used by

6% individuals(Table7). About 62.6% (Table7) people did not prefer any treatment , instead relied on self healing. The most commonly used topical gels were Mucopain, Zyte and Quadragel.

**Table 1: Gender and Age group distribution**

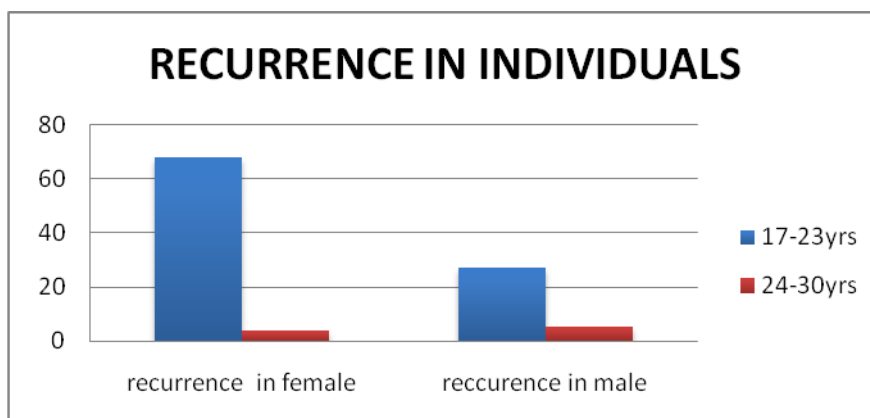
AGE GROUP	FEMALE	MALE	TOTAL NO. OF PARTICIPANTS
17-23YRS	186	86	272
24-30YRS	16	12	28
TOTAL	202	98	300

**Table 2: Gender distribution of Patients with RAU**

AGE GROUP	FEMALE	MALE
17-23YRS	101(67.3%)	36(24%)
24-30YRS	6(4%)	7(4.6%)
TOTAL=150	107	43

**Table 3: Recurrence In Individual**

AGE	RECURRENCE IN FEMALE	RECCURENCE IN MALE
17-23YRS	68(45%)	27(18%)
24-30YRS	4(2.6%)	5(3.3%)

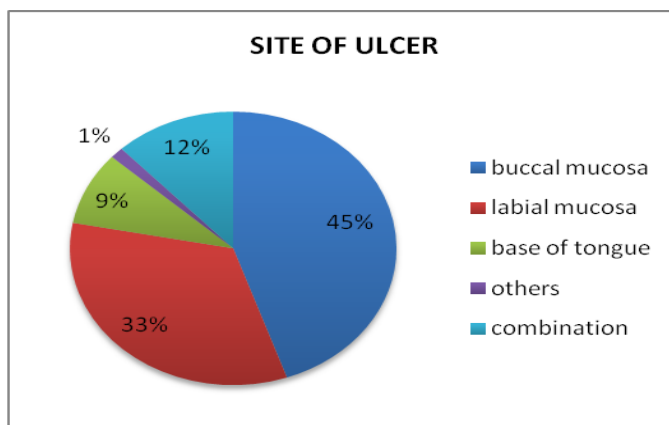


**Table 4: Information on experience of individuals**

VARIABLE	CATEGORY	NO. OF CASES
SIZE OF ULCER	<2MM	51(34%)
	>2MM	99(66%)
NUMBER OF ULCER	<1	99(66%)
	>1	51(34%)
DURATION FOR HEALING	2-5DAYS	65(43.3%)
	1WEEK	59(39%)
	>2WEEKS	26(17.3%)
FAMILY HISTORY	PRESENCE	39(26%)
	ABSENCE	111(74%)

**Table 5: Site of ulcer**

SITE OF ULCER	NO. OF INDIVIDUALS
BUCCAL MUCOSA	67(45%)
LABIAL MUCOSA	50(33%)
BASE OF TONGUE	13(9%)
OTHERS	29(1%)
COMBINATION	18(12%)



**Table 6: Triggering factors**

TRIGGERING FACTOR	NO. OF INDIVIDUALS
NUTRITIONAL DEFICIENCY	38(25%)
STRESS	57(38%)
DENTAL APPLIANCE	13(9%)
INFECTION	6(4%)

HORMONAL CHANGE	4(3%)
DRUGS	6(4%)
OTHERS	26(17%)

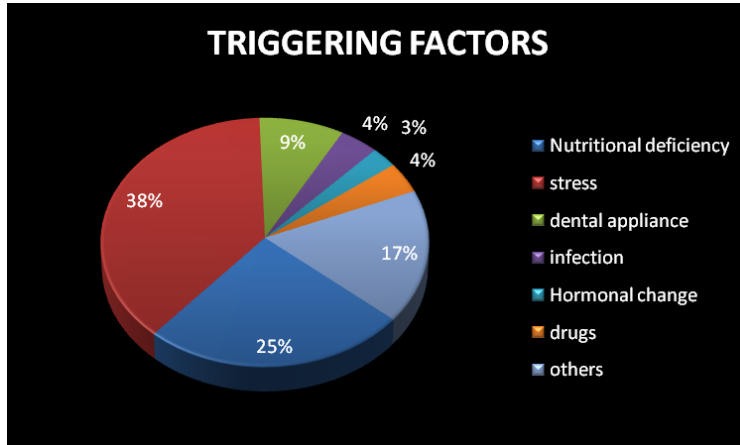
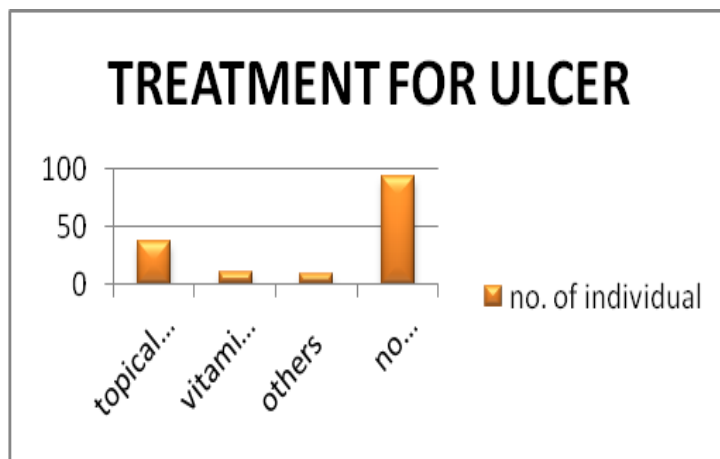


Table 7: Treatment for ulcer

TREATMENT	NO. OF INDIVIDUAL
TOPICAL GEL	37(24%)
VITAMIN B12	10(6.6%)
OTHERS	9(6%)
NO TREATMENT	94(62.6%)



**DISCUSSION**

Recurrent aphthous ulceration is a very common condition affecting about 20% of the world's population, yet it is an important condition since it can be distressing and cause suffering and pain. In addition, it interferes with normal life activities by affecting eating and swallowing of sufferers. Studying the prevalence of recurrent aphthous ulceration is important since it gives insight into the proportion of people who suffer from the condition as well as the possible causal factors.

Diagnosis of RAU is based on history, clinical manifestations, and histopathology. Other causes of recurrent oral ulceration must be ruled out. Diagnostic criteria for minor RAU were proposed by Natah et al in 2004. They proposed that a diagnosis of idiopathic RAU and secondary RAU (associated with systemic disease) is established when four major and one minor criteria are fulfilled.

**Figure -1: Minor Aphthous Ulcer on Left labial mucosa**



**Figure -2: Major Aphthous ulcer on left labial mucosa**



**Figure -3: Herpetiform ulcers on left labial mucosa**



RAU is an idiopathic condition in most patients. The most likely precipitating factors are local trauma and stress. Other etiological factors include systemic diseases, nutritional deficiencies, food allergies, genetic predisposition, immune disorders, medications, and human immunodeficiency virus infection. Deficiencies in iron, folic acid, and vitamin B12 are more common in RAS patients[15]. Although RAU may be a marker of an underlying systemic illness, such as celiac disease, or may present as one of the features of Behcet disease, in most cases no other body systems are affected and patients remain otherwise fit and well. Because the etiology is unknown, diagnosis is entirely based on history and clinical criteria[10,11,].

Psychological stress as a triggering factor for RAU has already been mentioned in the literature, and is typically observed during stressful situations[12] such as school exam periods, dental treatments[13] and periods of significant changes in life. The real role of stress is still unknown but it can be probably related with the modifications that affect multiple immune system components including the distribution, proliferation and activity of lymphocytes and natural killer cells, phagocytosis, and production of cytokines and antibodies. RAS has also been linked to immune system changes, which may partially explain the role of stress in the etiology of RAS[16]. Increased levels of salivary cortisol or of reactive oxygen species in the saliva, have been suggested as the initiator of the lesions[16,17].

Some investigators have speculated that anxiety due to stress could lead to parafunctional oral habits, including lip and cheek biting, and that those physical traumas may initiate the ulcerative process in susceptible individuals.

Comparison of the present results with those from previous studies should be undertaken with caution due to differences in the study design, sample size, and geographical location[7]. Reviewing the literature, approximately 80% of patients with recurrent aphthous ulcerations were exhibiting minor type [8]. The prevalence of recurrent aphthous ulceration was reported to be 40% in a sample of children of the United States [5] and in Iran it was estimated to be 25.2%. Bhatnagar et al reported a much lower prevalence of 1.53% among patients visiting a dental school in north India. In our study the prevalence was 50% which is in line with that of U.S results, while the prevalence value was higher than that of Iran. Aphthous ulcers were reported to vary from 5 to 66% among different nations[6].

A study in Jordan recorded Jordanian females with higher ulceration than males [9]. These results are also in line with the present study and other studies. Another study conducted by Dr.Sujata. M.Byahatti at Libya among student population presents females having higher percentage of recurrence than males and also the triggering factor was found to be stress(37%).

Ratio of ulcer occurring in our study shows females presenting RAU higher than **males**. In fact in this study individuals aged 17-23yrs (undergraduates & interns) complained of increased occurrence of ulcers than the other group aged 24-30yrs (postgraduates). The undergraduate students had recurrent ulcers during examination sessions. The main reason could be the inability of the younger ones to cope with the stress as compared to the higher aged individuals. Thus, stress-management interventions like preplanning of work and execution, counselling for stress, relaxation, healthy diet may be recommended in controlling RAU recurrence [14].

## CONCLUSION

Recurrent aphthous stomatitis (RAS) is a common condition affecting the oral cavity. Recurrent aphthous ulcer frequently affects quality of life of individuals due to recurrent episodes of burning sensation. RAU has an unpleasant effect on speech, eating and social interaction. Early detection of the cause and management of aphthous ulcer will help improve the health status of the individual.

Most studies have elicited that stress was the most important factor behind the occurrence of aphthous ulcer. Following stress, nutrition intake also plays an important role in the development of ulcers. To overcome these problems, students should be provided with awareness such as yoga, meditation, high nutrient rich diet and regular exercise to reduce the development of ulcer.

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