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The implication of social media on dentists concerning clinical performance and self-satisfaction for endodontic practice: A questionnaire-based study

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Purpose: To determine the role and impact of Instagram concerning use and sharing routines, its impact on the degree of self-satisfaction with post-treatment work, and its emotional influence on those performing endodontic treatment in clinical practice during simultaneous social media monitoring.

Methods: The study was conducted using a questionnaire data collection method. The questionnaire, consisting of two parts—demographics with four questions and an assessment of the aim of the study with seven questions—was administered to 151 individuals (students, general dentists, and endodontists).

Results: As a result of the analysis, 98% of the respondents use Instagram, 90.1% follow endodontic posts and videos, and 88.7% found that the information they accessed affects their clinical life. It was found that Instagram affects clinicians' self-satisfaction (81.5%) in a good or bad way concerning their practice. A higher number of clinicians responded that they try to offer better work due to the impact of social media (68.3%).

Conclusion: In light of the present findings, Instagram may be a source of data and motivation to improve clinical experience and skills when used appropriately.

Keywords: Endodontics; endodontic practice; Instagram; sustainable education.

Introduction

Social media has become a part of the social lives of human beings in recent years, and its use is increasing daily. With millions of people adopting social media, obtaining and sharing information has been dramatically affected. In addition to traditional interactions, these web-based tools are used to sustain, enhance, and accelerate communication in healthcare (1). This change has affected clinician-patient relationships, medical practice, public health, and health research, especially with the widespread COVID-19 pandemic (2). Besides, during the pandemic, social media became essential for transferring scientific knowledge and communicating with colleagues due to social distancing requirements, and education worldwide has been shifting

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towards distance education (3–5).

Given that the COVID-19 pandemic has affected face-to-face epidemiological research, the use of social media in scientific research has been helpful for an overview of the literature (6). Conversely, online information about health problems may be limited, inaccurate, and misleading (7). This is because social media content may be influenced by biases and advertisements, as well as the fact that the information reaches users directly without being subject to an independent process such as peer review. Therefore, evidence-based clinical practices are always needed (3). In this context, the accuracy and reliability analysis of relevant posts on Instagram should also be done and reported constantly.

With the emergence of social networking platforms, there has been a favorable environment for better exchange of ideas and social collaboration for educational purposes. Using these tools for educational purposes can improve the academic performance of students and help educators and students redefine their learning aspirations (8,9). It can also make learning more flexible, help students innovate, and facilitate shared learning by encouraging collaboration. Besides, Instagram is popular in dentistry, a visual field involving user video interaction. Some dentists turn to Instagram posts to discuss cases or provide clinical tips. Therefore, for specialists, general dentists, or student users, Instagram may be a guide to browse dental content, see different techniques, or be inspired by studies.

In this context, the motivation for this study was to evaluate the role and impact of Instagram in dentistry for endodontic practice, and the aim was that the questions sought to be answered in its planning are as follows:

1. Do clinicians use Instagram for their profession, especially for endodontic practice?

2. Does the information obtained about endodontics affect the clinical approach of the clinicians?

3. To what extent does it affect the clinician's satisfaction with their work after endodontic treatment?

Materials and Methods

Determining the Number of Participants and Ethical Approval

This study was conducted under the regulations of the Non-interventional Clinical Research Ethics Committee (Protocol no: 2022/05-18). The sample size was calculated using the software GPower* version V3.1.9.6 (Kiel University, Kiel, Germany). An alpha error of 0.05 and a 1-beta error of 0.95 with an effect size of 0.3 were established. As a result, the minimum number of participants in the study was determined to be 150. The inclusion criteria of the target group were dentistry students, general dentists, or endodontists. The study was conducted under the STROBE protocol for cross-sectional studies, and participants consented to their inclusion in the study by completing their online submission.

Design of the Survey

The survey, which included two parts with a total of 11 questions, was designed to assess the demographic information (n = 4: D1-4), social media use, and perceptions of clinicians (n = 7: Q1-7). Q1-5 were "Yes" or "No" questions. Q6 and Q7 included multiple-choice preferences. Participation in the survey was voluntary, and all information was collected anonymously. The survey was based on openness, validity, and function. The organization of questions, grouping, and section headings were designed to assist participants in understanding the flow of the questions, regardless of the planned analysis. Response options were organized consistently across the entire questionnaire to avoid confusing the respondents and consequently obtaining error-based data (10). Participants who were not dentists, endodontists, or dental students or did not have an Instagram account were excluded. All data were collected using a Google form. In the form, brief information about the survey was first given, and a link containing the study that those who wanted to participate could click on was added. Participants were able to leave at any time without completing the survey. No participant's name or personal data were requested for impartial data collection. The survey was administered for approximately one week until the determined participant number was reached (March/2022).

Statistical Analysis

Information was collected and entered into Microsoft Excel™. SPSS 20.0 software (IBM SPSS Inc., IL, USA) was used for all tests. The Shapiro-Wilk normality test assessed the scores. Descriptive statistics were used to describe participants' characteristics, social media use, and views on sharing characteristics and preferences. The Pearson Chi-square test at a 5% significance level was used for statistical analysis to determine the relationship between categorical data.

Results

Demographics

This study was conducted with the participation of 151 students, general dentists, and endodontists in Türkiye. Of the participants, 96 (63.6%) were female and 55 (36.4%)

were male. Thirty-five (23.2%) were students, 71 (47%) were general dentists, and 45 (29.8%) were specialists; 58 (38.4%) worked in private practice, 24 (15.9%) in public hospitals, and 69 (45.7%) in university hospitals. In terms of professional background, 64 (42.4%) of the participants had 0–5 years of experience, 20 (13.2%) 6–10 years, 22 (14.6%) 11–20 years, and 10 (6.6%) 20 years or more.

Table 1. The mean, standard deviation, and p values of the amount of removed dentin thickness in experimental groups (%)

		Q1. Do you use social media?			
		Yes	No	Total	p
Female					
	Count	93	3	96	
	% within gender	96.9%	3.1%	100.0%	0.554
	% within Q1	62.8%	100.0%	63.6%	
Male	Count	55	0	55	
	% within gender	100.0%	0.0%	100.0%	
	% within Q1	37.2%	0,0%	36.4%	
Total	Count	148	3	151	
	% within gender	98.0%	2.0%	100.0%	
	% within Q1	100.0%	100.0%	100.0%	
Student					
	Count	35	0	35	
	% within position	100.0%	0.0%	100.0%	
	% within Q1	23.6%	0.0%	23.2%	0.328
General Dentist					
	Count	70	1	71	
	% within position	98.6%	1.4%	100.0%	
	% within Q1	47.3%	33.3%	47.0%	
Endodontist					
	Count	43	2	45	
	% within position	95.6%	4.4%	100.0%	
	% within Q1	29.1%	66.7%	29.8%	
Total					
	Count	148	3	151	
	% within position	98.0%	2.0%	100.0%	
	% within Q1	100.0%	100.0%	100.0%	
Private Practice					
	Count	58	0	58	
	% within workplace	100.0%	0.0%	100.0%	0.358
	% within Q1	39.2%	0.0%	38.4%	
Public Hospital					
	Count	23	1	24	
	% within workplace	95.8%	4.2%	100.0%	
	% within Q1	15.5%	33.3%	15.9%	
University Hospital					
	Count	67	2	69	
	% within workplace	97.1%	2.9%	100.0%	
	% within Q1	45.3%	66.7%	45.7%	
Total					
	Count	148	3	151	
	% within workplace	98.0%	2.0%	100.0%	
	% within Q1	100.0%	100.0%	100.0%	

*Pearson Chi-square.

Table 2. Descriptive statistics of Question 2 according to categorical demographic data

	Q2. Do you follow posts or videos about endodontics to contribute to your professional practice?			
	Yes	No	Total	p
Female				
Count	89	7	96	
% within gender	92.7%	7.3%	100.0%	
% within Q2	65.4%	46.7%	63.6%	0.167
Male				
Count	47	8	55	
% within gender	85.5%	14.5%	100.0%	
% within Q2	34.6%	53.3%	36.4%	
Total				
Count	136	15	151	
% within gender	90.1%	9.9%	100.0%	
% within Q2	100.0%	100.0%	100.0%	
Student				
Count	29	6	35	
% within position	82.9%	17.1%	100.0%	
% within Q2	23.6%	21.4%	23.2%	0.229
General Dentist				
Count	61	10	71	
% within position	85.9%	14.1%	100.0%	
% within Q2	49.6%	35.7%	47.0%	
Endodontist				
Count	33	12	45	
% within position	73.3%	26.7%	100.0%	
% within Q2	26.8%	42.9%	29.8%	
Total				
Count	123	28	151	
% within position	81.5%	18.5%	100.0%	
% within Q2	100.0%	100.0%	100.0%	
Private Practice				
Count	55	3	58	
% within organization	94.8%	5.2%	100.0%	
% within Q2	40.4%	20.0%	38.4%	0.302
Public Hospital				
Count	21	3	24	
% within organization	87.5%	12.5%	100.0%	
% within Q2	15.4%	20.0%	15.9%	
University Hospital				
Count	60	9	69	
% within organization	87.0%	13.0%	100.0%	
% within Q2	44.1%	60.0%	45.7%	
Total				
Count	136	15	151	
% within organization	90.1%	9.9%	100.0%	
% within Q2	100.0%	100.0%	100.0%	

*Pearson Chi-square.

Table 3. Descriptive statistics of Question 4 according to categorical demographic data

	Q4. Is your job satisfaction after treatment affected by the posts you follow?			
	Yes	No	Total	p
Female				
Count	83[a]	13	96	
% within gender	86.5%	13.5%	100.0%	
% within Q4	67.5%	46.4%	63.6%	
Male				
Count	40[b]	15	55	
% within gender	72.7%	27.3%	100.0%	
% within Q4	32.5%	53.6%	36.4%	
Total				
Count	123	28	151	
% within gender	81.5%	18.5%	100.0%	
% within Q4	100.0%	100.0%	100.0%	
Student				
Count	29	6	35	
% within profession	82.9%	17.1%	100.0%	
% within Q4	23.6%	21.4%	23.2%	
0-5 years				
Count	55	9	64	
% within profession	85.9%	14.1%	100.0%	
% within Q4	44.7%	32.1%	42.4%	
6-10 years				
Count	17	3	20	
% within profession	85.0%	15.0%	100.0%	
% within Q4	13.8%	10.7%	13.2%	
11-20-years				
Count	16	6	22	
% within profession	72.7%	27.3%	100.0%	
% within Q4	13.0%	21.4%	14.6%	
20 and above				
Count	6	4	10	
% within profession	60.0%	40.0%	100.0%	
% within Q4	4.9%	14.3%	6.6%	
Total				
Count	123	28	151	
% within profession	81.5%	18.5%	100.0%	
% within Q4	100.0%	100.0%	100.0%	

*Pearson Chi-square, a,b: Different letters indicate statistical difference.

Questionnaire

The distribution of participants' answers for "Q1. Do you use Instagram?" was presented in Figure 1. Male and female participants gave similar answers, with no statistically significant difference ($p = 0.554$). When Instagram use and occupational position were compared, the answers were mostly "Yes" for each level, and there was no statistically significant difference between the groups ($p = 0.328$). When the comparison of Instagram use and the institution of employment was examined, it was observed that most of the participants use social media regardless of the institution ($p = 0.358$) (Table 1).

The distribution of the answers of participants for "Q2. Do you follow posts or videos about endodontics to contribute to your professional practice?" was presented in Figure 1. Male and female participants responded mainly

Table 4. Descriptive statistics of Question 5 according to categorical demographic data

	Q5. Do you share your clinical experiences and/or cases?			
	Yes	No	Total	p
Female				
Count	19	77	96	
% within gender	19.8%	80.2%	100.0%	
% within Q5	55.9%	65.8%	63.6%	
Male				
Count	15	40	55	
% within gender	27.3%	72.7%	100.0%	0.316
% within Q5	44.1%	34.2%	36.4%	
Total				
Count	34	117	151	
% within gender	22.5%	77.5%	100.0%	
% within Q5	100.0%	100.0%	100.0%	
Private Practice				
Count	20[a]	38	58	
% within workplace	34.5%	65.5%	100.0%	
% within Q5	58.8%	32.5%	38.4%	
Public Hospital				
Count	2[b]	22	24	
% within workplace	8.3%	91.7%	100.0%	
% within Q5	5.9%	18.8%	15.9%	0.014
University Hospital				
Count	12[a,b]	57	69	
% within workplace	17.4%	82.6%	100.0%	
% within Q5	35.3%	48.7%	45.7%	
Total				
Count	34	117	151	
% within workplace	22.5%	77.5%	100.0%	
% within Q5	100.0%	100.0%	100.0%	
Student				
Count	4	31	35	
% within profession	11.4%	88.6%	100.0%	
% within Q5	11.8%	26.5%	23.2%	
0-5 years				
Count	16	48	64	
% within profession	25.0%	75.0%	100.0%	
% within Q5	47.1%	41.0%	42.4%	
6-10 years				
Count	6	14	20	
% within profession	30.0%	70.0%	100.0%	
% within Q5	17.6%	12.0%	13.2%	0.256
11-20 years				
Count	7	15	22	
% within profession	31.8%	68.2%	100.0%	
% within Q5	20.6%	12.8%	14.6%	
20 and above				
Count	1	9	10	
% within profession	10.0%	90.0%	100.0%	
% within Q5	2.9%	7.7%	6.6%	
Total				
Count	34	117	151	
% within profession	22.5%	77.5%	100.0%	
% within Q5	100.0%	100.0%	100.0%	

*Pearson Chi-square, a,b: Different letters indicate statistical difference.

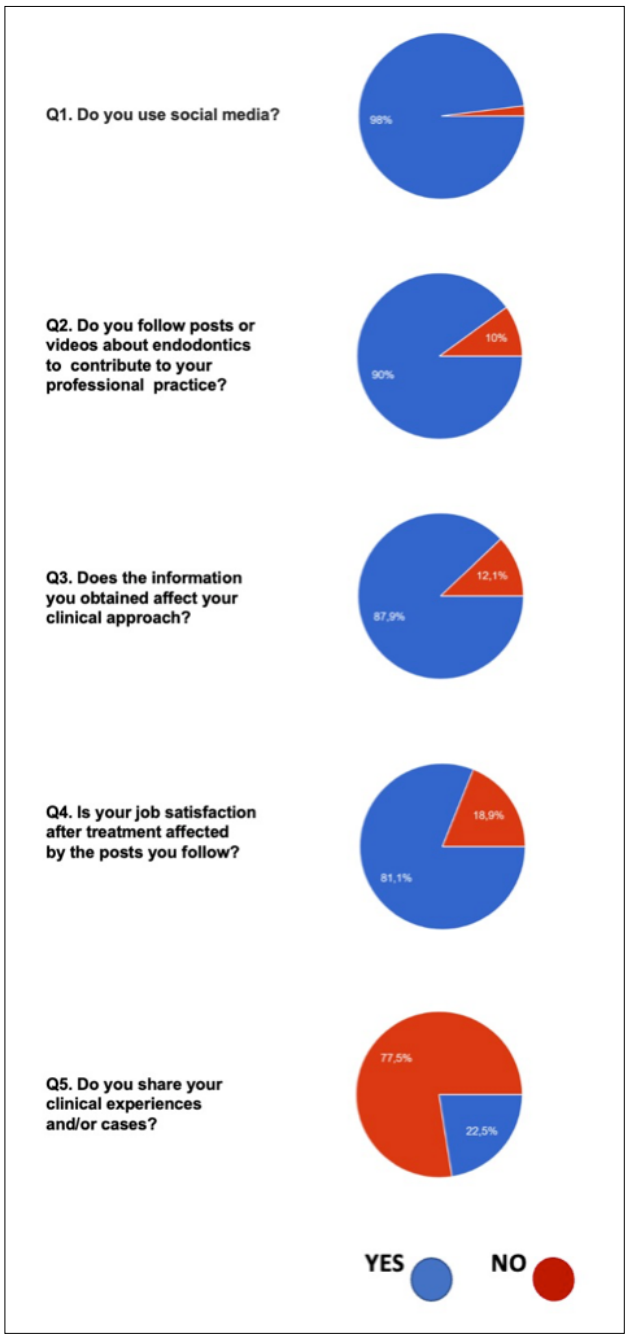

Fig. 1. Distribution of participants' responses to Yes/No questions (Q1-5).

positively to the question, and there was no statistically significant difference ($p = 0.167$). There was no statistically significant difference between following endodontic videos and occupational position ($p = 0.229$). There was no statistically signifiwcant difference between following endodontic videos and the workplace ($p = 0.302$) (Table 2).

When the responses for "Q3. Does the information you obtained affect your clinical approach?" were evaluated, 134 (88%) of the participants answered "Yes" to the question, while 17 (11.3%) answered "No" (Fig. 1).

The distribution of the answers of participants for "Q4. Is your job satisfaction after treatment affected by the posts you follow?" was presented in Figure 1. In the comparison of the question and gender, the answer "Yes" was more in favor of women, and significance was observed between the groups in terms of satisfaction after clinical practice applications and being affected by the videos/posts ($p \leq 0.05$). When the relationship between clinical practice satisfaction and occupational background was analyzed, a higher percentage of students and those with 0–5 years of experience answered "Yes"; however, no statistically significant difference was observed according to years of employment ($p = 0.265$) (Table 3).

For the question "Q5. Do you share your clinical experiences and/or cases?" the distribution of the answers was presented in Figure 1. There was no statistically significant difference between gender and sharing of clinical experiences ($p = 0.316$). A difference was found between the groups ($p < 0.05$) in case sharing ($p = 0.014$). There was no significant difference between years in occupational history and case sharing ($p = 0.256$) (Table 4).

"Q6. Which cases do you share more in your posts?" distribution was presented in Figure 2. When the professional background was analyzed, it was observed that the majority share complicated and successful cases, but no statistically significant difference was observed between the groups ($p = 0.098$). It was seen that primarily complicated and successful cases are shared regardless of the workplace. When the workplace and case sharing were compared, no difference was found between the groups

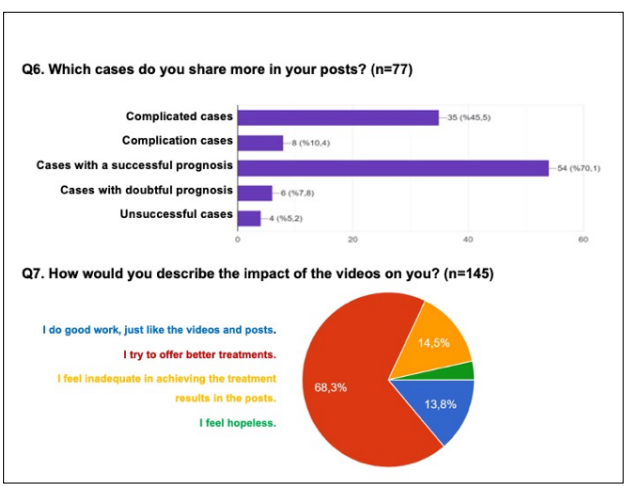

Fig. 2. Distribution of participants' responses to multiple choice questions (Q6, 7)

Table 5. Descriptive statistics of Question 6 according to categorical demographic data

	Q6. Which cases do you share more in your posts?					
	Complicated	Successful	Doubtful	Unsuccessful	Total	p
Student						
Count	7	8	0	0	15	
% within profession	46.7%	53.3%	0.0%	0.0%	100.0%	
% within Q6	20.0%	20.5%	0.0%	0.0%	19.5%	
0-5 year						
Count	15	20	0	0	35	
% within profession	42.9%	57.1%	0.0%	0.0%	100.0%	
% within Q6	42.9%	51.3%	0.0%	0.0%	45.5%	0.098
6-10 year						
Count	6	4	1	0	11	
% within profession	54.5%	36.4%	9.1%	0.0%	100.0%	
% within Q6	17.1%	10.3%	100.0%	0.0%	14.3%	
11-20 year						
Count	5	7	0	2	14	
% within profession	35.7%	50.0%	0.0%	14.3%	100.0%	
% within Q6	14.3%	17.9%	0.0%	100.0%	18.2%	
20 and above						
Count	2	0	0	0	2	
% within profession	100.0%	0.0%	0.0%	0.0%	100.0%	
% within Q6	5.7%	0.0%	0.0%	0.0%	2.6%	
Total						
Count	35	39	1	2	77	
% within profession	45.5%	50.6%	1.3%	2.6%	100.0%	
% within Q6	100.0%	100.0%	100.0%	100.0%	100.0%	
Private Practice						
Count	12	17	0	1	30	
% within workplace	40.0%	56.7%	0.0%	3.3%	100.0%	
% within Q6	34.3%	43.6%	0.0%	50.0%	39.0%	
Public Hospital						
Count	4	7	1	1	13	
% within workplace	30.8%	53.8%	7.7%	7.7%	100.0%	0.156
% within Q6	11.4%	17.9%	100.0%	50.0%	16.9%	
University Hospital						
Count	19	15	0	0	34	
% within workplace	55.9%	44.1%	0.0%	0.0%	100.0%	
% within Q6	54.3%	38.5%	0.0%	0.0%	44.2%	
Total						
Count	35	39	1	2	77	
% within workplace	45.5%	50.6%	1.3%	2.6%	100.0%	
% within Q6	100.0%	100.0%	100.0%	100.0%	100.0%	

*Pearson Chi-square.

(p = 0.156) (Table 5).

Based on the responses for "Q7. How would you describe the effect of the videos on you?" 20 (13.2%) of the participants answered that the videos have an impact on them as "I do good work," 97 (64.2%) said "I make an effort," 23 (15.2%) said "I feel inadequate," and 5 (3.3%) said "I feel hopeless" (Fig. 2). When questions Q6 and Q7 were compared, it was concluded that the participants who share their complicated and successful work are affected by the videos they watch and try to do better work. Still, no statistically significant relationship was observed (p = 0.345) (Table 6).

Table 6. Descriptive statistics of Question 6 - Question 7 crosstabulation

			Q6. Which cases do you share more in your posts?					
			Complicated	Successful	Doubtful	Unsuccessful	Total	p
Q7. How would you describe the impact of the videos on you?	I do good work, just like the videos and posts.	Count	6	6	0	0	12	
		% within Q7	50.0%	50.0%	0.0%	0.0%	100.0%	
		% within Q6	17.1%	15.4%	0.0%	0.0%	15.6%	
	I do good work, just like the videos and posts.	Count	24	24	1	1	50	
		% within Q7	48.0%	48.0%	2.0%	2.0%	100.0%	
		% within Q6	68.6%	61.5%	100.0%	50.0%	64.9%	0.345
	I try to offer better treatments.	Count	4	7	0	0	11	
		% within Q7	36.4%	63.6%	0.0%	0.0%	100.0%	
		% within Q6	11.4%	17.9%	0.0%	0.0%	14.3%	
	I feel inadequate in achieving the treatment results in the posts.	Count	1	2	0	1	4	
		% within Q7	25.0%	50.0%	0.0%	25.0%	100.0%	
		% within Q6	2.9%	5.1%	0.0%	50.0%	5.2%	
	I feel hopeless.	Count	35	39	1	2	77	
		% within Q7	45.5%	50.6%	1.3%	2.6%	100.0%	
		% within Q6	100.0%	100.0%	100.0%	100.0%	100.0%	

** Pearson Chi-square.

Discussion

The high number of posts and videos related to endodontics shows how effective Instagram is as a platform for education, communication, and advertising in dentistry. This study was designed as a questionnaire to learn the technical use of social media from the dentist's point of view concerning root canal treatment applications. The survey method was preferred because of its advantages in terms of online delivery, scalability, speed of data collection, and cost (11–13). However, the disadvantage of the method is the low participation and response rate due to its online presentation (14).

Generally, women tend to use Instagram more than men, which may be explained by differences in social expectations, interests, and cultural values (4,9). In the current study, no statistical significance was found between gender and social media use for dentists. Various studies emphasized the prevalence, use, and importance of Instagram in the daily lives of dentists and students, especially women in the early years of their professional lives (15–17). Based on previous findings, young dentists are more motivated to use social media platforms such as Instagram for professional networking, demonstrating their knowledge, and promoting their cases. They probably use Instagram more frequently than more experienced dentists. In this study, no significant difference was found in terms of gender, institution of employment, and educational level.

While several dentists focus on professional issues such as promotion and education on Instagram, others prioritize communication, relaxation, entertainment, social acceptance, and relieving the fear of missing out. Gonzales et al. (18) highlighted the multifaceted nature of social media use as motivation for this study design. On the contrary, Dobson et al. (19) reported that most of the participants use these platforms for professional and personal reasons. Consistent with the mentioned studies, the results of this study also suggest that social media tools, such as Instagram, serve different social and personal activities as well as professional use for dental students and clinicians.

There are many studies on how dentists use social media platforms and their impact on their education (16,20,21). A recent meta-analysis revealed that hybrid (blended) learning positively affects knowledge acquisition compared to traditional learning among healthcare students (22). It was reported that the most critical benefits of learning are accessing more knowledge on various topics, making learning more enjoyable, providing access to new resources, and improving creativity, innovation, and research skills (23). In today's technology age, the role of Instagram in learning remains uncertain, but it cannot

replace practical training, and its impact on learning has not yet been fully realized. In this survey, there was no significant difference between genders, educational backgrounds, or employment institutions in viewing endodontic videos on Instagram.

When social media is used as a source of knowledge, it does not comply with educational norms because another user usually originates its content (24). Keenan et al. (25) reported that the barriers to social media platforms in education are fundamental issues such as professionalism, educational value, clinician knowledge and experience, clinician motivation, and student utilization. These criteria and values indicate that a successful Instagram education account will require an individual or team dedicated to publishing quality and controlled content. Users must have an account to access non-public posts, which poses an accessibility challenge.

In a questionnaire-based study, some participants showed indifference to the content shared by other people, whereas others reported feeling insecure when following people they admire (26). Since social media platforms such as Instagram deeply interact with our daily social lives, being unable to access them may lead to a sense of disconnection from communities, helplessness, and loss of control. Alternatively, passive learning techniques may provide clinicians with overconfidence in their knowledge and self-assessment abilities (27,28). According to the results, it was observed that women responded statistically significantly in terms of being affected by post-treatment satisfaction. This situation may be explained by the emotional state of women being more open to being affected. When the relationship between being affected by the posts and occupational background was examined, it was found to be higher in students and those with 0–5 years of experience. Still, no statistically significant difference was observed according to years of employment, and this may be explained by fear of the unknown brought on by lack of experience.

As a result of the study, a significant difference was observed between public employees and those working in private practice in case sharing. It was observed that public employees mostly answer "No," while those working in private practice are more positive about sharing. This result can be attributed to advertising and potential patient return by utilizing the visual feature of Instagram.

Among the students, 82.8% use social media for educational purposes (29). There is a potential concern about the quality of endodontic information on Instagram and how this may affect dentists (7). Social media posts cannot be submitted for peer review; therefore, using social media for technical information may potentially be inaccurate. However, this can be understandable, considering they cannot see and examine every possible case during the training process. For this reason, adding strategies for accessing accurate information and the concept of information pollution to the curriculum in schools can be considered in today's technology age.

The effects of social media on human psychology may mislead clinicians about professional satisfaction. Although the number of people who feel inadequate and hopeless due to the posts they follow on Instagram is small, it should be emphasized that they should be aware of the possibility of reaching a wrong conclusion and should gain motivation to do better work. When the results on this subject are generally evaluated, it is quite promising that the answer to "I try to offer better treatments" is high regarding demographic characteristics.

This questionnaire-based study has multifaceted values. The fact that it had a sample size that includes both genders, a wide age range, dentists, endodontists, and students who perform endodontic treatments in clinical practice increases the applicability of the findings. In addition, examining the details of Instagram use in depth can help us comprehensively understand issues such as sharing motivations and behaviors and reflect the participants' perceptions of Instagram. However, possible limitations of the current study are response bias potential, cross-sectional design limiting comprehension, and causal inference.

Conclusion

Within the limitations, in light of the present findings, Instagram may be a source of data and motivation to improve clinical experience and skills when used appropriately. Ethical and thoughtful use of Instagram can potentially contribute to the digital world of endodontics by serving as an educational resource.

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sion in the study and completed their online submission. In the form, brief information about the survey was first given, and a link containing the study that those who wanted to participate could click on was added. Participants were able to leave at any time without completing the survey.

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