



Original Article

Analysis of the patient's experiences on the related instagram posts about the orthodontic treatment

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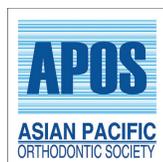
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Received: 18 January 2023
Accepted: 24 February 2023
Epub Ahead of Print: 27 March 2023
Published: 10 July 2023

DOI

10.25259/APOS_9_2023

Quick Response Code:



ABSTRACT

Objectives: The study aimed to comparatively evaluate the patients' experiences with these treatments by analyzing the contents of the posts shared by the patients with clear aligner and fixed orthodontic treatment (FOT).

Material and Methods: To reach the treatment methods, the hashtags "braces" for FOT and "aligner" for clear aligner treatment (CAT) were used in the Instagram search engine. To reach objective patient evaluations, clinicians' posts, company posts, and influencers' posts containing advertisements and collaborations were eliminated and direct patient posts were considered. Seventy-nine posts were included in the FOT group and 52 posts in the CAT group. The posts were evaluated comparatively in terms of the number of likes, followers of the profiles, comments and content, the gender of the patients, and the treatment stage.

Results: According to the results of the analysis, although the number of followers, likes, comments, and positive and neutral comments were higher in favor of the aligner group between the FOT and CAT groups, the rate of likes/followers was found to be higher in favor of the fixed treatment group ($P < 0.05$).

Conclusion: Considering the literature, although studies on CATs on social media are limited, this media is seen as an effective factor in the treatment decision-making process of patients. While the most negative comments of individuals in fixed treatment were psychological effects, the most criticized issue in CAT was treatment fees.

Keywords: Clear aligners, Social media, Orthodontics, Instagram

INTRODUCTION

Instagram is one of the most frequently used social media platforms today. According to 2022 data, the number of Instagram users has exceeded 1.1 billion and users spend an average of 28 min/day on this platform.^[1] The number of followers, the number of likes, and the comments on the posts can affect the lives of individuals, and due to the posts on this platform, esthetic values become more important to the individuals.^[2,3] It has been observed that social media platforms, such as Twitter, Youtube,TM and Instagram, play an active role in patients' own treatment decisions.^[4] On Instagram, patients get an idea about the treatment by looking at the comments made by other individuals under the photos and videos, in which they share their experiences, attitudes, and feelings about orthodontic treatments.

Today, orthodontic treatment can be performed using metal brackets, as well as with clear aligners, which is a new approach for individuals with esthetic concerns. Although the orthodontic treatment technique with clear aligners is a new touch, it has become popular by

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making a rapid breakthrough, and studies and clinical experiences have shown that difficult cases can be treated with clear aligners.^[5] In addition, it is reported that the number of Instagram posts related to the clear aligner treatment (CAT), whose popularity is increasing day by day, has increased very rapidly.^[6,7]

Despite the increasing posts, a limited number of studies were found in the literature review that examined the orthodontic experiences of patients on Instagram. Graf *et al.* evaluated the opinions of patients about orthodontic treatment on Twitter and Instagram platforms and concluded that young adults made more positive comments about this treatment.^[8] In another study, Buyuk *et al.* evaluated Instagram posts about accelerated orthodontic treatment.^[9] Noll *et al.* evaluated the posts about fixed orthodontic treatment (FOT) and orthodontic treatment with clear aligners using the Twitter platform.^[10] In this regard, the aim of the study is to analyze the Instagram posts shared by the patients with CAT and FOT according to the number of likes, positive and negative comments, and the content of the posts, and to evaluate the patients' experiences with these treatments comparatively. The null hypothesis was that there are no differences in content between posts about FOT and CAT.

MATERIAL AND METHODS

Ethical considerations

The data used in the study were taken from profiles that are accessible to everyone on social media, and ethical committee approval was not required as it does not require any special permission, and only descriptive information is used.

Selection of patients' post

To not affect the search results, a new account was created on Instagram to be used only for this study, and the "braces" hashtag for FOT and the "aligner" hashtag for CAT were searched in the Instagram search engine. Between February 01, 2022, and March 01, 2022, daily posts belonging to public profiles were evaluated. To stabilize the number of likes and comments on the posts, those 10 days or more after the posts were included in the study, and a total of 8954 posts were evaluated. The search results were evaluated by two researchers. To reach objective patient evaluations, exclusion criteria were determined physician posts, company posts, and influencers' posts containing advertisements and collaborations, and direct patient posts were considered. To keep the prevalence at the highest level in the evaluation of the post, a specific language was not selected and Google Translate (Google Inc, Mountain View, CA, USA) was used for language analysis. By the study criteria, 79 Instagram posts in the FOT group and 52 Instagram posts in the aligner treatment group were included in the study.

Evaluation criteria

The posts were evaluated comparatively in terms of the number of likes in each category, the number of followers of the profiles, the number and content of negative, positive, and neutral comments, the parameters of the gender of the patients, and the treatment phase (initial phase, active treatment, and end phase). The ratio of the number of likes to the number of followers and the number of negative, positive, and neutral comments to the total number of comments was compared. The study data were evaluated on the Microsoft Excel worksheet (Microsoft 2019, Washington, DC, USA), and the negative comments were categorized according to their content.

Statistical analysis

Data analysis was performed with the Statistical Package for the Social Sciences (SPSS) software (SPSS for Windows 13.0, IBM Inc., Chicago, IL, USA) 24.0. The Shapiro–Wilk normality test was used for evaluating the data. In the study, non-parametric tests were chosen because the parameters were not suitable for normal distribution. Pearson Chi-square test was used for the categorical evaluation. In this context, Mann–Whitney U and Kruskal–Wallis tests were used to compare the groups. The Spearman correlation coefficient was used in the relationship between the parameters. $P < 0.05$ was considered statistically significant.

RESULTS

The correlation between researchers was assessed by ICC analysis and it revealed that a strong positive correlation was found. Out of a total of 8954 posts, 79 posts (60.3%) related to FOT and 52 posts (39.2%) related to CAT were included in the study, as they were found to be suitable for the study criteria [Figure 1]. When the data obtained are evaluated, there is a statistically significant relationship between treatment type and treatment stages ($P < 0.05$). In addition, patients with FOT mostly share during active treatment [Table 1, 68.4%]. When the contents of the negative comments were evaluated, mostly negative thoughts, nutritional difficulties, treatment costs, pain, and duration of treatment were mentioned [Figure 2]. Furthermore, as a result of our evaluation, the post in the FOT group was 86% English, 3% German, 3% Japanese, 2.5% Russian, 2.5% Polish, and 1.2% Filipino. In the Clear Aligner Therapy group, posts of 84.6% are English, 5.7% German, 1.9% Estonian, 1.9% Russian, 1.9% Czech, 1.9% French, and 1.9% Indonesian.

Here are some examples of positive comments about CAT:

**Your too pretty 🍷 to be a vet. Do you only wear them overnight? I was told 22 h a day. Your smile looks great*

**This sounds amazing. My oldest sister was using clear aligner and she was very satisfied with results ❤️*

Table 1: The distribution of fixed orthodontic treatment and clear aligner treatment data according to stages and genders was compared.

	Fixed orthodontic treatment (#Braces)		Clear aligner treatment (#Aligner)		Total		Chi-square test	
	n	%	n	%	n	%	χ^2	P
Treatment phase								
1	11	13.9	26	50.0	37	28.2	25.395	0,000*
2	54	68.4	26	50.0	80	61.1		
3	14	17.7	0	0.0	14	10.7		
Gender								
1	64	81.0	40	76.9	104	79.4	0.119	0,730
2	15	19.0	12	23.1	27	20.6		

In the treatment stage category, it refers to 1: Treatment beginning, 2: Treatment phase, and 3: Treatment final phase. In the gender category, number 1 represents female patients, while number 2 represents male patients.

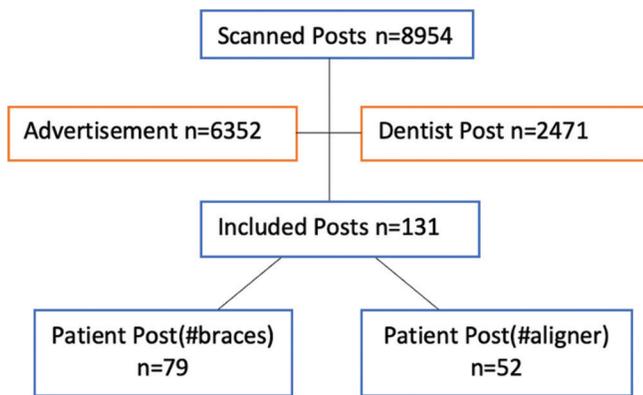


Figure 1: Flow chart of screened, included, and excluded (Advertisement and dentist) posts.



Figure 2: Distribution of the subjects of negative comments on fixed orthodontic treatment posts.

Examples of negative comments about CAT:

*Valus on lausa vaadata. Mäletan seda valu 😞. (*it's painful to look at. I remember that pain 😞.)

*A kam ze to chodis? ja o tom taky uvazuju, ale na ty obri centra, ktera se specializuju na tyto neviditelna

rovnatka, jsem cetla dost rozporuplne recenze:-/Navic ta cena je taky silena no.(And where are you going? I'm also thinking about it, but I've read quite conflicting reviews about those giant centers that specialize in these invisible straighteners:-/Besides, the price is also high.)

Examples of positive comments about FOT:

*Best braces cute

*This is getting exciting for me to watch your transformation! I was in your shoes, and I know what it means to build yourself a beautiful smile, from a mouth of crooked teeth! Thanks so much for sharing your journey!!!

*Omg they are so straight and perfect!x

*Braces is good

The following are examples of negative comments about FOT:

*Ну очень радует что хотя бы оправдывает, ну это очень дорого (Well, I'm very pleased that it at least justifies, well, it's very expensive..)

*Ого ничего себе какая же цена 😊 Да дороговато. (Wow, what a price 😊 Yes, it's expensive.)

*Давно хочу поставить брекеты, но почему то все равно боюсь. 😊 (I've been wanting to get braces for a long time, but for some reason I'm still afraid. 😊)

*Вот и моя сестра носила брекеты раньше времени сняла, А теперь опять прикус испортился (So my sister wore braces ahead of time she took off, And now the bite has deteriorated again)

According to the results of the Kruskal–Wallis test, which was conducted to compare the treatment stages with the parameters (the number of likes, the number of followers of the profiles, the number and content of negative, positive, and neutral comments, the gender of the patients) in the FOT group, there was no statistically significant difference between the treatment stages in terms of parameters ($P > 0.05$) [Table 2]. In addition, there was no statistically significant relationship between sharing of treatment type and gender ($P > 0.05$) [Table 2]. According to the results

of the Mann–Whitney U-test, performed to compare, the genders in terms of parameters in the FOT group, the number of likes, comments, positive comments, and neutral comments on the posts of female patients were found to be significantly higher than the posts of male patients ($P < 0.05$) [Table 3]. While the treatment fee was mostly mentioned in the negative comments about the CAT, it was the second subject of criticism that it was removed while eating most [Figure 3].

According to the results of the Mann–Whitney U-test performed to compare the treatment stages in terms of parameters in the CAT group, no significant difference was found between the treatment stages in terms of parameters ($P > 0.05$). There was a significant difference in the number of negative comments between the treatment stages in the CAT group ($P < 0.05$). The number of negative comments made to the patients who continue their CAT is higher than the patients who are at the initial stage [Table 4].

According to the results of the analysis, there is a significant difference between the FOT and the CAT groups in terms of

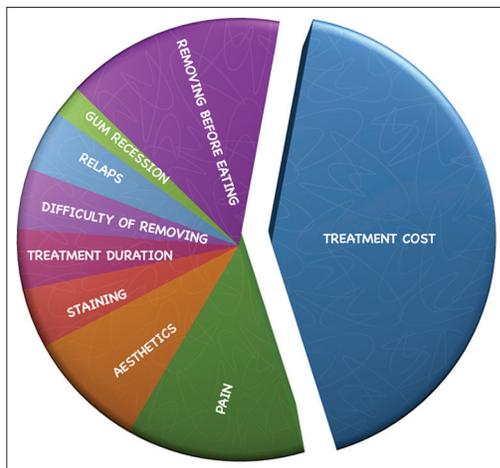


Figure 3: Distribution of the subjects of the negative comments made on the clear aligner treatment posts.

followers, likes, likes/followers ratio, number of comments, number of positive comments, and number of neutral comments ($P < 0.05$). While the number of followers, likes, comments, positive comments, and neutral comments were higher in the CAT group, the number of likes/followers was higher in the FOT group [Table 5].

DISCUSSION

In the present study, the positive and negative thoughts of the patients regarding the CAT and FOT were evaluated comparatively according to the content of the posts on Instagram. According to the results of the study, the number of likes, comments, and positive comments were found to be higher in CAT posts.

In the literature, studies evaluating the opinions of individuals about FOT were found on social media platforms, and it was seen that Youtube^[11,12] and Twitter^[10,13] studies were mostly performed. It is thought that the reason for this situation is that while Twitter and Youtube™ data could be transferred to various software, Instagram data could not be transferred to an environment with the help of software. However, since this platform is the most commonly used platform to obtain information about orthodontic treatment by patients, it was chosen in this study to evaluate patient experiences with FOT and clear aligners.^[14]

Instagram feed changes very quickly, and the number of likes and comments could change in the first few days. For this reason, to capture the time when the number of comments and likes is as stable as possible, the data of the posts that have passed at least 10 days after the sharing were examined. In addition, in the advertisements of trademarks and clinicians, the applied system is praised and this affects the results. For this reason, these posts were removed from the study. In the study, Instagram which is a database of gray literature was used, and it is thought that this literature provides information from different sources to reduce bias and enrich the findings.^[15]

Table 2: Comparison of processes in terms of parameters in the fixed orthodontic therapy (#Braces) group.

	Treatment stage									Kruskal–Wallis test	
	1			2			3			χ^2	P
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median		
Followers	1272.64	1043.29	1080	3561.46	6010.40	1425	12076.14	28038.60	3111	2.117	0.347
Likes	132.45	160.55	89	282.06	501.07	152	557.21	1489.50	160	1.812	0.404
likes/followers	0.12	0.11	0.0827	0.13	0.11	0.0995	0.11	0.13	0.0562	1.812	0.404
Total comments	6.18	6.10	5	10.41	11.98	6	17.36	22.94	11	2.196	0.334
Positive comments	4.18	5.64	4	5.70	6.27	3	13.71	21.13	9	3.795	0.150
Negative comments	0.36	0.92	0	0.35	1.23	0	0.07	0.27	0	0.806	0.668
Neutral comments	1.64	1.50	2	4.41	6.08	2	3.57	5.09	1	1.143	0.565

SD: Standard deviation, χ^2 : Chi-square test. In the treatment stage category, it refers to 1: Treatment beginning, 2: Treatment phase 3: Treatment final phase

Table 3: Comparison of genders in terms of parameters in the fixed orthodontic therapy (#Braces) group.

	Gender						Mann Whitney test	
	1			2			U	P
	Mean	SD	Median	Mean	SD	Median		
Followers	5529.28	14289.42	1559	1434.00	1662.81	871	346.000	0.094
Likes	367.73	821.24	163	63.60	52.20	35	191.500	0.000*
Likes/followers	0.13	0.12	0.0936	0.07	0.05	0.0827	337.000	0.074
Total comments	12.95	15.05	8	2.93	3.39	2	225.000	0.001*
Positive comments	8.09	11.59	4	1.87	2.33	1	240.500	0.003*
Negative comments	0.38	1.19	0	0.00	0.00	0	397.500	0.086
Neutral comments	4.53	5.94	2	1.07	1.33	0	305.000	0.025*

*P<0.05. SD: Standard deviation, U: Mann Whitney U test, In the gender category, number 1 represents female patients, while number 2 represents male patients

Table 4: Comparison of processes in clear aligner therapy (#Aligner) group in terms of parameters.

	Treatment stage						Mann Whitney test	
	1			2			U	P
	Mean	SD	Median	Mean	SD	Median		
Followers	28368.81	51800.24	11750	16707.77	25385.40	4523	283.000	0.314
Likes	1179.96	2954.56	501	796.58	1411.88	204	271.000	0.220
Likes/Followers	0.12	0.17	0.0407	0.07	0.07	0.0476	326.000	0.826
Total comments	41.00	58.95	9	60.50	135.17	15	297.500	0.458
Positive comments	30.19	46.53	5	41.46	96.40	8	327.000	0.840
Negative comments	0.19	0.98	0	1.56	3.28	0	222.000	0.005*
Neutral comments	9.15	15.66	3	17.58	45.80	4	274.000	0.237

*P<0.05. SD: Standard deviation, U: Mann Whitney U test. In the treatment stage category, it refers to 1: Treatment beginning, 2: Treatment phase 3: Treatment final phase

Table 5: Comparison of the data in the fixed orthodontic treatment and clear aligner treatment categories in terms of followers, likes, likes/followers, comments, positive comments and negative comments.

	Fixed orthodontic treatment (#Braces)			Clear aligner treatment (#Aligner)			Mann Whitney test	
	Mean	SD	Median	Mean	SD	Median	U	P
Followers	4751.70	12962.64	1356	22538.29	40815.18	9322	1098.500	0.000*
Likes	309.99	748.09	147	988.27	2300.82	257	1408.000	0.002*
Likes/Followers	0.12	0.11	0.0883	0.10	0.13	0.0437	1446.000	0.004*
Comment	11.05	14.17	6	50.75	103.72	12	1464.000	0.005*
Positive comment	6.91	10.75	4	35.83	75.16	7	1484.000	0.007*
Negative comment	0.30	1.08	0	0.86	2.47	0	1877.000	0.306
Neutral comment	3.87	5.54	2	13.37	34.15	4	1538.000	0.014*

*P<0.05. SD: Standard deviation, U: Mann Whitney U test

According to the findings of our study, the patients who receive FOT share more on social media during the active treatment phase of the treatment. As a result, there were more positive comments than negative comments in the posts about the improvement of the dental esthetic during the FOT process. On the other hand, when the active treatment process, more comments were made on the posts of the patients who have CAT, and it was seen that the

negative comments were mostly on these posts. In addition, curiosity about the CAT is higher than FOT. Based on this information, it is thought that CAT attracts more interest among individuals.

CAT is a more up-to-date treatment approach that researched by patients, but there is limited information on the internet to obtain. In the CAT and FOT group, the majority of the comments are positive comments, but there are also negative

comments too. The reason why the majority of the comments in both groups were positive is that the patients were very satisfied with the alignment of their teeth and smile esthetics as a result of orthodontic treatments.^[16]

The content of the negative comments made on the patient's posts who have FOT was about the scare of the difficulties of this treatment. Some individuals perceived fixed appliances as a bad experience, while others said that they are worried about this treatment. According to the results obtained from the study of Noll *et al.*,^[10] in which they evaluated the posts in English about CAT and FOT on the Twitter platform, the most criticized issue in this treatment was pain. According to our study, social media users in fixed treatment mostly made negative comments about orthodontic treatment affecting their psychological state. While this finding was different from the findings of the Noll *et al.*^[10] AlSeraihi *et al.* found that FOT affects patients more psychologically than CAT in their survey study.^[17]

Other criticisms of patients about FOT were feeding difficulties and pain.^[18] During the fixed appliances treatment stages, the pain after the control sessions causes difficulty in eating. Pain and feeding difficulties may decrease the quality of life of patients.^[19] In the study conducted by Zhang *et al.*,^[20] it was stated that it did not affect the quality of life of patients as expected before the treatment. However, patients feel more pain than the clinicians estimated, and therefore, they referred to this issue more frequently on the platform where they can express themselves comfortably.^[16] Although the applied forces are mild, pain due to tooth movement is a common complication.^[21] Due to the continuous force applied by the fixed orthodontic appliances to the teeth and intermittent forces applied by the clear aligner appliances, the pain levels perceived by the patients during the treatment are different, and the patients experience more severe pain with continuous forces.^[21] Studies have suggested that patients treated with clear aligners experience less pain and discomfort,^[22-24] and these results confirm the data obtained in our study.

According to the results of the study, it is seen that the point of criticism about CAT is mostly the treatment fees. Patients who receive CAT pay 50–60% more than patients who receive FOT, and patients with better socioeconomic status prefer CAT.^[25] Although the cost varies depending on the socioeconomic status of the patients and the countries, patients generally found the orthodontic treatment fees expensive in the comments. Paying more fees for the treatment that will provide similar results due to esthetic reasons may cause patients to make negative comments.

Limitations

Although Instagram did not limit the posts to any language in this study, tags of English terms were used in the search

engine. This may result in the inclusion of posts from different countries in different languages. The number of likes, comments, and followers in social media posts can vary very quickly, and this may cause variability in the results of the study.^[7] Since social media is mostly used by adolescents and young adults, the study may reflect the thoughts of individuals in this age group. Study data may not be representative of all individuals treated with these two treatments, as public posts are taken into account when evaluating posts. In addition, sarcastic interpretations made according to different languages may not have been detected in the interpretations. Within limitations, it is thought that this study gives an idea about the experiences that patients post on this virtual platform, where they feel more comfortable.

CONCLUSION

Although the studies about CATs on social media are limited, this platform is seen as an effective factor in the treatment type selection process of patients. According to the results of the recent study, patients applying CAT make more positive comments about their treatment processes than patients who have fixed orthodontic appliances. While the most negative comments of individuals in fixed treatment were psychological effects, the most criticized issue in CAT was treatment costs.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Doğrugören R, Demir GB, Topsakal KG, Duran GS, Gorgülü S. Analysis of the patients' experiences on the related Instagram posts about the orthodontic treatment. *APOS Trends Orthod* 2023;13:161-7.