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Prevalence of Fatigability in Undergraduate Dental Students: A Survey

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Introduction: High levels of stress and fatigue are associated with decreased academic success, well-being, and quality of life. The objective of this research was to quantify levels of perceived stress and fatigue among dental students to identify sources of and student coping mechanisms for perceived stress and fatigue and to identify the relationship between students' perceived stress and fatigue.
Materials and Methods: A total of 102 responses were tabulated and analyzed using statistical analysis. This study was conducted to acknowledge the effect of stress and fatigability and the different ways it affects the health of dental students. The obtained data was collected and tabulated in Google sheets, analyzed statistically with descriptive statistics using SPSS software version 23.
Results: Respondents have faced a feeling of fatigue in their working environment and some have experienced visual fatigue due to excessive screen time.
Conclusion: The survey concludes that respondents have moderate awareness about the prevalence of fatigability in dental students.

Keywords: Fatigue; social life; frustration; innovative technique; exhaustion.

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1. INTRODUCTION

Greater levels of stress and fatigue are related to depression and anxiety, reduced academic success hence decreased psychological and physical well-being, and a diminished quality of life. While it is common to identify both stress and fatigue as factors that together create negative effects, they are distinct psychological entities [1]. Henceforth, stress affects fatigue, which can affect one's perception of stress. Therefore, it is important to identify the relationships between stress and fatigue to better understand their effects on health, attitudes, and performance [2]. Various studies have examined how students experience stress in professional health education. As these students will become future health care providers, institutions need to teach them how to cope with stress themselves, as well as how to treat stress in their future patients [3]. Medical, nursing, dental, pharmacy, occupational therapy, and physical therapy students have reported high levels of perceived stress [4]. Student stress often stems from the academic load, classroom environment, faculty interaction, illness, and emotional concerns outside of the classroom or clinic [5,6]. Until recently, the literature on stress experienced by students in complementary and alternative medicine (CAM) has been scarce, but a recent study (4) among chiropractic students indicated that students in their 4th year of the doctoral study reported the highest levels of stress. At the constant time, information from a study by Kizhakkeveettil et al.12 that uses the validated perceived stress scale (PSS-10) suggests that stress levels were not statistically completely different across terms [7].

Fatigue is another vital issue to spot in professional person education because it can also affect student learning. Among nursing students, fatigue was reportedly moderate/intense for 83.5% of students, and 59.8% reported moderate/intense impairment from fatigue in their habitual activities. Tanaka et al. polled medical students and reported fatigue was prevalent in 16.5% of healthy individuals. In these individuals, school attendance, pleasure in school and learning, and lecture understanding were all negatively related to the prevalence of fatigue [8]. Our team has extensive knowledge and research experience that has translate into high quality publications [9]. [10–23],[24–28] This study aims to analyze the prevalence of fatigability among undergraduate dental students.

2. MATERIALS AND METHODS

This was a prospective observational study. A structured questionnaire was used to record the responses of participants. It was prepared to assess the effect of fatigability and its impact on UG dental students. There were a total of 102 undergraduate dental students involved in this survey. Internal validity was accessed by the principal investigator and guide, whereas external validity was done by a clinician expert. The independent variable of the survey was age and gender whereas dependent variables were etiology of the prevalence of fatigability. The advantages of this study were economical, easy to create, wide reach gathers large data, and quick interpretation. A total of 15 questions were framed and administered through google forms on an online platform. The study was conducted in February 2021 and involved responses from dental students. The obtained data was collected and tabulated in google sheets, analyzed statistically with descriptive statistics using SPSS software version 23.

3. RESULTS AND DISCUSSION

The data were subjected to descriptive statistics using SPSS software version 22. Each question of the survey was represented by a pie chart. 50% of the population were aged from 18 to 20 years, 32.4% of the population were 20-25 years of age, 17.6% of the respondents were 25 years and above (Fig. 1). 29.4% of the population were male and the majority of the population were female of 70.6% (Fig. 2). 52% of the respondents agree about fatigue being the feeling of extreme tiredness resulting in mental or physical illness, 31.4% of the population disagree and 16.7% of the population strongly disagrees with them (Fig. 3). 34.3% of the population have not experienced fatigue-ness while working, 43.1% of the respondents have experienced fatigue-ness while working, while 22.5% of the people may have experienced fatigue-ness (Fig. 4).

52.9% of the population work less than 7 hours a day, 31.4% of the population work 7-10 hours a day, 15.7% of the people work more than 10 hours a day (Fig. 5). 52.9% of the respondents spend less than 3 hours visually on the screen, 26.5% of the people spend 3-5 hours, 20.6% of the population spend more than 5 hours visually (Fig. 6). 45.1% of the population spend less than 5 hours physically, 36.3% of the people spend 5-8 hours physically, 18.6% of the students spend more than 8 hours physically (Fig. 7).

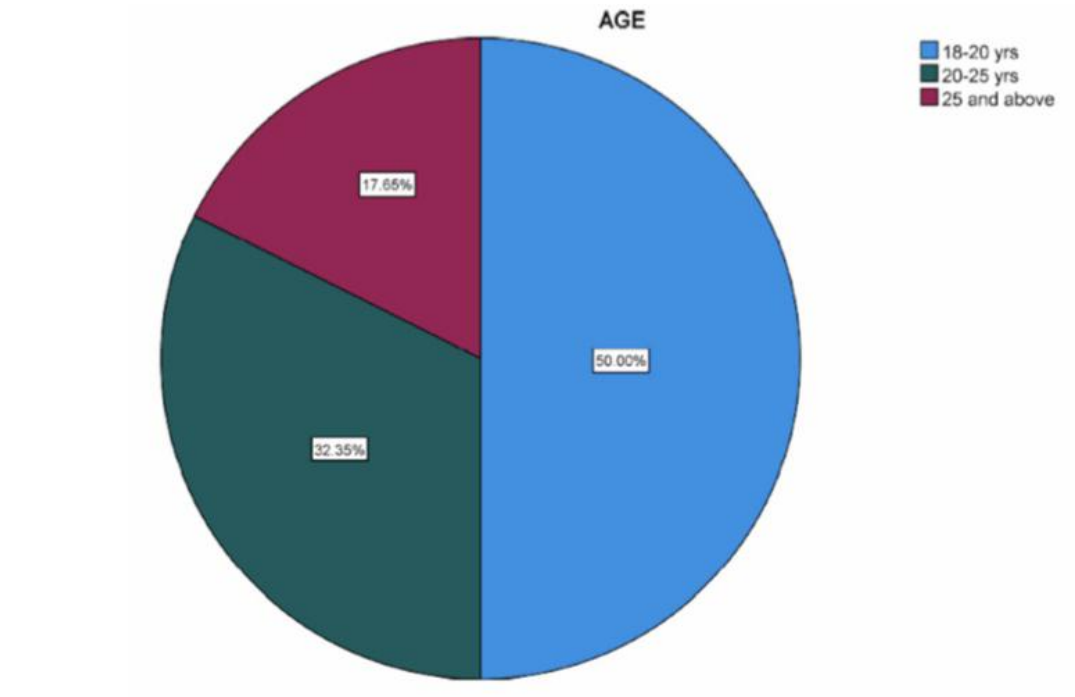

Fig. 1. Pie chart representing the different age groups of the respondents. Blue color denotes the age group of 18-20 years (50%), green denotes 20 to 25 years (32.4%) and pink denotes 25 and above years (17.6%)

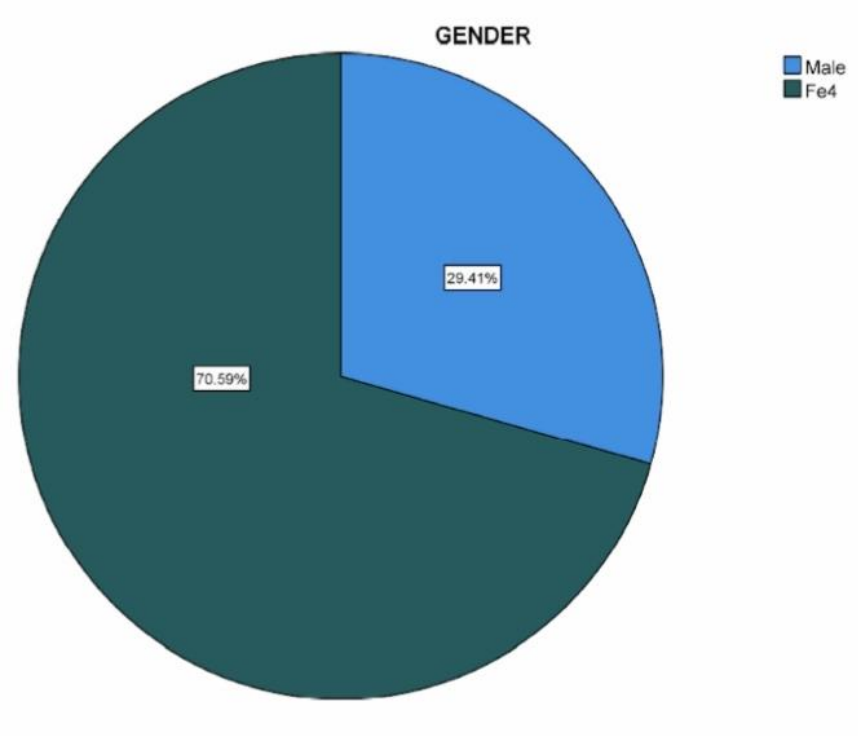

Fig. 2. Pie chart represents the gender category where green color denotes female (70.6%) and blue color denotes male (29.4%)

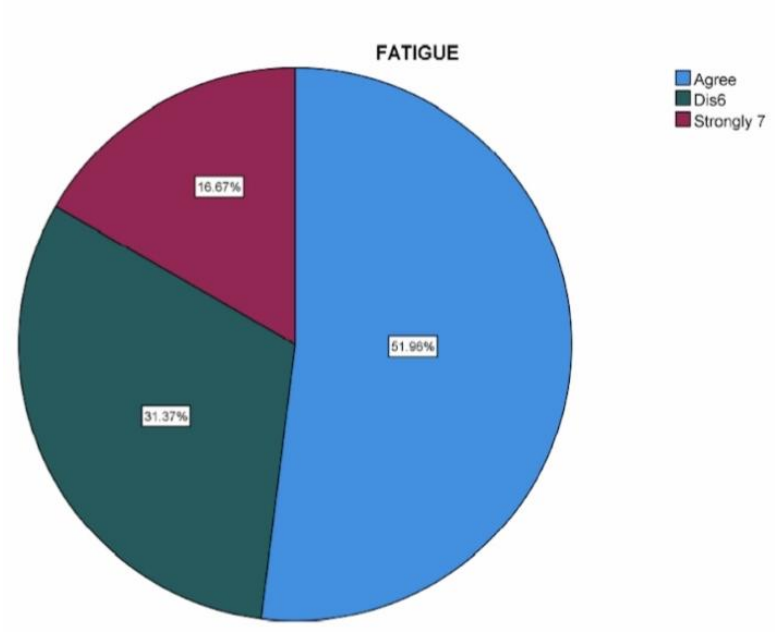

Fig. 3. Pie chart represents the awareness towards fatigue experienced in the workplace, where blue color denotes agree (52%), green denotes disagree (31.4%) and pink denotes strongly disagree (16.7%)

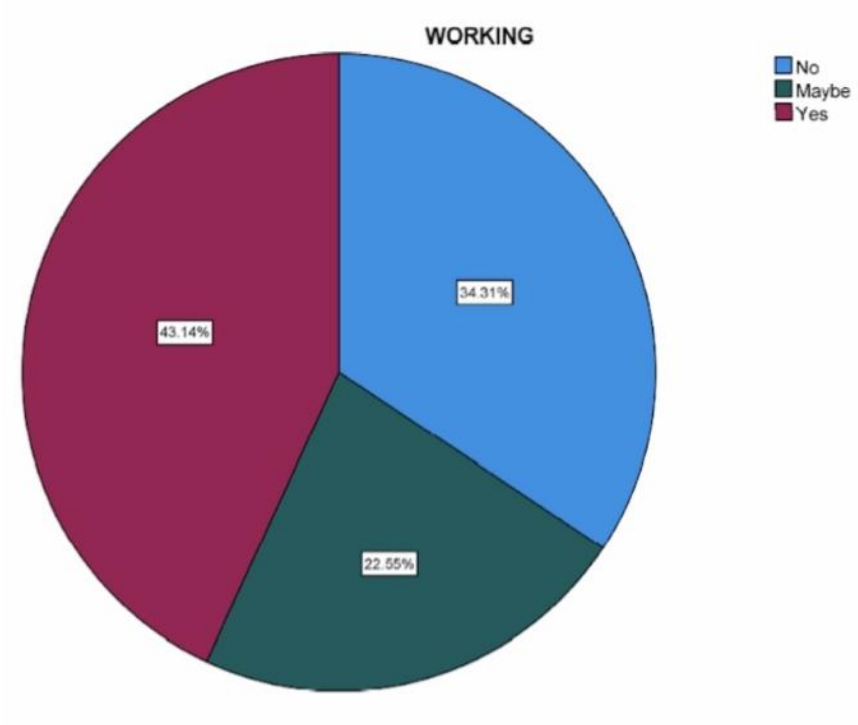

Fig. 4. Pie chart showing responses for the feeling of fatigue in the working area, where pink color denotes yes (43.14%), blue color denotes no (34.31%)andgreen color denotes maybe (22.55%)

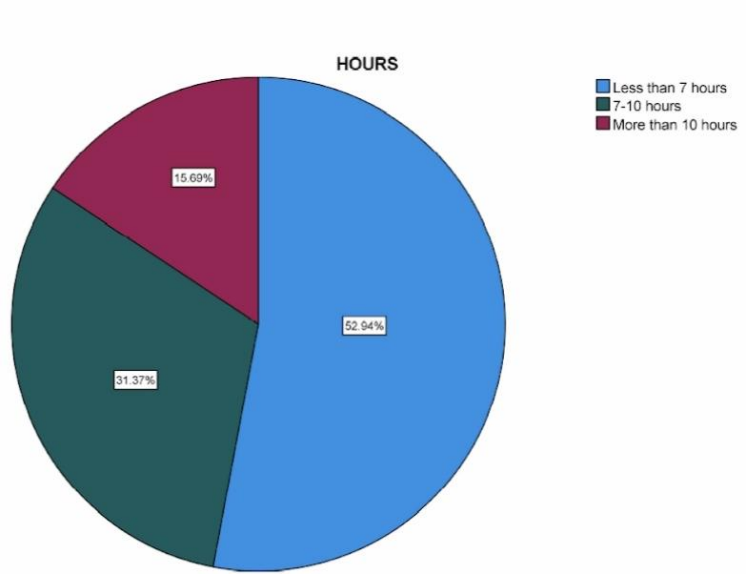

Fig. 5. Pie chart showing the responses for the total amount of working time, where blue color denotes less than 7 hours (52.94%), green color denotes 7-10 hours (31.37%) and pink color denotes more than 10 hours(15.69%)

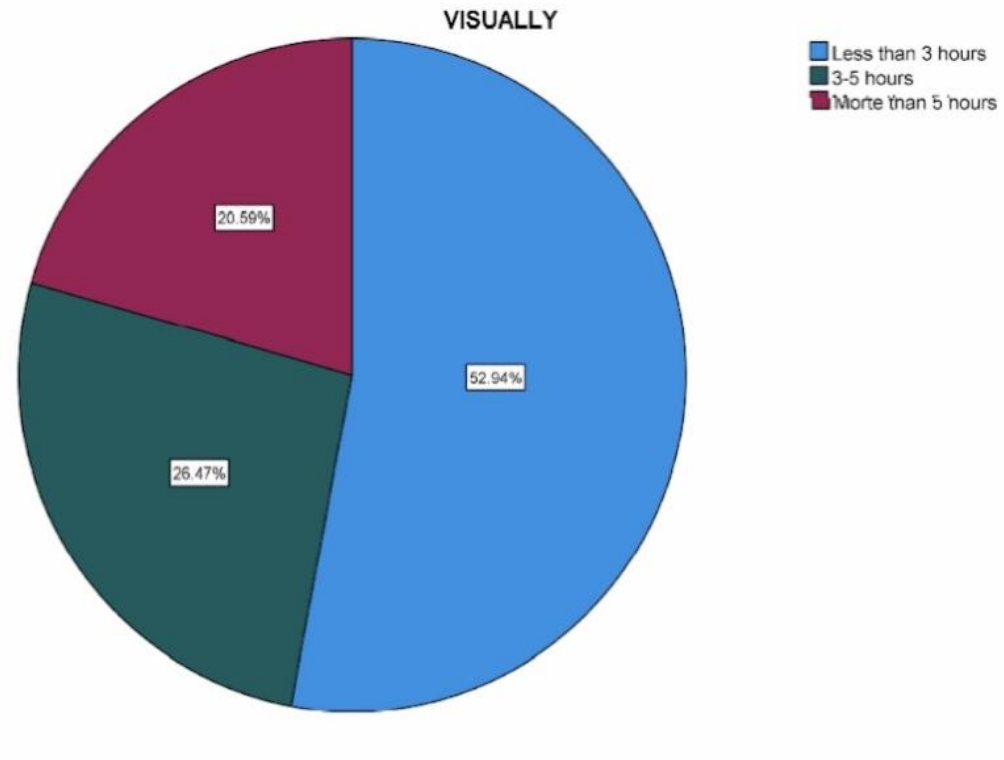

Fig. 6. Pie chart showing the responses on amount of time spent visually on the screen (26.59%), where blue color denotes less than 3 hours (52.94%), green color denotes 3-5 hours and pink color denotes more than 5 hours(20.59%)

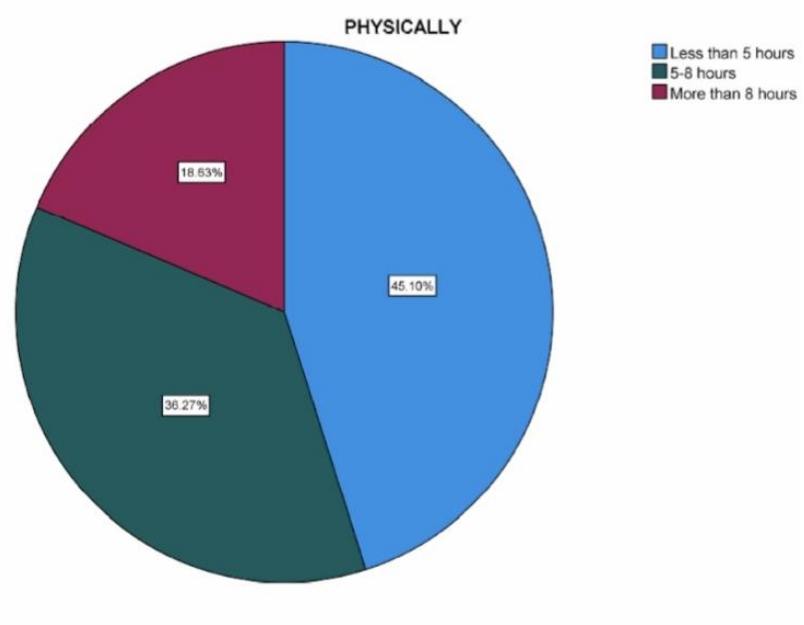

Fig. 7.Pie chart showing responses for the amount of time spent physically, where blue color denotes less than 5 hours (45.10%), green color denotes 5-8 hours(36.27%) and pink color denotes more than 8 hours(18.63%)

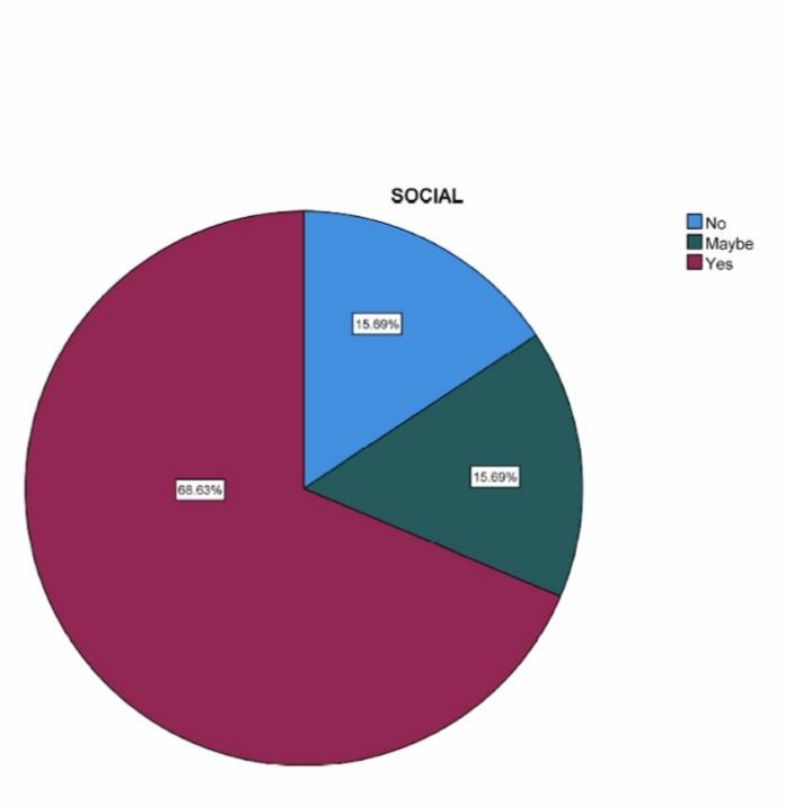

Fig. 8. Pie chart showing responses for social life interfering with fatigues, where pink color denotes yes(68.63%), blue color denotes no(15.69%) and green color denotes maybe(15.69%)

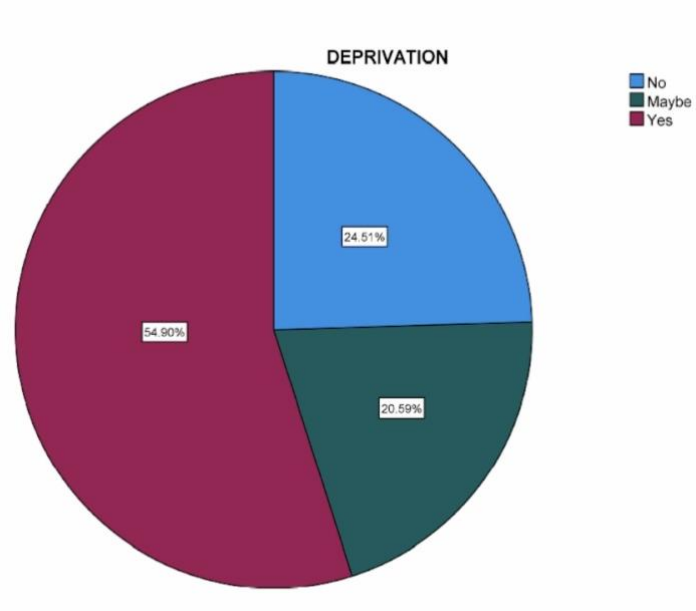

Fig. 9. Pie chart showing responses for the feeling of sleep deprivation, where pink color denotes yes(54.90%), green denotes maybe (20.58%)and blue color denotes no(24.51%)

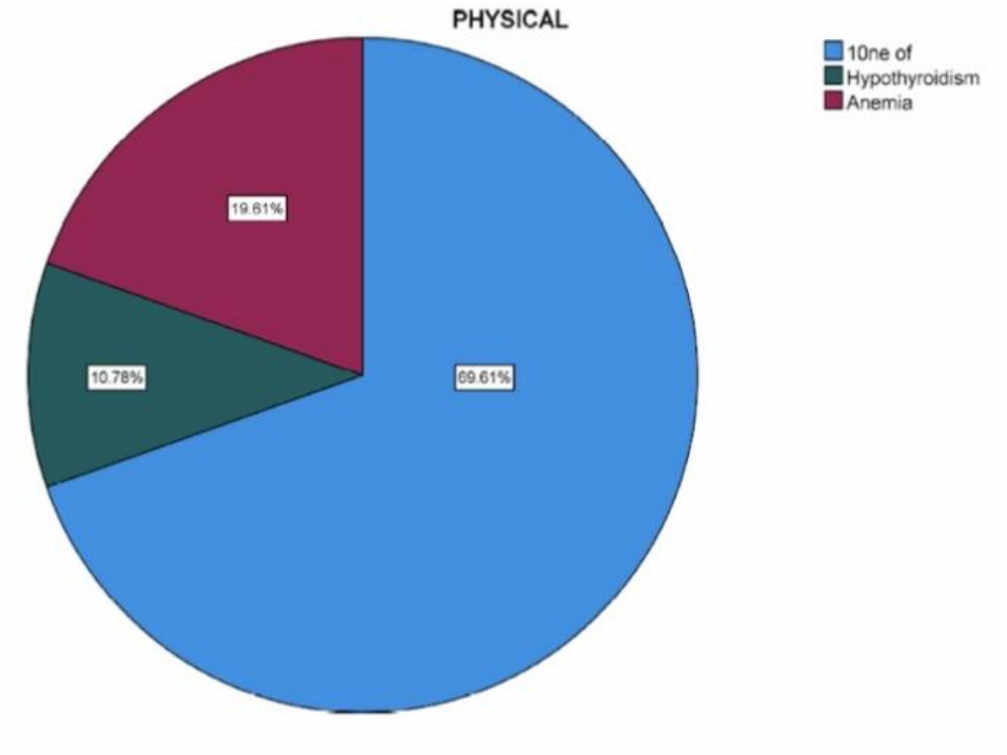

Fig. 10. Pie chart showing responses for the experience of the physical cause of fatigue where red color denotes anemia(19.61%), green color denotes hypothyroidism(10.78%)and blue color denotes none of the above (69.91%). This pie chart denotes that majority of the respondents have none of the above listed health issues

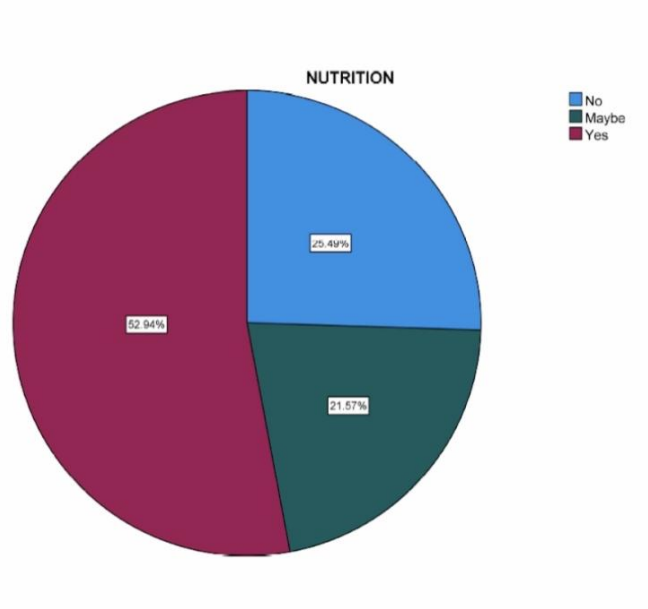

Fig. 11. Pie chart showing responses for a nutritive and balanced diet in controlling fatigue, where pink color denotes yes(52.94%), green color denotes maybe (21.57%) and blue color denotes no(25.49%).This pie chart denotes that majority of the respondents agree that nutritive diet is essential for health

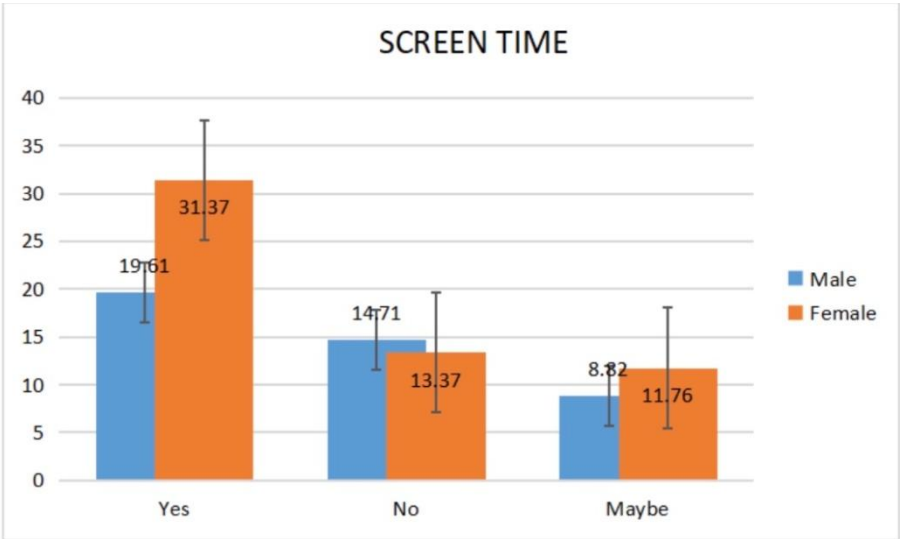

Fig. 12. Error bar graph showing comparison of gender and number of responses of the opinion about experiencing visual fatigue due to excessive screen time. X axis represents the number of participants who responded 'yes', 'no' and 'may be'. Y axis represents the percentage of response, where blue colour denotes responses from male and orange denotes responses from female. 19.61% of males agree, 14.71% disagree and 8.82% of male are not sure with their statement whereas, 31.37% of females agree, 13.73% disagree and 11.76% of females are not sure of experiencing visual fatigue due to excessive screen time. Females are more concerned about experiencing visual fatigue due to excessive screen time than males and this difference is statistically significant. Chi-square test, p-value: 0.045 (p value < 0.05 which is statistically significant)

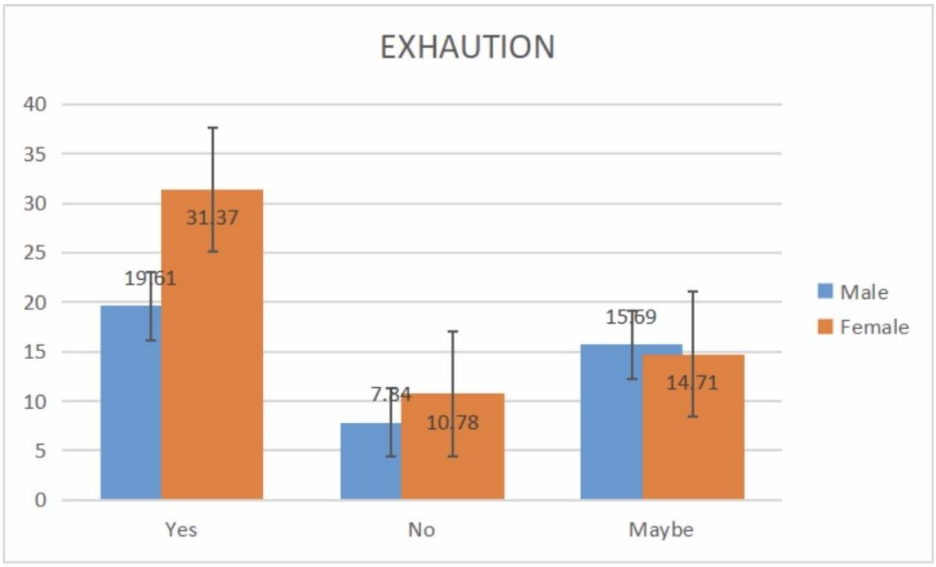

Fig. 13. Error bar graph showing comparison of gender and responses for experiencing the feeling of exhaustion, frustration or lack of motivation. X axis represents the number of participants who responded 'yes', 'no' and 'may be'. Y axis represents the percentage of response, where blue colour denotes responses from male and orange denotes responses from female. 19.61% of males agree, 7.84% disagree and 15.69% of male are not sure with their statement whereas, 31.37% of females agree, 10.78% disagree and 14.71% of females are not sure of experiencing the feeling of exhaustion, frustration or lack of motivation. Females have better awareness about experiencing the feeling of exhaustion, frustration or lack of motivation than males and this difference is statistically significant. Chi-square test, p-value = 0.240 (p value < 0.05 which is statistically significant)

68.6% of the students feel that fatigue interferes with work, family or social life, 15.7% of the population do not feel the same, whereas 15.7% of the people may feel that fatigue interferes with work (Fig. 8). 54.9% of the students have a feeling of sleep deprivation, 24.5% of the population do not experience sleep deprivation and 20.6% of the people may experience it (Fig. 9). 19.6% of the population experience anemia, 10.8% of the students have experienced hypothyroidism, whereas 69.6% of the students experience none of the above (Fig. 10). 52.9% of the population agree that a nutritive diet is essential for health, 25.5% of the students disagree whereas 21.6% of the people may agree that a balanced diet is essential for good health of students (Fig. 11). Bar graph showing comparison of gender and number of responses of the opinion about experiencing visual fatigue due to excessive screen time. X axis represents gender and Y axis represents the number of participants who responded 'yes' (blue), 'no' (green) and 'may be'(red). Females are more concerned about experiencing visual fatigue due to excessive screen time than males and this difference is statistically significant. Chi-square test, p-value: 0.045 (p value < 0.05 which is statistically significant) (Fig. 12).

Bar graph showing comparison of gender and responses for experiencing the feeling of exhaustion, frustration or lack of motivation. X axis represents gender and Y axis represents number of responses who responded 'yes' (blue), 'no' (green) and 'maybe' (red). Female have better awareness about experiencing the feeling of exhaustion, frustration or lack of motivation than males and this difference is statistically significant. Chi-square test, p-value = 0.240 (p value < 0.05 which is statistically significant) (Fig. 13).

In a study conducted by Luc Laberge ,average hours worked per week by students was 14.7 hours. It was observed that higher psychological distress, poorer health perception , greater sleep deprivation and higher exposure to physical work factors were associated with higher levels of acute fatigue [29,30].

That fatigue levels appear as a source of stress is consistent with the observation that a positive

correlation was found between stress and fatigue scores [31,32]. Similar to other studies, the main sources of fatigue were related to academic demands. To cope with such demands and to ameliorate stress, students used wellness strategies and sought social support and chiropractic treatments [33]. Similar strategies were employed by students to cope with fatigue as well. In both cases, students believed that these strategies were effective. In other studies, chiropractic students believed that they were effective at coping with such levels utilizing provided resources [34].

The limitation of the study was that due to reduced sample size, the result obtained may not be accurate. There can be better ideas on enhancing physical activity in institutions to eliminate the feeling of fatigue among budding dentists.

4. CONCLUSION

This study was conducted to acknowledge the effects of fatigueness and the different ways it impacts on the health of dental students. Our study revealed that dental students' prevalence rate of fatigability is 70% regardless of their work and rest patterns in their undergraduate level.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Jacob T, Ben Itzchak E, Raz O. Stress among healthcare students – A cross disciplinary perspective [Internet]. Physiotherapy Theory and Practice. 2013;29:401–12. Available:http://dx.doi.org/10.3109/09593985.2012.734011
2. Kovatz S, Kutz I, Rubin G, Dekel R, Shenkman L. Comparing the distress of American and Israeli medical students studying in Israel during a period of terror. Med Educ. 2006 Apr;40(4):389–93.
3. Evans JD. Straightforward Statistics for the Behavioral Sciences. Thomson Brooks/Cole; 1996:600.
4. Hester H, Cunliffe C, Hunnisett A. Stress in chiropractic education: a student survey of a five-year course. J ChiroprEduc. 2013 Jun 27;27(2):147–51.
5. Andreou E, Alexopoulos EC, Lionis C, Varvogli L, Gnardellis C, Chrousos GP, et al. Perceived Stress Scale: Reliability and Validity Study in Greece [Internet]. International Journal of Environmental Research and Public Health. 2011;8:3287–98. Available:http://dx.doi.org/10.3390/ijerph8083287
6. Mp B, Brundha MP, Nallaswamy D. Hide and seek in pathology- A research on game-based histopathology learning [Internet]. International Journal of Research in Pharmaceutical Sciences. 2019;10:1410–4. Available: http://dx.doi.org/10.26452/ijrps.v10i2.606
7. Kizhakkeveettil A, Vosko AM, Brash M, Dr PH, Philips MA. Perceived stress and fatigue among students in a doctor of chiropractic training program [Internet]., Journal of Chiropractic Education. 2017;31:8–13. Available: http://dx.doi.org/10.7899/jce-15-27
8. Tanaka M, Mizuno K, Fukuda S, Shigihara Y, Watanabe Y. Relationships between dietary habits and the prevalence of fatigue in medical students. Nutrition. 2008 Oct;24(10):985–9.
9. Anita R, Paramasivam A, Priyadharsini JV, Chitra S. The m6A readers YTHDF1 and YTHDF3 aberrations associated with metastasis and predict poor prognosis in breast cancer patients. Am J Cancer Res. 2020 Aug 1;10(8):2546–54.
10. Jayaseelan VP, Paramasivam A. Emerging role of NET inhibitors in cardiovascular diseases. Hypertens Res. 2020 Dec;43(12):1459–61.
11. Sivakumar S, Smiline Girija AS, VijayashreePriyadharsini J. Evaluation of the inhibitory effect of caffeic acid and gallic acid on tetR and tetM efflux pumps mediating tetracycline resistance in *Streptococcus* sp., using computational approach. Journal of King Saud University - Science. 2020 Jan 1;32(1):904–9.

12. Smiline Girija AS. Delineating the Immuno-Dominant Antigenic Vaccine Peptides Against gacS-Sensor Kinase in Acinetobacter baumannii: An in silico Investigational Approach. Front Microbiol. 2020 Sep 8;11:2078.
13. IswaryaJaisankar A, SmilineGirija AS, Gunasekaran S, Vijayashree Priyadharsini J. Molecular characterisation of csgA gene among ESBL strains of A. baumannii and targeting with essential oil compounds from Azadirachta indica. Journal of King Saud University - Science. 2020 Dec 1;32(8):3380–7.
14. Girija ASS. Fox3+ CD25+ CD4+ T-regulatory cells may transform the nCoV's final destiny to CNS! J Med Virol [Internet]. 2020 Sep 3. Available:http://dx.doi.org/10.1002/jmv.26482
15. Jayaseelan VP, Ramesh A, Arumugam P. Breast cancer and DDT: putative interactions, associated gene alterations, and molecular pathways. Environ Sci Pollut Res Int. 2021 Jun;28(21):27162–73.
16. Arumugam P, George R, Jayaseelan VP. Aberrations of m6A regulators are associated with tumorigenesis and metastasis in head and neck squamous cell carcinoma. Arch Oral Biol. 2021 Feb;122:105030.
17. Kumar SP, Girija ASS, Priyadharsini JV. Targeting NM23-H1-mediated inhibition of tumour metastasis in viral hepatitis with bioactive compounds from Ganoderma lucidum: A computational study. pharmaceutical- sciences [Internet]. 2020;82(2). Available:https://www.ijpsonline.com/articles/targeting-nm23h1mediated-inhibition-of-tumour-metastasis-in-viral-hepatitis-with-bioactive-compounds-from-ganoderma-lucidum-a-comp-3883.html
18. Girija SA, Priyadharsini JV, ParamasivamA. Prevalence of carbapenem-hydrolyzing OXA-type β-lactamases among Acinetobacter baumannii in patients with severe urinary tract infection. Acta Microbiol Immunol Hung. 2019 Dec 9;67(1):49–55.
19. Priyadharsini JV, Paramasivam A. RNA editors: key regulators of viral response in cancer patients. Epigenomics. 2021 Feb;13(3):165–7.
20. Mathivadani V, Smiline AS, Priyadharsini JV. Targeting Epstein-Barr virus nuclear antigen 1 (EBNA-1) with Murrayakoengii bio-compounds: An in-silico approach. Acta Virol. 2020;64(1):93–9.
21. Girija As S, Priyadharsini J V, A P. Prevalence of Acb and non-Acb complex in elderly population with urinary tract infection (UTI). Acta Clin Belg. 2021 Apr;76(2):106–12.
22. Anchana SR, Girija SAS, Gunasekaran S, Priyadharsini VJ. Detection of csgA gene in carbapenem-resistant Acinetobacter baumannii strains and targeting with Ocimum sanctum biocompounds. Iran J Basic Med Sci. 2021 May;24(5):690–8.
23. Girija ASS, Shoba G, Priyadharsini JV. Accessing the T-Cell and B-Cell Immuno-Dominant Peptides from A.baumannii Biofilm Associated Protein (bap) as Vaccine Candidates: A Computational Approach. Int J Pept Res Ther. 2021 Mar 1;27(1):37–45.
24. Arvind P TR, Jain RK. Skeletally anchored forsus fatigue resistant device for correction of Class II malocclusions-A systematic review and meta-analysis. OrthodCraniofac Res. 2021 Feb;24(1):52–61.
25. Venugopal A, Vaid N, Bowman SJ. Outstanding, yet redundant? After all, you may be another Choluteca Bridge! Semin Orthod. 2021 Mar 1;27(1):53–6.
26. Ramadurai N, Gurunathan D, Samuel AV, Subramanian E, Rodrigues SJL. Effectiveness of 2% Articaine as an anesthetic agent in children: randomized controlled trial. Clin Oral Investig. 2019 Sep;23(9):3543–50.
27. Varghese SS, Ramesh A, Veeraiyan DN. Blended Module-Based Teaching in Biostatistics and Research Methodology: A Retrospective Study with Postgraduate Dental Students. J Dent Educ. 2019 Apr;83(4):445–50.
28. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of Streptococcus mutans, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: randomized controlled trial [Internet]. Clinical Oral Investigations. 2020;24:3275–80. Available:http://dx.doi.org/10.1007/s00784-020-03204-9
29. Laberge L, Ledoux E, Auclair J, Thuilier C, Gaudreault M, Gaudreault M, et al. Risk factors for work-related fatigue in students

with school-year employment. J Adolesc Health. 2011 Mar;48(3):289–94.
30. Prashaanthi N, Brundha MP. A Comparative Study between Popplet Notes and Conventional Notes for Learning Pathology. Research Journal of Pharmacy and Technology. 2018;11(1):175–8.
31. Mizuno K, Tanaka M, Fukuda S, Imai-Matsumura K, Watanabe Y. Relationship between cognitive functions and prevalence of fatigue in elementary and junior high school students [Internet]. Brain and Development. 2011;33:470–9. Available:http://dx.doi.org/10.1016/j.braindev.2010.08.012
32. Brundha MP, Pathmashri VP, Sundari S. Quantitative Changes of Red Blood cells in Cancer Patients under Palliative Radiotherapy-A Retrospective Study. Research Journal of Pharmacy and Technology. 2019;12(2):687–92.
33. Tanaka M, Mizuno K, Fukuda S, Watanabe Y. Personality and Fatigue in Medical Students [Internet]. Psychological Reports. 2010;106:567–75. Available:http://dx.doi.org/10.2466/pr0.106.2.567-575
34. Harsha L, Brundha MP. Prevalence of Dental Developmental Anomalies among Men and Women and its Psychological Effect in a Given Population. Journal of Pharmaceutical Sciences and Research; Cuddalore. 2017;9(6):869–73.

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