

Assessment of emotional eating disorders in dental students and professionals of a dental college in North India

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Dentists, Dental Professional, Emotional Eating, Perceived Stress

ABSTRACT

The primary intent of this study was to provide valuable insights into the perception of stress and emotional eating patterns associated with acute and chronic stress events experienced by dental professionals during their academic tenure, as academicians, or in dental practice. A total of 404 subjects i.e. 316 Females and 88 Males participated in the study. With the maximum being undergraduate dental students, the study sample comprised post-graduates and teachers. Apart from socio-demographic details, the survey included the Perceived Stress Scale and the Emotional Eater Questionnaire. The results showed that the mediated effect of perceived stress on emotional eating was statistically significant across all age groups ($p = 0.023$), for both genders ($p = 0.001$), and among various categories of dental professionals ($p = 0.013$). The research highlighted that females experienced higher stress and emotional eating levels than males. However, age and professional designation did not significantly influence these behaviours at the individual level.

Introduction

WHO has declared that stress in the workplace has become a worldwide health epidemic of the 21st century (Mujic Jahic et al., 2019). Atkinson et al. (1991) described stress as an external physical or mental demand that affects an individual's physical and psychological well-being. It can also be defined as the reaction of an individual towards a challenging situation depending upon the individual sensitivity, perspective towards difficulties and way of handling and overcoming the problem, the way a person thinks or works depending on his /her health condition, the external factors coming in collateral with the condition and the stressors themselves (Mujic Jahic et al., 2019).

Heading off to a professional college is a thrilling experience for any student dreaming of being named by a doctor prefix. In this journey of experiencing new things and gaining knowledge one must do rigorous hard work and face new challenges that eventually lead to stress. Students and professionals of dentistry are subject to an additional amount of stress. Various studies have found that 10% of dental students suffered from severe emotional exhaustion, 17% complained about a severe lack of accomplishment and 28% reported severe depersonalisation symptoms (Pohlmann K et al., 2005). Stress in dentistry ranges from academic stress to coping with dentistry as a profession with various practical and financial liabilities. Dentistry takes a psychological as well as physical toll on the students as well as the professionals leading to a decline in their performance.

Seeking refuge in food has been considered an approach to assuage stress, anxiety, sadness, and other negative emotions resulting from problems occurring in daily life (Heatherton & Baumeister., 1991). During stress and varying emotions, one looks for captivating things that might uplift the mood and make the individual happy. In this phase, most subjects resort to an increase in energy intake, particularly 'comfort foods' that are rich in sugar, referred to as "food cravings." The simple carbohydrate contents of these foods are very high.

Consumption of certain foods can enhance serotonin production in the brain, potentially leading to improved mood and emotional well-being. It is documented that emotional eating provides an 'escape,' whereby the immediate act of consuming large amounts of food allows one to temporarily dissociate from experiences of negative effects

(Heatherton & Baumeister.,1991; Garaulet et al., 2012). Stress among dentists is a prevalent problem, and there is always a need to explore stressors, coping mechanisms, and treatment. To date, no study has been done to assess stress-related emotional eating behaviours in dental professionals.

This study intended to assess the level of emotional eating disorders among dental professionals and therefore delineate various side effects due to the same.

This Study

This study aimed to assess

- The correlation between stress and emotional eating disorders in dental students and professionals.
- The sexual predilection for emotional eating disorders in students and professionals of dental college.

METHOD AND MATERIALS

Study Design: A questionnaire-based survey was conducted among students and academic professionals of the dental colleges in North India. This study utilized a cluster sampling technique in which Dental colleges of Haryana and its adjoining states along with regional IDA branches were included. Institutional ethical permission was obtained from the Biomedical and Health Research Ethics Committee, (via certificate no PGIDS/BHRC/23/80 Dated 06/11/2023).

Study Population: The study population consisted of pursuing undergraduates and postgraduates in dentistry, senior residents, and faculty of the dental colleges. The contact details of academicians, postgraduate students and undergraduate students were obtained from the respective colleges, whereas the details of private practitioners were collected from IDA branches.

Sample Size: A strong correlation was anticipated between stress and emotional eating disorders, so, a sample size of 404 participants was calculated for a correlation of 0.7 and hence, included in this study. Those who filled out the forms were considered to have consented to participate in the research and those who did not fill out the form were eliminated and not considered. The study was conducted by following all the protocols and principles under the purview of the Helsinki Declaration (1964 and later). The questionnaire was available on Google Forms for 3 weeks. Incomplete forms were scrutinized, and the cleaning of the data was done by asking the respondents to rectify the improper or partially filled forms.

SELECTION CRITERIA

Inclusion:

- All students pursuing graduation, post-graduation, senior residents and faculty of Dental colleges in and around Haryana were included.
- Ones who agree to general consent or specific consent to subsequent use of his/her personal health.

Exclusion:

- Individuals who were immunocompromised due to any other treatment.
- A documented objection to subsequent use of personal health data.

STUDY INSTRUMENTS

Socio-demographic details included age, gender, faculty, marital status, exercise, or meditation. Perceived Stress Scale and Emotional Eater Questionnaire were used. The correlation between stress and eating habits was compared and analysed accordingly.

DATA COLLECTION:

- (a) Perceived Stress Scale (PSS) (Cohen and Williamson, 1988)

(b) Emotional Eater Questionnaire (EEQ) (Garaulet et al., 2012).

The name of the person was kept confidential so that he or she could feel free or not hesitate to write or mark genuine feelings.

STATISTICAL ANALYSIS

The data obtained was compiled on an MS Office Excel Sheet (2016) and was subjected to statistical analysis using Statistical Package for Social Sciences (SPSS v 21.0, IBM). The normality of data was checked using the Shapiro-Wilk test, which showed that the data was not normally distributed. Consequently, non-parametric tests were used for comparisons. Age was divided into four different categories viz Category-1(17-22), Category-2 (23-28), Category-3 (29-34) and Category-4 (35-44).

Intergroup comparisons of different factors were done using a chi-square test to evaluate the individual effect of Emotional Eating Questionnaires and Perceived Stress Scale.

A two-way ANOVA test was used to enumerate the combined effect of stress and emotional eating depending on the professionals' age, gender, and designation.

A **p-value** ≤ 0.05 was considered statistically significant, with the α error set at 5% and the β error at 20%, providing the study with a statistical power of 80%.

RESULTS

The participants' socio-demographic details and perceived stress are depicted in Table 1. Most of the participants were female (78.2%), belonged to age category- 1 (56.2%) and were mainly undergraduate students (80.2 %). The percentage of stress perception was higher in females. The results were statistically significant for the low-stress category ($p \leq 0.05$), thus showing that perception of stress was lower in males as compared to females (0.026*). However, the maximum number (60.5%) of participants belonged to the moderate perception of stress category.

The percentage of moderate stress recipients was higher in Category 1 of the age group 17–22. However, the results were statistically non-significant across all categories ($p > 0.05$), indicating that the perception of stress was moderately consistent across all age groups (60.5%). Regarding designation, most participants fell into the second category, i.e., moderate stress, with 60.5% of individuals belonging to this group. However, there was no significant difference in stress levels based on the designation of dental professionals.

Table 2 illustrates the variables and categories based on emotional eating tendencies. The percentage of emotional eaters was moderately high across nearly all age categories. However, the results were statistically non-significant across all categories ($p > 0.05$). This finding indicates that 34.9% of participants were in the low emotional eating category, while 39.6% were classified under the emotional eating category across all age groups. Regarding gender, the percentage of emotional eaters was higher among females. The results were statistically significant for non-emotional eating categories ($p \leq 0.05$), indicating that males were less influenced by emotional eating compared to females ($p = 0.013^*$). As per designation, there was an even distribution of participants in the low emotional eating category (34.9%) and the emotional eating category (39.6%). However, no significant differences were observed between the designations of dental professionals. Participants across all groups displayed variable levels of emotional eating throughout different phases of their careers, reflecting some impact on their eating habits. Graph -1 shows the mediated effect of perceived stress on emotional eating across various age categories and it was statistically significant for all age groups ($p = 0.023$). This highlights that stress, regardless of its form or the age group, can lead to alterations in eating patterns. The mediated effect of perceived stress on emotional eating was statistically significant for both genders ($p = 0.001$). This emphasizes that stress in both males and females can lead to increased emotional eating (Graph 2). The mediated effect of perceived stress on emotional eating across various categories of dental professionals was statistically significant for all groups ($p = 0.013$). This highlights that stress, whether experienced by dental students or academicians, can lead to alterations in eating patterns. This finding may be attributed to the broad range of stressors encountered at different stages of dental education and professional practice, which contribute to emotional eating (Graph-3).

DISCUSSION

Eating disorders have always been classified as the disease of the West. With the advent of convenience ordering and the rise in obesity among today's youth, now the whole world has taken cognizance of the issue.

Eating disorders have mostly been studied under the measures of anorexia nervosa, bulimia nervosa and Binge eating disorders.

However, there is an unexplored aspect of eating disorders called emotional eating disorders, which is more prevalent in the present-day scenario. According to Van Strien et al., (2007), two different aspects of overeating are enlisted in the literature. The first notable aspect is emotional eating, which is derived from the psychosomatic theory of Bruch (1964) and refers to the tendency to overeat in response to negative emotions such as anxiety or irritability. The second aspect is external eating, which refers to the tendency to overeat in response to external food-related cues, such as the attractive sight and smell of food. They defined emotional eating as an eating behaviour in which there is a tendency to overeat in response to negative emotions but in a nonpathological way (Arenis et al., 2023).

Davis (2013), categorised overeating food habits as an eating continuum. Instigated by the various factors, this continuum may be a non-pathological emotional eating progressing to a Subclinical binge eating disorder finally culminating into the extreme pathological Binge eating disorders.

Emotional eating is usually considered in terms of a stress coping mechanism, but, on a broader aspect, Grajek et al., (2022), established a bimodal relationship between eating based on psychological and physiological levels. As per the literature, in psychological response, stress generates a variety of bodily responses relating to coping with stress; a person under stress seeks to minimize feelings of tension accompanying given situations. In physiological terms, stress, due to activation of the nervous system thus causes an increase or decrease in appetite which is the basis for changes in eating behaviour (Grajek et al.,2022).

Dental students or professionals living away from home or even at home are often susceptible to various emotions. In a professional course which is demanding, physically and psychologically, dental students and professionals undergo a lot of stress. Although the perspicacity of stress may vary individually and the coping mechanism may also differ, this study was done to evaluate the perception of stress and assess the level of emotional eating as a coping mechanism for stress in dental professionals.

This study was designed as per various rational parameters and participants were evaluated based on age, gender, and designation during dentistry. Research has shown that stress levels can vary with age, although the direction and degree of correlation may differ depending on various factors such as life stage, career phase, and personal circumstances. In the context of dental studies and practice, the studies referenced do not specifically outline a direct correlation between age and stress but rather focus on stress factors within certain age groups, such as dental students and practitioners within specific age ranges (Basudan et al., 2017; Mary et al.,2023).

In our study, the perception of stress in moderate amounts was more in the age group of 17 to 28 whereas the perception of stress in higher amounts was seen in the age group of 29-44. This corroborated with the study done by (Mary et al.,2023) which mentioned, that a higher stress level was observed in the age group of 25 to 45 among doctors of dental medicine, though this did not specify a direct correlation with age (Basudan et al., 2017).⁶ For dental students, stress seems to be more related to the academic environment and external factors, such as academic load, financial concerns, and patient management tasks, rather than age per se.

Most of the participants in our study belong to the low emotional and emotional eating categories in all the age groups. So, it can be considered that age is not the specific criterion for emotional eating is evaluated at an individual level.

However, when perceived stress was taken as a mediator, an evaluation was done to see the correlation of perceived stress on the score of emotional eating. The results were statistically significant P value of (0.000) ** for all the age groups. These findings are like the studies (Hawash et al., 2024; Guerrini Usubini et al 2024; Gürkan et al., 2022), which have studied the effects on different age groups and found a positive correlation. Stress and other negative emotions, such as depression and anxiety, can lead to both decreased and increased food intake. However, the term emotional eating is commonly used as the tendency to eat energy-dense and palatable food in response to negative emotions (Konttinen 2020). Our study found that males tend to perceive lower levels of stress compared to females, and this difference was statistically significant. These results align with previous research, which consistently shows that female students generally report higher stress levels, although this trend has some exceptions (Sanders & Lushington, 2022; Myers & Myers, 2004). Also, the emotions did not affect the males' eating patterns. Both the findings showed significant results. However, when

the perception of stress was added as a mediator and emotional eating scores were evaluated, it was found that with the increased perception of stress, females tend to do more emotional eating than males. (p-.001) ** This behaviour was also commonly observed in women and individuals who are obese. Ljubičić et al., (2023) reported that the likelihood of consuming food items like wine or tea for relaxation appears lower among specific demographic groups, including unemployed, female, and rural respondents, as well as health, sport, and food professionals. This observation suggests that these groups might experience elevated stress levels and infrequently resort to such relaxation methods, despite their potential health benefits.

According to a study by Papier et al., (2015) on Australian students, Stress impacted the eating behaviours of men and women differently. While women tended to increase their food consumption when stressed about school, with up to 62% of surveyed women indicating this response, men may have exhibited a contrasting pattern. In usual circumstances, 80% of women reported making healthy food choices. However, only 33% maintained this healthy eating behaviour in stressful situations (Papier et al., 2015). These findings resonate with our own study's observations.

According to existing literature, despite higher levels of stress experienced in dentistry, it does not necessarily lead to lower academic performance. Instead, it is suggested that the stressful nature of the dental education environment itself may contribute to this phenomenon, rather than academic grades alone being the sole determinant of stress levels (Papier et al., 2015). In a study done by Myers & Myers (2004), it was reported that dentists experienced significant levels of stress. However, the study did not find a significant difference in stress levels between genders within the dental profession. In this study, the effect of stress and emotional eating was seen significantly higher in the female participants.

Grajek M et al (2022) stated that students represent a high-risk demographic for developing emotional eating disorders, primarily due to their exposure to various stressors such as academic pressure, social influences, and limited time for physical activity. In this study, when mediated by stress, all groups of dental professionals, including undergraduates, postgraduates, and academicians, tended emotional eating. These findings highlight the importance of raising awareness about effective coping mechanisms for managing stress and other emotional states. Instead of resorting to emotional eating and consuming unhealthy foods, individuals should prioritize adopting healthy lifestyle habits such as regular physical exercise and nutritious eating patterns.

CONCLUSION

It is crucial to educate both students and faculty about the physical and psychological indicators of stress to enable early detection and intervention for psychological conditions. Special consideration should be given to vulnerable groups, such as female students, with efforts aimed at enhancing relationships and satisfaction levels. Dental schools should implement strategies for stress prevention and management to enhance student well-being, reduce dropout rates, and ensure optimal patient care. Addressing these issues is essential, as unresolved problems may lead to further physical and psychological complications that persist beyond graduation. This could result in the emergence of unhealthy dentists, and early retirement, and ultimately impact the quantity and quality of the dental workforce.

DATA AVAILABILITY STATEMENT

Data supporting Tables 1–2 and Graphs 1–3 are not publicly available in order to protect patient privacy.

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