



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2017; 3(4): 455-458
© 2017 IJADS
www.oraljournal.com
Received: 01-08-2017
Accepted: 02-09-2017

Mamta Sharma
MDS, Oral Medicine and
Radiology, Indira Gandhi Govt.
Dental College Jammu, India

Ritesh Gupta
MDS, Orthodontic Dental
surgeon, Indira Gandhi Govt.
Dental College Jammu, India

Satvinder Singh
Asstt Professor, Oral Medicine
and Radiology, Indira Gandhi
Govt. Dental College Jammu,
India

Correlation of psychological stress with recurrent aphthous stomatitis among dental students in an educational institution

Mamta Sharma, Ritesh Gupta, Satvinder Singh

Abstract

Background: Stress related disorders are one of the leading causes of morbidity and even the dental students have been one of the bearers of this condition. So an attempt was made to correlate psychological stress level and recurrent aphthous stomatitis (RAS) among dental graduates.

Material and methods: The study was planned among 160 students by using a proforma including questions on experience of RAS. Stress of the students was measured using the Perceived Stress Scale (PSS). The data was analyzed by using SPSS version 17 software (SPSS Inc., Chicago, IL, USA). Binary logistic regression analysis to evaluate the influence of the different stress levels on RAS. The level of significance was fixed at $p < 0.05$ for all comparisons.

Results: Overall 55% gave history of RAS and mostly subjects experienced its frequency once in a year i.e. 24.7%. The most common sites affected with aphthous ulcer were Cheeks (15.8%), Lips (12.2%) and Tongue (9.9%). The distribution of RAS was more prominent in female participants and students of first professional year. Perceived Stress Scale (PSS) showed a positive correlation of stress with the occurrence of RAS.

Conclusion: More than half of the students experienced from RAS and the prevalence was correlated with stress level.

Clinical significance: The results revealed that higher stress level is the precipitating factor for the occurrence of recurrent aphthous ulcer in this study group.

Keywords: Dental students, Psychological stress, Recurrent Aphthous stomatitis

1. Introduction

Stress is a part and parcel of human's lifestyle. It can be helpful in terms of achieving goals, but on the other hand continuous stress can be harmful in terms of performance [1]. According to World Health Organization (WHO) stress-related problems will be one of the foremost causes of disability by the end of Year 2020. Stress can also lead the incidence of a number of systemic diseases as diabetes, hypertension and autoimmune diseases etc [2].

Students are being affected by a variety of stressors, such as the strain of academic curriculum, an undecided future and hindrances of incorporating into the system [3]. Learners belong to the profession of dentistry are known to be in an extremely stressful learning atmosphere [4]. Psychological stress may play a strong part in the appearance of recurrent aphthous stomatitis (RAS). It may serve as a triggering factor rather than being a reason of disease [5].

Recurrent aphthous stomatitis [RAS] or recurrent aphthous ulceration is a frequent pathologic situation mainly differentiated by the repetitive occurrence of benign and noncontagious oral ulceration. These ulcers are very widespread, disturbing around 20% of the individuals to some quantity [6, 7].

These ulcers are generally painful with an erythematous halo roofed by a yellowish-gray fibromembranous layer [8]. The size of the RAS is up to 1 cm in diameter, well circumscribed, and normally round in shape. The main surfaces affected are labial and buccal mucosa and the ventral surface of the tongue. These ulcers heal within 10 to 14 days.

Numerous hypotheses have been formulated regarding the etiology of RAS. These include both environmental and genetic factors. The impulsive factors comprise stress, allergy, infection, genetic predisposition, trauma and nutritional deficiencies [9]. A variety of studies had found a correlation between RAS and stress level [10, 11]. However a study by Ferguson *et*

Correspondence
Mamta Sharma
MDS, Oral Medicine and
Radiology, Indira Gandhi Govt.
Dental College Jammu, India

al.

not observed any kind of association. Researches also correlated the frequency of RAS in students with the level of education [12]. Hence, the present investigation intended to determine the prevalence of recurrent aphthous ulcers and its association with stress.

Materials and Methods

This descriptive epidemiological study was conducted among dental students in Government Dental College, Jammu. After taking ethical approval from the respected authorities, an informed consent was obtained from all the willing participants.

The data was collected using simple random sampling technique and a total of 160 students were finalized. Those students who were suffering from systemic diseases and were on medication that leads to immunosuppression were excluded from the study.

The entire study sample was informed about the nature and principles of the study and appealed to fill up the questionnaires which were circulated by investigator. The proforma was compromised of two sections. First part included personal details and second part recorded details related to aphthous ulcers such as history of ulcer, prognosis period and site of ulcer.

Stress of the students was measured using the Perceived Stress Scale (PSS) [13] which is the main psychological device to calculate the perception of stress level. PSS included of 14 items with answers varying from never to sometimes, fairly often and very often on the basis of the occurrence. The scale produces a single score with high and low scores indicating higher and lower levels of stress. The PSS-14 has a probable range from 0 to 56 scores.

Statistical analysis

The data was analyzed by using SPSS version 17 software (SPSS Inc., Chicago, IL, USA). Categorical variables like RAS versus stress were compared using Chi- square test. Mean stress scores versus gender and professional years was calculated with Student’s *t*- test and ANOVA respectively. Binary logistic regression analysis to evaluate the influence of the different stress levels on RAS. The level of significance was fixed at $p < 0.05$ for all comparisons.

Results

A total of 160 subjects participated in the study of which 112 (70%) were females and 48(30%) males. Additionally the participants were divided according to professional years as 44(27.5%) in First year, 40(25%) in Second year, 44(27.5%) in Third year and 32(20%) in Final year.

Overall 55% gave history of RAS and mostly subjects experienced its frequency once in a year i.e. 24.7% followed by once in a month (15.9%) and once in six months (14.4%) as illustrated in Graph 1. The common most location of aphthous ulcer was on the Cheeks (15.8%), Lips (12.2%) and Tongue (9.9%). Many subjects (14.8%) had experienced RAS on multiple parts of oral cavity (Graph 2). When students were asked about the prognosis of RAS, maximum participants responded that it heals in a week (29.8%). Some answered that it took around two week to them from the relief of ulcer (17.6%). Less number of participants had suffered from RAS for more than two weeks (7.6%) as mentioned in Graph 3.

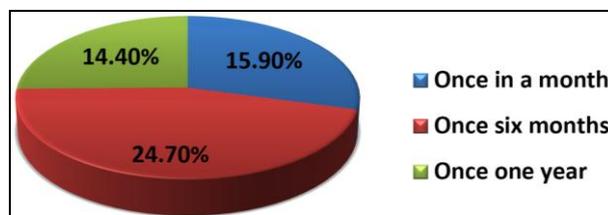
The distribution is more prominent in female participants (37.5%) compared to males (17.5%) which is statistically

non-significant ($p=.352$) as shown in Table 1. In this data first year professional students had highest frequency of RAS (18.8%) followed by third year students (15.0%). Whereas final year students experienced less prevalence of recurrent aphthous ulceration (7.5%) as mentioned in Table 2.

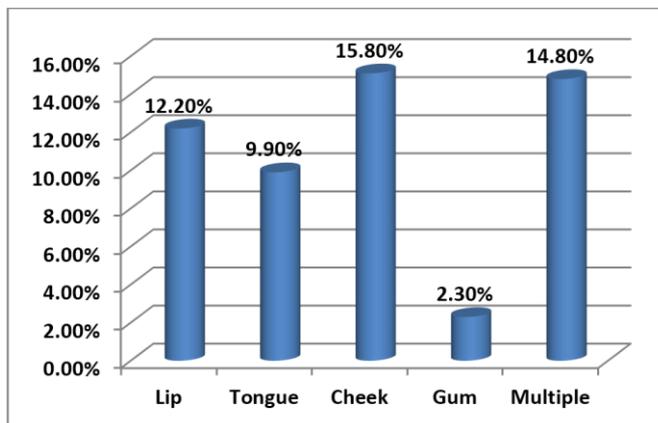
When the rate of RAS was compared according to various levels of stress measured by Perceived Stress Scale (PSS), maximum number was seen among students experienced stress very and fairly often and only few participants who never experienced stress had RAS ($p=0.000$) as discussed in Table 3.

Binary logistic equation showed statistically significant difference in between groups experienced never and sometimes stress when RAS was present. However no significant differences were present in subjects with fairly and very often stress level with recurrent aphthous ulceration (Table 4).

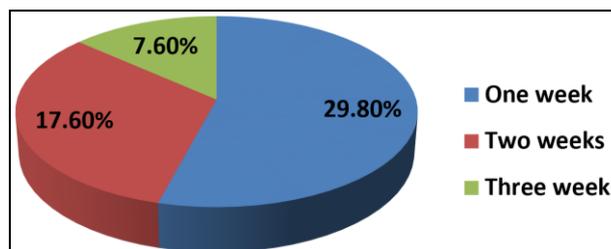
When Pearson Correlation test was applied a positive correlation of RAS was found in patients experienced stress fairly ($r= .337$, $p=.000$) and very often ($r= .377$, $p=.002$) as illustrated in Table 5.



Graph 1: Showing history of recurrent aphthous stomatitis



Graph 2: Showing occurrence of recurrent aphthous stomatitis in different parts of mouth



Graph 3: Showing the prognosis of Recurrent aphthous stomatitis

Table 1: Gender-wise distribution of subjects with Recurrent aphthous stomatitis

| Gender | Absent | Present | Total |
|--------|------------|-----------|------------|
| Female | 52 (32.5%) | 60(37.5%) | 112(70.0%) |

| | | | | | | | |
|------|-----------|-----------|-----------|-------|-----------|-----------|-------------|
| Male | 20(12.5%) | 28(17.5%) | 48(30.0%) | Total | 72(45.0%) | 88(55.0%) | 160(100.0%) |
|------|-----------|-----------|-----------|-------|-----------|-----------|-------------|

Table 2: Professional year wise distribution of subjects with recurrent aphthous stomatitis

| Year | Absent | Present | Total |
|--------|-----------|-----------|-------------|
| First | 14(8.7%) | 30(18.8%) | 44(27.5%) |
| Second | 18(11.3%) | 22(13.7%) | 40(25.0%) |
| Third | 16(10.0%) | 28(17.5%) | 44(27.5%) |
| Fourth | 20(12.5%) | 12(7.5%) | 32(20.0%) |
| Total | 72(45.0%) | 88(55.0%) | 160(100.0%) |

Table 3: Distribution of subjects with Recurrent aphthous stomatitis according to Perceived Stress Scale (PSS)

| Ulcer | Never | Sometimes | Fairly Often | Very often | p-value |
|---------|-----------|-----------|--------------|------------|---------|
| Absent | 37(51.4%) | 24(33.3%) | 5(6.9%) | 6(8.3%) | 0.000 |
| Present | 8(9.1%) | 20(22.7%) | 28(31.8%) | 32(36.4%) | |

Table 4: Binary logistic equation showing association of stress Recurrent aphthous stomatitis

| Stress | Sig. | 95.0% C.I. | |
|--------------|------|------------|-------|
| | | Lower | Upper |
| Never | .000 | .002 | .150 |
| Sometimes | .008 | .007 | .476 |
| Fairly often | .405 | .041 | 3.646 |
| Very often | .867 | .066 | 9.821 |

Table 5: Association of stress Recurrent aphthous stomatitis

| | Never | Sometimes | Fairly Often | Very often |
|---------------------|-----------|-----------|--------------|------------|
| Pearson Correlation | -.456(**) | -.118 | .337(**) | .377(**) |
| Sig. (2-tailed) | .000 | .137 | .000 | .002 |

** Correlation is significant at the 0.01 level (2-tailed)

Discussion

Stress has both pros and cons that it can either inspire the students to reach the zenith or shrink them to uselessness [14]. Mental stress provokes immunoregulatory activity by escalating the number of leukocytes at the site of inflammation, this characteristic often noticed during the pathogenesis of RAS [9]. Also it has been suggested that stress could lead to habits that harm the oral mucosa, like bites in the cheeks and lips, which finally leads to ulceration in oral cavity. It get in the way with usual life activities by distressing swallowing eating of person with stress. In spite of widespread analysis, studies have fallen short to locate the accurate etiology of RAS [15].

The current study determined the lifetime prevalence of RAS in dental graduates which was found to be 55% and similar results were obtained by Maheswaran *et al.* among the students of a dental institution in south India [16]. However lower rate of RAS was seen in Sulaimani City (28.2%) [17], in Iran (25.2%) [18] and in Turkey (25.5%) [19]. High occurrence of recurrent aphthous ulceration in the present study can be attributed to stress level of dental students, which would be high compared to other populations, as dental students may undergo more stress due to the nature of their academic curriculum [20]. On the other hand Ship JA reported frequency of RAS as 66.9% [21] and Donatsky O mentioned as 66% among Danish dental students [22].

The main targeted areas with RAS in this study were cheeks, lips and tongue. Similarly Schneider *et al.* observed buccal mucosa and labial mucosa, floor of the mouth and tongue as common most sites in Jordanian dental patients. Recurrent aphthous ulcers occur on areas of the mouth where the mucosa is non-keratinized and loosely attached, in particular, the buccal mucosa and labial mucosa, floor of the mouth, ventral surface of the tongue and soft palate [13]. 22.9 % of the

ulcers reported in the present study were observed on the cheeks [23]. In an another study by Pratibha *et al.*, 22.9 % of the ulcers reported on the cheeks of the study subjects. These ulcers mainly occur where the mucosa is non-keratinized and loosely attached [24].

Recurrent aphthous stomatitis heals in a week as reported by most of the study participants (29.8%). In accordance with this Safadi reported that generally ulcers lasted for less than a week among Jordanian dental students [20].

In the present study female students (37.5%) were more repeatedly affected by RAS than male counterparts (17.5%). The findings were similar to study by Safadi in Jordanian dental patients [20]. In addition to this Patil *et al.* also reported that females (56.3%) were more habitually affected compared to males (43.7%) and the results were statistically significant [11].

It could be due to more level of stress among females due to emotional conditions which can have an effect on their immune response. Also hormonal changes during pregnancy and menstruation also have an impact on stress [24]. On contrary to this Rao *et al.* found that males had higher Recurrent aphthous stomatitis (87%) compared to females (74%) [6].

Educational level had great impact on the pervasiveness of recurrent aphthous stomatitis. Prevalence of RAS was higher in junior dental students as compared to seniors. This could be due to more pressure of professional studies in the fresh years. However, Singh *et al.* showed that higher class students experienced more stress as the syllabus for final year classes is more difficult compared to preceding years [26].

In contrast to the current data, most of subjects experienced stress after the age of 30 [26]. Similarly Complito *et al.*, in their observational study among adult patients mentioned that RAS was more frequent at the age of 38 years [27].

The Perceived Stress Scale (PSS) in the present study stated that stress level is positively correlated with RAS. Correspondingly Rao *et al.* stated that existence of stress adds to the chances of having RAS by 3.1 times [6]. Similarly, Gallo *et al.* observed that patients with recurrent aphthous stomatitis exhibited high level of stress than the control group [9].

Conclusion

The findings reported prevalence of recurrent aphthous stomatitis as 55% among dental graduates. The stress level was positively correlated with RAS. Additional key factor of high stress prevalence is unemployment after graduation in dental sciences in India. The current data can assist in premeditated planning to ensure wellbeing for future dentists. Targeted efforts should be implied to tackle stress level and

improve physical and psychological well-being.

References

- Mengi A, Bharathi M, Vakil N, Divya DC, Goel S, Jindal R *et al.* A cross-sectional survey of perceived sources of stress in dental students from Punjab. *IAIM* 2015; 2(11):20-25.
- Lamk AL. Stress in the Medical Profession and its roots in Medical School. *SQU Med J*. 2010; 10:156-9.
- Kumar S, Dagli RJ, Mathur A, Jain M, Prabu D, Kulkarni S. Perceived sources of stress amongst Indian dental students. *Eur J Dent Educ*. 2009; 13:39-45.
- Jain A, Bansal R. Stress among Medical and Dental Students: A Global Issue. *IOSR JDMS* 2012; 1(5):5-07.
- Camila de Barros Gallo, Maria Angela Martins Mimura, Norberto Nobuo Sugaya. Psychological stress and recurrent aphthous stomatitis. *Clinics* 2009; 64(6):645-8.
- Rao AK, Vundavalli S, Sirisha NR, Jayasree CH, Sindhura G, Radhika D. The association between psychological stress and recurrent aphthous stomatitis among medical and dental student cohorts in an educational setup in India. *J Indian Assoc Public Health Dent*. 2015; 13:133-7.
- George S, Joseph BB. A study on aphthous ulcer and its association with stress among medical students of an Indian medical institution. *International Journal of Contemporary Medical Research* 2016; 3(6):1692-1695.
- Rivera-Hidalgo F, Shulman JD, Beach MM. The association of tobacco and other factors with recurrent aphthous stomatitis in an US adult population. *Oral Dis* 2004; 10:335-45.
- Gallo Cde B, Mimura MA, Sugaya NN. Psychological stress and recurrent aphthous stomatitis. *Clinics (Sao Paulo)* 2009; 64:645-8.
- Ship JA. Recurrent aphthous stomatitis. An update. *Oral Surg Oral Med Oral Pathol* 1996; 81:141-7.
- Patil S, Reddy SN, Maheshwari S, Khandelwal S, Shruthi D, Doni B. Prevalence of recurrent aphthous ulceration in the Indian Population. *J Clin Exp Dent*. 2014; 6(1):e36-40.
- Ferguson MM, Carter J, Boyle P. An epidemiological study of factors associated with recurrent aphthae in women. *J Oral Med*. 2008; 39:212-7.
- Wolfgang AP. The health professions stress inventory. *Psychol Rep* 1988; 62:220-2.
- Singh A, Jindal R, Bhardwaj A, Veerasha KL. A preliminary study of perceived stress among dental undergraduate students in rural Haryana. *Journal of Oral Health Research*. 2011; 2(3):91-95.
- Paterson AJ, Lamb AB, Clifford TJ & Lamey PJ. Burning mouth syndrome: the relationship between the HAD scale and parafunctional habits. *J Oral Pathol Med*. 1995; 24:289-292.
- Maheswaran T, Yamunadevi A, Ayyappan S, Panda A, Sivakumar JS, Vaithyanadane V. Prevalence and family history of recurrent aphthous stomatitis among the students of a dental institution in south India. *J Indian Acad Dent Spec Res*. 2014; 1:53-5.
- Abdullah MJ. Prevalence of recurrent aphthous ulceration experience in patients attending Piramird dental speciality in Sulaimani City. *J Clin Exp Dent*. 2013; 5(2):89-94.
- Davatchi F, Tehrani-Banihashemi A, Jamshidi AR, Chams-Davatchi C, Gholami J, Moradi M. The prevalence of oral aphthosis in a normal population in Iran: a WHO-ILAR COPCORD Study. *Arch Iran Med* 2008; 11:207-9.
- Cicek Y, Canakci V, Ozgoz M, Ertas U, Canakci E. Prevalence and handedness correlates of recurrent aphthous stomatitis in the Turkish population. *J Public Health Dent*. 2004; 64:151-6.
- Safadi RA. Prevalence of recurrent aphthous ulceration in Jordanian dental patients. *BMC Oral Health* 2009; 9:31.
- Ship JA. Recurrent aphthous stomatitis. An update. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; 81:141-147.
- Donatsky O. Epidemiologic study on recurrent aphthous ulcerations among 512 Danish dental students. *Community Dent Oral Epidemiol* 1973; 1:37-40.
- Schneider LC, and Schneider AE. Diagnosis of oral ulcers 1998; 65(5&6):383-387.
- Pratibha PK, Prerna J, Meena AK, Bhat KM, Chakravarthy PK, Bhat GS. Association of Recurrent Aphthous Ulcers with Stress among Students in an Indian Dental Institution. *NJIRM* 2012; 3(3):141-147.
- Zain RB. Oral recurrent aphthous ulcers/stomatitis: prevalence in Malaysia and an epidemiological update. *J Oral Sci*. 2000; 42:15-9.
- Singh A, Chopra M, Adiba S, Mithra P, Bhardwaj A, Arya R. A descriptive study of perceived stress among the North Indian nursing undergraduate students. *Iran J Nurs Midwifery Res*. 2013; 18:340-2.
- Nassaji M, Ghorbani R. Risk Factors Associated with Minor Recurrent Aphthous Ulcers in Adult Population of Semnan City in Iran: An Epidemiological Study. *Asian Journal of Oral Health & Allied Sciences*. 2012; 2(1):1-7.
- Compilato D, Carroccio A, Calvino F, Di Fede G, Campisi G. Haematological deficiencies in patients with recurrent aphthosis. *J Eur Acad Dermatol Venereol*. 2010; 24:667-73.