

Periodontal Health in Children and Adolescents-A Comparative Study

TYPE OF MANUSCRIPT: Retrospective study.

RUNNING TITLE: Periodontal health in children and adolescents

Noorul Aneesa.N,

Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University,
Chennai, India

Mail Id: 151501030.sdc@saveetha.com

Arvina Rajasekar,

Senior Lecturer,
Department of Periodontics,
Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University,
Chennai, India

Mail Id: drarvina92@gmail.com

Dhanraj Ganapathy,

Professor and Head,
Department of Prosthodontics,
Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University,
Chennai, India

Mail Id: ghanrajmanganapathy@yahoo.co.in

Corresponding author

Dhanraj Ganapathy,
Professor and Head,
Department of Prosthodontics,
Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University,
Chennai, India

Mail Id: dhanrajmanganapathy@yahoo.co.in

ABSTRACT

Oral health of children mirrors their general health and that it is also a strong predictor of their oral health in adolescence and adulthood. A total of 100 dental records of patients aged from 4-19 years, who had visited Saveetha Dental College and Hospitals, Chennai for dental check up from June 2019 to March 2020 were enrolled and the demographic data and clinical data regarding periodontal status were retrieved. Patients were categorised based on age groups as 4-9 years (children) and 10-19 years (adolescents) and periodontal disease was categorised as localized and generalized chronic gingivitis. Data was entered in Microsoft Excel Sheets and processed using IBM SPSS (statistical package for social sciences) software, Version 23.0 for analysis. Frequency distribution and percentage was calculated. Among the study population, patients belonging to the age group of 4-9 years (children) were 38% and patients belonging to the age group 10-19 years (adolescent) were 62.%. The prevalence of generalized chronic gingivitis was high (48%) among patients belonging to age group of 10-19 years as compared to patients belonging to age group of 4-9 years (9%). Therefore the study emphasizes the need and motivation for oral health practices among children and adolescents.

KEYWORDS: Oral Health, Gingivitis, Periodontal disease

INTRODUCTION:

The most prevalent periodontal disease among children is gingivitis [1], and it usually becomes more severe in adolescence [2]. If gingivitis is not treated and properly managed, it may progress to periodontitis[3]. Periodontal disease is one of the two most important oral diseases contributing to the global burden of chronic disease. In addition to social determinants, periodontal health status is related to several proximal factors.(4)

Periodontal disease in children and adolescents comprises mainly gingivitis. There are few cases where marked periodontal destruction has been observed). These patients, if perfectly healthy, may be described as early-onset periodontitis cases and prepubertal periodontitis cases, depending on their age at presentation. Most prepubertal periodontitis patients have re-lated systemic diseases that compromise the host response to the microbial plaque.(5,6)

Oral diseases such as dental caries, periodontal diseases and tooth loss are critical public health issues around the world, given the fact that poor oral health has far-reaching effects on overall health and quality of life. (7)There are challenges to overcome in order to improve oral health, particularly in developing countries, in which there is an urgency to globally strength public health programmes by deploying effective preventive measures against diseases while promoting oral health.(8)

Assessing periodontal health is important to establish a common reference point for diagnosing disease and determining therapy outcomes by practitioners. Four levels of periodontal health have been proposed, depending on whether (9) the periodontium (attachment and bone level) is structurally and clinically sound or reduced, (10) the ability to control local and systemic modifying factors, as well as (11) the relative treatment outcomes.

Monitoring gingival health or inflammation is best documented by the parameter of bleeding on probing since it is considered the primary parameter to set thresholds for gingivitis and the most reliable for monitoring patients longitudinally in clinical practice.(12)

Hence, the purpose of the current study was to determine the periodontal health in children and adolescents among patients who reported to Saveetha Dental College and Hospitals, Chennai..Our research experience has prompted us in pursuing this survey (Hemalatha and Dhanraj, 2016) (Ramya, Pandurangan and Ganapathy, 2019) (Anjum, Ganapathy and Kumar, 2019; Inchara, Ganapathy and Kumar, 2019) (Philip, Ganapathy and Ariga, 2012) (Gupta and Dhanraj, 2009; Mohamed Usman *et al.*, 2013; Indhulekha, Ganapathy and Jain, 2018) (Ganapathy *et al.*, 2013) (Menon and Ganapathy, 2019).

MATERIALS AND METHODS:

The present study was an institutional study which was carried out in Saveetha Dental College and Hospitals, Chennai. Ethical clearance was obtained from the Institutional Ethical Committee (Ethical approval number - SDC/SIHEC/2020/DIASDATA/0619-0320). A total of 100 dental records of patients aged from 4-19 years, who had visited the institution for dental check up from June 2019 to March 2020 were reviewed and the demographic data and clinical data regarding periodontal status were retrieved. Patients were categorised based on age groups as 4-9 years (children) and 10-19 years (adolescents) and periodontal disease was categorised as localized and generalized chronic gingivitis. Data was entered in Microsoft Excel Sheets and processed using IBM SPSS (statistical package for social sciences) software, Version 23.0 for analysis. Frequency distribution and percentage was calculated.

RESULTS:

Among the study population, patients belonging to the age group of 4-9 years (children) were 38% and patients belonging to the age group 10-19 years (adolescent) were 62.%. (FIGURE 1)

Among the study population, 43.56% of them had localized chronic gingivitis and 56.44% of them had generalized chronic gingivitis. (FIGURE 2)

Among the children, 28.7% of the population had localized chronic gingivitis and 8.91% had generalized chronic gingivitis. Among adolescents, 14.8% of the adults had localized chronic gingivitis and 47.52% of adults had generalized chronic gingivitis.(FIGURE 3)

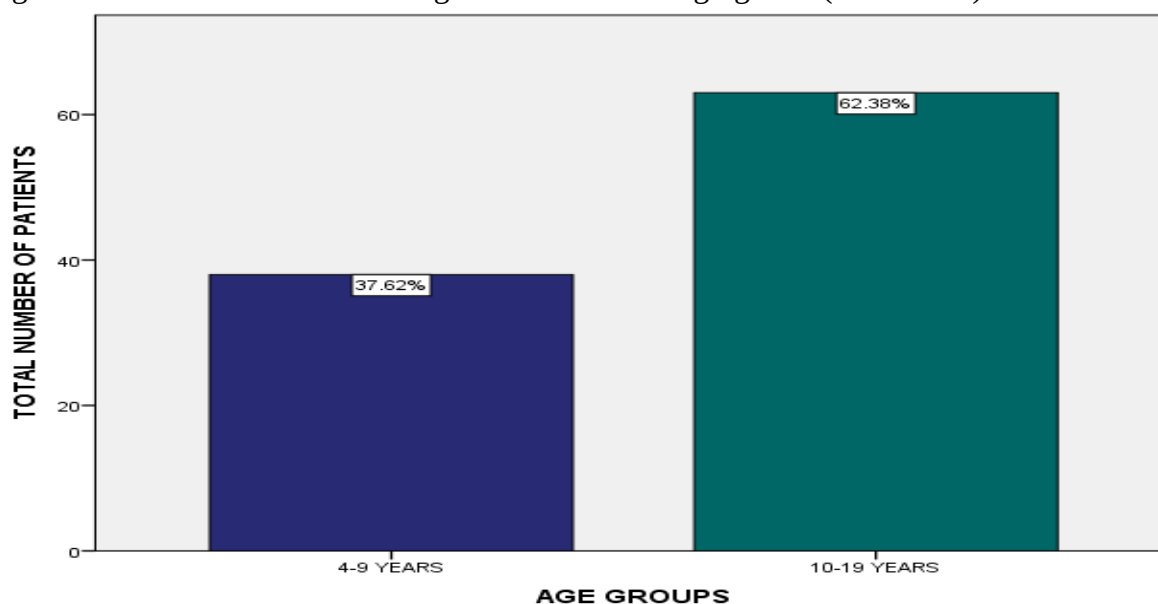


FIGURE 1: Bar graph represents the distribution of study population based on age groups. 37.62% of the patient belonged to 4-9 years and 62.38% belonged to 10-19 years.

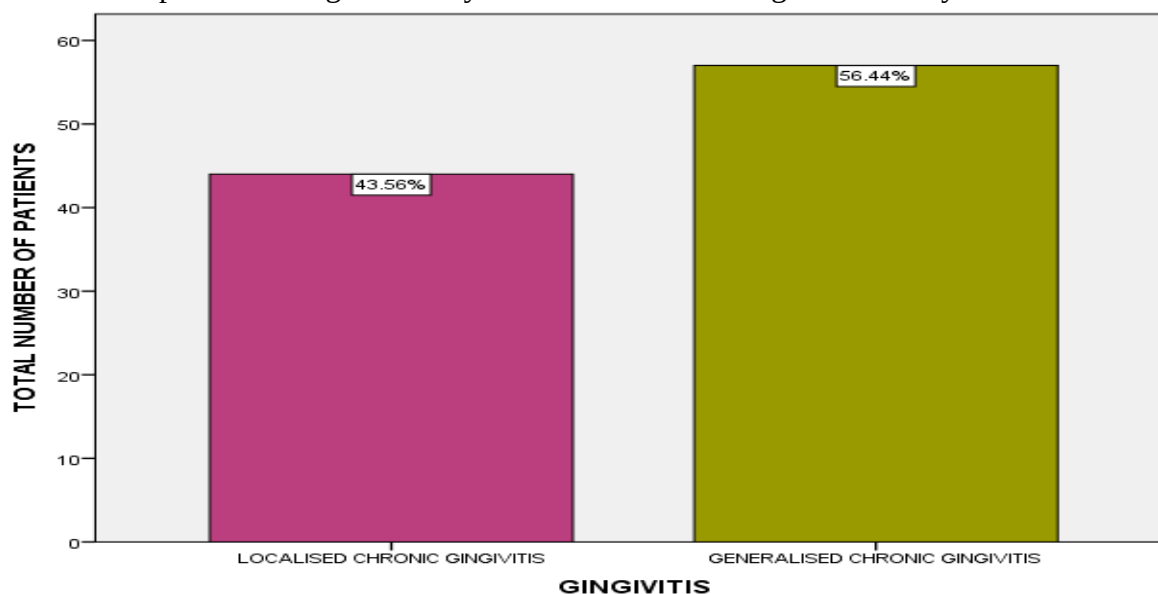


FIGURE 2: Bar graph represents the distribution of study subjects based on periodontal disease. 43.56% of the patients had localized chronic gingivitis and 56.44% had generalized chronic gingivitis

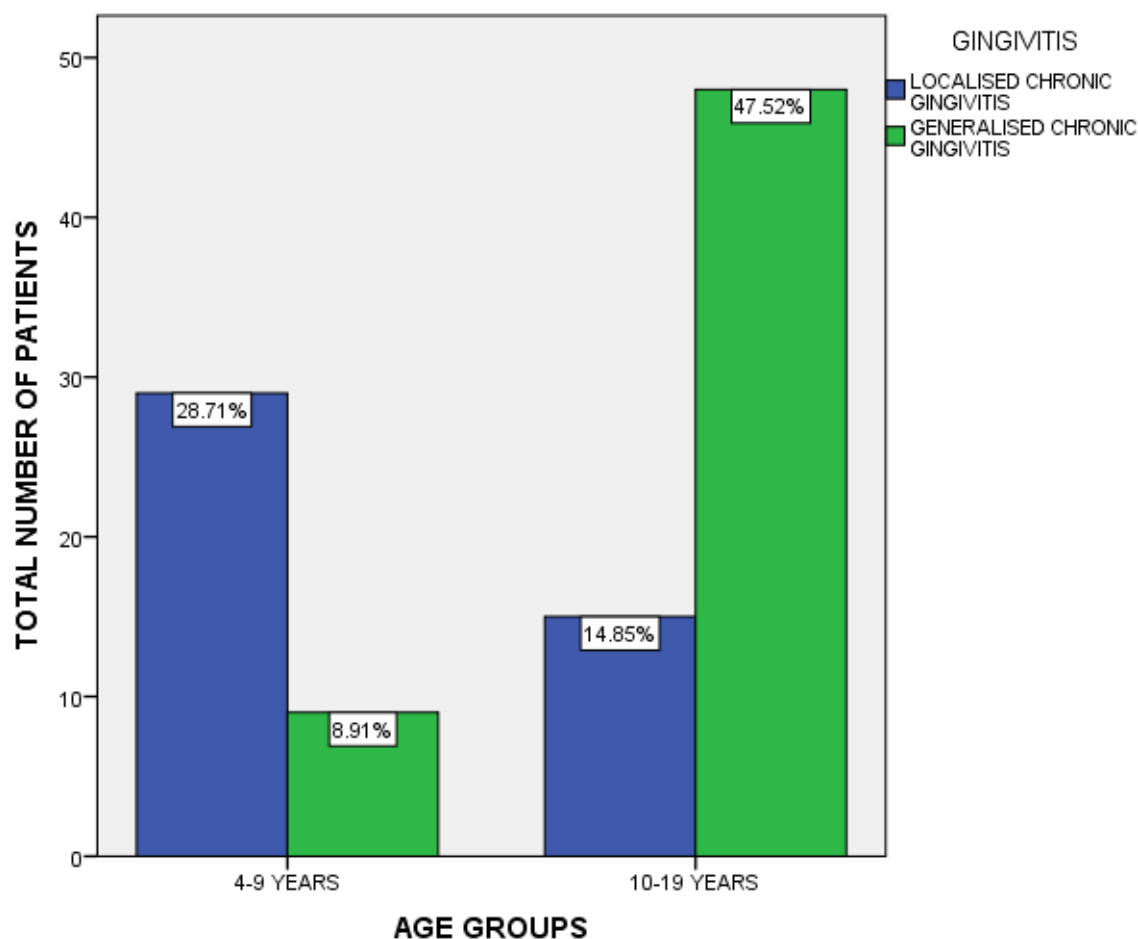


FIGURE 3: Bar graph represents the association between age groups and periodontal disease. In the 4-6 years age group, 28.71% of patients had localized chronic gingivitis and 8.91% had generalized chronic gingivitis. In the 10-19 years age group, 14.85% of patients had localized chronic gingivitis and 47.52% had generalized chronic gingivitis.

DISCUSSION:

The present study was done to assess the periodontal health in children and adolescents. A total of 100 patients were included in the study, out of which 38 subjects belong to the age group of 4-9 years (children) and 62 subjects belong to the age group of 10-19 years (adolescents). Under the age group of 4-9 years, 28 subjects had localized chronic gingivitis and 9 had generalized chronic gingivitis. In the 10-19 years age group, 15 subjects had localized chronic gingivitis and 48 had generalized chronic gingivitis.

Peter M et al conducted a study to assess the oral hygiene practices and periodontal health in primary school children in Nyrobi, Kenya and found that oral hygiene in adolescents was compromised when compared to children.(13) Alonge KO et al conducted a study on periodontal

health status of school children and found that periodontal health in children were good when compared to adolescents. (14)

Bimstein E et al conducted a study on periodontal health and disease in children and adolescent and found that subjects of age group 10-19 had more periodontal disease when compared to subjects in age group 4-9 years. (15) Our results are in accordance with the previous studies as majority of the adolescents was diagnosed with generalised chronic gingivitis as compared with children.

Drummond BK et al conducted a study on management of periodontal health in children and found out that patients under the age group 4-9 years (children) had less periodontal diseases when compared to adolescents 10-19 years. (16) Similarly, in the present study patients belonging to the age group of 4-9 years experienced less generalised chronic gingivitis as compared to the patients belonging to 10-19 years.

Wei H et al conducted a study on periodontal epidemiological indices for children and adolescents and observed that periodontal disease in children were less when compared to adolescents.(17) Lim Cha Young et al conducted a study on the relationship between oral health behavior and periodontal health status of Korean adolescents and found that periodontal diseases increases with age group.(18) The result of the present study was in accordance with these previous studies.

CONCLUSION:

The present study showed the prevalence of generalized chronic gingivitis was high (48%) among patients belonging to age group of 10-19 years as compared to patients belonging to age group of 4-9 years (9%). Therefore the study emphasizes the need and motivation for oral health practices among children and adolescents.

AUTHOR CONTRIBUTIONS:

Author 1 (Noorul Aneesa.N) carried out the retrospective study by collecting data and drafted the manuscript after performing the necessary statistical analysis. Author 2 (Dr. Arvina Rajasekar) aided in the conception of the topic, participated in the study design, statistical analysis and supervised in preparation of the manuscript and helped in study design and coordinated in developing the manuscript. All the authors have equally contributed in developing the manuscript.

CONFLICTS OF INTEREST:

There are no conflicts of interest.

REFERENCES

1. Bimstein E, Huja PE, Ebersole JL. The potential lifespan impact of gingivitis and periodontitis in children. *J Clin Pediatr Dent* 2013;38(2):95-9.
2. Alrayyes S, Hart TC. Periodontal disease in children. *Dis Mon* 2011;57(4):184-91.
3. Stenberg WV. Periodontal problems in children and adolescents. In: Nowak, AJ, Christensen JR, Mabry TR, Townsend JA, Wells MH, eds. *Pediatric Dentistry-Infancy through Adolescence*, 6th ed. St. Louis, Mo.: Elsevier/Saunders; 2017:371-8.
4. American Academy of Periodontology. Periodontal diseases of children and adolescents. *J Periodontol* 2003;74(11):1696-704.
5. Armitage GC. Development of a classification system for periodontal diseases and conditions. *Ann Periodontol* 1999;4(11):1-6.
6. Caton JG, Armitage G, Berglundh T, et al. A new classification scheme for periodontal and peri-implant diseases and conditions—Introduction and key changes from the 1999 classification. *J Periodontol* 2018;89(Suppl 1):S1-S8.
7. Albandar JM, Susin C, Hughes FJ. Manifestations of systemic diseases and conditions that affect the periodontal attachment apparatus: Case definitions and diagnostic considerations. *J Periodontol* 2018;89(Suppl 1): S183-S203.
8. Araujo MG, Lindhe J. Peri-implant health. *J Periodontol* 2018;89(Suppl 1):S249-S256.
9. Berglundh T, Armitage G, Araujo MG, et al. Peri-implant diseases and conditions: Consensus report of workgroup 4 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Clin Periodontol* 2018;45(Suppl 20):S286-S291.
10. Billings M, Holtfreter B, Papapanou PN, Mitnik GL, Kocher T, Dye BA. Age-dependent distribution of periodontitis in two countries: Findings from NHANES 2009-2014 and SHIP-Trend 2008-2012. *J Periodontol* 2018;89(Suppl 1):S140-S158.
11. Chapple ILC, Mealey BL, Van Dyke TE, et al. Periodontal health and gingival diseases and conditions on an intact and a reduced periodontium: Consensus report of workgroup 1 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Periodontol* 2018;89(Suppl 1):S74-S84.
12. Cortellini P, Bissada NF. Mucogingival conditions in the natural dentition: Narrative review, case definitions and diagnostic considerations. *J Periodontol* 2018;89(Suppl 1):S204-S213.
13. Ng'ang'a PM, Valderhaug J. Oral hygiene practices and periodontal health in primary school children in Nairobi, Kenya. *Acta Odontologica Scandinavica*. 1991 Jan 1;49(5):303-9.
14. Alonge KO et al conducted a study on periodontal health status of school children in St Vincent and the Grenadines and found that periodontal health in children were good when compared to adolescents. (14)

15. Paruthi S, Brooks LJ, D'Ambrosio C, Hall WA, Kotagal S, Lloyd RM, Malow BA, Maski K, Nichols C, Quan SF, Rosen CL. Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: methodology and discussion. *Journal of clinical sleep medicine*. 2016 Nov 15;12(11):1549-61.
16. Murgod V. Dear Readers, "Your articles are imprints on the sands of time of the scientific milieu. Leave the best imprint for the future". Warm greetings from the editorial team of JIDS. It gives me immense pleasure to write my first editorial for the journal. I would definitely try to fulfill this new task of mine as the Executive Editor.
17. Wei H et al conducted a study on periodontal epidemiological indices for children and adolescent :gingival and periodontal health assessment and found out that periodontal disease in children were less when compared to adolescents.
18. Park JB, Han K, Park YG, Ko Y. Association between socioeconomic status and oral health behaviors: The 2008-2010 Korea national health and nutrition examination survey. *Experimental and therapeutic medicine*. 2016 Oct 1;12(4):2657-64.
19. Anjum, A. S., Ganapathy, D. and Kumar, K. (2019) 'Knowledge of the awareness of dentists on the management of burn injuries on the face', *Drug Invention Today*, 11(9). Available at: https://www.researchgate.net/profile/Kiran_Pandurangan2/publication/337223550_Knowledge_of_the_awareness_of_dentists_on_the_management_of_burn_injuries_on_the_face/links/5dcbff5fa6fdcc5750470755/Knowledge-of-the-awareness-of-dentists-on-the-management-of-burn-injuries-on-the-face.pdf.
20. Ganapathy, D. M. *et al.* (2013) 'Evaluation of the influence of blood glucose level on oral candidal colonization in complete denture wearers with Type-II Diabetes Mellitus: An in vivo Study', *Dental research journal*, 10(1), pp. 87–92.
21. Gupta, A. and Dhanraj, M. (2009) 'Implant surface modification: review of literature', *The Internet Journal of*. Available at: <https://pdfs.semanticscholar.org/2621/efa71b775cbb82ac84373cfb09cd501045b6.pdf>.
22. Hemalatha, R. and Dhanraj, S. (2016) 'Disinfection of Dental Impression- A Current Overview', *Cuddalore*, 8(7), pp. 661–664.
23. Inchara, R., Ganapathy, D. and Kumar, P. K. (2019) 'Preference of antibiotics in pediatric dentistry', *Drug Invent Today*, 11, pp. 1495–1498.
24. Indhulekha, V., Ganapathy, D. and Jain, A. R. (2018) 'Knowledge and awareness on biomedical waste management among students of four dental colleges in Chennai, India', *Drug Invention Today*, 10(12), pp. 32–41.
25. Menon, A. and Ganapathy, D. M. (2019) 'Factors that influence the colour stability of composite resins', *Drug Invention*. Available at: <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=09757619&AN=135479093&h=p0RtIVRRakA2WmTZKSO2mJg3a%2BDX%2FXUDjuHqOt369Jyhu1ivws6Lh%2FvaGeF8aiouB5onVQzLFOfl6yzLcQ4plw%3D%3D&crl=c>.

26. Mohamed Usman, J. A. *et al.* (2013) 'Oromaxillary prosthetic rehabilitation of a maxillectomy patient using a magnet retained two-piece hollow bulb definitive obturator; a clinical report', *Case reports in dentistry*, 2013, p. 190180.
27. Philip, J., Ganapathy, D. and Ariga, P. (2012) 'Comparative evaluation of tensile bond strength of a polyvinyl acetate-based resilient liner following various denture base surface pre-treatment methods and immersion in artificial salivary medium: An in vitro study', *Contemporary Clinical Dentistry*, p. 298. doi: 10.4103/0976-237x.103622.
28. Ramya, G., Pandurangan, K. and Ganapathy, D. (2019) 'Correlation between anterior crowding and bruxism-related parafunctional habits', *Drug Invention Today*, 12(10). Available at: https://www.researchgate.net/profile/Kiran_Pandurangan2/publication/337223674_Correlation_between_anterior_crowding_and_bruxism-related_parafunctional_habits/links/5dcc083a92851c81804bf0fd/Correlation-between-anterior-crowding-and-bruxism-related-parafunctional-habits.pdf.