NUREXUS

Journal of MedVerse Research & Practice

nurexus.com

Prevalence and Management of Periodontitis

Dr. Sujini [1], Dr. Ajith [2], Dr. Pooja [3]

PG student, Professor, Professor

Department of Periodontics, Meenakshi Ammal Dental College, Chennai.

Email ID: sujinivarun@gmail.com

Submission Date: 20.04.2023	Accepted Date: 23.04.2023	Published Date: 30.06.2023
DOI: 10.65188/nurexus.1001		

Abstract

Background: This study aimed to evaluate the occurrence and treatment of three dental conditions, periodontitis, tooth decay, and misaligned teeth, within a particular population group.

Materials and methods: This study included 99 individuals who voluntarily agreed to participate. Each participant received a thorough dental checkup, which evaluated the frequency of dental issues and aids in their management. SPSS software was used to perform statistical calculations for data analysis.

Results: This study included 99 participants (56 males and 43 females) diagnosed with periodontitis, dental caries, and malocclusion. In terms of malocclusion, Angle class II was the most common (23 individuals), while classes I and III were found in 4 and 3 individuals, respectively. Treatment strategies varied according to severity: mild periodontitis patients were instructed to use saline rinses 3-5 times daily for 3 days, moderate cases underwent scaling and root planning, and severe cases required flap surgery. For class II malocclusion, interventions included activators (11 individuals), twin-block appliances (seven individuals), and Jasper Jumper devices (five individuals).

Conclusion: The research findings indicated similar rates of occurrence for periodontal disease, tooth decay, and misaligned teeth. Periodontitis is the severe variant. Periodontitis management requires flap surgery, while dental caries is treated with root canal interventions and stainless-steel crowns. Myofunctional appliances, including activators, twin-block appliances, and Jasper jumpers, have been used as therapeutic interventions for class II malocclusion.

Keywords: periodontitis, dental caries, malocclusion

Introduction

Periodontitis is a significant inflammatory disorder affecting the supporting structures of teeth, primarily caused by specific pathogenic microorganisms. This condition results in the progressive breakdown of the periodontal ligament and alveolar bone, leading to the formation of periodontal pockets, gum recession, or both [1]. This condition results from a sophisticated infectious mechanism that combines bacterial colonization with the body's immune reaction, affected by external conditions, risk factors, and inherited predispositions. Dental plaque plays a critical role as a biofilm and microbial community, showcasing emergent properties that exceed those of its components [2]. These microbial aggregations are prevalent in ecosystems and manifest as spatially organized biofilms on surfaces. Current research highlights that ecological diversity within biofilms facilitates rapid genetic and phenotypic adaptations, offering "biological insurance" to aid microbial communities in enduring adverse conditions imposed by pathogens

within a host [2].

Dental caries is another prevalent multifaceted disease influenced by dietary sugar consumption and biofilm formation. It is characterized by cyclical phases of mineral depletion and replenishment in teeth, affecting individuals across their lifespan. Dental caries compromises both primary and permanent dentition, including tooth enamel and exposed root surfaces. The protective factors form the foundation for assessing caries risk and determining appropriate interventions. Globally, tooth decay remains a preventable disorder with significant economic implications, affecting the quality of life. The global decline in cavity prevalence is attributed to the widespread adoption of fluoride-containing dentifrices [3].

Among oral health problems, malocclusion is the third most common issue, following tooth decay and gum disease. This condition involves the improper alignment of teeth or incorrect positioning of the jaws [4]. The World Health Organization [WHO] states that improperly aligned teeth and jaws have substantial effects on oral health, functional performance, and appearance [5]. Studies have identified various causative factors for malocclusion, encompassing genetic, environmental, and ethnic components. For example, Class III malocclusions exhibit a strong genetic predisposition, while environmental factors, such as non-nutritive sucking behaviours, can influence dental development [6].

This research aimed to investigate the occurrence and intensity of three widespread dental health problems [gum disease, tooth decay, and misaligned teeth] and to evaluate the efficacy of their corresponding treatment approaches within a specific demographic.

Material and methods

As part of the research initiative, a total of 99 volunteers participated in detailed dental assessments. The primary objective of this study was to determine the prevalence, distribution, and severity of common oral health problems among the participants and to recommend suitable preventive and therapeutic interventions based on clinical findings. Each participant underwent a comprehensive oral examination that included evaluation of the gingiva, periodontal status, dental caries, malocclusion, and overall oral hygiene condition.

Following the completion of dental examinations, participants were systematically categorized according to their identified dental conditions [such as gingival inflammation, periodontal pocket formation, dental caries, malalignment, or other oral abnormalities]. This classification enabled a structured analysis of the data and facilitated comparison among different oral health conditions.

All collected data were carefully recorded and entered into a digital database for further processing. Statistical analysis was performed using the Statistical Package for the Social Sciences [SPSS] software, which allowed for descriptive and inferential statistical evaluation. Frequency distributions, percentage analyses, and cross-tabulations were used to summarize findings, while chi-square tests were employed to determine associations between demographic variables and oral health outcomes. The results obtained provided valuable insights into the burden of oral diseases within the study population and highlighted the need for targeted community-based oral health interventions.

The present study was approved by the Institutional Ethics Committee of Meenakshi Ammal Dental College, Chennai (Ref No: MADC/IEC/2021/74203). A detailed Participant Information Sheet was provided to all participants, and written informed consent was obtained prior to their inclusion in the study.

Results

Table 1. Prevalence of diseases.

Groups	Number of subjects
Periodontitis	33
Dental Caries	33
Malocclusion	33
Total	99

The study identified three distinct oral health issues among the participants: 33 individuals were diagnosed with periodontitis, 33 exhibited dental caries, and the remaining 33 displayed malocclusion.

Table 2: Gender-wise distribution of subjects.

Gender	Group 1	Group 2	Group 3
Males	21	15	23
Females	12	18	10
Total	33	33	33

The study involved three separate cohorts, each with 33 individuals. Although the ratio of men to women varied across cohorts, each maintained a consistent total of 33 participants.

Table 3: Severity of periodontitis

Severity of periodontitis	Number of subjects
Mild	06
Moderate	11
Severe	16
Total	33

Table 4: Types of periodontitis

Type	Number of subjects
Angle class I	05
Angle class II	24
Angle class III	04
Total	33

Table 5: Treatment of diseases.

Disease	Treatment
Severe periodontitis	Flap surgery
Dental caries	RCT followed by crown placement
Class II malocclusion	Myofunctional therapy

A study examining periodontitis and related conditions was performed on 33 participants to evaluate the prevalence, classification, and therapeutic approaches. The results indicated diverse levels of disease intensity: 6 subjects exhibited mild periodontitis, 11 displayed moderate periodontitis, and 16 were found to have severe periodontitis. Treatment strategies were tailored to individual diagnoses. For instance, patients with severe periodontitis underwent flap surgery, those with dental caries received root canal therapy (RCT) followed by crown placement, and individuals with Class II malocclusion

were managed using therapy. (Table 3,4,5)

For individuals diagnosed with moderate periodontitis, the recommended treatment involves scaling and root planning procedures. Severe cases of periodontitis were prescribed flap surgery as the appropriate intervention.

Discussion

The findings of this study are consistent with global patterns in oral health, emphasizing the high prevalence of periodontitis, dental caries, and malocclusion. Periodontitis continues to be a major public health issue, with severe forms being the most frequent among the study participants. This observation corresponds with the results of earlier research, including the National Oral Health Survey of India, as reported by Bali et al. and the Dental Council of India et al., which documented a significant burden of periodontal disease across different age groups and geographical regions.

Dental caries, which affects a substantial proportion of the global population, remains one of the most widespread oral diseases. The elevated prevalence detected in this study highlights the urgent need for effective preventive strategies. These include the use of fluoride-containing products, reduction of dietary sugar intake, and large-scale public health initiatives to promote proper oral hygiene practices. The present findings are in agreement with studies conducted in Saudi Arabia and other regions, as reported by Al Agili et al., Petersen et al., and Hobdell et al., where dental caries continues to be a major concern, particularly among children and adolescents.

Malocclusion ranks as the third most common oral health disorder, with its prevalence varying considerably depending on ethnicity, age, and environmental influences. In this study, Angle Class II malocclusion was found to be the most predominant type, which is consistent with international observations. This finding emphasizes the need for specialized orthodontic interventions tailored to population-specific characteristics. Several studies have demonstrated that both genetic predispositions and environmental factors play a crucial role in the aetiology of malocclusion, as described by Heimer et al. and Lew et al.

Treatment approaches in this study were planned based on the severity of each condition. Mild cases of periodontitis were managed using saline mouth rinses and reinforcement of oral hygiene practices, while advanced cases required scaling, root planing, and surgical flap procedures. These approaches are in line with standard periodontal therapy protocols aimed at controlling infection and restoring gingival health. Dental caries management involved conservative restorative procedures, including root canal therapy and crown placement, reflecting evidence-based practices for preserving tooth structure and preventing disease progression. In patients with malocclusion, myofunctional appliances such as activators, twin-block appliances, and Jasper jumpers were effectively utilized, particularly for the correction of Class II discrepancies. These outcomes are comparable to those reported by Garbin et al., supporting the effectiveness of age-specific and individualized orthodontic interventions.

Overall, this study highlights the importance of a comprehensive oral health approach that integrates prevention, early diagnosis, and appropriate management of common dental conditions. Future research should focus on long-term follow-up studies to assess the sustained outcomes of various treatment modalities and to explore innovative strategies for improving oral health across diverse populations and age groups.

Conclusion

The research revealed comparable occurrences of periodontitis, dental caries, and malocclusion. Among these, severe periodontitis was the most prevalent, while angle class II was the primary form of malocclusion observed. Treatment for periodontitis involved flap surgery, whereas dental caries were addressed through root canal procedures and the application of stainless-steel crowns. For class II malocclusion, devices such as activators, twin-block appliances, and jasper jumpers were employed.

Conflict of Interest: NIL

References

1. Newman MG, Carranza FA, Takei H, Klokkevold PR. Carranzas clinical periodontology. 10th ed. Elsevier health sciences; 2006.
2. Marsh PD. Dental plaque as a biofilm and microbial community-implication for health and diseases. BMC Oral Health. 2006;6:S14.
3. Pitts NB, Zero DT, Marsh PD, Ekstrand K, Weintraub JA, Ramos-Gomez F, Tagami J, Twetman S, Tsakos G, Ismail A. Dental caries. Nat Rev Dis Primers. 2017 May 25;3:17030.
4. Angle EH. Classification of malocclusion. Dent Cosmos. 1899;41:248–264.
5. Guo L, Feng Y, Guo HG, Liu BW, Zhang Y. Consequences of orthodontic treatment in malocclusion patients clinical and microbial effects in adults and children. BMC Oral Health. 2016;16(1):112–112.
6. Heimer MV, Tornisiello Katz CR, Rosenblatt A. Non-nutritive sucking habits, dental malocclusions, and facial morphology in Brazilian children a longitudinal study. Eur J Orthod. 2008;30(6):580–585.
7. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012;380(9859):2163–2196.
8. Al Agili DE. A systematic review of population- based dental caries studies among children in Saudi Arabia. Saudi Dent J. 2013;25(1):3–11.
9. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century--the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol. 2003;31(Suppl 1):3–23.
10. Hobdell M, Petersen PE, Clarkson J, Johnson N. Global goals for oral health 2020. Int Dent J. 2003;53(5):285–288.
11. Kassebaum N.J., Bernabé E., Dahiya M., Bhandari B., Murray C.J.L., Marcenes W. Global burden of severe periodontitis in 1990- 2010: a systematic review and meta-regression. J Dent Res. 2014;93(11):1045–1053.
12. Bali R.K., Mathur V.B., Talwar P.P., Channa
13. H.B. Dental Council of India; New Delhi: 2002. National Oral Health Survey & Fluoride Mapping.
14. Dos Santos R.R., Nayme J.G., Garbin A.J., Saliba N., Garbin C.A., Moimaz S.A. Prevalence of malocclusion and related oral habits in 5-to 6-year-old children. Oral Health Prev. Dent. 2012;10:311–318.
15. Mtaya M., Brudvik P., Astrøm A.N. Prevalence of malocclusion and its relationship with socio-demographic factors, dental caries, and oral hygiene in 12- to 14-year-old Tanzanian schoolchildren. Eur. J. Orthod. 2009;31:467– 476.
16. Khan M., Fida M. Assessment of psychosocial impact of dental aesthetics. J. Coll. Physicians Surg. Pak. 2008;18:559–564. [PubMed]
17. [Google Scholar]
18. Lew K.K., Foong W.C., Loh E. Malocclusion prevalence in an ethnic Chinese population. Aust. Dent. J. 1993;38:442–449.
19. Gelgör I.E., Karaman A.I., Ercan E. Prevalence of malocclusion among adolescents in central

anatolia. Eur. J. Dent. 2007;1:125–131.
20. Garbin A.J.Í., Perin P.C.P., Garbin C.A.S., Lolli
21. L.F. Malocclusion prevalence and comparison between the Angle classification and the Dental Aesthetic Index in scholars in the interior of São Paulo state Brazil. Dent. Press J. Orthod. 2010;15:94–102.