



Influence of social media on Orthodontic patients when choosing an Orthodontist: A Cross-sectional study

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With the increasing rise in the use of social media platforms for marketing purposes, this study investigates the influence of social media on orthodontic patients when choosing an orthodontist. A cross-sectional study investigating 782 orthodontic patients recruited from Jeddah and Riyadh, Saudi Arabia. Questionnaires included demographic information, preferred social media platform, general orthodontist selection criteria and the preferred content of the orthodontists' and the orthodontic practices' social media accounts. From the total sample, 76.7% (n=600) were females and 23.3% (n=182) were males. The participants (62.1%) were between the ages of 25-44 years. When looking for an orthodontist, Google, Instagram, and Twitter ranked as the top three social media platforms, with a higher likelihood of females using Google (p=0.004), YouTube (p=0.026) and Instagram (p=0.036) and less likely to use Facebook (p=0.019) than males. Recommendations from family and friends, orthodontists' qualifications and ability to provide new orthodontic systems were considered important factors when selecting an orthodontist with no gender differences. Regarding social media content, before-and-after photos, patient educational videos, and advertising new products and treatments were considered important for the orthodontists' account while contact information, a list of services and prices and a display of the clinics' facilities were considered important for the clinics' account with no gender differences. While participants believed that orthodontists and clinics should be online, they didn't prioritize social media in choosing an orthodontist, valuing qualifications and experience more, which also reflected their content preferences on social media.

Keywords: social media, orthodontist selection, marketing, dental clinics

INTRODUCTION

Social media, a term used to describe various internet-based platforms that connect people worldwide via computers and smartphones, is a revolutionary form of communication that enables users to share their experiences and points of view in real-time (Stephen and Galak, 2012). The use of social media platforms has boosted in recent years whereas of September 2022, it has been reported that 58% of the total internet users around the world are active social media users (Oberlo, 2022). Today, Saudi Arabia has the largest social media presence in the world. The most recent report by Global Media Sights Statistics showed that 97.90% of the total population are active internet users of which 82.30% are active social media users and the mobile penetration arrived at 116% in the country (Global Media Insight, 2022). This increasing penetration of Web 2.0 applications opens doors for increasing sales, marketing and customer service through widespread and accessible platforms (Bahabri and Zaidan, 2021).

Most contemporary businesses that offer professional services compete for clients. Dental healthcare services

are one of several industries that rely on social media to influence consumer behaviour and foster brand loyalty. Hundreds of prospective patients can be potentially recruited through social media marketing which can be considered as an effective and relatively inexpensive means of communication (Nelson et al. 2015). In the last two decades, there has been a digital shift in the world of communication where dentists can use different social media platforms as public forums to showcase and advertise their activities in a timely and cost-effective method (Parmar et al. 2018). Although the positive effects of using social media platforms in the interaction between patients and medical professionals have been demonstrated in the literature, there is still a sense of reluctance by some medical professionals to include social media as part of their practice (Neville and Waylen, 2015). This does not come as a surprise as medical services are associated with professional, formal practices while social media is usually portrayed as a casual and entertaining platform (Maben-Feaster et al. 2018). In addition, as social media is becoming increasingly important in dentistry, clinicians are faced with several

challenges because, from a professional point of view, they must uphold the established image, principles, and procedures (Melkers et al. 2017).

In dental practice, social media can be used to communicate with patients, by publishing before and after treatment photos, clinic facilities, new products and treatments, patient education content, and even informal content all of which may establish a reputation, attract new patients and increase the chances of satisfaction with treatment (Ajwa et al. 2018). Studies have shown that several factors influence a patient's decision when choosing a dental clinic or dental specialist for treatment. These factors can range from being conventional such as suggestions from family or friends, credentials of the treating specialist, offers and promotions and the reputation of the clinic in which the specialist is working. Other factors can be more current such as the quality of the social media account, the type of content presented, and the number of followers (Tâncu et al. 2019; Alkadhi et al. 2020).

Although the value of social media in dental marketing and service delivery is well recognised, there remains a gap in understanding how people use social media to choose a dental professional (Parmar et al. 2018). This is especially true in orthodontics, where treatment times are usually extended, and patient selection criteria are more challenging. Orthodontists can find it difficult to manage their professional image and patient relationships due to the rapid and widespread availability of information (Neville and Waylen, 2015; Rolls et al. 2016). Additionally, there is increased pressure on orthodontists to attract patients via their social media profiles because orthodontic treatment is a treatment modality that is typically patient, as opposed to insurance, funded. It is challenging to create a useful reference that can assist orthodontists in leveraging the potential advantages that social media platforms can provide without fully understanding orthodontic patients' preferences and behaviours. Thus, the current study aims to investigate how orthodontic patients choose an orthodontist for their treatment and whether gender is a factor in their decision-making process.

MATERIALS AND METHODS

The sample comprised 1000 patients who were attending several randomly selected private orthodontic practices within the cities of Jeddah and Riyadh in Saudi Arabia. A list of specialized private dental clinics located in the aforementioned cities and registered with the Ministry of Health; Health Affairs system was obtained. The included clinics were randomly selected from the list and contacted to determine whether they have specialized orthodontic clinics, and consent was obtained to approach their orthodontic patients. Orthodontic patients who were 15 years or older and were able to read and speak Arabic were included in the study. Those who were attending specialty clinics other than the orthodontic clinic as well as

patients below the age of 15 were excluded from the study.

Study design

This was a cross-sectional study conducted between September and December 2022. The research instrument was adopted from the questionnaire developed by Alkadhi et al. (Alkadhi et al. 2020). The questionnaire was piloted on 10 orthodontic patients and as a result, a few questions and items were added and some questions were reworded. The questionnaire was divided into 5 sections; 1. Demographic section regarding gender, age, and income level (3 items); 2. Preferred social media platform when searching for an orthodontist (7 items); 3. General orthodontist selection criteria (11 items); 4. Content of orthodontists' social media accounts (10 items); 5. Content of orthodontic practices' social media account (9 items).

On the day of data collection, orthodontic patients who were present in the waiting area were approached by the researcher who briefly introduced them to the study. After obtaining informed consent they were asked to complete the questionnaire and return it to the researcher who was available to clarify any difficulties imposed by the participants.

Statistical analysis

All the collected data was entered into the Statistical Package for the Social Sciences version 20.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics (frequencies and percentages) were used to describe the sample's sociodemographic characteristics. The chi-square test and the Fisher exact test were used to find out whether significant differences existed between the sociodemographic variables. As for the remaining parts of the questionnaire that explore social media preferences, the mean and standard deviation values were calculated for each Likert scale item. Data were explored for normality using Kolmogorov-Smirnov and Shapiro-Wilk tests, data showed non-parametric distribution. Mann-Whitney test was used to compare differences in social media effect and use between males and females. The significance level was set at $P \leq 0.05$

RESULTS

A total of 15 clinics were contacted of which 13 agreed to take part in the study. From the 1000 participants who were invited 782 agreed to complete the questionnaire giving a response rate of 78.2%. From the total sample, the majority of the participants (76.7%, $n=600$) were females and 23.3% ($n=182$) were males and the difference was statistically significant ($p < 0.001$). The majority of the participants (38.1%) were between the ages of 35-44 years and 24% were between the ages of 25-34. Table 1 summarises some of the participant's demographics including sex, age, city and economic status.

Table 1: Demographic characteristics of the participants

Demographic Variable		n	%	p-value
Gender	Male	182	23.3%	<0.001*
	Female	600	76.7%	
Age	12-24	122	15.6%	<0.001*
	25-34	188	24%	
	35-44	298	38.1%	
	45-54	125	16%	
	55-74	49	6.3%	
Region	Western	461	59%	0.320
	Central	321	41%	
Economic Status	Less than 5000 riyals/month	162	20.7%	<0.001*
	5000-10000 riyals/month	174	22.3%	
	10001-15000 riyals/month	155	19.8%	
	15001-20000 riyals/month	129	16.5%	
	20001-30000 riyals/month	74	9.5%	

*p<0.05; significant

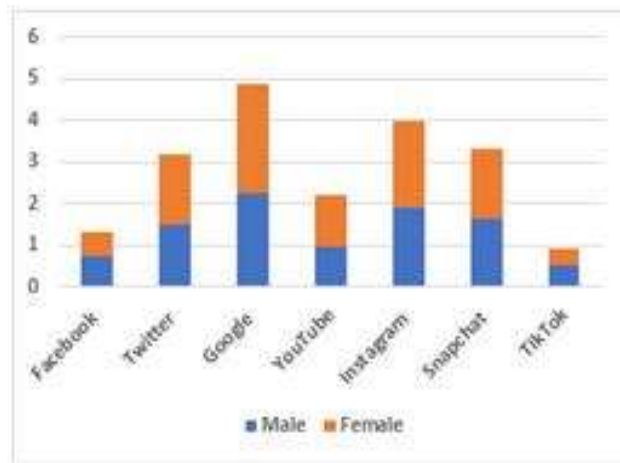


Figure 1: Participants' social media platform preference when searching for an orthodontist

Table 2: Comparison of the distribution of use of social media in searching for clinics by both genders using the chi-square test

Site	Male Mean (SD)	Female Mean (SD)	p-value
Facebook	0.764 (1.139)	0.571 (1.012)	0.019*
Twitter	1.505 (1.353)	1.676 (1.473)	0.136
Google	2.269 (1.456)	2.586 (1.377)	0.004*
YouTube	0.989 (1.221)	1.230 (1.329)	0.026*
Instagram	1.885 (1.454)	2.122 (1.457)	0.036*
Snapchat	1.643 (1.422)	1.658 (1.455)	0.903
Tiktok	0.505 (0.990)	0.417 (0.884)	0.252

*p<0.05; significant

Table 3: Comparison of the distribution of influencing factors when choosing an orthodontist by both genders using the chi-square test.

Factors	Male Mean (SD)	Female Mean (SD)	p-value
Qualification	3.110 (1.040)	3.302 (0.802)	0.088
Provide new orthodontic systems	3.137 (1.013)	3.175 (0.847)	0.732
Social media presence	1.742 (1.168)	1.691 (1.168)	0.584
Quality of social media account	1.791 (1.270)	1.803 (1.204)	0.808
Online reviews	2.335 (1.280)	2.467 (1.127)	0.348
Offers / and promotions	2.269 (1.175)	2.182 (1.128)	0.379
Recommendation from friends and family	3.187 (0.951)	3.272 (0.796)	0.649
General appearance of the orthodontist	2.654 (1.044)	2.770 (1.020)	0.172
Treatment prices	2.984 (1.048)	3.097 (0.781)	0.680
Availability of appointments	3.060 (0.959)	3.152 (0.823)	0.455
The reputation of the clinic	2.819 (0.972)	2.726 (0.958)	0.223

*p<0.05; significant

Table 4: Comparison of the distribution of type of content published by the orthodontist that participants were interested in by both genders using the chi-square test.

Orthodontist social media content	Male Mean (SD)	Female Mean (SD)	p-value
Before and after treatment photographs	2.742 (1.090)	2.830 (0.989)	0.505
Patient education videos	2.714 (1.095)	2.673 (0.950)	0.346
Live discussions	2.599 (1.061)	2.467 (0.993)	0.082
Orthodontist photographs	2.027 (1.182)	1.950 (1.064)	0.345
Personal content such as family and friends' photos	1.319 (1.146)	1.164 (1.036)	0.110
Staff photographs	1.593 (1.217)	1.412 (1.063)	0.074
Showing new products / treatments	2.555 (1.005)	2.631 (0.991)	0.379
Involvement of dentist in charities and social work	1.852 (1.125)	1.741 (1.104)	0.212
Advertisement by social media influencers	1.489 (1.299)	1.346 (1.112)	0.288
Photos of the clinic the orthodontist is working in	2.401 (1.107)	2.554 (1.005)	0.152

*p<0.05; significant

Table 5: Comparison of the distribution of type of content published by the clinic that participants were interested in by both genders using the chi-square test.

Dental practice social media content	Male Mean (SD)	Female Mean (SD)	p-value
Location	2.808 (1.157)	2.938 (0.921)	0.528
Services provided and prices	3.000 (0.997)	3.122 (0.754)	0.546
Facilities and technologies provided	2.995 (0.978)	3.062 (0.766)	0.965
Offers and promotions	2.742 (0.989)	2.765 (0.905)	0.930
Online booking system	2.885 (1.089)	2.773 (0.926)	0.051
Photos or videos of the interior design of the clinic	2.115 (1.084)	1.967 (1.050)	0.115
Contact information	3.093 (0.826)	3.205 (0.715)	0.158
Number of followers	1.956 (1.117)	1.833 (1.040)	0.237
Patient reviews	2.742 (1.124)	2.880 (0.967)	0.243

*p<0.05; significant

Figure 1 displays the participants' social media platform preferences when searching for an orthodontist. The results revealed that the top three social media platforms were Google, Instagram and Twitter when searching for an orthodontist (Figure 1). Significant differences were detected between males and females where females were more likely to use Google (p=0.004), YouTube (p=0.026) and Instagram (p=0.036) and less

likely to use Facebook (p=0.019) than males (see Table 2).

When asked about the factors that would influence their decision when choosing an orthodontist, the highest scores were given to recommendations from family and friends, the orthodontists' qualifications and the ability of the orthodontist to provide new orthodontic systems such as Invisalign. However, the lowest scores were given to the orthodontists' social media presence, the quality of the

social media account and the availability of offers and promotions respectively (Figure 2).

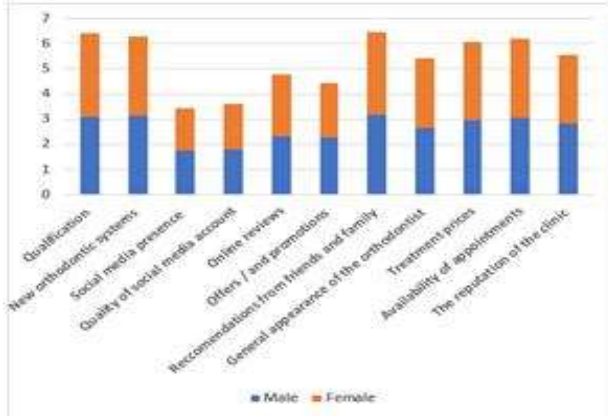


Figure 2: Factors that would influence the participants' decision when choosing an orthodontist

No significant differences were detected between genders (Table 3).

As for the content of the orthodontists' social media account, the participants gave the highest rankings to before and after photos, patient educational videos, and advertising of new products and treatments while the lowest scores were given to the personal content, advertisement by social media influencers and staff photos (Figure 3).

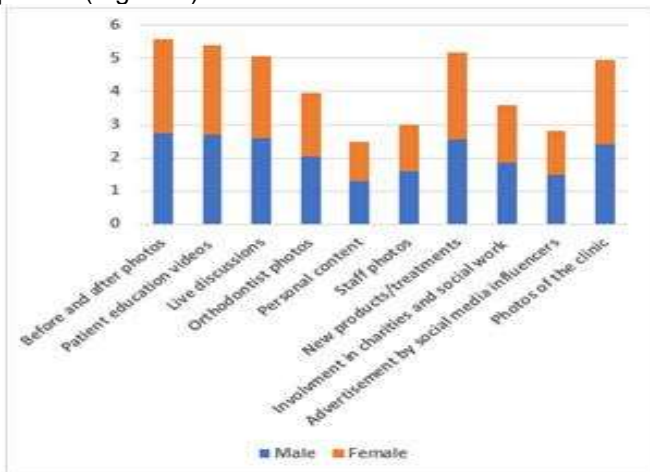


Figure 3: Participants' preferred content published on the orthodontists' social media account

No significant differences were detected between males and females (Table 4).

With regards to the content of the practices' social media account, the highest scores were given to contact information, a list of services and prices and showing the clinics' facilities and technologies while the lowest scores were given to the number of followers, interior design of the clinic and the display of offers and promotions with no significant gender differences (see Table 5 and Figure 4).

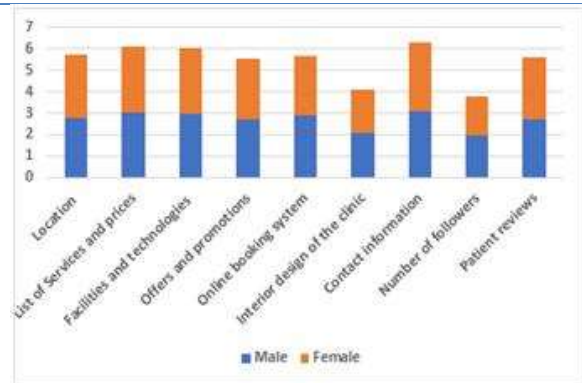


Figure 4: Participants preferred content published in the clinics' social media account

DISCUSSION

The importance of social media in people's lives has recently increased, particularly in the field of dentistry. Social media is being utilised for various functions, including marketing, teaching, and advertising. Dentists communicate with their patients via social media and upload before-and-after images of their clinical cases to draw patients to their offices (Ghandhi et al. 2022).

Numerous research studies have shown that social media has recently played a key role in the healthcare industry (Sarringhaus, 2011; Thielst, 2011). However, research on social media's use in dentistry is scarce, and the empirical samples used in these studies tend to be limited. To the best of our knowledge, this is the first study to investigate how orthodontic patients in particular interact with social media during the process of selecting their orthodontist. Dental professionals who want to increase their revenue potential must adjust to the changing nature of contemporary dentistry and shifts in customer behaviours and demographics. Effective marketing tactics can be as significant to a practice's bottom line as the clinical abilities on offer (Ajwa et al. 2018). In this study, social media networks were used to assess the elements consumers thought were most crucial in choosing an orthodontist.

The results revealed that the top three social media platforms used by the participants were Google, Instagram and Twitter when searching for an orthodontist. This is contrary to the results of other studies which were conducted in different geographical areas such as the USA, UK and Pakistan which found Facebook to be the most commonly used platform by both dental patients and dentists (Nelson et al. 2015; Parmar et al. 2018; Ghandhi et al. 2022). However, when comparing the results of the current study to the most recent Saudi Arabian social media statistics as reported by websites such as globalmediainsight.com, the findings are quite similar reporting that the most popular social media platform used by the Saudi population in general during the year 2022 is Instagram with 27.40 million active users, which accounts for 78.10% of the total population followed by Twitter with

25.23 million active users which accounts for 71.90% of the total population (Global Media Insight, 2022). These findings highlight the fact that dentists must understand that the professional use of social media should be dictated by the platform most frequently used by their patients which can be different depending on the geographical location of the practice.

The study also revealed differences between males and females when considering the most popular platform used by the sample where females were more likely to use Google, YouTube and Instagram and less likely to use Facebook than males. Previous studies that have investigated how gender influences continuance intention to use social networking sites, found females to be more engaged to different social media platforms than males where they were encouraged by the capability to sustain close ties and gain social information while men were inspired by the skill to gain general information (Krasnova et al. 2017).

With regards to the factors that influence the patient's decision when choosing an orthodontist, it was found that most patients do not consider social media as part of their decision-making process giving the lowest scores to the orthodontists' social media presence and quality of the social media account although, as previously mentioned, they did consider Instagram and Twitter to be popular social media platforms when looking for an orthodontist. The decision-making process was found to be more reliant on the orthodontists' credentials and experience, a finding that is in agreement with previous studies suggesting that patients may appear not to know why they should use social media when selecting a dentist (Nelson et al. 2015; Parmar et al. 2018). Orthodontists' social media marketing efforts can be hampered by ambiguity and conflicting views. Orthodontists must consider and specifically point out the unique services and information that social media provides for patients that cannot be found on other platforms (e.g., website or phone call). Although successful practices typically rely more on social media than any other kind of marketing, even though there is no evidence of a causal link between the use of social media and the number of new patients (Huang and Dunbar, 2013).

It was evident from the results that the patients were more interested in the professional content of the orthodontists' social media account as opposed to the personal content giving higher ranking to before and after photos, patient educational videos, and promoting new products and treatments while the lowest scores were given to the personal content, advertisement by social media influencers and staff photos. Although these findings are consistent with other studies that found that patients are more interested in factors that are directly related to the practitioners' skills as opposed to marketing through personal content, this may be a result of a Hawthorne effect where the patients modified their answers to reflect what they thought was a more ideal

viewpoint. Studies in the field of marketing have proved that social media influencers have a positive effect on consumer engagement with a brand however, little is published in the field of dentistry despite the growing use of social media influencers by dental practitioners and dental clinics to promote their practices which could be a focus for future research (Lou and Yuan, 2019).

Similarly, with regards to the practice's social media content, the patients were more interested in the professional content of the clinic giving higher scores to factors such as the availability of contact information, list of services and prices and showing the clinics' facilities and technologies while the lowest scores were given to factors that have no relation to their treatment such as number of followers and interior design of the clinic. This is in agreement with previous studies that have found patients are more interested in information about the practitioner and the business itself that would be considered directly related to the quality of treatment that will be delivered (Nelson et al. 2015). These findings highlight the fact that patients find social media as a communications tool that enhances the quality of information delivered to them and hence may enhance their treatment experience. In addition, as documented in previous studies, the choice of an orthodontist is largely based on his or her reputation and social media has proven to be an important reputation management tool (Bahabri and Zaidan, 2021).

In interpreting the results of the present study, it is important to highlight its limitations. The majority of the study sample were females and below the age of 44 affecting the generalisability of the results to the orthodontic population. Although studies have shown that females were generally more likely to receive orthodontic treatment than males, the difference in this study is quite high and hence the results should be interpreted with caution (Krey and Hirsch, 2012; Badran and Al-Khateeb, 2013). As for the age of the study sample, this may be considered favourable for this particular study as the majority of orthodontic patients are generally younger. It has also been established from previous research that the use of social media decreases steadily with age. Research has shown that the elderly did not have the desire to personally connect themselves actively in technology to make use of the internet or social media due to physical and psychological hindrances related to age (Meymo and Nyström, 2017). In addition, due to their significantly higher engagement with social media platforms younger generations are now the ones calling the shots by influencing decisions and changes and understanding their behavioural patterns will help orthodontists add value to their services by speaking to this generation using the content that attracts them.

CONCLUSION

The most frequently used social media platforms were Google, Instagram and Twitter. However, although the

participants thought that orthodontists and orthodontic clinics should have an online presence, social media was not considered an important factor when choosing an orthodontist as the patients were more reliant on the orthodontists' credentials and experiences which also applies to what they want to see as content in their social media accounts. Social media offers opportunities for dental professionals to improve the efficiency of their marketing activities. This study provides valuable information regarding the patient's expectations about, and attitudes toward, social media usage in orthodontics.

CONFLICT OF INTEREST

The authors declared that the present study was performed in the absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

Gassem AAB: Concept, design, data collection, analysis, statistics, reviewing manuscript and final editing.

Alfayez E: Concept, design, data collection, analysis, statistics, and manuscript writing.

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