



The Mind-Body Connection: How Orthodontics Elevates Psychological Well-Being And Systemic Health

¹ **Dr.KEERTHIKHA.G.V**

Compulsory Rotatory Residential Intern, Thai Moogambigai Dental College and Hospital, Dr. M.G.R. Educational and Research Institute, Chennai, Tamil Nadu, India.

² **Dr.KEERTHANA.S**

Compulsory Rotatory Residential Intern, Thai Moogambigai Dental College and Hospital, Dr. M.G.R. Educational and Research Institute, Chennai, Tamil Nadu, India.

³ **Dr.R.SARAVANAN** , MDS, Professor,

Department of Orthodontics and Dentofacial Orthopedics , Thai Moogambigai Dental College and Hospital,

Dr. M.G.R. Educational and Research Institute, Chennai, Tamil Nadu, India.

⁴ **Dr. M.K.KARTHIKEYAN**, MDS, HOD & Professor,

Department of Orthodontics and Dentofacial Orthopedics, Thai Moogambigai Dental College and Hospital,

Dr. M.G.R. Educational and Research Institute, Chennai, Tamil Nadu, India.

Abstract

Orthodontics, traditionally focused on aligning teeth and correcting malocclusions for aesthetic and functional purposes, has increasingly been recognized for its broader impact on overall health. Malocclusion and misaligned teeth not only compromise oral hygiene but also contribute to periodontal disease, temporomandibular joint dysfunction, and systemic inflammation, which are linked to cardiovascular, metabolic, and respiratory disorders. Orthodontic interventions improve oral hygiene, masticatory efficiency, airway function, and jaw alignment, while also enhancing psychosocial well-being, self-esteem, and quality of life. In adults and older populations, orthodontics preserves dentofacial structure, prevents tooth wear, and maintains functional efficiency. Emerging technologies such as digital orthodontics, AI-driven predictive models, and personalized treatment strategies integrating genetic, microbiomic, and lifestyle data further enhance preventive, precise, and patient-centered care. This review emphasizes that orthodontics transcends cosmetic improvement, serving as a pivotal component of holistic oral and systemic health, with significant functional, psychological, and preventive benefits.

Keywords: Orthodontics, Malocclusion, Oral-Systemic Health, Quality of Life, Digital Orthodontics

Introduction

Orthodontics, a specialized branch of dentistry, focuses on diagnosing, preventing, and correcting malpositioned teeth and jaws to enhance both function and aesthetics. Traditionally, orthodontic care has aimed to align teeth, correct malocclusions such as crowding, spacing, overbites, and underbites, and establish a balanced bite and facial symmetry, thereby promoting oral health, proper jaw function, and self-esteem.¹ Beyond aesthetics, contemporary research increasingly highlights the profound connections between oral and systemic health, showing that periodontal disease, malocclusion, and oral inflammation can influence conditions such as cardiovascular disease, diabetes, respiratory illnesses, adverse pregnancy outcomes, and even neurodegenerative disorders.² Poor oral alignment can hinder effective brushing and flossing, promote plaque accumulation, and elevate systemic inflammatory burden, while orthodontic interventions improve oral hygiene, reduce bacterial load, and mitigate the risk of dental and systemic complications. Functionally, orthodontic treatment enhances mastication, digestion, and nutrient absorption, alleviates temporomandibular joint dysfunction and associated pain, and may improve speech and airway function.³ Psychosocially, correcting dental misalignments boosts self-confidence, emotional well-being, and social integration, while also facilitating restorative dental procedures, trauma management, and long-term preservation of dental structures. Overall, orthodontics transcends cosmetic enhancement, providing broad, evidence-based benefits that impact oral, systemic, functional, and psychosocial health, reflecting a shift toward holistic, preventive, and patient-centered dental care.⁴ This article gives an overview on the link between orthodontics and overall health.

Orthodontic Treatment and Oral Health

Malocclusion, characterized by crowded, misaligned, or improperly positioned teeth, can significantly compromise oral health by creating areas that are difficult to clean, promoting plaque accumulation, increasing the risk of dental caries, and triggering gingival inflammation that may progress to periodontal disease.⁵ Additionally, an uneven bite can lead to occlusal trauma, excessive tooth wear, chipping, and temporomandibular joint (TMJ) stress, resulting in jaw pain, headaches, and muscle fatigue. Orthodontic correction addresses these issues by realigning teeth, facilitating thorough oral hygiene through easier brushing and flossing, and reducing plaque and cavity formation. Proper alignment also enhances masticatory efficiency, ensuring more effective chewing, improved digestion, and better nutrient absorption.⁶ Furthermore, orthodontic treatment stabilizes jaw alignment, alleviating TMJ strain, improving speech, and potentially supporting unobstructed airway function, which may reduce the risk of sleep apnea and related complications. In the long term, these benefits translate into lower incidence of dental disease, protection against tooth wear and trauma, reduced need for restorative procedures, and a decreased risk of systemic conditions associated with chronic oral inflammation.⁷

Orthodontics and Systemic Health Connections

Orthodontic treatment extends its benefits beyond oral health by influencing multiple systemic functions. Chronic oral inflammation, particularly from periodontitis, can contribute to cardiovascular disease as bacteria and inflammatory mediators enter the bloodstream, promoting atherosclerosis and vascular injury; by improving tooth alignment and facilitating oral hygiene, orthodontics indirectly reduces cardiovascular risk through better periodontal health.⁸ Similarly, systemic inflammation linked to poor oral health exacerbates metabolic disorders such as diabetes and obesity, and evidence shows that orthodontic correction and enhanced oral care can help lower inflammatory markers and stabilize blood glucose levels, improving long-term glycemic control.⁹ Respiratory health is also impacted by dental alignment, as malocclusions like narrow jaws or retruded mandibles can lead to mouth breathing, restricted airways, and obstructive sleep apnea, while orthodontic interventions such as palatal expansion and jaw alignment improve airway patency, oxygenation, and overall health.¹⁰ Moreover, proper occlusion affects musculoskeletal balance, as bite misalignment can induce TMJ dysfunction, neck tension, and

compensatory postural changes; orthodontic stabilization supports jaw function and postural harmony, mitigating musculoskeletal strain.¹¹

Psychological and Quality-of-Life Benefits of Orthodontics

Malocclusion can have significant psychosocial consequences, negatively affecting self-esteem, social interaction, and emotional well-being, particularly among adolescents and young adults. Traits such as anterior crowding, spacing, and increased overjet are associated with lower self-worth, reduced social confidence, and heightened vulnerability to anxiety and depression, with females often reporting more pronounced psychological effects.¹² Social stigma and appearance-related bullying further exacerbate emotional distress and diminish overall quality of life. Orthodontic treatment, by improving dental alignment and aesthetics, serves as a powerful confidence booster, enhancing self-esteem, facilitating better social integration, and reducing psychological distress.¹³ These benefits are reflected in validated quality-of-life measures such as the OHIP-14 (Oral Health Impact Profile-14), OQLQ (Orthognathic Quality of Life Questionnaire), and PIDAQ (Psychosocial Impact of Dental Aesthetics Questionnaire), which capture improvements in physical comfort, emotional health, social functioning, and oral satisfaction.¹⁴ Studies consistently demonstrate that malocclusion severity correlates with poorer scores on these scales, while post-treatment assessments show marked improvements, underscoring the positive psychosocial impact of orthodontic care. Overall, orthodontics not only enhances aesthetics and oral function but also profoundly supports mental health, emotional resilience, and the broader quality of life.¹⁵

Orthodontics and Aging

Orthodontic treatment in adults, including those over 40 or 50, remains highly effective in improving dental alignment and bite function, addressing age-related shifts that can lead to crowding and malocclusion. Modern techniques, such as clear aligners and ceramic braces, provide discreet and comfortable options for adult patients while helping maintain dentofacial structural integrity by repositioning teeth and jaws, optimizing occlusion, and preventing further deterioration.¹⁶ ~~Correcting malocclusion also protects against uneven tooth wear, enamel loss, and temporomandibular joint (TMJ)~~ dysfunction, reducing associated pain, headaches, and masticatory inefficiency, which is particularly important for digestion and nutritional health in aging populations. Beyond function, adult orthodontics supports esthetics and psychosocial well-being, enhancing self-esteem and social engagement by preserving facial appearance.¹⁷ Well-aligned teeth facilitate oral hygiene, lowering the risk of caries and periodontal disease, which may be more prevalent in older adults due to reduced dexterity. Overall, orthodontic care in adulthood contributes to lifelong oral health, functional efficiency, and quality of life, demonstrating that orthodontics is not limited to younger populations but remains a vital component of geriatric dental care.¹⁸

Future Directions

The integration of artificial intelligence (AI) and digital orthodontics is transforming the field, enabling early prediction of malocclusion patterns, treatment outcomes, and potential complications through the analysis of large datasets, dental imaging, and 3D craniofacial scans. Digital tools such as computer-aided design and manufacturing (CAD/CAM), 3D printing, and virtual treatment simulation enhance diagnostic precision, efficiency, and minimally invasive, personalized interventions.¹⁹ Moreover, next-generation personalized orthodontics combines multi-omics data including genomics, microbiomics, and epigenetics with patient lifestyle factors to tailor treatment strategies. Genetic profiling predicts responses to orthodontic forces and susceptibility to complications, microbiomic analysis informs caries and gingivitis risk, and lifestyle data guides appliance design, force application, and maintenance protocols.²⁰

Conclusion

Orthodontics extends far beyond cosmetic enhancement, serving as a cornerstone of oral, systemic, and psychosocial health. By improving alignment, function, and hygiene, it contributes to overall well-being and disease prevention. Awareness of these broader benefits among both practitioners and patients is essential. Integrating orthodontic care into holistic health strategies can optimize long-term outcomes and quality of life.

References

1. Ghodasra R, Brizuela M. Orthodontics, Malocclusion. [Updated 2023 Apr 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK592395/>
2. Kapila YL. Oral health's inextricable connection to systemic health: Special populations bring to bear multimodal relationships and factors connecting periodontal disease to systemic diseases and conditions. *Periodontol* 2000. 2021 Oct;87(1):11-16. doi: 10.1111/prd.12398. PMID: 34463994; PMCID: PMC8457130.
3. Abreu LG, Drumond VZ, Mesquita RA, Bernabé E, de Arruda JA. Implications of orthodontic treatment for overall health, social determinants of health, and the economic burden of malocclusion. *Semin Orthod*. 2025 Sep;31(4):448–455.
4. A Consumer's Guide to Dentistry. 2nd ed. Chapter 13: Orthodontics: Straightening Teeth. 2002;99–112.
5. Zhou Y, Wang Y, Wang X, Volière G, Hu R. The impact of orthodontic treatment on the quality of life a systematic review. *BMC Oral Health*. 2014 Jun 10;14:66. doi: 10.1186/1472-6831-14-66. PMID: 24913619; PMCID: PMC4060859.
6. Chugh, T., Singh, T., Ahluwalia, R., Nautiyal, A., & Bhargava, A. (2025). *From Self-Esteem to Oral Health: The Multi-dimensional Impact of Orthodontic Therapy*. 1050–1058. <https://doi.org/10.1201/9781003616283-187>
7. Taibah SM, Al-Hummayani FM. Effect of malocclusion on the self-esteem of adolescents. *J Orthod Sci*. 2017 Oct-Dec;6(4):123-128. doi: 10.4103/jos.JOS_16_17. PMID: 29119092; PMCID: PMC5655961.
8. Alsulaiman OA, Alghannam MI, Almazroua DM, Alamri AS, Shahin SY, Nassar EA, Almasoud NN, Alsulaiman AT, Alsulaiman AA. Mental Health and Malocclusion: A Comprehensive Review. *Clin Pract*. 2025 Feb 24;15(3):44. doi: 10.3390/clinpract15030044. PMID: 40136580; PMCID: PMC11941310.
9. Zakai, A. M., Khatri, M. S., Qurban, E., Jabbar, A., Shah, S., & Memon, A. (2024). The Impact of Malocclusion Severity on Self-Confidence and Facial Appearance among Orthodontic Patients: Malocclusion Severity and Self-Confidence . *Pakistan Journal of Health Sciences*, 5(08), 110–114. <https://doi.org/10.54393/pjhs.v5i08.2027>
10. Iranzo-Cortés, J.E., Montiel-Company, J.M., Bellot-Arcis, C. *et al*. Factors related to the psychological impact of malocclusion in adolescents. *Sci Rep* **10**, 13471 (2020). <https://doi.org/10.1038/s41598-020-70482-4>
11. Nausheen K, Madiha S, Kaur H. Impact of malocclusion on self-esteem (SE) and orthognathic quality of life (OQOL) amongst dental undergraduate students [Internet]. *Int Dent J Stud Res*. 2020 [cited 2025 Oct 10];8(1):14-17. Available from: <https://doi.org/10.18231/j.idjsr.2020.003>
12. Shrivastava, S. R., Bobhate, P. S., & Meshram, V. D. (2025). Orthodontic treatment and its impact on psychological and social health: A review of the literature. *Journal of Orthodontic Science*, 14(1). https://doi.org/10.4103/jos.jos_21_25
13. Dayanand V, RNG R, Kondody R, et al. (October 08, 2025) Impact of Awareness, Motivation, and Willingness on the Perception of Age as a Barrier in Adult Orthodontic Treatment: A Questionnaire-Based Study. *Cureus* 17(10): e94105. doi:10.7759/cureus.94105

14. Gul, M., Ahmad, N., Tajik, I., Javaid, A., & Khan, A. S. (2024). The Impact of Orthodontic Treatment on Body Weight Due to Change in Dietary Habits. *Cureus*.
<https://doi.org/10.7759/cureus.75764>
15. Cossio-Escobar, M., & Lema-álvarez, M. C. (2014). *How our body asks for orthodontics Como pide nuestro cuerpo la ortodoncia*.
16. Banerjee, M. (2024). The Role Of Oral Hygiene In The Prevention Of Systemic Diseases: A Public Health Perspective. *International Journal For Multidisciplinary Research*, 6(6).
<https://doi.org/10.36948/ijfmr.2024.v06i06.33693>
17. Hein, C., & Williams, R. C. (2017). The Impact of Oral Health on General Health: Educating Professionals and Patients. *Current Oral Health Reports*, 4(1), 8–13.
<https://doi.org/10.1007/S40496-017-0124-4>
18. Anastasi, G., & Spennato, A. (2014). *Impact of Orthodontic Treatment on Oral Health-Related Quality of Life and other psychological variables*.
https://www.webmedcentral.com/article_view/4496
19. Gilchrist, F., & Marshman, Z. (2015). Does orthodontic treatment improve oral health-related quality of life? *Evidence-Based Dentistry*, 16(3), 86. <https://doi.org/10.1038/SJ.EBD.6401118>
20. Guo X, Shao Y. AI-driven dynamic orthodontic treatment management: personalized progress tracking and adjustments-a narrative review. *Front Dent Med*. 2025 Aug 1;6:1612441. doi: 10.3389/fdmed.2025.1612441. PMID: 40823526; PMCID: PMC12354369.

