# Knowledge and Awareness about Stress Level Perceived by Software Engineers and its Correlation with Gingival Status

**Dr. Divya Gunasekar[1], Souparnika Venkatakrishnan[2]**

[1]*Tutor - Research Interest, Department of Pediatric and Preventive Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, India*
[2]*Department of Public Health Dentistry, Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, India*
*Corresponding Author: Divya Gunasekar; Email: divyag.sdc@saveetha.com*

**KEYWORDS**
IT professionals,Mental health,Quality of life,Perceived stress.

**ABSTRACT**
Objectives : The objective of this study is to Analyze Stress level perceived and its correlation with gingival status in Information Technology workers and to create an awareness and spread knowledge on the stress level perceived by software engineers and its correlation with Oral Hygiene in general.
Methodology : 500 IT professionals were provided with health questionnaires and Gingival index was clinically evaluated and recorded. Statistical analysis done with SPSS Software for log and assessing the data collected.
Results : Sample set contained 59.2% male and 40.8% female. The results of the study indicated a mean negative gingival status of 2.51 with a standard deviation of 2.51 compared to the perceived stress level of 1.97 with a standard deviation of 0.507.
Conclusion : Age and gingival status could be an important but not the only explanatory factors for perceived stress among the Information technology workers. Perceived stress levels could be high amongst the productive age group of 26 to 45 years which also faces a lot of social expectations and societal obligations.

## 1. Introduction

Stress is the body's response to detrimental circumstances, whether they are actual or only perceived as such. When someone feels threatened, a hormonal change takes place in their body that enables them to respond to stop harm from happening. "Fight-or-flight" or the stress response are terms used to describe this response. Blood pressure rises, muscles constrict, respiration becomes more rapid, and the heart rate accelerates during the stress response. Each person's definition of stress is unique[1]. For one person, something that makes them stressed out might not be that important. It varies from person to person how well they can handle stress. Not all stress is negative, either. Stress can, in moderation, aid in task completion and assist or shield us from harm.

A person's physiological functioning is negatively impacted by psychological stress to a distressing degree. According to the National Institute of Mental Health and Neurosciences (NIMHANS) in Bengaluru, 50 million Indians have mental illnesses that are not regarded to be extremely serious, while another 20 million need assistance with major mental problems.[2]Physical symptoms of these illnesses are brought on by mental or emotional factors, the most prevalent of which are stress, anxiety, and depression. A physical, mental, or emotional reaction to situations that result in physical or mental tension is referred to as stress[3].

People who are under a lot of stress may develop parafunctional habits, which are unintentional attempts to reduce stress like biting, chewing on pencils, or any other object that causes dental attrition of teeth; abnormal positioning and tight closure of the jaws that affect the masticatory muscles and cause bruxism and symptoms similar to myofacial pain dysfunction syndrome (MPDS).[4] Vomiting caused by gastrointestinal disorders and irregular eating patterns can erode teeth. Other oral issues that develop as a result of stress also require specific care. Xerostomia, MPDS, aphthous ulcers, oral lichen planus, burning mouth syndrome, and bruxism are a few of these[5].

The aim of this study was to Analyze Stress level perceived and its correlation with gingival status in software Engineers and objective is to create an awareness and spread knowledge about stress level perceived by software engineers and its correlation with Oral Hygiene in general.

## 2. Materials and Methods

The study involved a population of 500 software engineers from the Information Technology (IT) and IT-enabled Services (ITES) sectors. Ethical Board approval received with reference number :

IHEC/SDC/FACULTY/23/PEDO/183. Patient consent was asked and then selected as study participants. Participants were recruited from various IT companies, ensuring a diverse representation in terms of age, gender, and experience. A comprehensive health survey was administered, consisting of closed-ended questions designed to assess perceptions of stress related to work. After completing the survey, each participant's periodontal health was evaluated using a Williams periodontal probe, which assessed probing pocket depth and calculated the Gingival Index (GI). Based on their GI scores, participants were categorized into three groups: Mild, Moderate, and Severe gingival health. The analysis focused particularly on those in the Moderate and Severe categories to explore the relationship between perceived stress and gingival status. Data collected from the surveys and clinical assessments were logged and analyzed using SPSS Software, with descriptive and inferential statistics employed to assess correlations. Ethical considerations were paramount, with informed consent obtained from all participants and assurances of confidentiality regarding their responses. This methodology facilitated a thorough examination of the impact of workplace stress on oral health among IT professionals.

## 3. Results

A total of 500 participants were surveyed from the software Industry. The study consisted of 59.2% male and 40.8% female. The perceived stress moderate to high was obtained to be 42.9% and the standard deviation was 0.507. Gingival status was 33.33% mild, moderate and severe.the standard deviation of gingival status was 0.51. The p value was obtained as 0.728 and likelihood ratio chi square was statistically significant with a p value of 0.004.

**TABLE 1 : Frequency and Percentage distribution of Gingival Status and Stress Perceived**

| | FREQUENCY | PERCENTAGE |
|---|---|---|
| GINGIVAL STATUS | | |
| MILD | 4 | 0.8 |
| MODERATE | 235 | 47 |
| SEVERE | 261 | 52.2 |
| PERCEIVED STRESS | | |
| LOW | 71 | 14.2 |
| MODERATE | 371 | 74.2 |
| HIGH | 58 | 11.6 |

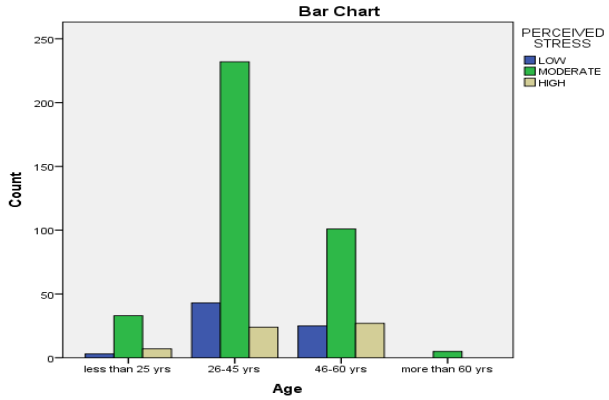
**Table 2 : Gender Distribution**

| AGE GROUP [YEARS] | GENDER | | | | | |
|---|---|---|---|---|---|---|
| | MALE | | FEMALE | | TOTAL | |
| | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| < 25 | 23 | 7.77 | 20 | 9.80 | 43 | 8.6 |
| 25 TO 45 | 180 | 60.81 | 119 | 58.33 | 299 | 59.8 |
| 45 TO 60 | 90 | 30.40 | 63 | 30.88 | 153 | 30.6 |
| > 60 | 3 | 1.01 | 2 | 0.98 | 5 | 1 |

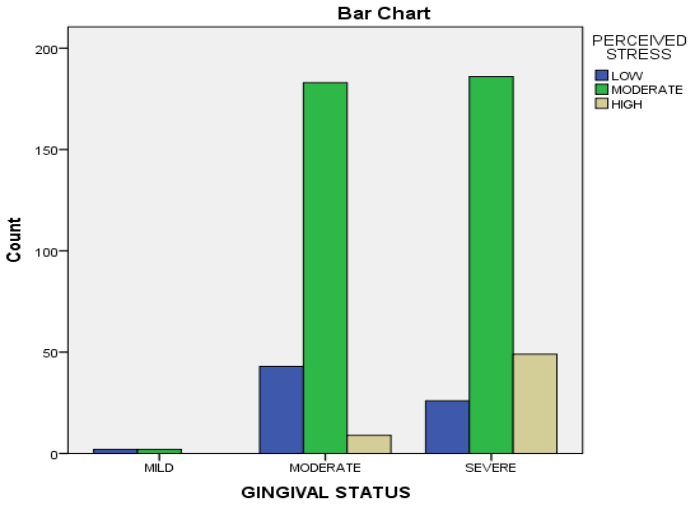
In this study male and female participated, their p value when gingival status with perceived stress was 0.052 and 0.04 respectively.

Similarly with age the p value was obtained to be 0.23 for perceived stress and 0.00 for gingival status.

The results of the study indicated a mean gingival stress level of 2,5140 with a standard deviation of 2.51 compared to the perceived stress level of 1.97 with a standard deviation of 0.507.




Graph 1 : represents the age distribution of IT Professionals with their level of stress perceived.




Graph 2 : represents the Correlation between Gingival status of IT Professionals and level of stress perceived.

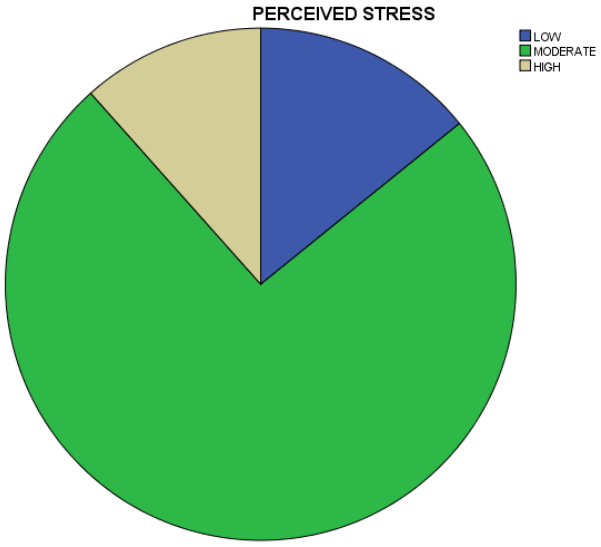



Figure1 : represents the Correlation between Gingival status of IT Professionals and level of stress perceived.

## 4. Discussion

A considerable percentage of software engineers, according to the present study, report having moderate to high levels of stress. This emphasizes how critical it is that mental health issues be addressed in the IT sector. An earlier study found a similar correlation between the incidence of professional stress and an increase in IT professional experience[6]. Employees with more years of experience may be more stressed because they have

more responsibilities. These days, new hires receive better training and are acclimatized to the field gradually, which may make it easier for them to adjust and handle the work[7].Therefore, our study's findings that younger employees experience less stress than their senior counterparts, who were not hired at the same time as the new hires, may not hold true.

Participants in the study were both male and female, with the female engineers reporting slightly higher levels of stress. This shows that stress perception in this field may be influenced by gender-related factors. Research indicates that women encounter work-family conflict—that is, work interfering with family life or family life interfering with work—more frequently than men. One of the most reliable and potent results of work-family conflict is depression[8]. Women software engineers may face greater work-family conflict in the Indian context, where women are expected to take care of the home as their primary responsibility. This could increase the prevalence of depression among women[9].

Gingival status and perceived stress were found to be correlated in the study. Greater gingival stress was linked to higher perceived stress, which highlights the possible influence of stress on oral health. The resulting correlation between psychological factors and plaque-associated gingival inflammation were similar to other study[10]. Symptoms of Gingival problems may arise as a result of parafunctional behaviors such as teeth grinding brought on by stress. It is imperative that software engineers are cognizant of oral health issues[11].

The study discovered that stress perception varied with age. This might be the result of rising expectations in the workplace and society for professionals between the ages of 26 and 45. The current study found a significant age correlation with periodontitis, which is consistent with numerous other studies[12]. A study that found that over 95% of cases with good oral hygiene across every age group were not suffering from periodontitis lends more credence to this belief[13].

Encouraging stress-reduction practices like exercise, mindfulness, and relaxation is crucial to assisting software engineers in managing their stress levels, which will ultimately improve their oral health[14]. These preventative steps can be easily added to workplace wellness initiatives, promoting workers' physical and mental health. Software engineers should see their dentists more often because they may be more susceptible to gingival problems as a result of stress[15]. The early identification and prevention of oral health issues are greatly aided by these regular examinations.

In addition, managing persistent stress at work is crucial to preventing long-term health issues and maintaining workers' wellbeing. Workers are also accountable for taking personal responsibility for controlling their stress levels by taking care of themselves and, if needed, obtaining professional help[15,16].The following studies highlight the important relationships between public health, stress, and quality of life, emphasizing how occupational stress can significantly affect overall well-being and health outcomes[17–21] . More research is needed to explore the particular stressors that affect software engineers, such as workload, deadlines, and job satisfaction, in order to obtain a more thorough understanding. Such studies can open the door to more focused interventions and support plans, which will help a variety of other professions in addition to the IT sector.

## 5. Conclusion

Our study concludes that a significant number of information technology professionals experience moderate to high levels of stress, indicating the need for an all-encompassing strategy to address mental health issues in the IT sector. Stress has a significant impact on oral health, as demonstrated by the study's notable correlation between gingival status and perceived stress. Software engineers frequently have parafunctional habits and oral health problems related to stress, so there is a need for increased awareness. Additionally, age is a significant factor in stress and periodontal health, which emphasizes the significance of customized interventions for professionals between the ages of 26 and 45 who must fulfill societal obligations and expectations. In light of these findings, it is imperative to support stress management, regular dental checkups, and stress-reduction techniques. Employers should also take a proactive approach to creating a work environment that recognizes the long-term health effects of chronic stress.

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Conflict Of Interest:

All the authors declare that there was no conflict of interest in the present study.

Author/S Contribution:

As per regulations of ICMJE and COPE ,

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

The Authors confirm contribution to the paper as follows:-

Study Conception and Design: Dr. Divya

Data collection: Souparnika

Analysis and Interpretation of results: Dr. Divya

Draft Manuscript Preparation: Souparnika, Dr. Divya

All authors reviewed the results and approved the final version of the manuscript.

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