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Original Research

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Evaluating the Causative Cycle of Stress and Oral Aphthous Incidence in an Iranian Population

Fatemeh Owlia¹, Saba Sabaghi², Mohammad-Hasan Akhavan-Karbassi³, Roqayeh Hakimian³

Contributors:
1Assistant professor, Department of Oral Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran; 2Dentist, Shiraz, Iran; 3Librarian and Search Literature Officer, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

Correspondence:
Dr. Sabaghi S. Dentist, Shiraz, Iran. Phone: +91-09172679959. Email: Sabaghi.saba@gmail.com

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Abstract:
Background: Oral recurrent aphthous stomatitis (RAS) is the most common ulcer that clinician should be managed. It entails approximately 10-20% of people regarding the geographic and genetic pattern of society. Some literatures reported RAS episodes in stressful events. Patients experience repeating cycle of aphthous, pain, and recurrence. Stress and inheritance as a crucial factor on RAS incidence was studied. This study aimed to assess the effect of stress on incidence of oral aphthous ulcer between girl students.

Materials and Methods: In this cross-sectional descriptive analytic study, 248 female students from Yazd high schools were evaluated, before and after a period of stress. Informed consent was taken before oral examination.

Results: About 248 students were partaken, only 62 persons had RAS which 32 had positive parental involvement. Correlation between familial history and experience of RAS was significant. (P < 0.001). According to the data, stress had considerable effect on RAS incidence with 67.7%. Aphthous incidence was significantly different (P < 0.001).

Conclusion: RAS prevalence was about 25% in the society and considerable impact of stressful events on incidence ratio was released.

Key Words: Aphthous, incidence, stomatitis, stress, students

Introduction
Recurrent aphthous stomatitis (RAS) is one of the most common oral mucosal disease. It is a painful ulcer with frequent recurrence. It is distressing and debilitating to the patients and frustrating for clinicians. Although the cause of RAS remains unclear, but there is a genetic predisposition to RAS is about 40%.¹

Many papers emphasis on Some predisposing factors like local trauma, stress, food allergy, hormone imbalance or smoking cessation, nutritional deficiency, food hypersensitivity, and immune disturbance for RAS incidence.² Stressful events were reported association with the onset of RAS episodes.³ Improving awareness about RAS lead to prevention of recurrence, to some extent albeit. It develops on the labial, buccal mucosa, tongue, and less frequent on the mucobuccal fold, floor of the mouth and soft palate.⁴ Ulcer may be taken place several times in months or years. This ulcer is classified to three types: Minor, major, and herpetiform. The popular type is minor with a shorter period with no scar. It usually resolved after 7-14 days. But major type resists till 30 days.⁵ Furthermore, race and geographic background can play an important role in incidence of RAS.⁶ This study was conducted to assess prevalence of oral aphthous before and after exams among girl teenagers.

Materials and Methods
In this cross-sectional descriptive analytic study, 248 girl students (62 persons in each grade) with age range of 15-18 years without anemia or joint involvement and no history of taking cytotoxic drugs⁷ were selected from Yazd high schools by randomized cluster method.

According to similar studies, values for this study determined as follows: P = 20%, d = 5% and α = 0.05.

All of the selected persons signed informed consent. Data were collected by observation, interview, and oral examination in two courses from November 2013 to January 2014. First time 30 days before date of exam and second time the next day of exam. The distributed questionnaire was composed grade of student, previous experience of aphthae and family history, presence of oral aphthous. This study was submitted and approved by the research ethics committee of Yazd Shahid Sadoughi University of medical science and all students signed free and informed consent. Statically analysis was performed applying chi square by SPSS 17. P < 0.05 was considered statistically significant.

Results
About 248 students were participated, 62 persons (25%) had RAS, which 32 (51.6%) had positive family history. distribution of RAS in different grades was distinguished in Table 1.

Correlation between parental involvement and experience of RAS had statically significant results (P < 0.001) (Table 2).
Among 186 students with involved mucosa, 32 persons (82.1%) had positive family history while from 744 students with no aphthous experience, 7 persons (17.9%) had one.

Data revealed that incidence of oral aphthous in samples were 22% and 34% before and after exam, respectively.

According to the data, stress had significant impact on RAS incidence with 67.7%. A significant difference was detected between them ($P < 0.001$) (Table 3).

Before and after exam, 55 persons (22.2%) and 85 persons (34.4%) compromised with aphthae, respectively. Incidence of aphthae had an indictable rise after stress period ($P < 0.001$).

### Discussion

RAS is one of the most painful oral conditions affecting the quality of life. That can be the cause of discomfort during eating, swallowing, and speaking. It can occur either in single or multiple forms in oral mucosa. Autoimmune conditions such as rheumatoid arthritis or lupus erythematosus could be represented as an aphthous ulcer. In this cases, early diagnosis may be had prognostic value. Since with no distinct pathologic feature, diagnosis of aphthous ulcer purely is clinical. First reports on the role of genetic predisposition in the development of RAS are dated to the middle 1960s of the twentieth century. Reports about the role of genetic factors in the etiopathogenesis of RAS initiated in 6th decade of 20 century. Positive family history of RAS was reported in 24-46% of cases. A common predisposing factor for recurrent aphthous confirmed by our data was genetic predisposition demonstrated by the positive family history and stress. This study had been under gone in a certain population, girl Nevis range 15-18 years. Initially aphthous ulcer usually occurs in the second decade of life in first experience. Scientists attributed it to first experience of social stress and period of responsibility sense. Because of cognate data in term of sex and age was unique. According to the more incidence in female than male, girl students were selected. Appearing in the second decade of life confirming effects of estrogen and progesterone and having more stress in females led to selection of these targeted groups. In this study a new approach for assessment of oral aphthous because of evaluating a certain population after a period of stress. Epidemiological studies performed over the past few years had shown considerable variation in the prevalence of RAS among different regions throughout the world. The prevalence range among different populations has been documented as 4.4-26%. Past positive family history for RAS in parents significantly increases risk of incidence in children. Patients with a positive family history of RAS suffer more frequent recurrences and severe course of the disease comparing with those with a negative RAS family history. In this literature prevalence of RAS was 25%. Although some reported approximately same results, 37% more prevalent of reports of RAS was mentioned in students of third grade (37%). In this study, 43.4% of students' course had positive family history for it. This result may be related to direct effect of genetic, same social condition, or same nutritional habits in members of family. Another described factor potentially related with RAS is stress. Psychological stress as a trigger factor of RAS, already has been mentioned in the literatures. It is typically observed during stressful situations. Role of stress was statically significant in this study that was confirmed by other literatures. However, some authors did not affirm this overview. In the study done by Gallo et al., 68% of patients reported the occurrence of RAS was associated with same of the aforementioned situations, particularly changes in life such as family affairs, new job, or new location of residence. According to the some authors, it rather triggers the onset of the episode than influences its duration. This finding was in the alignment of Davatchi et al. reported (25.5%). In sum considering other some studies, RAS had higher prevalence in Iran rather than some countries such as Malaysia and Turkey.

### Table 1: Distribution of oral aphthous on the basis of educational grades.

<table>
<thead>
<tr>
<th>Aphthae</th>
<th>N (%)</th>
<th>Grade/Aphthae experience</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>First grade</td>
<td>12 (19)</td>
<td>50 (27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second grade</td>
<td>14 (23)</td>
<td>48 (26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third second</td>
<td>23 (37)</td>
<td>39 (21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last grade</td>
<td>13 (21)</td>
<td>49 (26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>62 (100)</td>
<td>186 (100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: Distribution of aphthous history in evaluated data and family history.

<table>
<thead>
<tr>
<th>Aphthae</th>
<th>N (%)</th>
<th>Family history</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive previous experience</td>
<td>32 (82.1)</td>
<td>30 (14.4)</td>
<td>62 (25)</td>
</tr>
<tr>
<td>Negative previous experience</td>
<td>7 (17.9)</td>
<td>179 (85.6)</td>
<td>186 (75)</td>
</tr>
<tr>
<td>Total</td>
<td>39 (100)</td>
<td>209</td>
<td>248 (100)</td>
</tr>
</tbody>
</table>

Chi-square test $P < 0.001$

### Table 3: Distribution of aphthous ulcer before and after exam.

<table>
<thead>
<tr>
<th>Aphthae</th>
<th>N (%)</th>
<th>Grade/aphthae experience</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before exam</td>
<td>55 (22.2)</td>
<td>193 (77.8)</td>
<td>248 (100)</td>
</tr>
<tr>
<td>After exam</td>
<td>85 (34.3)</td>
<td>163 (65.7)</td>
<td>248 (100)</td>
</tr>
</tbody>
</table>

Chi-square test $P < 0.001$
to direct efficacy of genetic factors, same social status or similar habits in family members. Patients with a positive family history of RAS experience it in lower age and more severe symptoms than patients with a negative history. The strong association with familiarity, the unexpected higher frequency of RAS in positive family history was observed in this group, means that familiarity should be cleared in RAS management. This findings corroborated by other literatures.

A person with comprised parents has more chance to afflict rather than negative parental history (90-20%). It is worthy of mention that some reports rejected a significant correlation between RAS and parental involvement. This study point to the importance of a thorough history taking to identify the patient’s main risk factors to get preventive measures, therefore treatment will be tailored for each patient accordingly. And the author concluded that stress was a main risk factor, thus, stress-management interventions suggested to be beneficial in reducing episodes of RAS recurrence.

Limitations of this study were difficulty in filling questionnaire in two period of time and some selected schools had low cooperation.

Conclusion
Oral RAS prevalence was about 25% in this population. According to our study, stress emerged as having a causal role on incidence ratio on RAS.

Acknowledgment
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References