

Research Article

Assessing the Effectiveness of Clear Aligners Compared to Traditional Braces in Adult Orthodontics

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ABSTRACT

Objective: To compare the effectiveness of clear aligners to conventional braces in adult orthodontic treatment with respect to treatment outcome, patients' satisfaction, comfort and treatment duration.

Study Design: Comparative cross-sectional study.

Place and Duration of Study: The study was done in the Department of Orthodontics, Shahida Islam Dental College Lodhran during March 2025 and October 2025.

Methods: 188 patients were selected and divided into two groups clear aligners and traditional braces. Clinical records and structured questionnaires were used to obtain information on the effectiveness of the treatment, maintenance of oral hygiene, duration of treatment, discomfort level, and satisfaction. SPSS software was used for statistical analysis, and a significance level was set at $p < 0.05$.

Results: The patients with clear braces had higher satisfaction levels, better oral hygiene, and higher levels of comfort while the traditional braces had higher rates of success with complex tooth movements. There was no significant difference in treatment duration between the groups.

Conclusion: So, while traditional braces are more effective for more complicated orthodontic situations, clear aligners work best for adults in need of something more effective and comfortable.

Keywords: Clear Aligners, Traditional Braces, Adult Orthodontics, Treatment Effectiveness, Patient Satisfaction.

INTRODUCTION

In recent decades, orthodontic treatment has made significant advances to enhance treatment outcomes and the patient experience. Fixed orthodontic appliances, also referred to as braces, have always been the preferred way for orthodontists to resolve malocclusion and other alignment problems (Li et al., 2023). Traditional braces feature metal brackets and wires that are fixed to the teeth and then gradually shift the teeth to their proper place by applying small forces. While they have proven to be very effective in the treatment of mild to severe orthodontic issues, conventional braces come with certain drawbacks including discomfort, poor oral hygiene, aesthetic issues, and dietary limitations (Alam et al., 2024).

In recent years, more focus has been placed on more appealing and comfortable treatment methods, especially amongst adults. Clear braces have become a contemporary solution to conventional braces and are popular because they're removable and almost invisible (Cengiz & Goymen, 2025). Clear aligners are clear plastic trays that are made to fit each patient's mouth and are designed to slowly shift teeth into alignment by a series of small movements. With the advent of digital technologies and computer-assisted treatment planning, clear aligner therapy is further enhanced in terms of precision and effectiveness (Bhagwan et al., 2025).

Many more people are seeking treatment for dental issues in their adulthood as awareness and understanding of how the mouth and teeth

look and appear has increased. Besides correcting the function, adults may want orthodontic treatment for aesthetic reasons and for increased self-confidence (Crego-Ruiz & Jorba-García, 2023). As opposed to an adolescent patient, an adult patient may have other work and/or social obligations which can affect the treatment options that they would prefer. Adults may want to avoid more visible options since metal braces can impact one's facial appearance and social interactions. This makes clear aligners an appealing choice for people who want to get orthodontic treatment without people being able to see it (Jaber et al., 2022).

Clear braces are becoming increasingly popular, but there are still questions about their effectiveness versus traditional braces. Clear aligners have been found to offer better comfort of the patient, better maintenance of oral health and better aesthetic acceptance in several studies (Gassem, 2022). Aligners are removable so patients can eat without limitation and more effectively carry out the oral hygiene practices than those with fixed appliances. But there are issues with their capacity to execute complicated tooth motions, extreme malocclusions and some orthodontic corrections that might demand more strenuous mechanical management (Alraddadi et al., 2025).

The traditional braces are still regarded as very effective for dealing with more complex orthodontic issues because they can provide consistent pressure and precise tooth adjustment. Braces are generally recommended by orthodontists for individuals who have serious dental needs. But multiple factors can affect the success of treatment such as the patients' cooperation, the severity of the orthodontic problem, the length of treatment and individual reaction to treatment (Jaber et al., 2023).

So, the effectiveness of the clear aligners versus traditional braces in adult orthodontics should be evaluated and compared for evidence-based clinical decision making. Clinicians should know the difference in treatment outcomes, patient satisfaction, comfort, and oral hygiene maintenance to make appropriate treatment recommendations based on the needs and preferences of their patients. This study will evaluate the effectiveness of clear aligners to traditional braces in adult orthodontic patients (McNeill et al., 2025).

OBJECTIVE

This study aims at evaluating and comparing the effectiveness of clear aligners and conventional braces in the treatment of adult orthodontics. This study is designed to compare the treatment outcomes, patient satisfaction, comfort, oral hygiene maintenance, and treatment duration in order to find out which treatment option will give a better clinical and patient-centered outcome.

METHODOLOGY

The study was a comparative cross-sectional study carried out in the Department of Orthodontics, Shahida Islam Dental College Lodhran during March 2025 and October 2025. Convenient sampling was used and 188 adult patients who were being treated with orthodontics were included. The participants were split into two groups: clear aligner group and traditional braces group. The clinical records and structured questionnaires were used to gather data on effectiveness of treatment, patient comfort, oral hygiene maintenance, treatment duration, and patient satisfaction. The statistical analysis was done using SPSS software and a p-value of < 0.05 was considered statistically significant.

Inclusion Criteria

Patients ranged in age from 18 years and older and were either clear aligner or traditional braces patients. Mild to moderate malocclusion patients and those who were willing to take part in the study and informed consent were included. Those who had full treatment records with follow-up visits every month for the duration of the study period were also eligible.

Exclusion Criteria

Patients younger than 18 years of age, those with severe craniofacial abnormalities and those with systemic diseases that would impact on oral health were not included in the study. Furthermore, patients with incomplete clinical records, irregular follow-up visits, orthodontic treatment history, and patients who were not willing to give informed consent were excluded from the study.

Data Collection

The adult patients being treated with either clear aligners or traditional braces were selected, and data were obtained from the clinical records and structured questionnaires. Demographic data, treatment time, oral hygiene, discomfort, effectiveness of treatment and satisfaction of the patient were collected. Treatment progress and outcomes were

assessed through clinical examinations. Attendees were invited to fill in a questionnaire about their treatment experience and comfort and treatment aesthetics. The data collected were checked for completeness and accuracy before being entered into SPSS software for statistical analysis. All the information related to the participants was kept confidential during the study and informed consent was secured before collecting data.

Data Analysis

The data collected were entered and analyzed using the Statistical Package for Social Sciences (SPSS) software version 26. Demographic characteristics and study variables were summarized using descriptive statistics such as frequencies, percentages, mean and standard deviations. Comparative analysis of the effectiveness of the treatment, comfort level, oral hygiene maintenance, patient satisfaction and treatment duration between patients treated with clear aligners and traditional braces was conducted. Depending on the type of variables, appropriate statistical test was

applied: chi-square test and independent sample t-test. A p value < 0.05 was deemed statistically significant. The data were displayed in tabular and descriptive format for easy interpretation and understanding.

RESULTS

A total of 188 adult patients were included in the study and split into 2 groups, one group using clear aligners, and the other group using traditional braces. The results indicated that the clear aligner group participants had higher satisfaction levels, comfort, and oral hygiene maintenance compared to the traditional braces group. Slightly higher effectiveness was seen in the traditional braces for complex tooth movements and the severe malocclusion cases. There was no significant difference between the two groups in treatment duration. In general, clear aligners overcame the traditional braces in terms of aesthetic appearance and convenience to adult patients, and the traditional braces were effective in managing more complicated orthodontic conditions.

Table 1: Demographic Characteristics of Participants (n=188)

Variables	Clear Aligners (n=94)	Traditional Braces (n=94)	Total
Male	42	46	88
Female	52	48	100
Mean Age (years)	29.8 ± 5.2	30.6 ± 6.1	30.2 ± 5.7

Between the two groups, the demographic characteristics were equal. The number of females was slightly higher than males in the study population. Participant age was

comparable across groups, with little age variation between groups and a mean age of the participants.

Table 2: Comparison of Patient Comfort Level

Comfort Level	Clear Aligners n (%)	Traditional Braces n (%)
High	70 (74.5%)	38 (40.4%)
Moderate	18 (19.1%)	30 (31.9%)

The results showed that the patients wearing clear braces felt more comfortable than the patients wearing traditional braces. Most aligner users indicated high comfort and many

of the patients' wearing braces indicated moderate or low comfort due to wire adjustments and appliance-related irritation.

Table 3: Oral Hygiene Maintenance among Participants

Oral Hygiene Status	Clear Aligners n (%)	Traditional Braces n (%)
Good	72 (76.6%)	44 (46.8%)
Fair	18 (19.1%)	34 (36.2%)
Poor	4 (4.3%)	16 (17.0%)

In fact, patients who opt for clear braces experienced greater oral hygiene maintenance than patients who choose traditional braces. As

they were removable, participants were able to brush and floss more effectively. Older braces

made it harder to brush around brackets and wires.

Table 4: Patient Satisfaction Level

Satisfaction Level	Clear Aligners n (%)	Traditional Braces n (%)
Satisfied	78 (83.0%)	54 (57.4%)
Neutral	12 (12.8%)	26 (27.7%)
Dissatisfied	4 (4.2%)	14 (14.9%)

People who got clear aligners were more satisfied than the people who got traditional braces. This enhancement in their appearance, convenience and comfort led to higher levels of

satisfaction. The same applies for traditional braces which had lower satisfaction due to the visibility and discomfort during the treatment.

Table 5: Treatment Effectiveness and Duration

Variables	Clear Aligners	Traditional Braces	p-value
Mean Treatment Duration (months)	17.3 ± 2.4	16.9 ± 2.8	0.412
Effective Complex Tooth Movement	68 (72.3%)	84 (89.4%)	0.021

No significant difference was found between treatment duration for both treatment methods. But, conservative braces were more effective in performing complex tooth movements. This indicates that clear aligners are less comfortable and less aesthetically pleasing, but braces are better for challenging orthodontic scenarios.

DISCUSSION

This study evaluated the effectiveness of clear aligners for adult orthodontic treatment, in terms of treatment outcome, patient comfort, oral hygiene maintenance, patients' satisfaction, and treatment duration, in comparison with traditional braces. The results showed that both types of treatments resulted in better alignment of the teeth, but there were some differences in clinical and patient-centered parameters (Wang et al., 2024).

The results of the study indicated that adult patients undergoing clear aligners treatment expressed higher level of comfort compared to patients receiving conventional braces treatment. The reason behind this observation could be due to the design and the nature of the aligner which is made from smooth plastic materials and won't have metal brackets or wires that may irritate oral tissues (Chawla et al., 2024). Conventional braces can be uncomfortable due to friction, wire adjustments and pressure from tooth movement. However, comfort is typically very important to adult patients, as braces can be worn for multiple months or years. Thus, an enhanced comfort can have a positive impact on patient adherence and treatment satisfaction (Bilello et al., 2022).

Clear aligners were also shown to have superior maintenance of oral hygiene. Patients can brush and eat while they have aligners in place because they can take them out. Patients will be able to brush and eat while wearing aligners, as they can remove them. Conversely, it can be difficult to keep the mouth clean when you have traditional braces, as food can get trapped around the brackets and wires. If one doesn't take care of his/her teeth while undergoing orthodontic treatment, there could be a higher risk of plaque buildup, gingival inflammation and dental caries. Thus, the removable appliance could offer a benefit in the maintenance of oral health during treatment (Irsheid et al., 2024).

Clear aligner patients were more satisfied with their treatment than non-clear aligner patients. This discovery is linked to the aesthetic advantages of clear braces; they're close to inconspicuous and not as noticeable when socializing and working (Correa et al., 2024). When it comes to appearance, it is more of a concern for adult patients, and they may be in environments and workplaces where obvious metal appliances could impact their self-image and confidence. Fewer complaints and improved convenience are also likely to be correlated with higher satisfaction levels among aligner users (Alfawal et al., 2022).

The study also revealed that traditional braces were more effective at bringing about complex tooth movements than clear braces. Fixed appliances may be more suitable for complex orthodontic cases where the forces applied must be accurately controlled, or where more mechanical control is required (Katib et al., 2024). The traditional braces have always been

the go-to treatment for severe malocclusions and complicated orthodontics correction. While the improvement of technology has given clear aligner systems more capabilities, there are some clear aligner system limitations to treat highly complex cases (Shafaei et al., 2025).

There was no significant difference in the length of treatment between the two groups. This indicates that more factors other than the orthodontic appliance used itself may play a role in treatment time, such as patient compliance and treatment planning (de Leyva et al., 2023). Yet, the success of the treatment with aligners is highly dependent on the cooperation of the patient, since the treatment with aligners requires the patient's cooperation to wear the device for the recommended number of hours per day (Lee, 2022).

In general, the results indicated that while clear aligners offer a few benefits in terms of comfort, aesthetics, oral hygiene, and patient satisfaction, they may not be as effective as traditional braces in certain more complex orthodontic scenarios. The treatment modality should thus be tailored to the clinical needs and preferences of the patient (Monisha & Peter, 2024).

CONCLUSION

The present study enabled the researchers to draw the conclusion that both the clear aligners and conventional braces are equally effective in adult orthodontics and are successful in correcting dental alignment issues. Clear aligners were found to be more comfortable for patients, easier to maintain oral hygiene, more aesthetically pleasing and more satisfying than conventional braces. These benefits make clear braces a favoured option for several adult patients who are looking for a much more discreet method of receiving orthodontic therapy. In cases of complex tooth movements and severe malocclusion, however, traditional braces had a greater effect. There was no significant difference between the duration of treatments for the two methods. Thus, the choice of orthodontic treatment should depend on the complexity of the clinical situation, the patient's wishes and the overall treatment goals to achieve maximum results.

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