Quality of life in an adolescent orthodontic population:
Invisalign versus fixed appliances

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ABSTRACT

Objectives: To investigate adolescent orthodontic patient experiences and quality of life with fixed appliances compared to Invisalign.

Materials and Methods: Adolescent patients in active treatment with Invisalign or fixed appliances for a minimum of 6 months were provided with the Child Oral Health Impact Profile-Short Form 19 questionnaire, along with additional items of interest that were assessed separately. Pearson's χ^2 test was used to compare responses ($P < .05$), and unpaired *t*-tests ($P < .05$) were used to test for differences in mean satisfaction, quality of life, and domain scores.

Results: In total, 74 patients (37 in each treatment group) participated. Overall, no significant differences were noted in the mean quality of life, satisfaction, or domain scores between the two groups. A significant difference was noted in the time taken to adjust to appliances, with the Invisalign group demonstrating faster adaptation. Additionally, the fixed appliance group was 3.8 times more likely to report missing school because of their appliance (95% confidence interval [CI]: 1.2, 12.5) and 2.7 times more likely to report having difficulty eating certain foods (95% CI: 1.1, 7.1). When the sample of females between the ages of 14 and 18 was analyzed, the Invisalign group reported feeling attractive more often than the fixed appliance group.

Conclusions: Both treatment groups were generally very satisfied with their treatment modality. The overall quality of life of adolescent orthodontic patients undergoing treatment with fixed appliances and Invisalign for a minimum of 6 months was similar. (*Angle Orthod.* 2021;91:718–724.)

KEY WORDS: Quality of life; Invisalign; Braces

INTRODUCTION

Today's orthodontic patients have the option of two different treatment modalities: fixed appliances and clear aligners. Fixed appliances, also known as braces, have been the conventional modality for over a century.[1] However, since Invisalign was introduced in 1997, treatment with clear aligners has become a fast-

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growing sector in orthodontics.[2] The choice of one treatment modality over the other may affect quality of life during treatment.

Quality of life is a broad, multidimensional concept that is influenced by many different factors. The World Health Organization Quality of Life Group defines it as "an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their personal goals, expectations, standards and concerns."[3] It can also be described as a "sense of well-being derived from satisfaction or dissatisfaction with areas of life considered important for an individual."[4]

The impact of oral health on one's quality of life is referred to as oral health–related quality of life (OHRQoL). This can be further described as the functional impacts, psychosocial impacts, and symptoms that occur as a result of diseases and disorders.[5] Measuring OHRQoL is becoming an increasingly valuable evaluation in dentistry as patient-centered research helps reduce the knowledge and perception gaps between the patient and the clinician and provides evidence that is suitable for patients to understand.[6]

Align Technology advertises Invisalign treatment as a superior patient experience over traditional fixed appliances by emphasizing comfort, esthetics, easier hygiene, and a better overall lifestyle.[7] Patients who choose to be treated with Invisalign are often seeking appliances that are less obtrusive in their daily lives, and they are willing to incur possibly greater treatment costs with the hopes of less negative impacts on their quality of life.[8] The purpose of this study was to compare the treatment impacts, quality of life, and satisfaction of adolescents related to fixed appliances versus Invisalign.

MATERIALS AND METHODS

Ethical approval was obtained from the University of Manitoba Health Research Ethics Board. Adolescent patients from the University of Manitoba Graduate Orthodontic Clinic and from four private practices in Winnipeg in active treatment with Invisalign or fixed appliances were enrolled. Informed consent was obtained. Entry to win a $100 Visa gift card or an electric toothbrush was used as an incentive to increase participation.

Inclusion and Exclusion Criteria

Patients included were between the ages of 11 and 18 years old, currently in active treatment for a minimum of 6 months, Grade 2 or Grade 3 in the Index of Treatment Need, and undergoing their first course of orthodontic treatment. Exclusion criteria were

patients of the principal investigator, learning difficulties, physical disabilities, chronic medical conditions, symptoms of pain or discomfort from any other body part, active dental decay, poor periodontal health, syndromes and craniofacial anomalies, history or current use of auxiliary appliances, extraction cases, and experience with both fixed appliances and Invisalign.

Questionnaire

The Child Oral Health Impact Profile Short Form-19 (COHIP-SF 19) was used to assess and compare OHRQoL. The COHIP-SF 19 is well known in dental research and has been validated using an ethnically diverse sample of Canadian and American children and adolescents, similar to the sample in this study.[9] It possesses high scale reliability (Cronbach's alpha coefficient = 0.91) and high test–retest reliability (intraclass correlation coefficient = 0.84). The COHIP-SF 19 assesses three domains: oral health well-being, functional well-being, and social-emotional well-being. The five possible responses to the 19 items are never, almost never, sometimes, fairly often, and almost all of the time, and they are rated on a Likert scale of 0 – 4. All participants were instructed to choose the answer that best described their experience over the past 3 months regarding their teeth, mouth, or face. They were also asked to consider their fixed appliances or Invisalign when responding. The domain score was produced by summing the mean scores of each item in that domain. The total COHIP-SF 19 score, referred to as the quality-of-life score, was generated by summing the mean scores of each domain. Scoring of the negatively worded items was reversed, and a higher COHIP-SF 19 score reflected a more positive OHRQOL.[9] In addition to this validated questionnaire, supplementary questions of interest were added to the survey to investigate such topics as frustration, adaptation, satisfaction, and frequency of sore spots. These additional questions were not included in the calculation of the domain scores or the overall COHIP-SF 19 score and were analyzed and reported separately.

Statistical Analysis

Descriptive analysis of the data was performed to analyze the frequency of events and the extent of the impact of fixed appliances compared with Invisalign on the oral health–related quality of life of the sample. Inferential analysis of the data was conducted using Pearson's χ^2 test to evaluate whether the participants in the fixed-appliance group answered each item differently from those in the Invisalign group ($P < .05$), and unpaired t-tests ($P < .05$) were used to test

Table 1. Child Oral Health Impact Profile Short Form-19 (COHIP-SF 19) Scores: Fixed Appliances vs Invisalign

Domain and Items[a]	Fixed Appliances		Invisalign	
	Mean ± SD	Range	Mean ± SD	Range
Oral health well-being				
1. Had pain in your teeth/toothache	2.62 ± 0.83	1–4	2.59 ± 0.90	1–4
2. Had discolored teeth or spots on your teeth	2.38 ± 1.34	0–4	2.51 ± 1.30	0–4
3. Had crooked teeth or spaces between your teeth	3.19 ± 0.94	1–4	3.27 ± 1.02	0–4
4. Had bad breath	2.76 ± 1.01	0–4	2.73 ± 0.96	1–4
5. Had bleeding gums	3.03 ± 1.08	0–4	3.11 ± 1.04	1–4
Oral health well-being domain score (0–20)	13.98 ± 3.03	6–20	14.21 ± 3.31	5–20
Functional well-being[b]				
9. Had difficulty eating foods you would like	2.16 ± 1.26	0–4	2.86 ± 1.00	1–4
13. Had trouble sleeping	3.43 ± 0.83	1–4	3.41 ± 0.60	2–4
17. Had difficulty saying certain words	3.22 ± 1.03	0–4	3.03 ± 1.01	1–4
18. Had difficulty keeping your teeth clean	2.68 ± 1.08	0–4	3.11 ± 1.05	0–4
Functional well-being domain score (0–16)	11.49 ± 2.77	4–16	12.41 ± 2.36	6–16
Social-emotional well-being[b]				
6. Been unhappy or sad	3.05 ± 1.15	0–4	3.38 ± 0.98	0–4
7. Missed school for any reason	2.89 ± 1.21	0–4	3.46 ± 0.82	1–4
8. Been confident	2.49 ± 1.04	0–4	2.76 ± 1.14	0–4
10. Felt worried or anxious	3.27 ± 0.90	1–4	3.49 ± 0.84	1–4
11. Did not want to speak/read out loud in class	3.50 ± 1.03	0–4	3.43 ± 0.88	1–4
12. Avoiding smiling or laughing with other children	3.54 ± 0.90	0–4	3.46 ± 1.07	0–4
14. Been teased, bullied, or called names by other children	3.84 ± 0.55	1–4	3.95 ± 0.23	
15. Felt that you were attractive (good looking)	1.95 ± 1.27	1–4	2.05 ± 1.20	3–4
16. Felt that you look different	2.49 ± 1.26		2.32 ± 1.51	
19. Been worried about what other people think	3.27 ± 1.28	0–4	3.35 ± 1.11	0–4
		0–4		0–4
		0–4		0–4
Social-emotional well-being domain score (0–40)	30.29 ± 5.50	15–40	31.65 ± 5.80	15–40
Total COHIP-SF 19 Score (0–74)	55.76 ± 9.11	33–73	58.27 ± 9.06	34–70

[a] Participants were asked to consider their braces or Invisalign before answering each question.
[b] Questions finish with "because of your teeth, mouth, or face."

for differences in mean satisfaction, quality of life, and domain scores. Using a 95% confidence interval, odds ratios were calculated for the all participants group for each item of the survey where applicable ($P < .05$). In order to construct a 2 × 2 table to determine the odds ratio, the responses sometimes, fairly often, and almost all of the time were combined together, and the responses almost never and never were combined separately in order to create a binary response. Additionally, a 10 cm visual analog scale was used to measure each respondent's overall satisfaction with their appliance on a typical day, with a higher measurement indicating greater satisfaction.

Test Groups

The total sample consisted of 74 participants age 11–18 years: (fixed appliances: n = 37, Invisalign: n = 37). To investigate potential gender and age differences, the sample was further organized into the following groups:

Participants age 14–18 years: n = 56 (fixed appliances: n = 32; Invisalign: n = 24)

All males: n = 30 (fixed appliances: n = 16; Invisalign: n = 14)

Males age 14–18 years: n = 24 (fixed appliances: n = 13; Invisalign: n = 11)

All females: n = 44 (fixed appliances: n = 21; Invisalign: n = 23)

Females age 14–18 years: n = 32 (fixed appliances: n = 19, Invisalign: n = 13)

RESULTS

A total of 74 adolescents were enrolled (37 in each treatment group). The mean age of the participants was 14.9 ± 1.9 years. There was no significant difference in the distribution of genders between the groups ($P = .81$).

Table 1 depicts the mean responses of all participants for items 1–19 of the COHIP-SF 19 questionnaire. Table 2 illustrates that there were no significant differences in mean quality of life, satisfaction, or domain scores between the two treatment groups among all the test groups analyzed. The majority of both groups reported high and similar satisfaction with their fixed appliances or Invisalign on a typical day ($P =$

Table 2. Quality-of-Life, Satisfaction, and Domain Scores Among All Test Groups

Domain and Treatment Groups	Fixed Appliances		Invisalign		Statistical Findings	
	Mean ± SD	Range	Mean ± SD	Range	t- Test	P-Value
Oral health well-being (0–20)						
All participants 11–18 years old (N = 74)	13.89 ± 3.03	6–20	14.14 ± 3.31	5–20	−0.33	.74
Participants 14–18 years old (n = 56)	14.00 ± 2.83	6–20	13.50 ± 3.09	5–19	0.63	.53
All males (n = 30)	14.25 ± 2.46	10–18	13.93 ± 2.43	9–17	0.36	.72
Males 14–18 years old (n = 24)	14.00 ± 1.91	12–17	13.55 ± 2.54	9–17	0.50	.62
All females (n = 44)	13.62 ± 3.43	6–20	14.26 ± 3.79	5–20	−0.59	.56
Females 14–18 years old (n = 32)	14.00 ± 3.37	6–20	13.46 ± 3.60	5–19	0.43	.67
Functional well-being (0–16)						
All participants (N = 74)	11.49 ± 2.77	4–16	12.41± 2.36	6–16	−1.54	.13
Participants 14–18 years old (n = 56)	11.56 ± 2.31	6–16	12.67 ± 2.34	8–16	−1.74	.09
All males (n = 30)	12.25 ± 2.86	8–16	13.64 ± 1.91	10–16	−1.54	.13
Males 14–18 years old (n = 24)	12.00 ± 2.52	8–16	13.73 ± 1.95	10–16	−1.85	.08
All females (n = 44)	10.90 ± 2.61	4–15	11.65 ± 2.33	6–15	−1.00	.32
Females 14–18 years old (n = 32)	11.26 ± 2.18	6–15	11.77 ± 2.42	8–15	−0.62	.54
Social-emotional well-being (0–40)						
All participants 11–18 years old (N = 74)	30.11 ± 5.50	15–40	31.27 ± 5.80	15–40	−1.54	.38
Participants 14–18 years old (n = 56)	29.69 ± 5.52	15–40	30.00 ± 6.59	15–40	−0.19	.85
All males (n = 30)	30.13 ± 6.04	15–39	32.50 ± 3.46	26–40	−1.29	.21
Males 14–18 years old (n = 24)	28.77 ± 5.79	15–35	32.55 ± 3.93	26–40	−1.83	.08
All females (n = 44)	30.01 ± 5.20	20–40	30.52 ± 6.81	15–38	−0.23	.82
Females 14–18 years old (n = 32)	30.32 ± 5.40	20–40	27.85 ± 7.70	15–38	1.07	.29
Child Oral Health Impact Profile Short Form-19 Score (0–74)						
All participants 11–18 years old (N = 74)	55.49 ± 9.10	33–73	57.81 ± 9.06	34–70	−1.10	.27
Participants 14–18 years old (n = 56)	55.25 ± 8.53	33–69	56.17 ± 9.88	34–70	−0.37	.71
All males (n = 30)	56.63 ± 8.61	43–73	60.07 ± 5.62	49–70	−1.28	.21
Males 14–18 years old (n = 24)	54.78 ± 7.55	43–64	59.82 ± 6.37	49–70	−1.75	.09
All females (n = 44)	54.62 ± 9.58	33–69	56.43 ± 10.51	34–69	−0.60	.55
Females 14–18 years old (n = 32)	55.58 ± 9.34	33–69	53.08 ± 11.43	34–68	0.68	.50
Satisfaction (0– 10)						
All participants (N=74)	8.34 ± 1.39	4.45–10.00	8.47 ± 1.33	5.20–10.00	−0.41	.68
Participants 14–18 years old (n = 56)	8.19 ± 1.42	4.45–10.00	8.45 ± 1.32	5.20–10.00	−0.71	.48
All males (n = 30)	8.26 ± 1.52	4.45–10.00	8.59 ± 1.13	6.60–10.00	−0.66	.51
Males 14–18 years old (n = 24)	8.07 ± 1.60	4.45–10.00	8.66 ± 1.17	6.60–10.00	−1.02	.32
All females (n = 44)	8.40 ± 1.32	6.00–10.00	8.40 ± 1.45	5.20–10.00	−0.00	1.00
Females 14–18 years old (n = 32)	8.27 ± 1.32	6.00–9.95	8.27 ± 1.45	5.20–10.00	−0.01	1.00

.68). There was no significant difference in satisfaction scores between males and females.

Additionally, no significant differences were noted between the treatment groups with respect to experiencing pain, bad breath, sore spots, speech issues, difficulty keeping teeth clean, trouble focusing in the classroom, feeling worried or anxious, feeling shy or embarrassed around friends, feeling annoyed or frustrated, avoiding smiling or laughing, being teased or bullied, or feeling that they looked different because of their fixed appliances or Invisalign. Table 3 shows the breakdown of responses for items with significant findings and for items of interest.

DISCUSSION

This study sought to compare the quality of life, treatment experiences, and overall satisfaction of adolescents undergoing treatment with fixed appliances and Invisalign. There was no significant difference

in the mean quality of life, satisfaction, or domain scores between the two groups among all the test groups analyzed, indicating that their overall quality of life was similar. Both treatment groups reported fairly high and similar quality-of-life scores, indicating a low negative impact of their respective appliances (Table 1). While there were no significant differences in the overall quality of life, domain scores, and satisfaction scores between the two groups, there were significantly different responses for individual items of the questionnaire among the six test groups investigated (Table 3).

With regard to experiencing difficulty eating, the fixed appliance group was 2.7 times more likely to report difficulties compared with the Invisalign group. The majority of the fixed-appliance group reported sometimes having difficulty eating foods they would like, whereas the majority of the Invisalign group reported never having difficulty. Additionally, 8.1% of the fixed-

Table 3. Detailed Summary of Responses

B = Braces / I = Invisalign* / Items	B	I	B	I	B	I	B	I	B	I	Statistical Findings P < 0.05
	Never n (%)		Almost Never n (%)		Sometimes n (%)		Fairly Often n (%)		All the Time n (%)		
Missed school *All Participants*	16 (44.4%)	22 (62.9%)	6 (16.7%)	8 (22.9%)	10 (27.8%)	4 (11.4%)	2 (5.6%)	1 (2.9%)	2 (5.6%)	0	Odds Ratio: 3.8 (95% CI 1.2, 12.5, P= 0.02)
Been Confident: *Participants 14-18*	1 (3.1%)	2 (8.3%)	3 (9.4%)	1 (4.2%)	12 (37.5%)	7 (29.2%)	13 (40.6%)	3 (12.5%)	3 (9.4%)	11 (45.8%)	P= 0.007
Difficulty eating: *All Participants*	8 (21.6%)	13 (35.1%)	5 (13.5%)	9 (24.3%)	12 (32.4%)	12 (32.4%)	9 (24.3%)	3 (8.1%)	3 (8.1%)	0	Odds Ratio: 2.7 95% CI 1.1, 7.1, P= 0.04
Felt that you were attractive (good looking): *All Females*	3 (14.3%)	1 (4.4%)	7 (33.3%)	4 (17.4%)	7 (33.3%)	8 (34.8%)	1 (4.8%)	9 (39.1%)	3 (14.3%)	1 (4.4%)	P= 0.04
	Immediately		1 day		1-2 weeks		1 month		3 months		
Time taken to get used to appliance: *All Participants*	2 (5.4%)	0	4 (10.8%)	8 (21.6%)	15 (40.5%)	21 (56.8%)	7 (18.9%)	7 (18.9%)	9 (24.3%)	1 (2.7%)	P= 0.03
All Females	2 (9.5%)	0	3 (14.9%)	3 (13.0%)	6 (28.6%)	14 (60.9%)	4 (19.1%)	6 (26.1%)	6 (28.6%)	0	P= 0.014
Difficulty keeping teeth clean: *All Participants*	10 (27%)	16 (43.2%)	11 (29.7%)	13 (35.1%)	11 (29.7%)	6 (16.2%)	4 (10.8%)	0 (5.4%)	1 (2.7%)	2 (5.4%)	P= 0.11
Reasons why braces or Invisalign* are annoying/frustrating: *All Participants*	Food Gets Stuck		Wire Pokes		Insertion/Removal		Eating		Pain/Sores/Sensitivity		
	6 (16.2%)	0	7 (18.9%)	0	0	6 (16.2%)	2 (5.4%)	1 (2.7%)	4 (10.8%)	3 (8.1%)	
	Oral Hygiene		Other		N/A						
	1 (2.7%)	1 (2.7%)	2 (5.1%)	4 (10.8%)	15 (40.5%)	22 (59.4%)					

appliance group reported having trouble eating all of the time, compared with 0% in the Invisalign group (Table 3).

A similar trend was noted in the recent study by Flores-Mir et al.[10] comparing the quality of life of adult patients in fixed appliances and Invisalign, in which responses regarding eating and chewing were significantly different between the two treatment modalities: 47% of Invisalign patients reported 100% satisfaction compared with only 24% of the fixed-appliance group.

Eating difficulties have been reported in the literature for both treatment modalities. Carter et al.[11] found that adolescent patients with fixed appliances reported having difficulty chewing foods, being messy while eating, taking longer to finish a meal, and having restricted food choices, while Livas et al.[12] found that Invisalign patients often complained about tooth sensitivity causing them to follow the so-called "Invisalign-diet" by decreasing the frequency of their meals or changing the type of foods they were eating.

Although Align Technology promotes Invisalign as having an advantage over conventional fixed appliances as the removability of the aligner makes it possible to enjoy all the same foods as before having treatment,[7] 32.4% of the Invisalign group still reported sometimes having difficulty eating the foods they would like (Table 3). This may have been due to the fact that although Invisalign patients do not necessarily have to restrict their food choices as do those with fixed appliances, aligners must still be removed and teeth should be brushed before reinsertion.

There was a significant difference in the distribution of responses between the treatment groups with regard to the time taken to adapt to treatment in the all participants group and the all females group (Table 3). While the majority of patients in both treatment groups took between 1 and 2 weeks to adapt to treatment, 24.3% of the fixed appliance group took 3 months to adapt to their appliances, compared with only 2.7% of the Invisalign group. The absence of brackets and wires, not having to adjust oral hygiene techniques, and the decreased visibility of the Invisalign appliance may have been factors that aided in faster adaptation.

When asked about feeling confident, a significant difference in the distribution of responses was noted in participants aged 14–18 (Table 3). Almost half of the Invisalign group (48.5%) reported feeling confident all the time, compared with only 9.4% of the fixed appliance group. However, the majority of the fixed

appliance group (40.6%) reported feeling confident fairly often, which is still a relatively regular occurrence, and the difference between reporting all the time versus fairly often may not be clinically significant. In the all females group, there was a significant difference in the distribution of responses between the fixed appliance and Invisalign group ($P = .04$) with regard to feeling attractive because of their mouth, teeth, or face. The majority of the Invisalign group (39.1%) reported feeling attractive fairly often due to their mouth, teeth, or face, compared with only 4.8% of the females in the fixed appliance group. Given that attention is usually focused on the face and mouth during social interactions,[13] perhaps the Invisalign group reported feeling confident and attractive more often than the fixed appliance group because of the decreased visibility of the appliance, and due to the fact that it can be removed for social events. Overall, the majority of both groups did not feel like their appliances inhibited them from wanting to speak or read out loud in class, did not avoid smiling or laughing because of their appliance, and did not worry about what others thought about their appliances, implying that, in general, their appliances did not adversely affect their confidence.

Given that it is more challenging to perform oral hygiene in fixed appliances due to trapped food and oral debris around brackets and wires, it was surprising to see that there was no significant difference between the treatment groups with regard to having difficulty keeping their teeth clean (Table 3). The majority of the Invisalign group (78.3%) reported never, or almost never having difficulty. This could be attributed to the ability to remove the aligners, which facilitated easier brushing and flossing. In the fixed appliance group, only 56.7% had the same response.

The fixed appliance group was 3.8 times more likely to report having to miss school because of their appliance compared with the Invisalign group. The majority of the Invisalign group reported never having to miss school (62.9%), compared with 44.4% of the fixed appliance group (Table 3). This may be due to the fact that treatment with Invisalign often involves greater intervals between appointments. However, some patients may have booked appointments strategically to avoid missing school. When asked to explain frustrations, the fixed appliance group reported the wire poking as a concern, and the Invisalign group listed frustrations with insertion and removal of their appliance. Aside from these unique challenges that were specific to each treatment modality, the distribution of the other responses was similar. Both groups expressed similar frustrations, including being unable to eat certain foods and sometimes experiencing generalized pain and sensitivity. While patients with fixed appliances commonly experience ulcerations and

mucosal damage,[14] no significant difference was noted in the distribution of responses between the two treatment groups with regard to the frequency of soft tissue sore spots. The similarity of responses in the two groups was surprising considering the absence of wires and brackets in the Invisalign group. Patients in the Invisalign group may have reported a similar frequency of sore spots as those in the fixed appliance group due to possible rough or sharp edges of the aligner, irritation from their attachments during function, or pinching of soft tissue during insertion.

The results of this study suggest that both groups were generally very satisfied with their treatment modality. Both groups reported high and almost identical satisfaction scores (Table 2). These findings were analogous to the quality-of-life study by Flores-Mir et al.[10] that compared adult patients with fixed appliances and Invisalign in which the authors reported statistically similar satisfaction outcomes for almost all of the dimensions investigated in both groups.

Limitations

As with any survey, the Hawthorne effect may have influenced the responses as participants may have altered their behavior due to their awareness of being evaluated.[15] Another consideration is that while participants had to be in treatment for a minimum of 6 months to adapt to their appliance, there was no further attempt to standardize the duration of treatment time when they responded to the survey. This range in treatment duration at the time of survey delivery may have led to variability in the responses.

CONCLUSIONS

Overall, there were no significant differences in the mean quality of life, satisfaction, or domain scores between the two treatment groups among all test groups analyzed. However, there were significantly different responses for individual items of the questionnaire:

- The Invisalign group demonstrated faster adaptation to treatment.
- The fixed-appliance group was 3.8 times more likely to report having to miss school.
- The fixed-appliance group was 2.7 times more likely to report having difficulty eating.
- Females between the ages of 14 and 18 years in the Invisalign group reported feeling attractive more often than those in the fixed-appliance group.
- Participants between the ages of 14 and 18 years in the Invisalign group reported feeling confident more often than those in the fixed-appliance group.

- The findings from this study can be used to aid clinicians, patients, and their families in selecting a treatment modality by providing realistic expectations and treatment experiences.

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