

Innovations

Evaluating the Psychological Stress Level with Recurrent Aphthous Stomatitis among Undergraduate Dental College Students in Chengalpattu District Tamil Nadu- A Cross Sectional Survey

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Abstract

Introduction: Stress is an inherent element of human existence, The learning environment for students in the dental profession is well known for being exceedingly stressful. Recurrent aphthous stomatitis (RAS) can develop as a result of psychological stress. Recurrent aphthous stomatitis (RAS), also known as recurrent aphthous ulceration, **Materials and Methods:** The study is designed for a cross sectional online survey for a period of one month (JUNE 2023). The study was intended to a target population of Dental college students in Chengalpattu district in which Undergraduate students from First year BDS to Interns were included. A total of 198 students participated in the study. A twenty five item questionnaire including demographic details were enclosed in the questions which was sent through online mode. **Results:** The results of the study states that 74% of them have recurrent aphthous ulcer among the student population. Almost 55.6% experienced ulcer more than one year and 66.2% of them had ulcer once in a month of about 74.2% of the students had painful ulcers. When emotions are considered during stress management 57.1% we're able to control their emotions and 42.9% couldn't handle the emotional entity, **Conclusion:** The students exhibit a range of psychological effects on causing stress, with academics, education, and social interaction playing key roles during the course of the dentistry curriculum. Therefore, managing stress and its psychological effects would aid dental college students in overcoming the stress-induced ulcer and enhancing the quality of their oral health.

Keywords: Dental Students, Stress, Psychology, Reccurent Aphthous Ulcer.

Introduction

Stress is an inherent element of human existence. Although constant stress can be detrimental to performance, it can also be useful in reaching goals. By the end of

2020, the World Health Organisation (WHO) predicts that stress-related issues will rank among the leading causes of disability¹. A range of systemic ailments, including diabetes, hypertension, and autoimmune disorders, can also be brought on by stress. Numerous pressures, including the strain of the academic curriculum, an uncertain future, and obstacles to integration into the system, have an impact on students.

The learning environment for students in the dental profession is well known for being exceedingly stressful. Recurrent aphthous stomatitis (RAS) can develop as a result of psychological stress. Instead than being a cause of the disease, it could operate as a trigger. Recurrent aphthous stomatitis (RAS), also known as recurrent aphthous ulceration, is a common pathologic condition distinguished primarily by the recurring recurrence of benign and noncontagious oral ulceration. These ulcers are highly prevalent and cause some discomfort in 20% of people².

The dentist is frequently asked to recommend a therapy to lessen the discomfort brought on by recurrent aphthous ulcers (RAU), also known as canker sores. RAU are thought to impact 15 to 25 percent of the population³. Previous research has shown that worry and stress may lead to RAU episodes, although the findings are mixed. Stress caused by academic exams has been proven to lower immunological function and to raise physiological and self-reported indicators of stress. Students reported more acute felt stress and had higher salivary cortisol concentrations during the exam period compared to the non-exam period¹.

Similar levels of stress were also seen throughout the non-examination time, despite cortisol levels and reported stress levels being much greater during the test period. Therefore, if stress is a triggering element, there may be a higher chance that students may get ulcers. RAU has also been linked to a high incidence in the student population in earlier studies. Compared to the non-examination time, people felt more stress during the exam period⁴.

Therefore, the current study sought to identify the frequency of recurring aphthous ulcers among students in Tamil Nadu dental institutions as well as a number of factors linked to episodes of ulcers, with a focus on the effect of stress. We also made an effort to compare the levels of stress tolerance among various dental student groups.

Materials and Methods

Study Design and Study Setting

The study is designed for a cross sectional online survey for a period of one month (JUNE 2023). The study was intended to a target population of Dental college students in Chnegalpattu district in which Undergraduate students from First year BDS to Interns were included. The ethical clearance was obtained from

the Institutional ethical committee Adhiparasakthi Dental College and Hospital Melmaruvathur, Tamilnadu.

Sample Size Estimation and Sampling

The sample size was estimated from a previous study using G power software 3.1.9.4 through which the total study population is calculated as follows⁵

Analysis: A priori: Compute required sample size

Input:	Tail(s)	=	Two	
	Effect size dz	=	0.2858032	
	α err prob	=	0.05	
	Power (1- β err prob)	=	0.95	
Output:	Noncentrality parameter δ	=		3.6376809
	Critical t	=	1.9748081	
	Df	=	198	
	Total sample size	=	198	
	Actual power	=	0.9511324	

The total sample size is estimated as 198 on the whole for participating in the study.

Questionnaire

Two sections made up the questionnaires. Personal information and questions about aphthous ulcers were included in the first section of the questionnaire, including information about previous ulcer experiences, the frequency of episodes in the previous six months, the number of ulcers present during each episode, the length of each episode, the site of the episode, symptoms and treatment options, associated conditions, allergies, and self-reported periods of stress, tobacco use, and family history.

A modified perceived stress scale (PSS)¹⁰ was used for the second section's 10 items, which were all concerning felt stress. To calculate PSS scores, responses to the four positively stated items (items 4, 5, 7, and 8) are reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0), and the responses for the perceived stress scale (5-point Likert scale) are then summed up to provide an overall stress score. The comparison of stress levels between those with and without aphthous ulcers came next.

The newly built 20 item questionnaire was tested for validity and reliability through which the examiner calibration was also done. The kappa statistics shows a value of 0.80 with good agreement and discrimination ability for the suggested questionnaire.

Data Collection

The data was collected through online google forms in which the link was shared among the students in Chengalpattu district dental colleges. All the responses were given a week time to complete the survey and a reminder link was again sent to the concern through a reminder message to the participants. A total of fifteen days was given for the participants to fill the survey and informed consent was obtained automatically from the survey link. All the responses were collected from the paternal site and descriptive analysis was performed for statistical analysis. The collocated data results were formulated accordingly and the results were correlated.

Statistical Analysis

The data were entered in Microsoft EXCEL spread sheet and by using the SPSS 23.0 (SPSS INC CHICAGO IL , USA). The descriptive and frequency were analysed using descriptive statistical analysis for each questionnaire. The inferential statistical test was done to check whether any association is present among the variables in the study among the study population.

Results

The results of the study states that a total of 198 students from dental College participated in which according to Table 1 the age group, distribution of the study, population which shows that 17-20 years 69 students were enrolled and 124 students in 21-23 years of age followed by 5 students more than 24 years

Table 2 shows that year wide distribution of study population in which 39 first year students 30 second year students 29 third years students 35 final year students and 65 interns participated in the study

Table 3 shows the distribution of questions related to recurrent aphthous ulcer among the study participants in which 149 students had past experience of ulcer within them. 39 of them showed family history of aphthous ulcer. Almost 55.6% experienced ulcer more than one year and 66.2% of them had ulcer once in a month of about 74.2% of the students had painful ulcers. 60.1 % of them had a single episode of ulcer in their life time and mostly all the students 61.6 % followed home remedy as a relief for the ulcer. The study participants responded that 54.5% of them had ulcer in cheeks 13.6% on gums and 10.1% in tongue as the common site of occurrence of aphthous ulcer. When the source or cause of the ulcer occurrence was depicted it was found that stress was the major cause for ulcer 52.5 % followed by 23.7% of them due to trauma 18.2% had dermal issues and 5.6% of them with gastric problem. It was also denoted that 34.8% of them experienced ulcer due to exam stress 28.3% of them due to loss of people and 32.3% had other systemic and psychological issues.

Table 4 represents the association between the psychological problem and recurrent aphthous ulcer among the dental college students in which it was noted

that 34.3% felt that they were in stress most of the times and 17.2% of them had not sure on their stress management. 73.7% had stress during exam times and 26.3% of them had stress due to lack of work completion. When emotions are considered during stress management 57.1% we're able to control their emotions and 42.9% couldn't handle the emotional entity. The intake of food and appropriate timings are take in to consideration 55.6% of them have their food on time and 74.7% had a very good confidence level on management of stress during the period of study.

When education and college are considered for stress as an inter source 76.8% had no problem on approaching staffs and 58.1% of them had no issues on rules and regulations imposed by the college for the students.

Education and academic play a vital role in stress induced recurrent aphthous ulcer shows that 54% of them consider the course is difficult, 73.2% of them are stressed about getting good marks 51.5% are afraid of the course completion and 55.1% have uncertainty in the dental career in mere future. The students tried to cope up their stress by distracting themselves to get relieved from stress by sleeping 32.8% , 32.3% by hearing songs, 21.7% by spending time going out with friends, 8.1% spend time with their family and 5.1 % couldn't distract themselves of being stressed. On the whole the students had responded that 73.7% are able to share their problems to delineate their stress.

Discussion

In the current investigation, variables associated with the development of these lesions were identified as well as the incidence of RAU among dental students in dental college. In line with earlier investigations, the current study's self-reported prevalence of RAU was determined to be 75.3%⁶. According to Ship JA, the prevalence of recurring aphthous ulcerations ranged from 5% to 66% in the general population, while it was discovered that roughly 56% of Danish dentistry students had such lesions. Recurrent aphthous ulcers develop on the buccal and labial mucosa, the mouth's floor, the ventral surface of the tongue, and the soft palate¹³, regions of the mouth where the mucosa is non-keratinized and loosely linked⁷.

The cheeks were the site of 54.5% of the ulcers found in the current investigation. In 2009 research by Safadi on Jordanian dentistry students, he found that 92% of the participants reported experiencing discomfort, whereas 2/3 of them recognised that ulcers only lasted a week or less, and 13% thought ulcers remained more than two weeks. In this research, similar findings were clear⁸. Local trauma, stress, food consumption, drug use, hormonal shifts, and vitamin and trace element deficits can all cause ulcer episodes. In the current study, almost of the dental college students informed that home remedy was the primary source of treatment for ulcer.74.2% had experienced painful ulcer for a duration of one day which is encountered monthly once 66.2% of them. There, have been reports of increasing occurrences in the general community⁶.

Kvam et al. reported that ulcerations occurred in 28.7% of orthodontic patients, particularly with permanent appliances. The difference between RAU and traumatic oral ulcers, when the origin may be determined as being mechanical, chemical, thermal, or radiotherapeutic, is crucial. Gluten-containing foods as well as chocolate, peanuts, strawberries, and tomatoes, among others, have been linked to the development of these ulcers. Such reports were absent from the current study⁹. The usage of flavoured lozenges was mostly linked to ulcer incidents. It seems that the lozenge's crusty and acidic texture may be a contributing element. During ulcer episodes, general practitioners and doctors frequently give vitamin supplements and topical gels¹⁰.

20% of RAU patients have been reported to have haematinic deficits. The symptoms have disappeared as a consequence of this deficit being corrected. The majority of the pupils claimed not to smoke. This is not entirely credible since the students might not have provided the accurate facts out of concern for instructor inspection¹¹. It has been hypothesised that smoking cigarettes increases the keratinization of the oral mucosa, hence preventing aphthous ulcers. Additionally, it has been suggested that a tobacco component that is systemically absorbed may be in charge of preventing aphthous ulcers. On the other hand, smokeless tobacco was shown to be protective, implicating nicotine as the protective factor⁸.

Prior research indicated that those aged 17 to 29 had the highest adjusted chances of RAU. Never smokers were more likely to develop RAU (OR 9.2; 95% CI 2.8 -3.1) than daily cigarette users of more than 10 cigarettes. The prevalence of ulcers and cigarette use were shown to be negatively correlated, according to Axell and Henricsson.¹² For those groups who smoked a pipe or unfiltered cigarettes, the suppression of ulcers was more pronounced than it was for those who used snuff. 44.1% of the students remembered that family members had experienced painful ulcer episodes. They also discovered that heavy smokers had a reduced frequency of ulcers than moderate smokers¹³.

It has been suggested that people with a positive family history of RAS may experience more severe symptoms and mouth ulcers at a younger age than those without such a history²³. Despite evidence implicating genetic determinants no reliable connection has been discovered. Additionally, we saw no difference in stress levels between people who had ulcers and others who did not⁸. The results of earlier studies are consistent with ours. In 1989, Pedersen A tested the theory that psychological stress is a trigger for RAU²⁶ episodes by conducting a research on 22 patients. He discovered no correlation and came to the conclusion that such correlations must be demonstrated under standardised conditions.

Nevertheless, due to the anxiety around upcoming tests or the need to finish prescribed work, students generally seem to be under some tension. In addition,

stress has been linked to the aetiology of recurrent aphthous stomatitis, especially in individuals with an anxiety disorder. According to a paper by Kasi PM et al. from 2007, medical graduates had considerable amounts of stress, which caused them to use unhealthy coping techniques to deal with it. Additionally, it has been proposed that stress may cause behaviours that harm the oral mucosa, such as biting the lips and cheeks, which may appear as mouth ulcers. A prospective dentist's internship is a thrilling phase of their career¹⁴.

In Indian dental colleges, an internship is the time following the last degree examinations when students are permitted to work independently under constant supervision from teachers, providing them the chance to get practical experience with a range of dental procedures. This develops their abilities and increases their self-assurance, allowing them to function independently in a general dentistry practise. Their enthusiasm for this departure from the learning environment they experienced as students may be helping interns experience less stress. Another element that, in contrast to other nations, may help to lower relative stress levels in India is financial support from family members¹⁵. On the subject of comparison with internships at other schools, there are conflicting accounts.

According to research done in 2004 by Willcock et al, the internship experience can be stressful for recent medical graduates. This was ascribed to a variety of things, such as a demanding work environment, lengthy workdays, conflicts between work and other responsibilities in one's home life, and psychological susceptibility on the part of the individual. Interns in Hong Kong, according to Lam TP et al 2010, had high levels of stress, anxiety, and depression¹⁰. The biggest stressor was determined to be the amount of work. The care of RAU would focus mostly on symptom alleviation due to the generally moderate course of the disease, despite the fact that the causes of RAU are diverse. The goal of treatment should be to lessen symptoms, lessen the size and number of ulcers, and extend the time between ulcer attacks¹¹.

To lessen the discomfort, topical anaesthetic gel (2% viscous Lignocaine hydrochloride) and chlorhexidine mouthwash without alcohol base may be advised. Additionally, patients should be encouraged to practise proper daily dental hygiene. Avoiding irritants like alcoholic beverages, hard, salty, spicy, and acidic meals may also be a good idea. The study may have some limitations because the information was gathered based on the subjects' memories of their ulcer experiences.¹⁶ The study highlights to depict the relationship between stress and recurrent aphthous ulcer through various variables like the root cause analysis and psychological barriers association with respect to ulcer formation to reliving from the state. The study also shows that dental college student perspective to academic excellence and stress as a factor in them which correlates with that of their education and dental career. The limitations of the study include a diverse in the population of study subjects and time period of the study. The mere future

perspective of the study should include an intervention and multiple recall for the students to analyse and impart knowledge and practice among the students in managing stress and occurrence of ulcer.

Conclusion

In the current study, we were able to ascertain that 74% of dental students encountered recurrent apthous ulcer through, self-reported questionnaires. The study concludes that stress as a key role in occurrence of the ulcer among the dental college students. The students also show a variation in the psychological impact on inducing stress in which academics, education and social activity are the role elements during the span of dental curriculum. Hence the management of stress and psychological impact will help the dental college students to overcome the stress induced ulcer and improve their oral health quality of life.

Tables

Table 1: Represents the Age Group Distribution of the Study Population

AGE GROUP	FREQUENCY	PERCENTAGE
17-20 yrs	69	34.8
21-23 yrs	124	62.6
More than 24 years	5	2.6

Table 2: Represents the Year Wise Distribution of the Study Population

YEAR WISE DISTRIBUTION	FREQUENCY	PERCENTAGE
First year BDS	39	19.7
Second year BDS	30	15.2
Third year BDS	29	14.6
Final year BDS	35	17.7

Interns BDS	65	32.8
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Table 3: Represents the Distribution of Questions Related to Recurrent Aphthous Ulcer Among the Study Subjects

QUESTIONS	RESPONSE	FREQUENCY (N)	PERCENTAGE (%)
Previous history of mouth ulcer	yes	149	75.3
	No	49	24.7
Family history of repeated mouth ulcer	Yes	39	19.7
	no	159	80.3
Last mouth ulcer encountered	<1 Week	36	18.2
	< 1 Month	52	26.3
	< 1 Year	110	55.6
Duration of mouth ulcer	0-2 Days	198	100.0
	3-6 Days	-	-
	7-10 Days	-	-
Frequency of mouth ulcer	once in a week	56	28.3
	once in a month	131	66.2
	once in a year	11	5.6
Painful mouth ulcer	yes	147	74.2
	no	51	25.8
Episode of mouth ulcer noticed	1	119	60.1
	2-3	74	37.4
	more than 5	5	2.5
Management of mouth ulcer	self healing	9	4.5
	home remedy	122	61.6
	topical agent	17	8.6
	oral drugs	22	11.1
	all the above	28	14.1
Area of occurrence	cheeks	108	54.5
	gums	27	13.6
	tongue	20	10.1
	all the above	43	21.7
Ulcer associated with any condition	stress	104	52.5
	trauma	47	23.7
	gastric problem	11	5.6
	dermal problem	36	18.2
Stress induced ulcer encountered during	exam time	69	34.8
	loss of people	56	28.3
	change in food	9	4.5
	other problem	64	32.3

Table 4: Represents the Stress Related Correlation Between Psychological Problem Associated with Recuurent Aphthous Ulcer

QUESTIONS	RESPONSE	FREQUENCY (N)	PERCENTAGE (%)
How often you felt stressed	most of times	68	34.3
	not at all	96	48.5
	not sure	34	17.2
Nervous and stressed due to	exam times	146	73.7
	lack of work completion	52	26.3
	personal	-	-
Control emotions during stress	yes	113	57.1
	no	85	42.9
Intake food at correct time	yes	110	55.6
	no	88	44.4
Confidence level to handle stress	yes	148	74.7
	no	50	25.3
Problem regarding approaching staffs	yes	46	23.2
	no	152	76.8
Rules and regulations in college related to stress	yes	83	41.9
	no	115	58.1
Do you feel the course is difficult	yes	107	54.0
	no	91	46.0
Do you feel stressed about getting good marks	yes	145	73.2
	no	53	26.8
Do you fear falling course or year	yes	102	51.5
	no	96	48.5
Uncertainty about dental career	yes	109	55.1
	no	89	44.9
how do you distract yourself	sleep	65	32.8
	hearing songs	64	32.3
	outings	43	21.7
	spending time with family	16	8.1
	i am not able to distract	10	5.1
Are you able to share your problems	yes	146	73.7
	no	52	26.3

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Conflicts of Interest: Nil

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