

The Role of Social Media in Dental Health Promotion during COVID-19 Pandemic

Research Article

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Abstract

The study aimed to measure the prevalence of using social media to gain and exchange oral health information during the COVID-19 pandemic (data collected by self-reported questionnaire) and to correlate these data with the oral health status measured by plaque index and DMF scores of these patients. A questionnaire was developed and administered to all patients who visited King Abdul-Aziz University Dental Hospital in Jeddah, Saudi Arabia for initial screening after the re-opening of the dental clinics for routine dental care during the interval from October 1st, 2021, till December 31st, 2021. Measurement of plaque index and decayed/missed/filled (DMF) score was plotted for each patient as a reflection of his/her oral health status. A total of 101 participants were recruited for this study. Data revealed that the most commonly used source of oral health information for the participant is the internet and social media with 69.3%. The most commonly used application is YouTube (65.3%), DMF score showed that the minimum value of the DMF index was 0 and the maximum was 58 with a mean value of 9.5 ± 6.9 . We may conclude that the majority of Saudis have at least one account on one or more social media platforms and that they have become social media addicts, relying heavily on it as a source of information in a variety of disciplines, including medical and oral health data. During the COVID-19 epidemic, social media played a significant role in guiding subscribers.

Keywords: Social Media; Dental Health; COVID-19.

Introduction

Social media evaluate the dynamic application with lots of platforms and milliner users that innovate on web 2.0 technology, which assess user to generate and exchange their content [1]. Social media platforms like Facebook and Twitter have increased their awareness by being the easiest ways to connect and eliminated distances [2]. Social media has become as a convenient platform for sharing information as well as for evaluating the opinions [3, 4]. As of May 20, 2021, the COVID-19 pandemic has spread to 223 nations, resulting in 163,869,893 confirmed instances of infection and 3,398,302 fatalities globally [5]. Governments all around the world have enacted stringent policies to enforce social distancing and preventative measures, while effective treatments and vaccinations are being deployed to contain the

epidemic and restore normalcy. COVID-19 has presented a substantial hazard to healthcare personnel in the field, in addition to infecting communities and increasing the disease burden. Front-line workers and dentists are among the most vulnerable, with a higher chance of SARS-CoV-2 transmission through infected patients' saliva and COVID-19 transmission through asymptomatic carriers or prospective patients in an incubation state. According to studies, dentists are becoming increasingly concerned about acquiring COVID-19 during dental operations. During the epidemic, this resulted in the suspension of dental practices [6, 7]. Patients in need of normal dental treatments have been driven to seek consultations via social media platforms and benefit from teledentistry [8]. The advantages of applying innovation and communication technologies in healthcare have well been recognised [9]. Social media has brought about cost reduction by providing

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online services. Connectivity has become a norm also in the medical occupation where patients can consult with the doctor and discuss the issues over the internet [10].

In Saudi Arabia, dental practices were suspended from the middle of March till August 2020 with strict preventive measures across the country for only emergency procedures. This has forced patients requiring routine dental services to seek consultations through social media platforms and benefit from teledentistry [8]. During recent outbreaks, information obtained over the internet and the increasing use of social media by patients seeking consultations have been reported [6]. This was shown again during the COVID-19 lockdowns when there was a large increase in the usage of social media. Studies have shown that healthcare practitioners use social media to detect medication adverse events, gauge public opinion on health-related problems including vaccination and infectious disease outbreak surveillance, and formulate public health policies [6]. A survey conducted by a general dental practitioner, in Qassim-KSA, indicated that most respondents (64%) were using social media for oral health-related reasons.

A review by Oakley and Spallek (2012) [11], considered the effects of social media on healthcare services and the related prospects and challenges due to the innovation of new technologies, especially in dental health.

The most used applications were Twitter (53.8%), Instagram (40.9%), and YouTube (36.7%) [12]. In public health, the center for disease control and prevention is actively using social media. [13] Accordingly, this current study aims to evaluate the effect of social media as a source of oral health information during the COVID-19 pandemic and to correlate these data with the oral health status of these patients measured by plaque index and DMF scores of patients initially screened by dental hygienists in King Abdulaziz University Dental Hospital in Jeddah, Saudi Arabia.

Materials And Methods

A cross-sectional study was conducted through an anonymous questionnaire. The students of King Abdul-Aziz University Dental Hospital in Jeddah province, Saudi Arabia were recruited for initial screening after the re-opening of the dental clinics for routine dental care during the interval from October 1st, 2021, till December 31st, 2021.

A systematic random sampling technique was used to select study participants from the registration lists of patients who visited the hospital. A total of 101 patients were involved in this study as well as the statistically relevant sample size on this demography was calculated using the Raosoft sample-size calculator (Raosoft Inc., Seattle, WA, USA). 140 patients were approached to conduct the questionnaire but only 101 patients who agreed to the study protocol after being verbally told about the procedure and study goals were included and were asked to review and sign an informed consent with a response rate of 97.1%.

Social media effects on those patients were assessed with a questionnaire. The first part of it was concerned with the socio-demographic data including age, gender, and level of education. The second part of the questionnaire included questions assessing knowledge about COVID-19 and the behavioral changes of

the patients during the pandemic. A questionnaire comprising 17 questions and constructed and reviewed by an expert colleague for face validity. The suggested modifications were made for eliminating the errors. Subsequently, the questionnaire was finalized and administered to the participants. The Cronbach value of each item came out to be more than 0.7 which validates that the questionnaire was reliable to be used for data collection. All items were closed-ended with pre-formulated answer choices and covered the following: demographics, reasons for using social media, disadvantages, and barriers. The questions were answered in the dental hygienist clinics then history taking, and clinical examination was carried out. Measurement of plaque index was based on oral health and clinical perspective and the decayed/missed/filled (DMF) score was plotted for each patient as a reflection of his/her oral health status. Frequency and percentages were calculated for all questions. Pearson correlation tests were applied to determine the correlation between dental health information and measures of the Plaque Index and DMF scores where $P < 0.05$ was considered statistically significant. In other words, with Pearson's correlation coefficient values that are more than 0.4 will be considered as significant and values above 0.7, it will be reckoned as highly significant.

Responses were coded, entered, and statistically analyzed with SPSS 23. The normality test was based on the person correlation test (the common test of coefficient determination between the range of -1 to +1. The test was applied on a statistical basis which approaches the probability values < 0.05 that shows its significance.

Results

According to Table 1, 101 responses were received; females constituted 64.4% of the total participants and the rest 35.6% were males. The majority of the survey respondents' age ranged from 30-39 years old (41.6%). About 50.5% of the respondents were bachelor's degree holders, followed by 17.8% with high school degrees, 11.9% a master's degree or Ph.D. holders, 10.9% are diploma holders, and 8.9% less than secondary school education. Regarding questions about COVID-19 encounters and fear of dental treatment; 80.2% of the participants have not been diagnosed with COVID-19, 78.2% of the participants don't have a fear of dental appointments, and 61.4% denied that their oral health is affected by the quarantine during the pandemic. Data are shown in Table 2. Figure 1 shows that the most commonly used source of oral health information for the participant is the (internet and social media) with 69.3%.

Figure 2 shows the responses regarding the advantage of using social media as the main source getting oral health information including accessibility/easiness ($N=85$, 85.1%) then the second advantage is that it is Free ($N=54$, 53.5%) it is covering all population groups ($N=36$, 35.6%), professional interaction ($N=33$, 32.7%) and the last advantage is it contains enough information ($N=29$, 28.7%). As for the Barriers to using social media in getting oral health information, it was found that the most common barrier is lack of trustworthiness ($n=50$, 49.5%), lack of information ($n=39$, 38.6%), then lack of time ($n=24$, 23.8%) and finally communication difficulties ($n=23$, 22.8%). Figure 3 shows the responses for the topics the participants are commonly viewing, it is found that 75.2% of the participants are interested in (oral hygiene), 44.6% are interested in (bleaching), 34.7% in

Table 1: Demographic characteristics of participants.

Variables	Categories	N (%)
Age	Less than 20	5 (5)
	20 - 29	38(37.6)
	30 - 39	42 (41.6)
	40 - 49	9 (8.9)
	50 and above	7 (6.9)
Gender	Female	65 (64.4)
	Male	36 (35.6)
Education level	Less than high school	9 (8.9)
	High school	18 (17.9)
	Diploma	11 (10.9)
	Bachelor's degree	51 (50.5)
	Post-graduate education	12 (11.9)

Table 2: COVID-19 encounter and fear of dental treatment.

Questions	Response	N (%)
Q4. Have you been diagnosed with COVID-19?	Yes	20 (19.8)
	No	81 (80.2)
Q5. Do you have fears about dental appointments during the COVID-19 Pandemic?	Yes	22 (21.8)
	No	79 (78.2)
Q6. Does the quarantine affect your oral health?	Yes	39 (38.6)
	No	62 (61.4)

Figure 1. Answers to Q7. What are your general sources of oral health information?

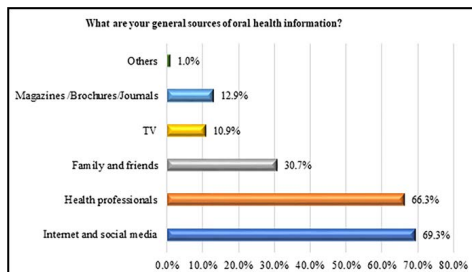


Figure 2. Answers of Q8. The most used applications for getting oral health information.

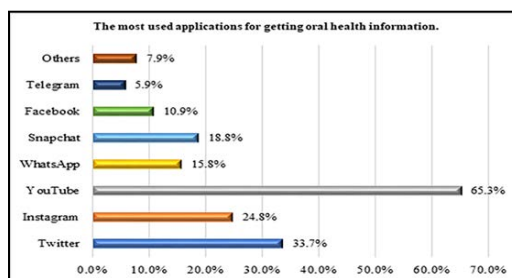
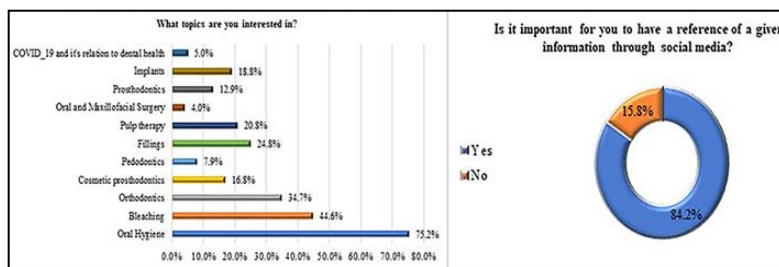


Figure 3. Answers of Q11 and Q17.



(orthodontics), 24.8% in (fillings), 20.8% are interested in (pulp therapy), while the lowest preferred topic for the participants was (COVID-19 and its relation to dental health) and (Oral and Maxillofacial Surgery) with 5% and 4% respectively. Bar chart number (3) shows these percentages. It is found that 33.7% (n=34) of the participants are searching/view oral health information every few months, while only 4% (n=4) never search/view oral health information. As for question 13 asking whether the patient will change some of his/her oral health behavior depending on the information found on social media; it was found that 45.5% (n=46) of the participants change some of their oral health behavior depending on the information that found on social media, 40.6% (n=41) maybe do that, while 13.9% (n=13.9%) never change their oral health behavior depending on the information that found on social media.

Oral hygiene habits are discussed in Tables 3 and 4. 60.4% of all the participants think that the person should brush his teeth twice per day, while 39.6% of the participant think that person should brush his teeth three times or more per day. Also, the majority (91.1%) think that the correct times for brushing are after breakfast and before bedtime, 5% think that the correct time is before sleeping only, and 4% think that the correct time is when you wake up only. When the participants were asked about previous scaling sessions, it was found that 83.2% (n=84) of the participant have done scaling before. Regarding the awareness of the importance of referencing a given data for the patients; as shown in Figure 3, it is found that 84.2% of the participant think that it is important for them to have a reference of any given information through social media, while the rest 15.8% do not think so.

Clinical Measurements of Plaque Index and DMF score

The results of descriptive analysis for plaque index and DMF index found that the minimum value of plaque index is 2% and the maximum is 100% with a mean value of 56.7 ± 28.2 . The results of the DMF score showed that the minimum value of the DMF index was 0 and the maximum was 58 with a mean value of 9.5 ± 6.9 . The relationship between dental health information and measures of plaque index and DMF scores is illustrated in Table 5. The value of the correlation coefficient and the sign determine the strength and direction of the relationship, and whether the relationship is direct or inverse. The results of the Pearson correlation showed only two significant relationships; where there is a statistically significant positive relationship between the correct time for brushing and DMF score, with a p-value (of 0.014). Also, a statistically significant negative relationship between scaling before and plaque index since the correlation is (-0.212) with a p-value (0.033).

Discussion

COVID-19 has posed a challenge to health professionals throughout the world, eliciting a variety of emotions and answers. During the outbreak, most nations ceased all normal dental treatment. Many consumers see social media as an alternative source of general and oral health information in the middle of the proliferation of information available online [14]. Health-related information has positively significantly increased because of the freedom to

Table 3: Results of Q14. How often should a person brush his teeth per day?

Answers	N (%)
Twice	61 (60.4)
Three or more	40 (39.6)

Table 4: Results of Q15. What is the correct time for brushing?

Answers	N (%)
When wakeup only	4 (4.0)
After breakfast, before bedtime	92 (91.1)
Before sleeping only	5 (5.0)

Table 5: Pearson correlation tests between dental health information and measures of Plaque Index and DMF scores.

Questions	Plaque Index		DMF score	
	Correlation	p-value	Correlation	p-value
Q12. How often you are searching/view oral health information?	-0.044	0.661	-0.105	0.296
Q13. Change some oral health behavior depending on the information found on social media.	0.019	0.848	0.095	0.346
Q14. How often should a person brush his teeth per day?	0.037	0.71	0.051	0.615
Q15. What is the correct time for brushing?	0.038	0.705	0.244*	0.014
Q16. Have you done scaling before?	-0.212*	0.033	0.125	0.213
Q17. Important for you to have a reference of the given information through social media?	0.05	0.616	0.134	0.182

(*p-values ≤ 0.05)

assess patients and the increase in popularity of medical information by public and private sources [15].

The goal of this study was to see how social media affected dental health promotion and oral hygiene modifications in Saudi Arabia during the COVID-19 epidemic. Because most information collected in surveys about oral hygiene measures is based on self-reported data of participants, and this may have introduced bias due to the possibility of false positive responses from participants and the data presented on oral health knowledge, attitude, and behaviors that could be under- or over-estimated, we supplemented the self-reported data with clinical examination of Plaque Index and DMF scores.

The plaque control record (O'Leary index) appears to be a commonly used oral hygiene index for assessing oral health skills and was used in this study to record the presence of supragingival plaque on all four tooth surfaces. For this test, the plaque is disclosed and the presence (+) or absence (-) of plaque is recorded in a simple chart, and the plaque incidence in the oral cavity is expressed as an exact percentage. This index provides sufficient information for patient education and compliance with oral hygiene measures [16]. DMF score was also used in this study to augment self-reported data about oral health.

The average DMF score was 9.5 ± 6.9 . There was a correlation between self-reported time of brushing and DMF score. In accordance, with a study by Samorodnitzky and Levin [17], participants' assessment of their dental treatment needs to be correlated positively with DMF score as well. We found that the majority express their fear of dental appointments during the pandemic and exclude the effect of quarantine on their oral health. The internet is regarded as the most favorable source to provide oral health information. Most participants use the internet and social media as general sources for oral health information and the most commonly used application is YouTube because it is associated with visibility which is more convenient than reading or hearing. Yet they expressed their worries sometimes about using the internet due to lack of trustworthiness, lack of some needed information, or communication difficulties. Based on these worries, about 84.2% of the participants consider the importance of the reference of each medical and dental information in social media.

In a recent article discussing social media influence in the COVID-19 pandemic, they addressed the advantage of the rapid spread of information and ease of communication through the internet at the quarantine time, but they stated that at the same speed information travels, disinformation does, it is for this same reason that some authors have suggested creating working groups aimed at fighting myths and disinformation in social media platforms [18].

The results also showed that the majority of participants search or review oral health information every few months which indicates that the participants are reluctant to gain information related to oral health. About 45.5% of the participants confirmed that there is some change in oral health behavior depending on information from social media while 40.6% show uncertainty.

A limitation of this study is that the results cannot be generalized to the Saudi population due to the small sample size and recruitment of participants only from King Abdul-Aziz University

Dental Hospital in Jeddah City, Saudi Arabia. Also in the cross-sectional design, no adjustment for potential confounders such as socioeconomic conditions which may dramatically affect the use of social media as well as the oral hygiene care by the patients. The overall distinct population is using the internet from their mobile as well as on computers. When they look for healthcare information social media become a necessary tool for health education and it will turn out to be carefully expected outcomes [19].

Conclusion

We may conclude that the majority of Saudis have at least one account on one or more social media platforms and that they have become social media addicts, relying heavily on it as a source of information in a variety of disciplines, including medical and oral health data. During the COVID-19 epidemic, social media played a significant role in guiding subscribers, and it has had some impacts on changing the oral hygiene practices of this study's sample. This conclusion is decided on the research considered by Eloff et al. [20] which create (61%) of contributors agree that online social media healthcare information promote easily.

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