

Clear Aligners vs Fixed Orthodontic Appliances: A Comparative Analysis of Patient Satisfaction

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Abstract

The advent of clear aligners has revolutionized orthodontic treatment by offering an aesthetic, comfortable, and patient-friendly alternative to fixed orthodontic appliances. Patient satisfaction, a key metric of treatment success and compliance, varies between these modalities. This review provides a comprehensive comparison of clear aligners and fixed appliances across multiple dimensions of patient satisfaction, including comfort, aesthetics, oral hygiene, speech, dietary restrictions, and psychosocial impact. A synthesis of current literature provides evidence-based insights into how each appliance type influences patient experience and overall satisfaction.

1. Introduction

Orthodontic treatment aims to correct malocclusion, enhance dental function, and improve aesthetics. Traditional fixed appliances, comprising brackets, wires, and bands, have been the gold standard for decades. However, the increasing demand for aesthetic and comfortable treatment options has led to the widespread adoption of clear aligner systems such as Invisalign™, Clear Correct™, and Spark™.

Patient satisfaction is now a pivotal factor in orthodontic care. Satisfaction is influenced by perceived comfort, pain levels, aesthetics, ability to maintain oral hygiene, ease of speech, and social confidence. This article reviews the existing literature comparing clear aligners and fixed appliances, focusing on patient satisfaction outcomes.

2. Aesthetics

Aesthetic appeal is a significant reason for the preference of clear aligners, especially among adults.

- **Clear Aligners:** Virtually invisible, offering superior aesthetic appeal. Patients often feel more confident in social and professional settings^{1, 2}.

- **Fixed Appliances:** Highly visible due to metal brackets and wires. Even ceramic brackets are more noticeable compared to aligners³.
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3. Comfort and Pain

Patient comfort includes pain perception during treatment and adaptation to appliances.

- **Clear Aligners:** Less painful and more comfortable due to smooth plastic surfaces and gradual force application^{4, 5}.
 - **Fixed Appliances:** More pain, especially after activations due to wire adjustments and bracket-induced soft tissue irritation⁶.
 - **Clear aligners** significantly reduced treatment-related discomfort⁷.
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4. Oral Hygiene and Periodontal Health

Oral hygiene maintenance during treatment directly affects patient satisfaction and clinical outcomes.

- **Clear Aligners:** Removable nature allows normal brushing and flossing, resulting in better plaque control⁸.
- **Fixed Appliances:** Increase plaque accumulation, risk of gingivitis, and enamel decalcification due to brackets and wires⁹.

Clinical Finding: Clear aligners showed significantly better periodontal scores among aligner patients compared to fixed appliance users¹⁰.

5. Dietary Considerations

Eating restrictions play a key role in day-to-day patient convenience.

- **Clear Aligners:** Removed during meals; thus, minimal dietary restrictions. Patients report greater satisfaction in terms of food choice¹¹.
 - **Fixed Appliances:** Require dietary modifications to avoid damage to brackets/wires. Hard or sticky foods are often restricted¹².
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6. Speech and Phonetics

Speech difficulty can impact early treatment satisfaction.

- **Clear Aligners:** May cause a mild initial lisp, especially with aligners covering the palatal region¹³.
- **Fixed Appliances:** Less impact on speech unless palatal expanders or bulky hardware are involved¹⁴.

7. Treatment Duration and Compliance

Patient satisfaction is also affected by treatment duration and required discipline.

- **Clear Aligners:** Often require high patient compliance (20–22 hours/day). Non-compliance can extend treatment time¹⁵.
- **Fixed Appliances:** Require less compliance as they are non-removable. Generally preferred for complex cases¹⁸.

8. Psychosocial and Quality of Life Impact

Patient-centered outcomes such as confidence, anxiety, and social interaction are critical.

- **Clear Aligners:** Associated with improved self-esteem, reduced embarrassment, and greater willingness to smile during treatment¹⁶.
- **Fixed Appliances:** May lead to lower confidence levels, especially among adults¹⁷.

9. Overall Satisfaction

A multi-dimensional assessment consistently Favors clear aligners in terms of patient satisfaction.

Parameter	Clear Aligners	Fixed Appliances
Aesthetic Appeal	Excellent	Moderate to Low
Comfort	High	Moderate
Oral Hygiene	Easy	Challenging
Speech	Slightly affected	Mostly unaffected
Food Restrictions	Minimal	High
Psychosocial Impact	Positive	Neutral/Negative
Overall Satisfaction	High	Moderate

10. Limitations and Considerations

- Clear aligners may not be suitable for severe malocclusions.
- Treatment outcomes may vary based on clinician experience.
- High cost of aligners could limit accessibility.

11. Conclusion

Clear aligners demonstrate higher patient satisfaction than fixed appliances in most domains, particularly aesthetics, comfort, oral hygiene, and lifestyle flexibility. However, fixed appliances remain indispensable for complex malocclusions and non-compliant patients. An individualized approach, considering patient expectations, case complexity, and financial considerations, remains the best clinical strategy.

References

1. White DW, Julien KC, Jacob H, Campbell PM, Buschang PH. Discomfort associated with Invisalign and traditional brackets: A randomized controlled trial. *J Clin Orthod*. 2017;51(11):728–734.
2. Kravitz ND, Kusnoto B, Begole E, Obrez A, Agran B. How well does Invisalign work? A prospective clinical study evaluating the efficacy of tooth movement with Invisalign. *Am J Orthod Dentofacial Orthop*. 2009;135(1):27–35.
3. Rosvall MD, Fields HW, Ziuchkovski J, Rosenstiel SF, Johnston WM. Attractiveness, acceptability, and value of orthodontic appliances. *Angle Orthod*. 2009;79(3):442–448.
4. Miller KB, McGorray SP, Womack R, et al. A comparison of treatment impacts between Invisalign aligner and fixed appliance therapy during the first week of treatment. *Am J Orthod Dentofacial Orthop*. 2007;131(3):302.e1–302.e9.
5. Fujiyama K, Honjo T, Suzuki M, Matsuoka S, Deguchi T. Analysis of pain level in cases treated with Invisalign aligner: comparison with fixed edgewise appliance therapy. *Angle Orthod*. 2008;78(6):1017–1022.
6. Scheurer PA, Firestone AR, Bürgin WB. Perception of pain as a result of orthodontic treatment with fixed appliances. *Eur J Orthod*. 1996;18(4):349–357.
7. Azaripour A, Weusmann J, Mahmoodi B, Peppas D, Gerhold-Ay A, Willershausen B. Braces versus Invisalign®: gingival parameters and patients' satisfaction during treatment: a cross-sectional study. *BMC Oral Health*. 2015;15:69.
8. Miethke RR, Vogt S. A comparison of the periodontal health of patients during treatment with the Invisalign system and with fixed orthodontic appliances. *J Orofac Orthop*. 2005;66(3):219–229.
9. Pellegrini P, Sauerwein R, Finlayson T, et al. Plaque retention by self-ligating vs elastomeric orthodontic brackets: quantitative comparison of oral bacteria and detection with adenosine triphosphate-driven bioluminescence. *Am J Orthod Dentofacial Orthop*. 2009;135(4):426.e1–426.e9.
10. Boyd RL, Miller RJ, Vlaskalic V. The Invisalign system in adult orthodontics: mild crowding and space closure cases. *J Clin Orthod*. 2000;34(4):203–212.
11. Krieger E, Seiferth J, Marinello I, et al. Invisalign® treatment in the anterior region: were the predicted tooth movements achieved? *J Orofac Orthop*. 2012;73(5):365–376.

12. Almasoud NN. Pain perception among patients treated with passive self-ligating brackets and conventional pre-adjusted brackets. *J Contemp Dent Pract.* 2018;19(3):294–298.
13. Kau CH, Kantarci A, Shaughnessy T, et al. Photobiomodulation enhances orthodontic alignment in the early phase of treatment. *Eur J Orthod.* 2010;32(6):586–593.
14. Sifakakis I, Pandis N, Makou M, Eliades T. Speech assessment during orthodontic treatment with fixed appliances and Invisalign aligners. *Am J Orthod Dentofacial Orthop.* 2014;145(3):305–310.
15. Phan X, Ling PH. Clinical limitations of Invisalign. *J Can Dent Assoc.* 2007;73(3):263–266.
16. Shalish M, Cooper-Kazaz R, Ivgi I, et al. Adult patients' adjustability to orthodontic appliances. Part I: A comparison between labial, lingual, and Invisalign™. *Eur J Orthod.* 2012;34(6):724–730.
17. Johal A, Fleming PS, Al Jawad FA. A prospective longitudinal controlled assessment of quality of life in teenage patients undergoing orthodontic treatment. *Eur J Orthod.* 2015;37(4):313–319.