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Knowledge And Awareness Of Periodontal Diseases Among Medical Students

Ashna Yuvaraj[1], M. Jeevitha*[2], S. Kavitha[3]

[1]Undergraduate, Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, 160, Poonamallee High road, Chennai 600077, Tamilnadu, India

[2]Senior Lecturer, Department of Physiology, Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, 160, Poonamallee High road, Chennai 600077, Tamilnadu, India

[3]Lecturer, Department of biochemistry, Saveetha Dental College & Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, 160, Poonamallee High road, Chennai 600077, Tamilnadu, India

***Corresponding Author:**

Dr. Jeevitha

Email ID: jeevitham.sdc@saveetha.com

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ABSTRACT

Periodontal disease, including gingivitis and periodontitis, is considered to be one of the most common diseases among the population and if left untreated, it can lead to tooth loss. The main cause of periodontal diseases is bacterial plaque, other factors are smoking, hormonal changes, nutrition and stress. This study aims to study the knowledge and awareness of periodontal diseases among medical students. A self-administered questionnaire was prepared based on the awareness of periodontal diseases and its causes, it was distributed among 105 medical college students, the data was obtained, tabulated and statistically analysed and presented. The Chi- square test was done associating the year of study of the student and the knowledge on periodontal diseases. 47.6% of the 1st year students were aware of periodontal diseases followed by 25.% of 2nd year, 13.% of 3rd year, 6% from 4th year and 6% of intern students. 84.8% of the participants know about periodontal diseases. Majority of the medical college students were aware of periodontal diseases. The first and the second year students were highly aware of the various periodontal diseases who were the major participants of the study.

Keywords: *Periodontal diseases; Inflammation; Oral health and hygiene; Medical students.*

1. INTRODUCTION

The term "periodontal disease" encompasses a wide variety of chronic inflammatory conditions of the gingiva (or gums, the soft tissue surrounding the teeth), bone and ligament, (the connective tissue collagen fibres that anchor a tooth to the alveolar bone) supporting the teeth (Kinane, Stathopoulou and Papapanou, 2017). Periodontal disease begins gingivitis, the local inflammation of the gingiva that is initiated by bacteria in the plaque, which is a microbial biofilm that forms on the teeth and gingiva. Periodontal disease may contribute to the body's overall inflammatory burden, worsening conditions such as diabetes mellitus and atherosclerosis (Gotsman *et al.*, 2007). The major reasons for periodontal diseases are smoking, diabetes, hormonal changes, certain medications and genetic susceptibility. The symptoms of a gum disease mainly include bad breath, red or swollen gums, painful chewing, loss of a tooth, bleeding gums and receding gums (Schenkein and Loos, 2013). A mechanism has been proposed where the bacterial pathogens, antigens, endotoxins and inflammatory cytokines of periodontitis contribute to the process of atherogenesis and thrombotic events. In response to infection and inflammation, susceptible individuals may exhibit greater expression of local and systemic mediators and may thereby be at increased risk for myocardial infarction or stroke (Beck, Eke and Heiss, 2005). Case-control studies have found that periodontitis is associated with coronary heart diseases and cerebrovascular disease, even after adjustment for a variety of potential co-founders of these associations (Syrjänen *et al.*, 1989).

The extraordinary process is being made in understanding the relationship between periodontal disease and systemic health. It is not being widely recognised that systemic diseases such as osteoporosis, diabetes and immune disorders may increase the risk of periodontal diseases (Laskaris and Scully, 2012). The relation between periodontal diseases and systemic health is well known, mainly inflammation may be responsible for these conditions. Therefore, managing inflammation may not only help to cure periodontal diseases but also help manage and prevent chronic health diseases such as liver diseases (Harsha *et al.*, 2015) (Choudhari and Jothipriya, 2016), cardiovascular (Renuka and Sethu, 2015) and respiratory problems

(R and Sethu, 2018) (Dave and Preetha, 2016) (Timothy, Gayatri Devi and Jothi Priya, 2019). There is an association between periodontitis and goitre as they have the common immunodeficiency pathways in disease pathogenesis obesity is a major risk factor for several chronic diseases like diabetes (Iyer, Gayatri Devi and Jothi Priya, 2019), hypertension and cardiovascular problems (Samuel and Devi, 2015) (Baheerati and Gayatri Devi, 2018) (Fathima and Preetha, 2016). Due to the modulation of the immunoinflammatory mechanism, there has been a strong association between sleep deprivation and periodontitis. (Rj and R, 2016) also, it was found that people who maintained a healthy weight and had high levels of physical fitness (Abigail *et al.*, 2019) (David *et al.*, 2019) (Shruthi and Preetha, 2018) had a lower incidence of severe periodontitis. (Swathy and Gowri Sethu, 2015) .Previously our team has a rich experience in working on various research projects across multiple disciplines (Gheena and Ezhilarasan, 2019; Ke *et al.*, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Samuel *et al.*, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Venu, Raju and Subramani, 2019; Venu, Subramani and Raju, 2019; Vignesh *et al.*, 2019; Vijayakumar Jain *et al.*, 2019; Jose, Ajitha and Subbaiyan, 2020; Krishnaswamy *et al.*, 2020; Muthukrishnan *et al.*, 2020; Samuel, Acharya and Rao, 2020; Sathish and Karthick, 2020). Now the growing trend in this area motivated us to pursue this project.

The importance of oral health and hygiene is still neglected and ignored, the controlling of the periodontal disease improves the general overall health of a person, therefore a good knowledge of periodontal diseases is essential for medical practitioners and students. This research aims to study the knowledge and awareness of periodontal diseases among medical college students.

2. MATERIALS AND METHODS

A descriptive cross-sectional survey was conducted among medical college students in Chennai to analyse their knowledge and awareness of periodontal diseases. The approval was obtained from the “Institutional review board”. The survey was conducted among 105 college-going students doing medicine. A self-administered questionnaire was prepared and circulated online to medical students. Similar studies were done by Nada Alzammam with 906 participants (Alzammam and Almalki, 2019), Ravindranath Dhulipalla with 150 participants (Dhulipalla *et al.*, 2016) and Nader Alzarea with 250 participants (Al-Zarea, 2013).

The responses were collected and tabulated in the excel sheet and analysed. The results were further graphically represented in pie charts and bar charts. Statistical analysis was done using “SPSS Software” and a Chi-Square test was performed.

3. RESULTS AND DISCUSSION

The questionnaire was taken up by 105 participants where the majority of the participants belonged to the age 18 of 34.62% followed by 28.85% from 19 years, 18.27% from 20, 2.88% from 21, 11.54% from 22 and 3.85% from 23 year olds (figure 1). 51% of them were male and 48.5% of the Female (figure 2). The first-year students were in the majority of 47.6% followed by 25.7% of the second year, 13.3% the third year, 6.6% fourth year and 6.8% intern students. 84.8% of the participants were aware of what is periodontal disease (figure 3). 33.3% of the participants agreed that the symptoms are bleeding gums, followed by tooth loss by 27.6% of them, all of the above for 25.7% and bad breath for 13.3% (figure 4). 80% of the participants agreed that there is a relationship between periodontal and systemic health (figure 5). 42.9% of the participants agreed that the primary clinical symptom for periodontal diseases is gingival bleeding, followed by 26.7% agreeing to tooth mobility and 24.8% of tooth migration (figure 6). 84.8% of the participants agreed that smoking affects the healing of periodontal disease (figure 7). 70.5% of the participants agreed that gingival swelling occurs during pregnancy (figure 8). 72.4% of the participants agreed that periodontitis is related to cardiovascular problems (figure 9). 77.1% of the participants agreed that diabetes and periodontal diseases are related (figure 10). 86.7% of the participants agreed that periodontal disease causes tooth hypersensitivity (figure 11).

The Chi- square test was done associating the year of study of the participants and the knowledge and awareness on periodontal health and diseases. In the present study, 42.9% of the participants responded as gingival bleeding, the majority of the first-year students agreed to this showing 37.37%. From the Chi-square Test obtained, P value: 0.053 (< 0.05) Therefore it is not statistically significant (figure 12). Similarly, in the study by Bader K Alzarea, 80% of the participants agreed to gingival swelling as the primary clinical symptom for periodontal diseases (Al-Zarea, 2013). In the present study, 84.8% of the participants agreed that smoking affects the healing of periodontal diseases, 38.18% of the first-year students agreed followed by 22.73% of the second year students. From the Chi-square Test obtained, P value: 0.126 (< 0.05) Therefore it is not statistically significant (figure 13). Similarly, in the study by Dhulipalla, 60% of the participants agreed that smoking affects the healing of periodontal diseases (Dhulipalla *et al.*, 2016). Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Mathew *et al.*, 2020). We hope this study adds to this rich legacy.

In the present study, 84.8% of the participants were aware of what is periodontal disease, the awareness was more in the first year students showing 40.91% followed by the second year of 22.73%, third year of 7.36% and intern, 9%. From the Chi-square Test obtained,P value: 0.183 (< 0.05) Therefore it is not statistically significant (figure 14). Similarly in the study by

CC Azodo, 74.4% of the participants were aware of periodontal disease (World Health Organization, 2003). In the present study, 80% of the participants agreed that there is a relationship between periodontal health and systemic diseases. From the Chi-square Test obtained,P value: 0.151 (< 0.05) Therefore it is not statistically significant (figure 15). Similarly, in the study by Sajjad, 72% of the participants agreed that there is a relation between periodontal health and system diseases (Sajjad *et al.*, 2017). But, in the study by Alshehri, 74% of the participants who were primary school teachers were not aware of the relation between periodontal diseases and systemic health (Alshehri, 2018). In the present study, 77.1% of the participants were aware of the relationship between diabetes and periodontal diseases, majority of the first-year students were aware followed the second year, the third year, intern and the fourth-year students. From the Chi-square Test obtained,P value: 0.927 (< 0.05) Therefore it is not statistically significant (figure 16). But, in the study by AO Ehizele, 72% of the participants were not aware of the relation between periodontal and systemic diseases (Ehizele and Akhionbare, 2018).

The limitation of the present study is because of the small sample size and geographic limitations. In the future, the study can be expanded to more number of students and participants to a wider group of people. Awareness programmes are necessary among medical students to emphasise periodontal disease health and its relation to systemic diseases.

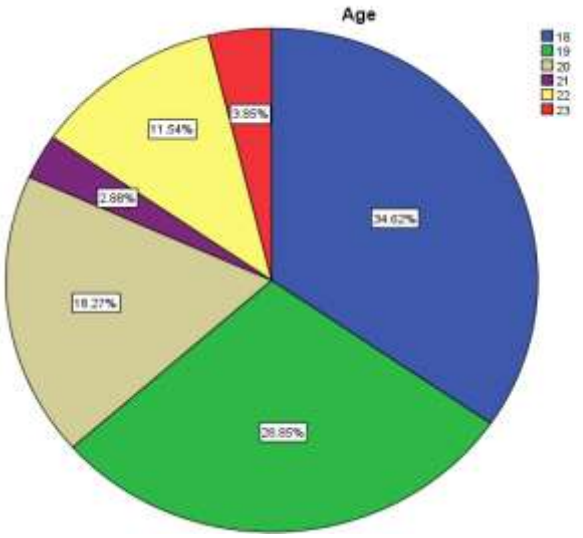

Figure 1: Pie chart representing the distribution of age. 34.62% (blue) of the participants were of age 18 years, 28.85% (green) of 19 years, 19.27% (beige) of 20 years, 2.88% (violet) for 21 years, 11.54% (yellow) for 22 years and 3.85% for 23 year old participants.

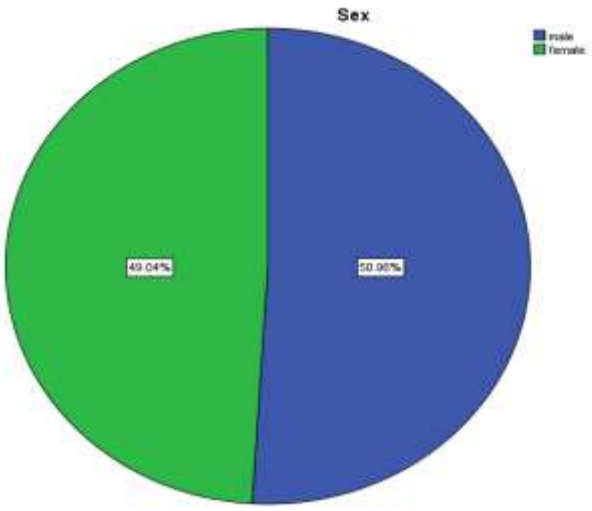

Figure 2: Pie chart representing the distribution of gender. 50.96% (blue) of the participants were males and 49.04% (green) were females.

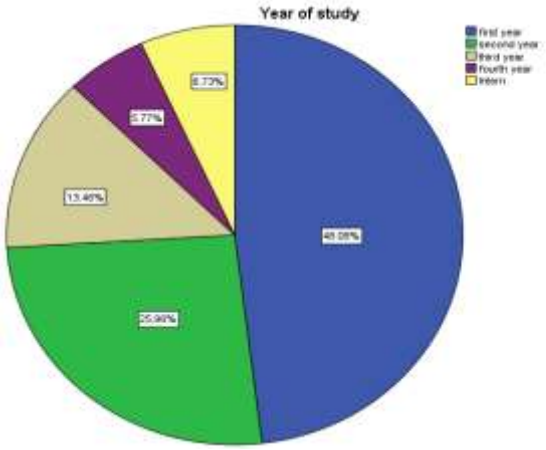

Figure 3: Pie chart representing the distribution of year of study of the participants. 48.08% (blue) of the participants belonged to the first year, 25.96% (green) from second year, 13.46% (beige) from third, 5.77% (violet) from fourth and 6.73% (yellow) from intern.

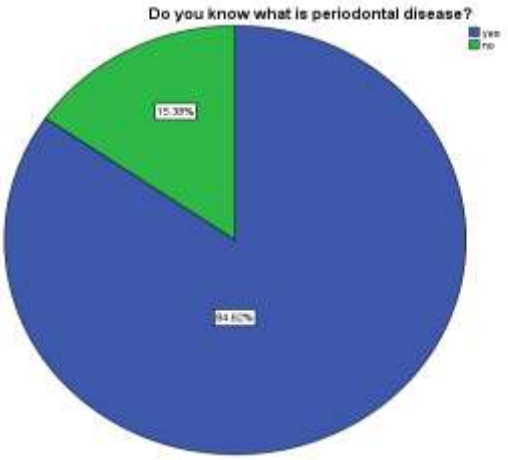

Figure 3: Pie chart representing the distribution of the awareness of periodontal diseases. 84.62% (blue) of the participants were aware and 15.38% (green) were not aware.

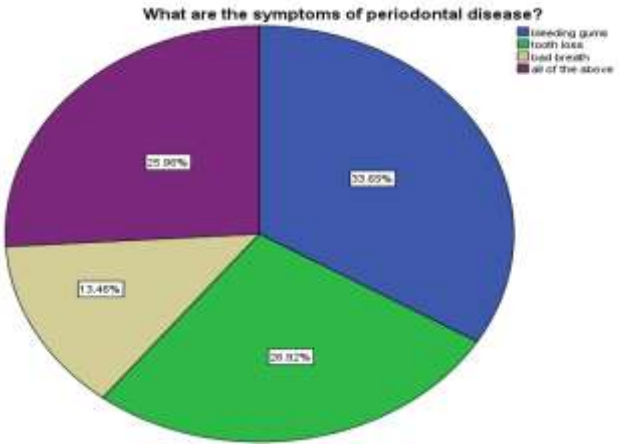

Figure 4: Pie chart representing the distribution of awareness on the symptoms of periodontal diseases. 33.65% (blue) of the participants agreed to bleeding gums, 26.92% (green) for tooth loss, 13.46% (beige) for bad breath and 25.96% (violet) for all of the above.

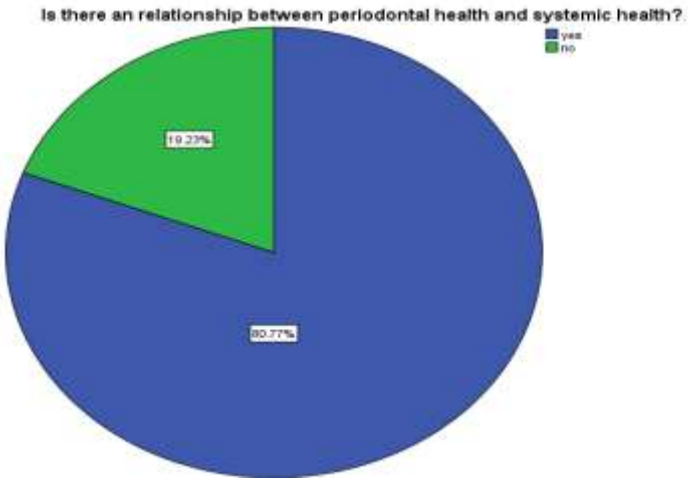

Figure 5: Pie chart representing the distribution of awareness on the relationship between periodontal health and systemic health. 80.77% (blue) of the participants agreed and 19.23% (green) of the participants disagreed.

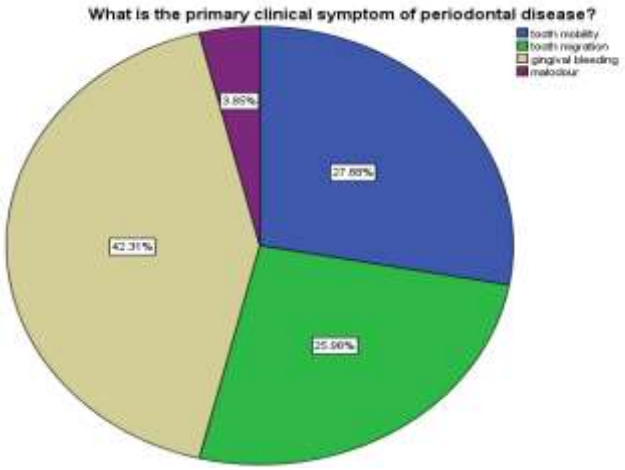

Figure 6: Pie chart representing the distribution of awareness on the primary clinical symptom of periodontal disease. 27.88% (blue) of the participants said tooth mobility, 25.96% (green) for tooth migration, 42.31% (beige) for gingival bleeding and 3.85% (violet) for malodour.

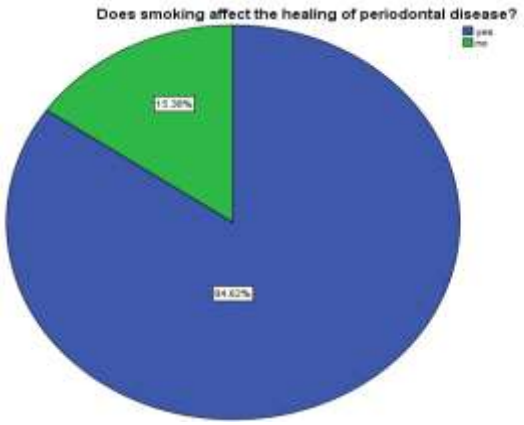

Figure 7: Pie chart representing the distribution of awareness on the effect of smoking on the healing of periodontal disease. 84.62% (blue) of the participants agreed and 15.38% (green) of them disagreed.

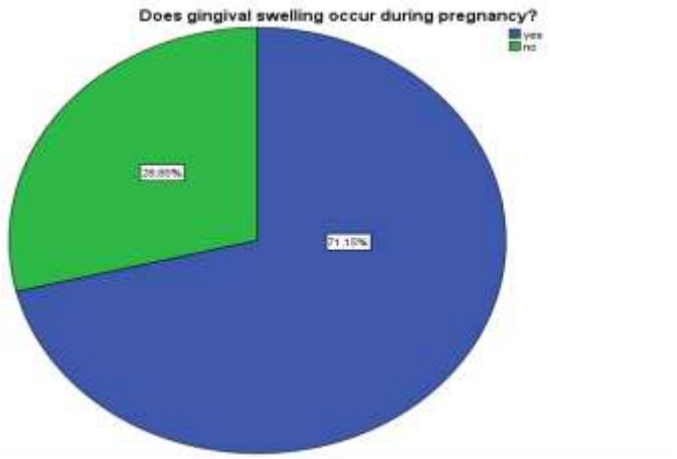

Figure 8: Pie chart representing the distribution of awareness on the occurrence of gingival swelling during pregnancy. 71.15% (blue) of the participants agreed and 28.85% (green) of them disagreed.

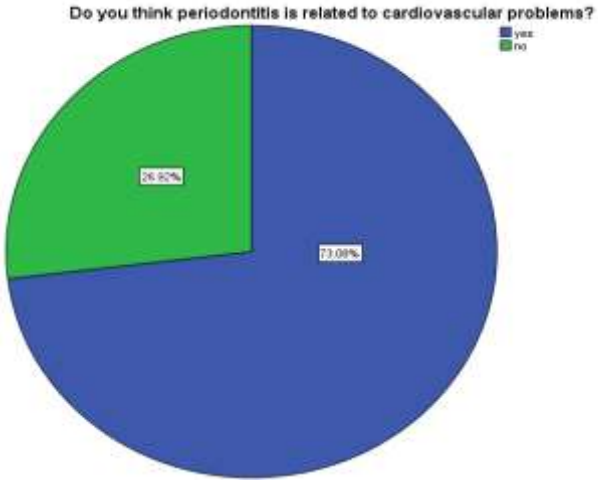

Figure 9: Pie chart representing the distribution of awareness on the relation between periodontitis and cardiovascular problems. 73.08% (blue) of the participants were aware and 26.92% (green) were not aware.

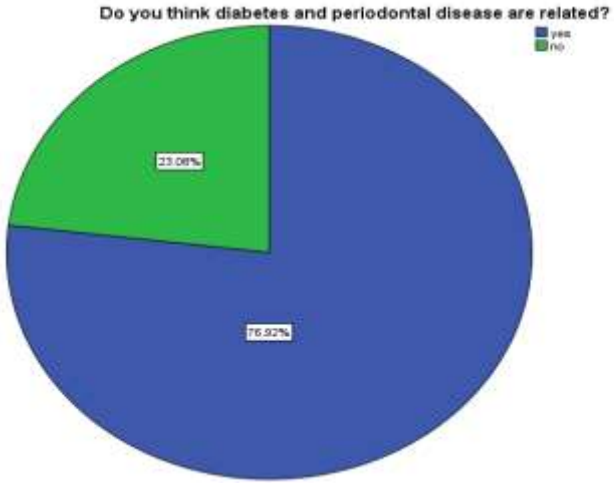

Figure 10: Pie chart representing the distribution of awareness on the relation between diabetes and periodontal disease. 76.92% (blue) of the participants were aware about the relation and 23.08% (green) were not aware.

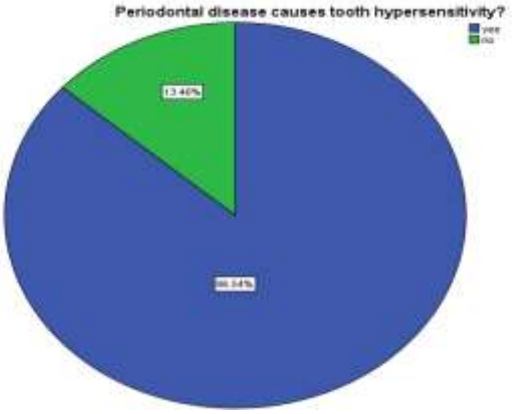

Figure 11: Pie chart representing the distribution of awareness on the cause of hypersensitivity due to periodontal disease. 86.54% (blue) of the participants agreed and 13.46% (green) of them disagreed.

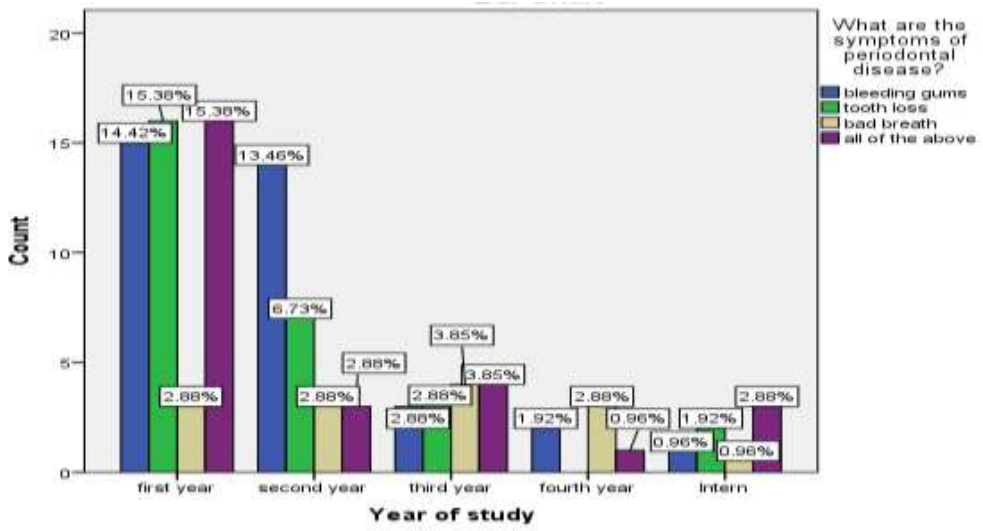

Figure 12: Bar chart showing the comparison between different year of study of the participant and the knowledge about the symptoms of a periodontal disease. X axis represents the student's grade and Y axis represents the number of responses obtained for bleeding gums (blue), tooth loss (green), bad breath (beige) and all of the above (violet). Majority of the participants from the first year agreed to all of the above (15.38%). There is no significant difference in responses between different grades. (Chi-square Test, P value: 0.053 (< 0.05) Therefore it is not statistically significant).

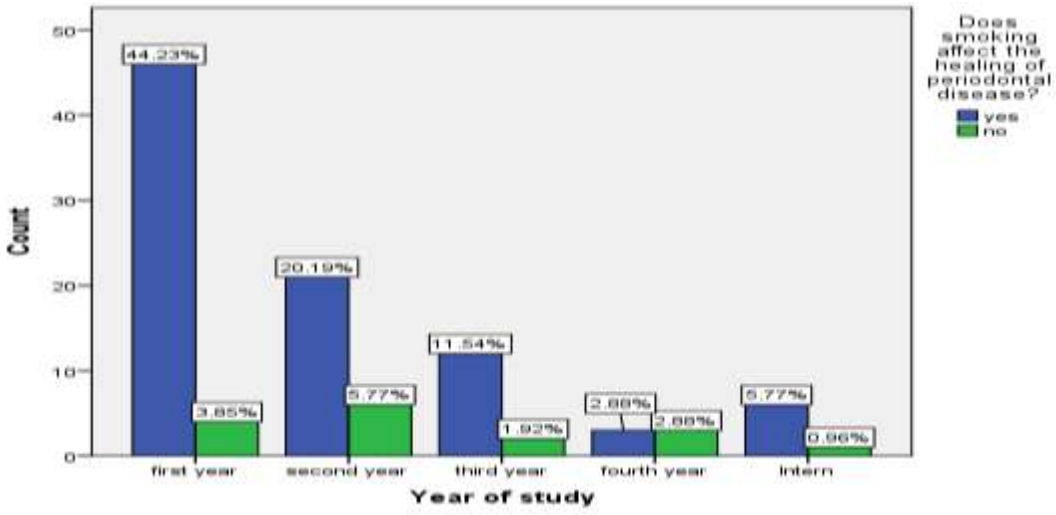

Figure 13: Bar chart showing the comparison between different year of study of the participant and the awareness of the effect of smoking on the healing of periodontal disease. The X-axis represents the student's grade and Y-axis represents the number of responses obtained for yes (blue) and no (green). The first year students (44.23%) were the most aware of the effect of smoking on the healing of a periodontal disease. There is no significant difference in responses between different grades. (Chi-square Test, P value: 0.126 (< 0.05) Therefore it is not statistically significant)

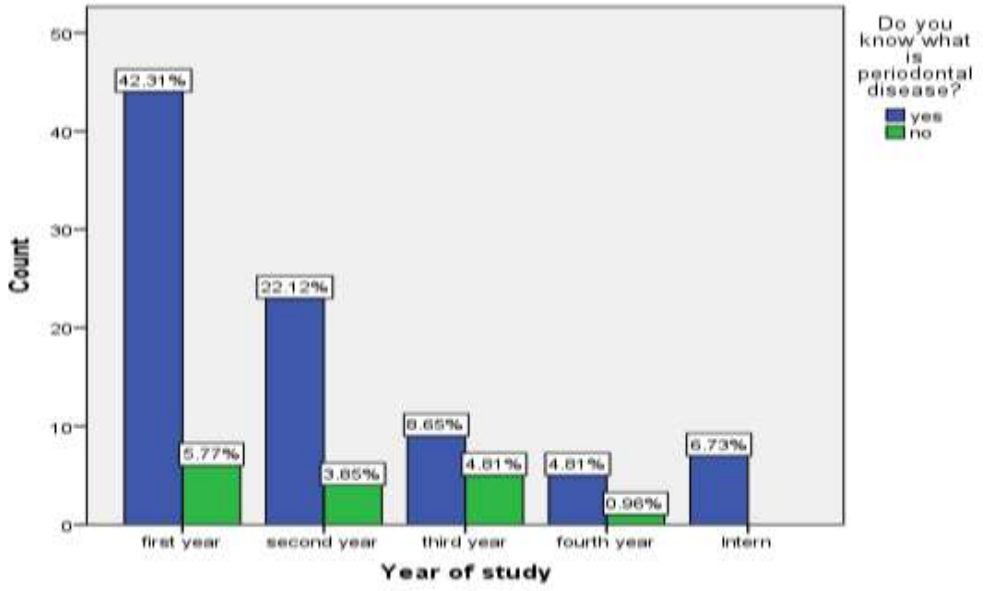

Figure 14: Bar chart showing the comparison between different year of study of the participant and the knowledge about periodontal disease. The X-axis represents the student's grade and Y-axis represents the number of responses obtained for yes (blue) and no (green). The first year students (42.31%) were the most aware about periodontal diseases. There is no significant difference in responses between different grades. (Chi-square Test, P value: 0.183 (< 0.05) Therefore it is not statistically significant)

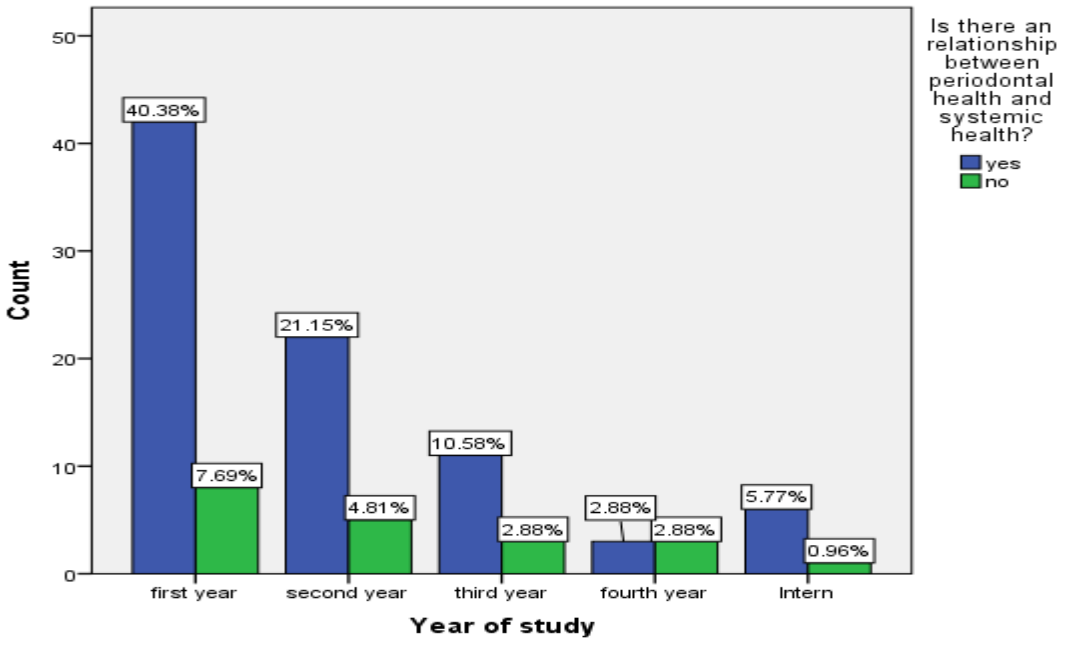

Figure 15: Bar chart representing the distribution of awareness on the relationship between periodontal health and systemic health. The X-axis represents the student's grade and Y-axis represents the number of responses obtained for yes (blue) and no (green). The first year students (40.38%) were the most aware of the relationship between the periodontal health and systemic health. There is no significant difference in responses between different grades. (Chi-square Test, P value: 0.151 (< 0.05) Therefore it is not statistically significant)

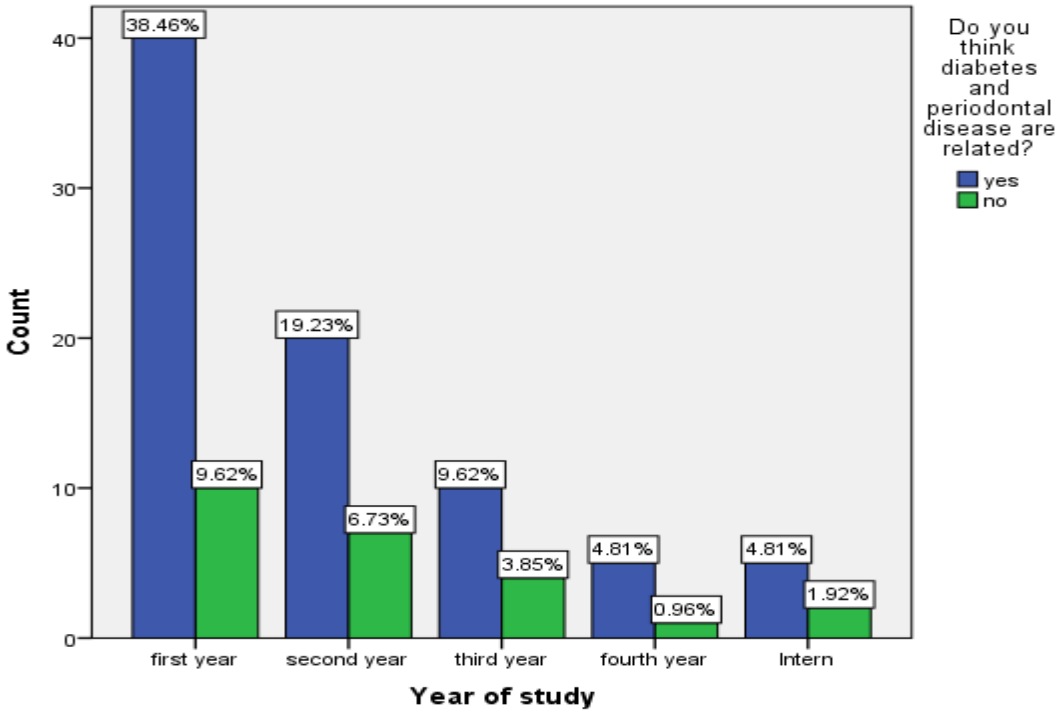

Figure 16: Bar chart showing the comparison between different year of study of the participant and the knowledge about the relation between diabetes and periodontal disease. The X-axis represents the student's grade and Y-axis represents the number of responses obtained for yes (blue) and no (green). The first year students (38.46%) were the most aware about the relation between diabetes and periodontal disease. There is no significant difference in responses between different grades. (Chi-square Test, P value: 0.927 (< 0.05) Therefore it is not statistically significant)

4. CONCLUSION

Most of the medical students were aware of periodontal health and its various diseases. The Chi- square test was done associating the year of study of the student and the knowledge on periodontal diseases.The first year and the second-year students who were the major participants were found to be highly aware compared to the third year, fourth year and the intern students More steps can be taken to improve the knowledge of periodontal health and to bring about its importance to the general public in the future.

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