

# Analysis of Usefulness and Information Quality of Instagram Posts About Smile Aesthetic: Methodological Study

## Gülüş Estetiği ile İlgili Instagram Gönderilerinin Kullanışlılık ve Bilgi Kalitesinin Analizi: Metodolojik Çalışma

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**ABSTRACT Objective:** This study evaluates the usefulness and information quality of Instagram posts related to smile aesthetic. **Material and Methods:** The search identified 6.4 million posts related to smile aesthetic. The three most used hashtags were selected: #smilemakeover, #smiledesign, and #hollywoodsmile. The “Top 300 posts” listed by the Instagram search algorithm were recorded for each hashtag (n=300). Out of 900 posts, 225 were suitable for the research topic. The reliability of their general information was analyzed using the modified DISCERN analysis based on five questions, and the usefulness score based on six criteria was assessed by two independent reviewers. Descriptive statistics were calculated, and comparisons were performed using the Kruskal-Wallis test and the Mann-Whitney U test (p=0.05). **Results:** Of the posts, 81.3% (n=183) were uploaded by the dentist/clinic, 4.4% (n=10) by the patient, and 14.2% (n=32) by the dental technician. According to the reliability of the posts' general information, there was a highly significant difference in the posts between those uploaded by the dentist/clinic and the other groups (p<0.001). There is a statistically significant difference between the Usefulness score of dentist/clinic and dental technician (p<0.001) but not between the other groups (p>0.05). **Conclusion:** Despite dentist/clinic accounts' posts being more reliable and more useful Instagram posts do not contain reliable information for patients.

**Keywords:** Aesthetics; data quality; health literacy; prosthodontics

**ÖZET Amaç:** Çalışmanın amacı, gülüş estetiği ile ilgili Instagram gönderilerinin faydasını ve bilgi kalitesini değerlendirmektir. **Gereç ve Yöntemler:** Gülüş estetiği ile ilgili 6,4 milyon gönderi tespit edilmiştir. En çok kullanılan 3 hashtag seçildi: #smilemakeover, #smiledesign ve #hollywoodsmile. Instagram arama algoritması tarafından listelenen “Başlıca 300 gönderi” her hashtag için kaydedildi (n=300). 900 gönderiden 225'i araştırma konusu için uygun bulundu. Genel bilgilerinin güvenilirliği, 5 sorudan oluşan modifiye DISCERN analizi kullanılarak ve faydalılık analizi ise 6 kritere göre 2 bağımsız hekim tarafından değerlendirildi. Tanımlayıcı istatistikler hesaplandı ve karşılaştırmalar Kruskal-Wallis testi ve Mann-Whitney U testi kullanılarak yapıldı (p=0,05). **Bulgular:** Gönderilerin %81,3'ü (n=183) diş hekimi/klinik tarafından, %4,4'ü (n=10) hasta tarafından ve %14,2'si (n=32) diş teknisyeni tarafından paylaşılmıştır. Gönderilerin genel bilgilerinin güvenilirliğine göre diş hekimi/klinik tarafından yüklenen gönderiler ile diğer gruplar arasında anlamlı fark bulunmuştur (p<0,001). Diş hekimi/klinik ve diş teknisyeni grupları arasında faydalılık analizi açısından istatistiksel olarak anlamlı fark bulunmuştur (p<0,001), ancak diğer gruplar arasında anlamlı bir fark bulunmamıştır (p>0,05). **Sonuç:** Diş hekimi/klinik hesaplarının gönderileri daha güvenilir ve faydalı olmasına rağmen Instagram gönderileri hastalar için güvenilir bilgi içermemektedir.

**Anahtar Kelimeler:** Estetik; veri kalitesi; sağlık okuryazarlığı; prostodonti

Nowadays, social media applications play a crucial role in delivering information that patients are interested in. Patients prefer social media applications such as Instagram (Facebook, Menlo Park, USA), Twitter (Space X, California, USA), Youtube (Alphabet, California, USA) to obtain information about dental procedures, doubts, advice, and costs because

of easier than face-to-face.<sup>1-3</sup> In addition, social media can be utilized for marketing, promotion, and educational purposes in the field of dentistry.<sup>4</sup> However, the information available online is not always accurate and may not come from reliable sources. This situation impacts the treatment process for both patients and dentists.<sup>5,6</sup>

### TO CITE THIS ARTICLE:

Şahin N, Ural Ç. Analysis of usefulness and information quality of Instagram posts about smile aesthetic: Methodological study. Türkiye Klinikleri J Dental Sci. 2024;30(4):674-8.

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Peer review under responsibility of Türkiye Klinikleri Journal of Dental Sciences.

**Received:** 17 Jul 2024

**Received in revised form:** 10 Sep 2024

**Accepted:** 11 Sep 2024

**Available online:** 16 Sep 2024

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In previous studies, simplified scales, Health on the Net Foundation Code of Conduct (HON Code), Global Quality Score, Journal of American Medical Association score, modified DISCERN Scale, DISCERN Scale, and usefulness scores were used to evaluate the accuracy of claims, reliability, and information quality.<sup>7-15</sup>

Instagram is the most popular photo-sharing site with 2 billion monthly active users.<sup>12</sup> Instagram enables users to share photos and videos either publicly or privately, both on its platform and across other social networks. Users can post content that their followers can comment on, like, or save. When a search is conducted using a hashtag (#), Instagram displays posts that include the corresponding hashtag.<sup>16-18</sup>

Smile aesthetics are determined by the appearance of the teeth, the framing provided by the lips, the shape and contour of the gums, and the presence of gaps and spaces between the teeth.<sup>19</sup> Smile aesthetic treatment has recently become very popular, and there are a lot of posts about smile aesthetic treatments on social media. In the study, Temizci evaluated the YouTube Turkish language videos about smile design and found 36% of the content insufficient.<sup>20</sup> However, the literature review shows that no study has analyzed the information quality of smile aesthetic on Instagram. Because of this, this study aimed to evaluate the usefulness and quality of the top posts related to smile aesthetic on Instagram using the modified DISCERN Scale and usefulness score. The null hypothesis posited no significant difference in the usefulness and informational quality of Instagram posts among different user types.

## MATERIAL AND METHODS

Since the data is publicly accessible, ethics committee approval was not necessary for this study.

First of all, a new Instagram account was created to eliminate biases. Study data was collected by recording public Instagram posts from June 12-14, 2024, by a single investigator (N.Ş.) using the same smart phone. The autocomplete function of Instagram's search engine, which users often rely on to find trending hashtags (#), was employed. By entering #smile in the search bar, trending tags (#) related to smiling were identified based on their popularity

and aligned with the objectives of this study. This process was repeated a total of three times. Search hashtags were determined as “#smilemakeover, #smiledesign, and #hollywoodsmile” and listed. For each hashtag, the Uniform Resource Locator of the Top 300 posts determined by the Instagram search algorithm was recorded (n=300). The data obtained from the three hashtags were filtered using the following exclusion criteria: (1) posts not in English, (2) posts with likes and views disabled, (3) duplicate posts, and (4) posts irrelevant to the topic. Then related posts were categorized using based on predetermined criteria, including the type of user (dentist clinic/patient/dental technician), the purpose of the post (marketing/information/advice), and the format of the post (photograph/video).

The quality of information in Instagram posts was analyzed by two independent reviewers (N. Ş. and Ç.U.) using the Modified DISCERN analysis and usefulness score shown in Table 1. In cases where their scores differed, the reviewers decided by reviewing the posts together. A modified DISCERN analysis with 5 questions was used to evaluate information quality.<sup>9,10,21</sup> The usefulness score was analyzed under 6 headings according to the quality of the content.<sup>1,13</sup> The questions answers; had a “yes” score of 1 and a “no” score of 0, with higher scores indicating greater reliability and quality. The post analysis was recorded in an Excel (Microsoft, USA) file.

**TABLE 1:** Modified DISCERN and usefulness score.

Modified DISCERN	
1.	Is the aim clear, concise, and understandable?
2.	Are sources of information reliable? (cited publication, video content was from valid studies, dentists)
3.	Is the information presented balanced and unbiased? (any reference to other treatment choices?)
4.	Are additional sources of information listed?
5.	Does it refer to areas of uncertainty?
Usefulness score	
1.	Indications/Contraindications
2.	Advantages
3.	Procedures involved
4.	Complications
5.	Prognosis and survival
6.	Cost

Statistical analysis was performed using Python software (Version 3.8). The normality of quantitative data was assessed using the Shapiro-Wilk test, revealing non-normal distributions in all three groups ( $p < 0.05$ ). To evaluate the statistical significance of DISCERN Score and Usefulness Score among different user groups, Kruskal-Wallis and Mann-Whitney U tests were conducted.

## RESULTS

The total number of posts related to the 3 included hashtags was 6.4 million, with the highest number of posts under the #smilemakeover hashtag (2.9 million), followed by the #smiledesign hashtag (2.1 million), and the lowest number of posts found under #hollywoodsmile hashtag (1.4 million). Among the 900 posts, 36 posts that were not in English, 15 posts with likes and views disabled, 121 duplicate posts, and 503 posts irrelevant to the topic were extracted. 225 posts were categorized based on predetermined criteria (Table 2).

The mean, and standard deviation for Modified DISCERN Score and Usefulness Score were calculated for the type of user posts on the Instagram platform (Table 3).

**TABLE 2:** Posts analysis table.

		#Smilemakeover	#Smiledesign	#Hollywoodsmile
Type of user	Dentist/clinic	44	64	75
	Patient	4	2	6
	Dental technician	5	24	3
Purpose of post	Marketing	36	61	71
	Information	12	18	9
	Advice	5	9	4
Format of post	Photograph	24	63	56
	Video	28	25	29

**TABLE 3:** The mean, and standard deviation values for the type of user.

	Modified DISCERN Score ( $\bar{X} \pm SD$ )	Usefulness score ( $\bar{X} \pm SD$ )
Dentist/clinic	2.03±0.99	1.55±1.06
Patient	0.70±0.67	1.30±1.06
Dental technician	0.94±1.08	0.71±0.59

SD: Standard deviation.

For the Modified DISCERN Score and Usefulness Score, the Shapiro-Wilk normality test was conducted to determine if the quantitative data followed a normal distribution. According to the test results, none of the three groups showed a normal distribution for the Modified DISCERN Score ( $p < 0.05$ ). For the Usefulness Score, the results indicate that the Dentist/clinic group and the Dental Technician group do not follow a normal distribution ( $p < 0.05$ ). Only the Patient group follows a normal distribution ( $p = 0.11$ ).

Subsequently, the Kruskal-Wallis analysis was conducted to evaluate the statistical significance between the groups. The resulting p-values indicate an extremely significant relationship between types of users for both scores ( $p < 0.001$ ). To identify which groups were significantly different from each other, post-hoc pairwise comparisons were performed using the Mann-Whitney U test.

The results of the Modified DISCERN Score indicate statistically significant differences between the Dentist/clinic group and the Patient group, as well as between the Dentist/clinic group and the Dental Technician group ( $p < 0.05$ ). However, no statistically significant difference was found between the Patient group and the Dental Technician group ( $p = 0.77$ ).

The results of the Usefulness Score indicate statistically significant differences between the Dentist/clinic group and the Dental Technician group ( $p < 0.05$ ). However, no statistically significant difference was found between the Dentist/clinic group and the Patient group, nor between the Patient group and the Dental Technician group ( $p = 0.08$ ).

## DISCUSSION

The findings of the present study rejected the null hypothesis that there would be no significant difference between user types regarding the usefulness and information quality of smile aesthetic posts on Instagram.

Different treatment options and digital treatment protocols shared on social media can bring patients and dentists together in various innovative educational and marketing roles.<sup>7</sup> However, posts with incorrect and incomplete content can be harmful, especially when it is related to health.<sup>11,13</sup> When looking at stud-

ies evaluating the quality of social media shares in the field of dentistry, applications such as Instagram, YouTube, Twitter, and TikTok (ByteDance, Beijing, China) were used.<sup>4,7,9,11,14,15,22,23</sup> Since Instagram has recently become a trading platform among the young population, the reliability and usefulness of Instagram posts were evaluated.<sup>24</sup>

Smile aesthetic, which has become very popular lately, is one of the most researched dentistry applications on social media. For this study, hashtags accompanying #smileaesthetic in the posts were identified. The three hashtags with the maximum number of posts on the subject were included in the study. The previous studies analyzed “recent”, “random” or “top” posts.<sup>21,25-27</sup> Considering the patients’ search strategy, the “Top 300 posts” associated with each hashtag were scanned.

225 posts related to smile aesthetics were analyzed, focusing on the type of user, purpose of the post, and format of the post. As in other similar studies, the dentist/clinic group shared more than others, accounting for 81.3% of the posts.<sup>1,12</sup> In about smile aesthetics, a significant portion of the posts (74.6%) were primarily aimed at marketing, and before-and-after clinical case reports were frequently featured.<sup>16,18</sup> Additionally, since editing and adjusting photographs required less time and effort, the most common format used was photographs.<sup>6,10,25</sup>

To our knowledge, this study is one of the first to assess the information quality of smile aesthetics content on Instagram using the Modified DISCERN and Usefulness Score. The modified DISCERN can be used to evaluate information quality on many social media platforms.<sup>11,28</sup> According to the modified DISCERN scale and usefulness score result, the information in Instagram posts is inaccurate or of inadequate quality. This may be due to the use of irrelevant hashtags, marketing tactics, personal advice, and the lack of a thorough peer review process.<sup>14,27,29-31</sup>

The dentist/clinic accounts mean modified DISCERN score is  $2.03 \pm 0.99$  and is significantly higher than other groups. The higher information quality of the dentist/clinic accounts was an expected result considering their education and experience.<sup>17</sup> The fact that there is no significant difference between the

Dentist/clinic group and patient group usefulness scores is because the advantage and detail of the procedure involved are generally included in the shares made by patients.

There were some important limitations in this study. One limitation is that, although Instagram is a dynamic platform, the analysis of hashtags and posts was conducted within a specific date range. In future studies, it would be beneficial to analyze Instagram posts at various time points throughout the year. Another limitation is that only posts in English were considered. Posts about smile aesthetics may be re-evaluated through multinational studies.

## CONCLUSION

As a result of this study, posts shade from dentist/clinic accounts were found to be more successful in terms of Usefulness and Information Quality. However, Dentist/clinic accounts should be more active and support their posts with evidence-based content because social media can affect patients’ decisions about medical treatment.

The Instagram posts do not have enough reliable information for patients so patients should be careful when researching medical procedures on social media platforms.

### Source of Finance

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

**Idea/Concept:** Nurşen Şahin, Çağrı Ural; **Design:** Nurşen Şahin; **Control/Supervision:** Nurşen Şahin, Çağrı Ural; **Data Collection and/or Processing:** Nurşen Şahin; **Analysis and/or Interpretation:** Nurşen Şahin; **Literature Review:** Nurşen Şahin, Çağrı Ural; **Writing the Article:** Nurşen Şahin, Çağrı Ural; **Critical Review:** Çağrı Ural; **References and Fundings:** Nurşen Şahin.

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