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Assessment of Periodontal Health Literacy, Stress, Habits and Periodontal Treatment Anxiety Among Corporate Sector Employees- A questionnaire survey

Akshita Srivastava¹, Suhana Shamsuddeen², Joann Pauline George³, Prabhuji MLV⁴

¹ Postgraduate student, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore, Karnataka, India

² Senior Lecturer, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore, Karnataka, India

³ Professor, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore, Karnataka, India

⁴ Professor and Head of the Department, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore, Karnataka, India

Abstract

Introduction: Maintaining good oral hygiene is a fundamental requirement that has been vital to humans since ancient times. It is a clear reflection of overall health and well-being, regardless of one's social status. Periodontal health is supported by healthy behaviours such as practising regular plaque control on your own and refraining from using tobacco and stress coping mechanisms. Inadequate oral hygiene, tobacco use, and stress, on the other hand, are shown to have a destructive impact on periodontal tissues. In today's erratic lifestyle, it is common to ignore one's physical, psychological and emotional well-being. This questionnaire survey provides insight towards the knowledge and awareness of corporate sector employees on periodontal health and treatment. **Objective:** This survey aimed to assess periodontal health literacy, stress, habits and periodontal treatment anxiety among corporate sector employees using an online questionnaire survey. **Methodology:** An online questionnaire survey consisting of 20 questions was conducted between October and December 2023. The study involved 200 participants (corporate employees). An Independent Chi-square test was used to compare the periodontal health literacy, stress, habits and periodontal treatment anxiety among corporate sector employees based on the sociodemographic & work-based characteristics of the study respondents. **Results:** Overall, 200 participants of this study demonstrated major findings such as 73.8% of them were not confident in smiling, 51% visited the dentist once in 1-2 years, and only 45 % would prefer going to a dentist in case of bleeding gums and loose teeth. **Conclusion:** Oral hygiene maintenance should be incorporated into the corporate sector by more awareness drives. Habit counseling should also be planned together with stress coping workshops.

Keywords: Stress, Periodontal disease, Corporate, Work stress.

INTRODUCTION

Periodontitis, a chronic inflammatory condition that affects the tissues that surround and support teeth, is the most prevalent oral disease globally. According to recent studies, around 11.2% of the world's population suffers from periodontitis.^[1] The disease is primarily caused by the accumulation of bacteria in dental plaque, which triggers an immune response that can lead to inflammation, gum recession, and tooth loss. However, it is important to note that periodontitis is a multifactorial disease, and several other risk factors, such as smoking, tobacco consumption, and stress, can significantly increase the likelihood of developing the condition.^[2]

Research has shown that emotional factors play a significant role in the development of periodontal disease since 1950. Stress, in particular, is described as a state of physiological or psychological tension brought about by unfavorable stimuli, be it physiological, mental, emotional, internal, or external. This tension can interfere with an organism's normal functioning and is something that the organism naturally seeks to avoid.^[3] It describes a condition that can affect mental and physical well-being, either positively or negatively.

It is a well-established fact that stress is a significant risk factor for periodontal disease. Numerous studies have confirmed that individuals who experience high levels of stress are more likely to develop this oral health condition.^[4-6] One specific manifestation of stress is acute necrotizing ulcerative gingivitis, which can

***Corresponding author:**

Dr. Akshita Srivastava

Postgraduate student,
Department of Periodontology,
Krishnadevaraya College of
Dental Sciences and Hospital,
Bangalore, Karnataka, India

Email:

drakshitasrivastava@gmail.com

be a serious and life-threatening condition.

Workplace stress is a harmful response that occurs when job demands surpass an employee's control.^[7] India's corporate sector has experienced tremendous growth in recent decades, and its workforce, which is highly skilled in technology, has made a significant contribution to the country's socioeconomic development. Over time, the industry has introduced a fresh approach to working, which has resulted in a lifestyle that is predominantly sedentary. This way of life, characterized by prolonged periods of sitting and a lack of physical activity^[8], has been linked to a higher likelihood of developing periodontitis and gingivitis as a result of chronic stress.^[9]

Experiencing occupational burnout is a multifaceted reaction to prolonged stress in the workplace that can result in physical, mental, and defensive coping mechanisms, and potentially even chronic inflammation. The challenges that arise in a corporate setting can take many forms, from complicated responsibilities to unclear objectives, insufficient resources, overwhelming demands, self-doubt, and a need for precision^[8]. Long and irregular working hours may add up to this. Therefore, this sector can be considered as a high-stress population probably neglecting their oral hygiene and practicing deleterious oral habits due to work related stress.

Thus, the aim of our study was to analyze and assess periodontal health literacy, stress, habits and periodontal treatment anxiety among corporate sector employees through a questionnaire survey.

MATERIALS AND METHODS

Study design and setting

Between October and December 2023, an online questionnaire survey was conducted. This study involved 200 participants from corporate setups across India to assess periodontal health literacy, stress, habits and periodontal treatment anxiety. Ethical committee approval was obtained from Krishnadevaraya College of Dental Sciences Ethical Committee (dated 17.04.2024 no. KCDSHEC/ IP/2024 /39).

Sampling procedure

The process of selecting the study participants was based on the convenience sampling technique, which is a non-probability sampling method. This method involves selecting individuals who are easily accessible and available to participate in the study, without any specific criteria or randomization. The study comprised participants who met the criteria and were willing to participate. The initial page of the questionnaire consisted of a comprehensive overview of the study's objectives, its significance, and the positive impact it could have. Participants were given a choice to either proceed or opt-out of the study based on the information presented.

Study population and recruitment

This study included corporate sector employees in India aged 18 and above. Participants with less than six months of work experience and pregnant or lactating women were excluded. The survey was distributed via social media platforms.

Study tool

The following questionnaire was utilized to assess periodontal health literacy, stress levels, habits, and anxiety towards periodontal treatment among corporate employees in India.

A total of 20 questions were given in the questionnaire (Table 1). The questionnaire encompassed 6 headings which included demographic information, oral hygiene practices, periodontal health awareness, stress assessment, habits, and treatment-oriented approach.

Demographic information on age, gender and marital status were collected. Information on the oral hygiene practices of participants was gathered by asking about how many times one brushes daily, if the toothpaste contained fluoride or if they have used mouthwash and floss.

Sample size

To ensure accurate statistical results, we aimed for a minimum sample size of 200 participants with a 95% confidence level and a 0.05% margin of error.

Statistical analysis

Independent Chi-square test was used to compare the periodontal health literacy, stress, habits and periodontal treatment anxiety among corporate sector employees based on the sociodemographic & work-based characteristics of the study respondents.

RESULTS

Participants' demographic characteristics

The study consisted of 200 participants wherein 61.4% were male and 38.6% were female. The age distribution was as follows: 49.5% of the participants were between 18 to 30 years of age. Of all the participants, 53.5% were unmarried. Table 2 below presents the demographic characteristics of the study participants.

Oral hygiene practices

The following is a presentation of the oral hygiene practices of the participants under study, as outlined in Figure 1. The results indicate that a significant proportion of the participants (57.9%) reported brushing their teeth twice daily. However, there was a mixed response regarding the use of toothpaste containing fluoride. Furthermore, the study revealed that a majority of the participants (59.4%) had never used a mouthwash, while a larger proportion (65.3%) never flossed.

Periodontal health awareness

Table 3 shows periodontal health awareness responses among the participants. 13.4% of participants claimed bleeding gums while 5.9% never noticed. Interestingly, 73.8% of participants were not confident while smiling. 39.6% were unaware of any periodontal treatment which can improve aesthetics. Halitosis was reported by the majority (69.3%). 51.0% visited the dentist only in 1-2 years. When asked if oral prophylaxis is good for their oral health, 26.2% reported No, my teeth start shaking and I experience discomfort after treatment.

Stress assessment

The stress ratings given by the participants are displayed in Figure 2. They were asked to rate their stress on a scale of 1-10, with 1 indicating the lowest level of stress and 10 indicating the highest. According to the results, 56.9% of participants rated their stress between 4-6, while 24.8% reported being unable to cope with stress.

Habits

Figure 3 shows details about the oral habits of participants. 23.8 % were smokers with 20.8% consuming 1-10 cigarettes per day while 3% consumed more than 10 cigarettes per day.

Treatment oriented approach

Table 4 presents the results of investigated individual's responses to a treatment-oriented scenario. The scenario involved experiencing symptoms such as bleeding gums, bad breath, and loose teeth, and asked participants what they would do next. Surprisingly, only 45.0% of

participants reported that they would seek consultation with a dentist. The study also found that almost half of the participants experienced dental anxiety prior to treatment. Additionally, 2.5% of participants reported that they did not experience any positive effects from periodontal surgery and, in fact, it caused them significant pain.

Figure 4-8 demonstrate significant differences in responses to the study questionnaire based on the age group of participants and significant differences in responses to the study questionnaire based on the gender of participants respectively.

Table 1: Questions included in the questionnaire

Demographic information:			
1. Age	18-30 years	30-60 years	>60 years
2. Gender	Male	Female	Other
3. Marital status	Unmarried	Married	Divorced/separated
Oral hygiene practices:			
4. How many times do you brush daily?	1 time	2 times	3 times
5. Is your toothpaste containing fluoride?	No	Yes	Maybe
6. Do you use mouthwash?	No	Yes, have used it before	Yes, I use it daily
7. Do you floss?	No	Yes, sometimes	Yes, everyday
Periodontal health awareness:			
8. Do your gums bleed?	No	Yes	Sometimes
9. Are you confident while smiling?	Yes	No	Never noticed
10. Do you know about any gum treatment which can improve aesthetics?	Yes	No	Never thought of it
11. Do you suffer from bad breath?	Yes	No	Never noticed
12. How often do you visit a dentist for teeth cleaning?	Every 3-6 months	1-2 years	Never been to a dentist
13. Does teeth cleaning benefit your oral health? If yes, then how?	No, my teeth start shaking and I get discomfort after treatment.	Yes, I feel fresh.	Yes, my gums and teeth look good.
Stress assessment:			
14. Rate your stress on this scale(1→10 in increasing order):	1-3	4-6	7-10
15. How well do you manage your work pressure?	Positively	Nothing helps me.	I don't have any work pressure
Habits:			
16. Do you smoke ? If yes, rate:	No	Yes, 1-10 per day	Yes, >10 per day
17. Do you consume tobacco in any form?	No	Yes, sometimes	Yes, daily or monthly
Treatment oriented approach:			
18. Supposing, one morning you notice your gums bleeding, you have bad breathe, some of your teeth are loose. What would you do next?	Ignore it	Find a medicine for this from a pharmacy nearby on my own.	Consult a dentist
19. Do you feel anxious before a dental appointment?	No, I am great.	Yes, a little	Yes, any dental treatment makes me uneasy
20. Have you got gum surgery done before? if yes, then any improvement in your gum health?	No	Yes, my gums felt better	No improvement, it gave me too much pain.

Table 2: Demographic characteristics of study participants

Variable	Category	n	%
Age	18-30 years	100	49.5%
	30-60 years	79	39.1%
	> 60 years	23	11.4%
Gender	Males	124	61.4%
	Females	78	38.6%
Marital status	Unmarried	108	53.5%
	Married	84	41.6%
	Divorced / Separated	10	5.0%

Table 3: Periodontal health awareness

Distribution of Responses to the questions on Periodontal health awareness among study participants			
Questions	Responses	n	%
Do your gums bleed?	No	163	80.7%
	Yes	27	13.4%
	Don't know	12	5.9%
Are you confident while smiling?	No	149	73.8%
	Yes	34	16.8%
	Never noticed	19	9.4%
Do you know about any gum treatment which can improve aesthetics?	No	80	39.6%
	Yes	85	42.1%
	Never thought of it	37	18.3%
Do you suffer from bad breath?	No	40	19.8%
	Yes	140	69.3%
	Never noticed	22	10.9%
How often do you visit a dentist for teeth cleaning?	Every 3-6 months	62	30.7%
	1-2 years	103	51.0%
	Never been to a dentist	37	18.3%
Does teeth cleaning benefit your oral health? If yes, then how?	No, my teeth start shaking and I get discomfort after treatment	53	26.2%
	Yes, I feel fresh	112	55.4%
	Yes, my gums and teeth look good	37	18.3%

Table 4: Treatment oriented answers

Distribution of Responses to the questions on Treatment oriented Approach among study participants			
Questions	Responses	n	%
Supposing, one morning you notice your gums bleeding, you have bad breath, some of your teeth are loose. What would you do next?	Ignore it	76	37.6%
	Find a medicine from nearby pharmacy on my own	35	17.3%
	Consult a dentist	91	45.0%
Do you feel anxious before a dental appointment?	No, I am great	102	50.5%
	Yes, a little	79	39.1%
	Yes, any dental treatment makes me uneasy	21	10.4%
Have you got gum surgery done before? if yes, then any improvement in your gum health?	Not done yet	159	78.7%
	Yes, my gums felt better	38	18.8%
	No improvement, it gave me too much pain	5	2.5%

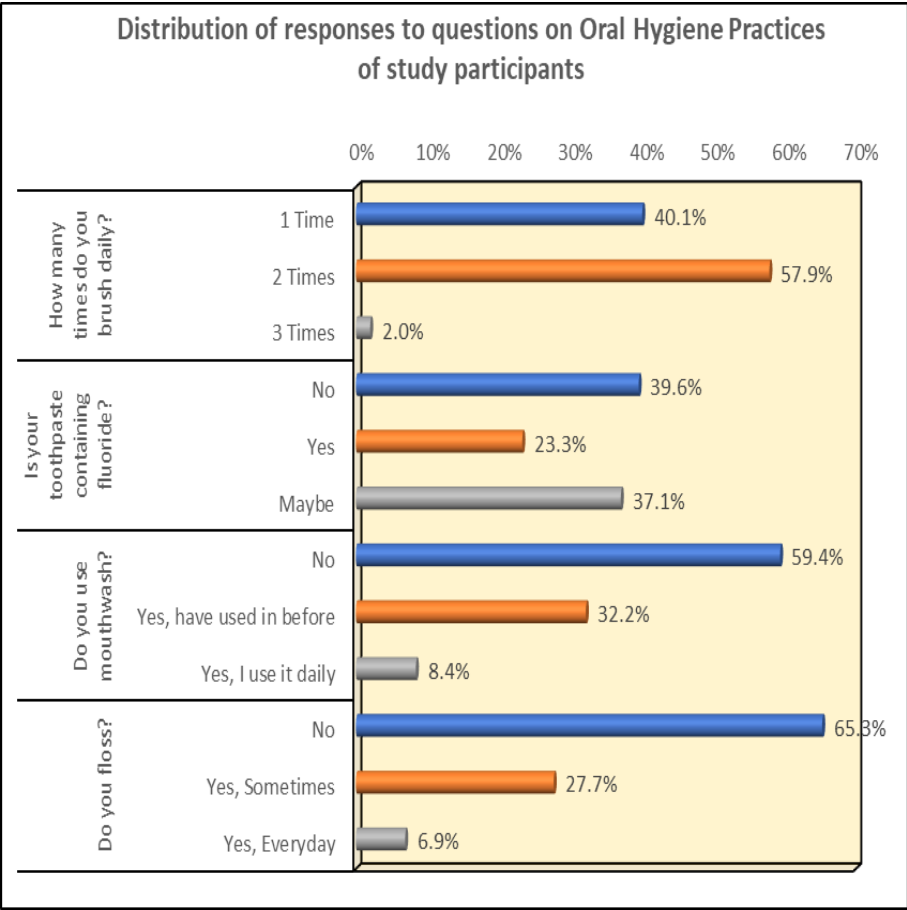


Figure 1: Oral hygiene practices

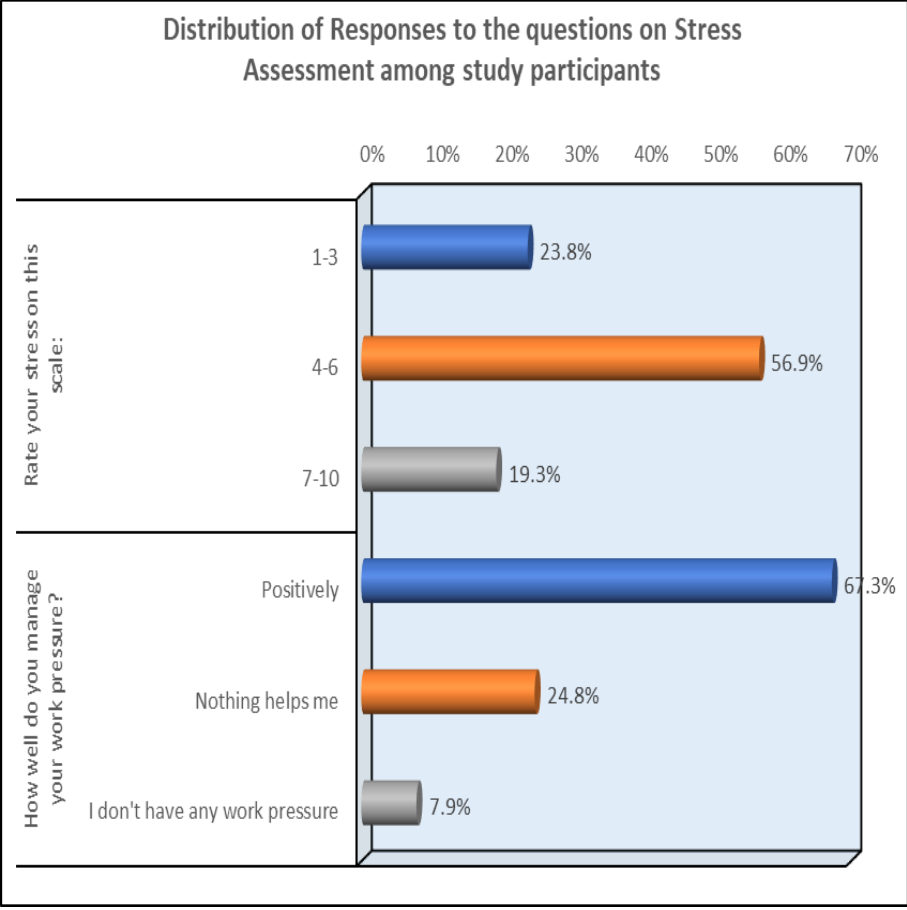


Figure 2: Stress ratings

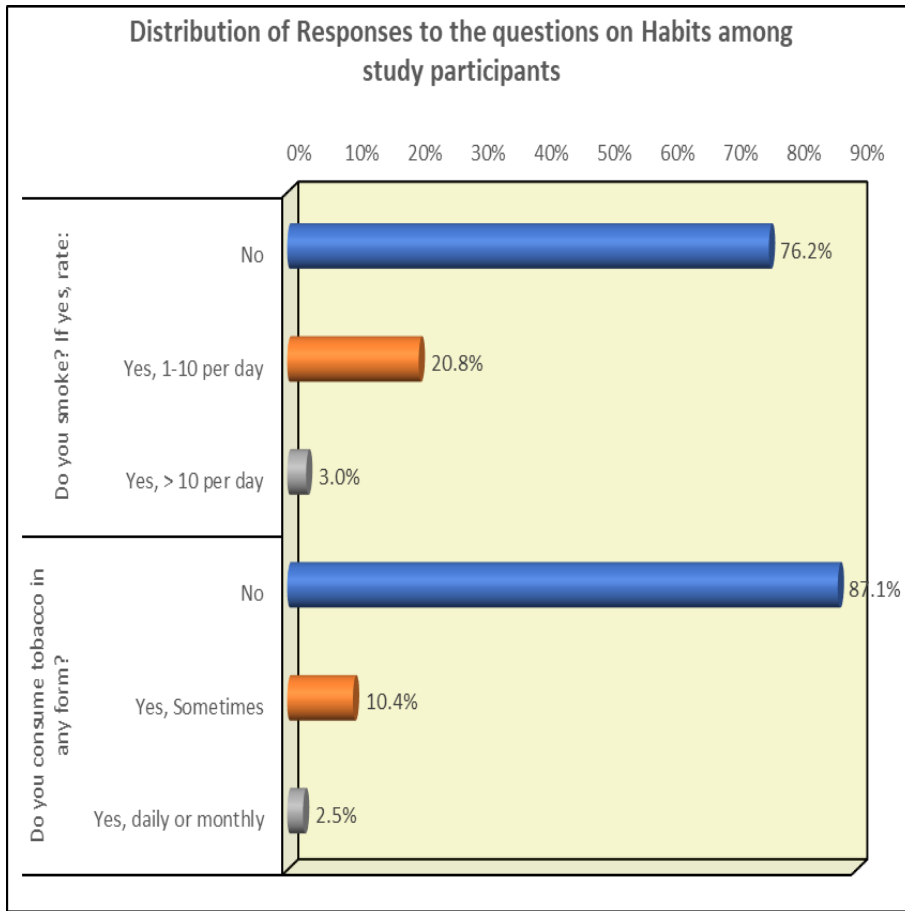


Figure 3: Oral habits

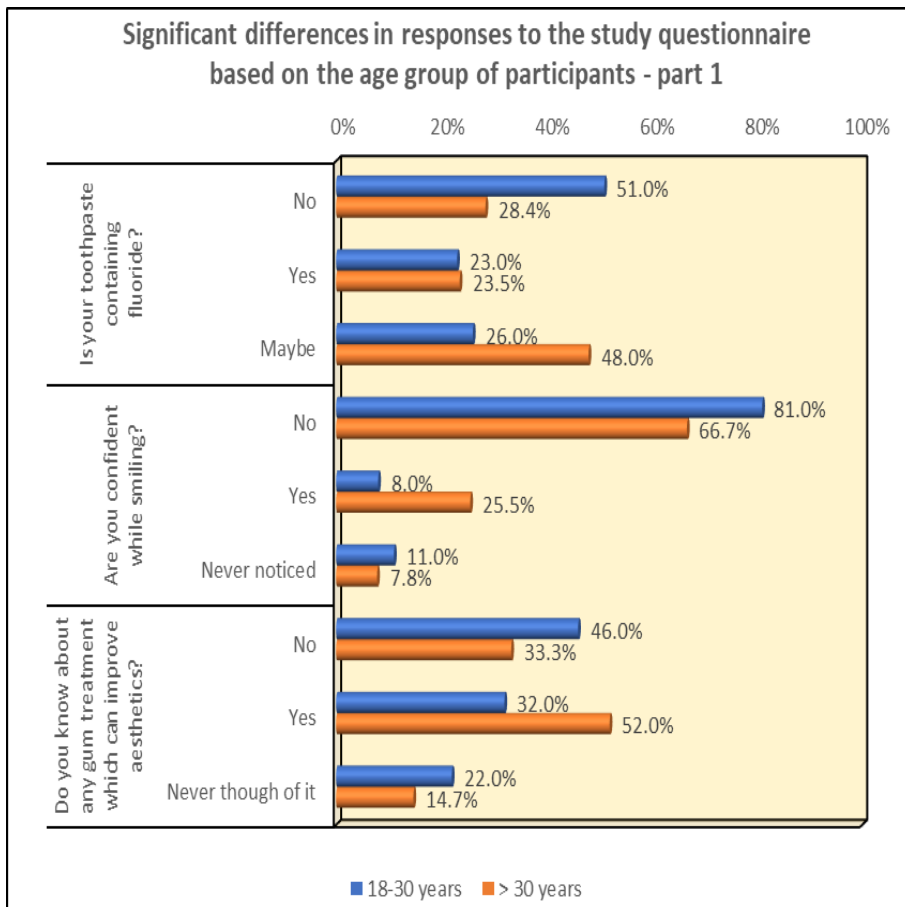


Figure 4: Significant differences in responses to the study questionnaire based on the age group of participants - part 1

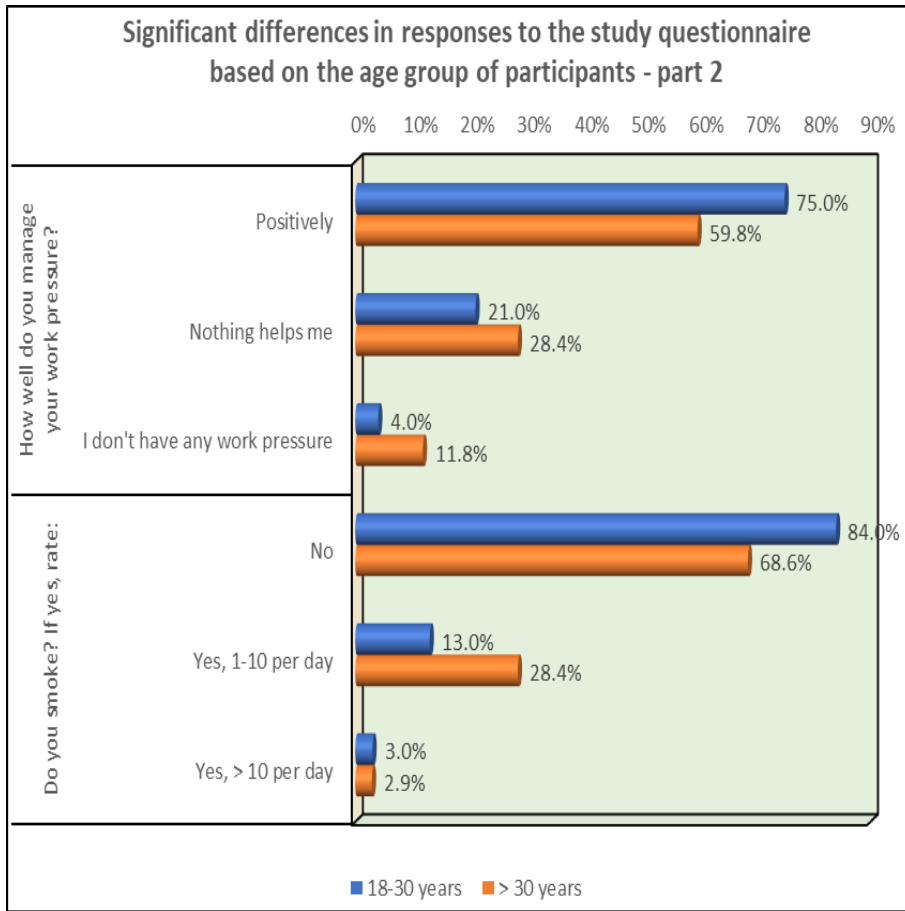


Figure 5: Significant differences in responses to the study questionnaire based on the age group of participants - part 2

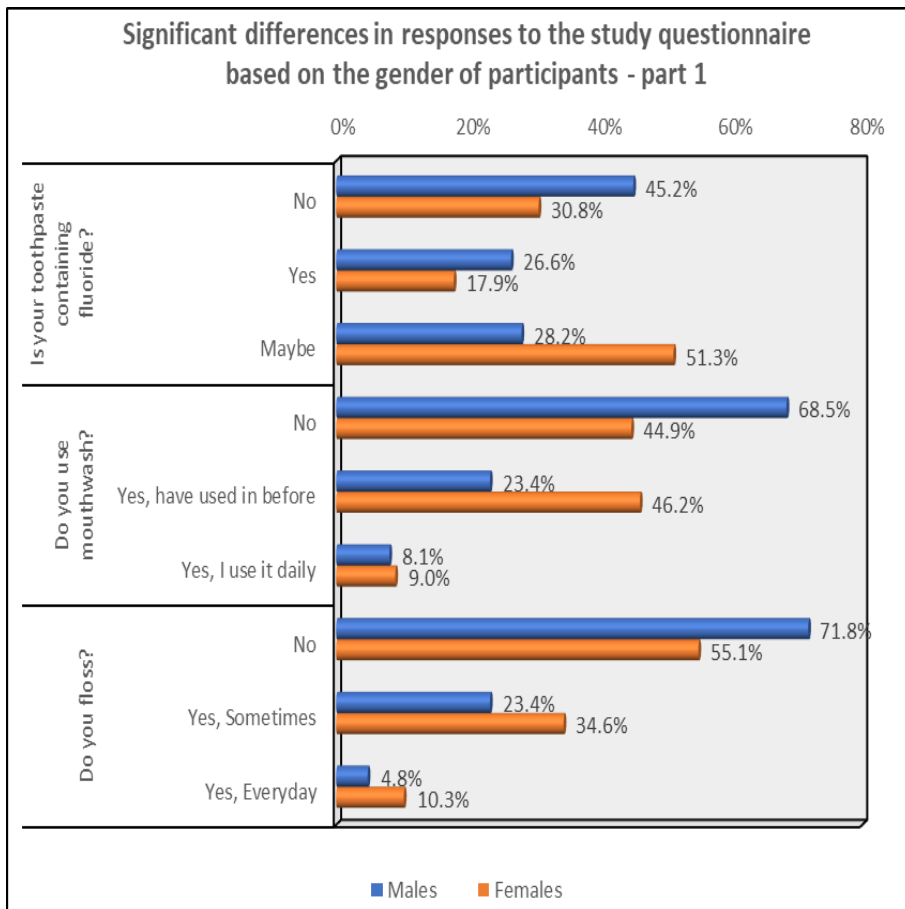


Figure 6: Significant differences in responses to the study questionnaire based on the gender of participants- part 1

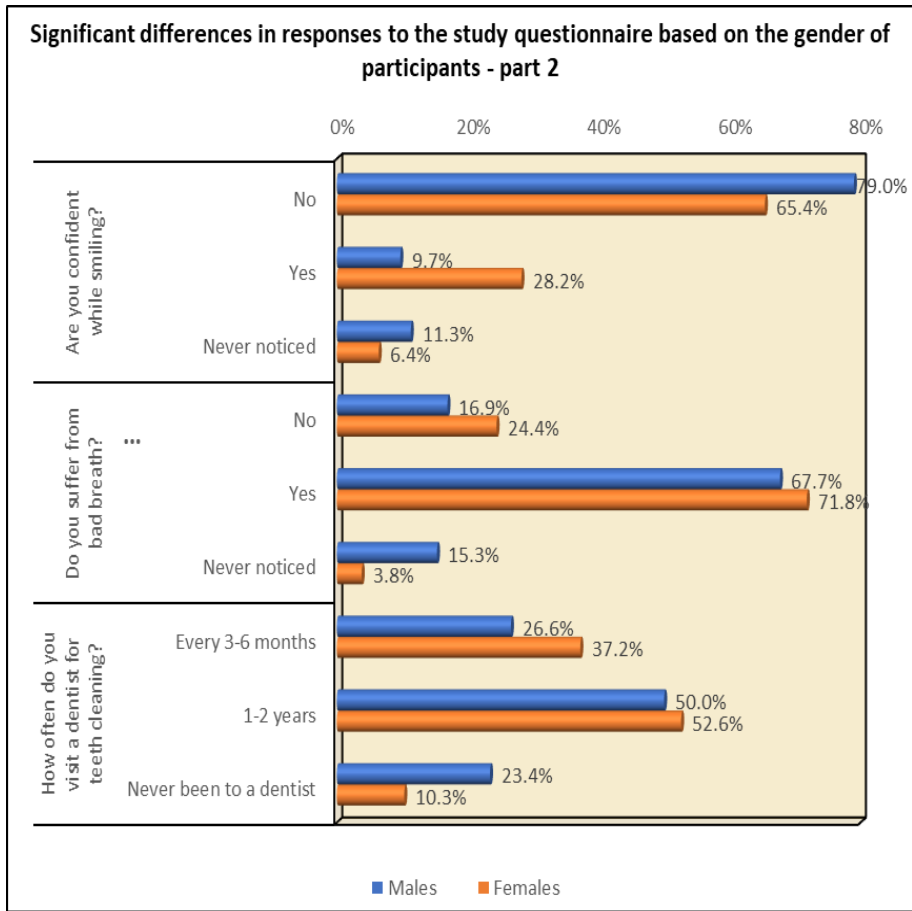


Figure 7: Significant differences in responses to the study questionnaire based on the gender of participants- part 2

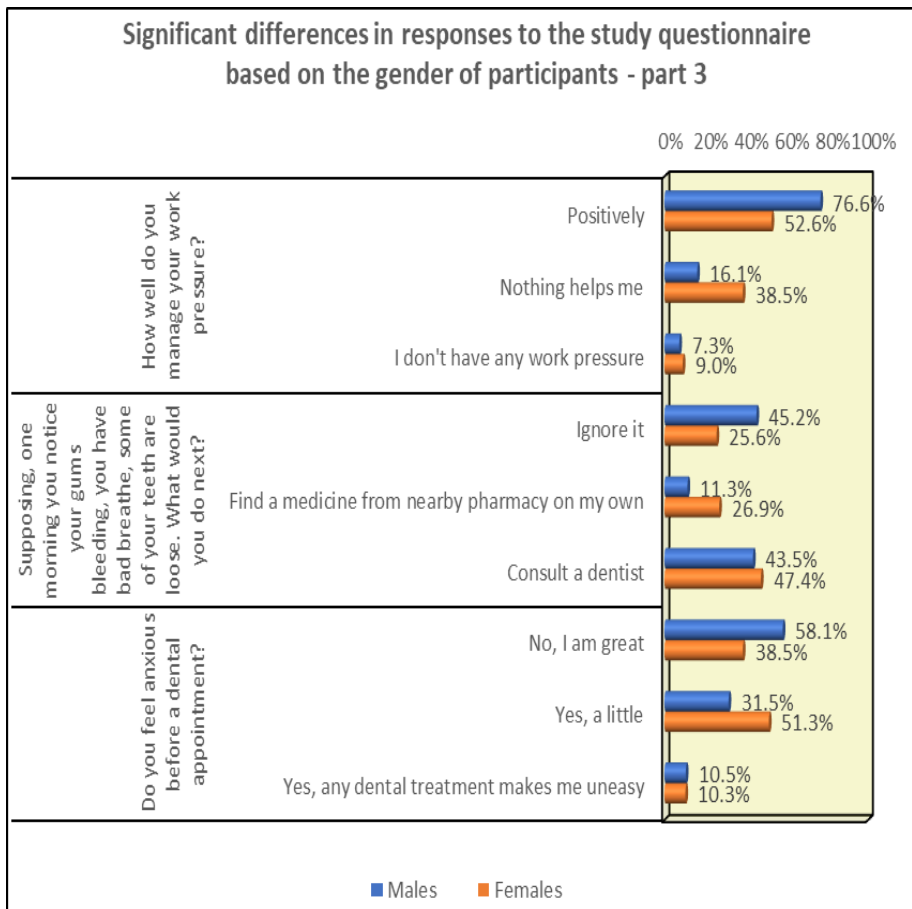


Figure 8: Significant differences in responses to the study questionnaire based on the gender of participants- part 3

DISCUSSION

Our study was designed as an online survey, which aimed to evaluate periodontal health literacy, stress, habits and periodontal treatment anxiety among corporate sector employees using a well-established online questionnaire. Online surveys have been found to offer significant advantages over traditional survey methods. The internet's ability to reach a wider and more diverse group of participants is one of the most notable benefits. Additionally, online surveys have been shown to save both time and effort for both researchers and participants. These findings are supported by a growing body of research that highlights the effectiveness of online surveys in collecting data across a variety of domains.^[10] In this study, a total representative sample of 200 participants was found adequate to give some insights into the level of knowledge and awareness of periodontal health among the targeted population and provide baseline data for the study's objectives. Other countries have conducted similar studies in the past to gauge the knowledge, awareness, and behavior of various groups, including professionals, students, and populations.

The study yielded the following results: (1) Over 50% of the participants expressed a lack of confidence while smiling, (2) A majority of the participants acknowledged visiting the dentist once every 1-2 years, (3) Only 45% of the participants were willing to seek a dentist's opinion on bleeding gums.

Jakkula et al (2012)^[7] also observed that the employees experienced similar levels of occupational stress but they differed significantly in its sources and effects. In a review article by Spector et. al (2020)^[11] it was claimed that psychological stress seems to be an important modifiable risk factor for the development and progression of periodontitis and other periodontal diseases.

It is interesting to note that the study participants in our study have shown a remarkable degree of awareness and knowledge about periodontal treatment, which indicates a positive trend towards better oral health in the future. However, it is important to keep an eye on the stress levels associated with this sector, as it is likely to be a significant factor that may impact the overall effectiveness of the periodontal treatment.

A previous study in Jordan conducted to explore the oral health profile and periodontal disease awareness and knowledge among the Jordanian population^[12] through a questionnaire survey revealed that the average degree of periodontitis knowledge among Jordanians was moderate. Along with it, there were modest oral hygiene practices.

Furthermore, another study conducted in 2018 (Coelho et. al)^[9] showed a positive association between exposure to stress and the presence of periodontitis, reaffirming the need to prevent and control stress in this population.

The limitations of the current study are as follows. The design of the survey restricted us build a rapport with the study participants. Self-filled surveys are prone to social bias and may not represent the situation accurately. As the participants rated themselves on the stress scale which is a subjective condition on an objective scale so, results could not be standardized. Using a convenient sampling method may have limited the generalizability of our study's results. Any human error while entering the response would alter the results. Stress coping plays a vital role in stress assessment, individuals with more stress could sometimes cope well or individuals with less stress would sometimes cope in a better manner altering the stress ratings. Therefore, our findings should be carefully interpreted.

CONCLUSION

The need for oral hygiene maintenance irrespective of workplace culture, stress and habits should be emphasized and more awareness

drives should be done in such institutions. Stress should be monitored and evaluated periodically with such questionnaires. Stress-coping workshops should be mandated and a counsellor should be readily available to those in need. Apart from the work load some fun activities and sports should be incorporated.

Conflicts of Interest

The author reports no conflicts of interest.

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None declared.

Authors contribution

Dr. Akshita Srivastava: conceptualization, project administration, data curation, manuscript drafting. Dr. Suhana Shamsuddeen: validation, project administration, manuscript editing and finalizing. Dr. Joann Pauline George: validation, manuscript editing and finalizing. Dr. Prabhuji MLV: validation, manuscript editing.

ORCID ID

Dr. Akshita Srivastava: <https://orcid.org/0009-0009-2183-0824>

Dr. Suhana Shamsuddeen: <https://orcid.org/0000-0003-2049-0097>

Dr. Joann Pauline George: <https://orcid.org/0000-0002-3256-7752>

Dr. Prabhuji MLV: <https://orcid.org/0000-0002-0353-8119>

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