



GRADUATION PROJECT

Degree in dentistry

TREND IN THE USE OF SOCIAL MEDIA IN DENTAL EDUCATION

Madrid, academic year 2022-2023

Identification number: 105

SUMMARY AND KEYWORDS

Introduction: Social networking sites have become an essential part of daily life, allowing users to share various aspects of their lives. The first networks were created in 1997 and are still constantly growing in popularity to this day. Professionals learn and share their knowledge, while patients can share their experiences and obtain information. Sharing and viewing images throughout the day can have an impact on users. Rise of specialized accounts in dentistry makes us wonder about the educational potential of social networks in the bucco-dental health field. In fact, online reputation and credibility of information found on the internet must be studied in order to allow its use for the benefit of health and prevention at its best; **Objective :** To conduct an online survey in order to investigate the impact of social networks on dental education, determining the authenticity of information obtained from social media and its impact on the influence of social networks. Evaluate the potential use of social networking in dental education, prevention as well as training; **Material and methods:** Cross-sectional study was conducted using an online survey questionnaire created with Google Forms and distributed via WhatsApp, Instagram, and Snapchat. A total of 113 filled questionnaires were returned. Descriptive statistical analysis has been developed; **Results :** Over a 20-days period, 113 people participated, most answers were gathered from WhatsApp.; **Conclusion :** Social networks do have an impact on dental education, but the extent of this influence is not fully understood. Social media can be a valuable educational tool, but regulations are needed to ensure the reliability of educational data found on the internet. Further research is needed to fully comprehend and capitalize on the educational potential of social networks.

Keywords: Dentistry; dental education; social media; survey; e-learning.

RESUMEN Y PALABRAS CLAVES

Introducción : Los redes sociales (RD) se han convertido en una parte esencial de la vida cotidiana, permitiendo a los usuarios compartir diversos aspectos de sus vidas. Las primeras redes se crearon en 1997 y todavía siguen siendo cada vez más populares hoy. Los profesionales aprenden y comparten conocimientos, mientras que los pacientes pueden compartir sus experiencias, obtener información. Compartir, ver imágenes todo los días puede tener un impacto en los usuarios. El surgimiento de cuentas especializadas en odontología nos hace preguntarnos sobre el potencial educativo de las RD en la salud bucodental. La reputación en línea y la credibilidad de la información encontrada en internet están siendo estudiadas para utilizar las RD en beneficio de la salud y la prevención en su máximo esplendor; **Objetivos :** Realizar una encuesta en línea para investigar el impacto de las RD en la educación dental, determinar la autenticidad de la información obtenida y su impacto en la influencia de las mismas. Evaluar el potencial uso de las RD en la educación dental, la formación y la educación superior; **Material y Métodos :** Se realizó un estudio transversal utilizando un cuestionario de encuesta en línea creado con Google Forms, distribuido a través de WhatsApp, Instagram y Snapchat. Se obtuvieron un total de 113 cuestionarios completados. desarrollamos un análisis estadístico descriptivo; **Resultados :** Durante 20 días, participaron 113 personas, la mayoría de las respuestas se recopilaron a través de WhatsApp; **Conclusiones :** Las RD sí tienen un impacto en la educación dental, pero no se comprende completamente la magnitud de esta influencia. Las RD pueden ser una valiosa herramienta educativa, se necesitan regulaciones para asegurar la confiabilidad de los datos educativos encontrados. Se necesita más investigación para assimilar completamente y aprovechar el potencial educativo de las RD.

Palabras claves : Odontología; educación dental; redes sociales, encuesta ; e-learning.

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1 INTRODUCTION

1.1 Definition of social media

Today, social networks have taken a huge part in everyday life. The development of technology and its advances have allowed the creation of social networks that allow all of its users to share their daily life, their purchases, their work and even sometimes, the medical care they benefited.

What really is a social network? It is a website that allows users to build a network of relationships as well as promoting social interactions between individuals. There are many existing today, the most popular ones being Facebook, Instagram, Twitter and most recently TikTok. They have become a powerful mean of communication for both healthcare professionals and potential patients. How has the Internet revolutionized our means of communication, learning, and sharing? We will review the progress of most important social networks from their early years to today in order to understand their expansion.

1.2 History of social media

The first social network named “Bolt” was created in 1997 by Dan Pelson. It targeted 15-20 years-olds to be used for voice mail, chat, message board, email and instant messaging. It was Shut down 11 years after its creation. Andrew Weinreich is the founder of “Six degree”, also referred to as the “father of social networking”. He created this platform in order to connect strangers with each other, allowing to make new friends on the internet as well as facilitating communication between people. It had about one million members when it peaked. However, same as his predecessor, SixDegrees, it was shut down in 2001. Entering in the early 2000s, we can start talking about modern social media, that are still used nowadays.

1.3 Different platform of social media

1.3.1 LinkedIn

LinkedIn was created in 2003, it was the main and the first social network used for business. This network allows to post pictures and to interact with private messages. Later on, with new updated versions, the platform added new features such as letting users create groups and post videos, assuring an easier and greater use.

1.3.2 Facebook

Facebook was created by Mark Zuckerberg in 2004. This social network was first launched in Harvard and has continued to spread rapidly to other universities until becoming the most famous and used social network in 2008. With numerous new updates, Facebook continues to grow rapidly. It allows users to publish content and customize their profiles.(1) Over the years, Facebook added many new features making it even more popular. People could use private messaging as well as adding various messages to their public walls. It is even easier for them to change their account's parameters according to their own discretion. Users are able to choose whether or not people can see their account, as well as choosing who or what to follow depending on one's interest. The advertising platform has now been made available to brands, making it become a great tool to deliver messages at a high scale.(1) Today Facebook is still used by the largest number of people and has added a new feature since 2021: the ability to add ephemeral stories on its profile's home page. (2) At the beginning, Facebook was not designed for educational purposes but for sharing of personal life. However, over time it has become a professional sharing tool, linking doctors. Moreover, it is very useful for students as it serves as an information tool with a wide database. (2) In fact, this application allows students to access many sources of information at the same time, allowing them to study from anywhere as long as they have an electronic device. (2-4). Besides, it allows for a shorter learning time as all the information is gathered in only one tool, therefore constituting a more motivational view on studying for both professionals and students. (3)

1.3.3 My Space

My Space became the most famous social network in the world in 2006. Created in 2003, this platform allows its users to customize their profile completely with more details about themselves (hobbies, jobs, passion, style of music), to post music or videos. The objective was to allow users to engage a little more on themselves in order to create groups, meet and share with people who resemble them. (5)

1.3.4 Youtube

Youtube launched its website in 2005, It is the most famous sharing site of music and videos. It was originally a site where music videos were posted, and as time went on, it became a social network.(6) Many users create videos to share their daily life through small videos called "vlogs" in which users show their travel, wedding or even shopping in "haul" videos where they would open received packages, or purchases in front of the camera. There are also TV shows, interviews and journalistic reports that are posted on YouTube. On this social network that aimed to share music at fist, we can now find trainings, courses, interviews, cooking recipes and many more in every field. (2,6,7)

1.3.5 Twitter

Twitter is also a famous social media. Created in 2006, the social network with a small blue bird logo has been designated as an SMS platform. Users post what we call "tweets" which are public texts with a limited number of characters. The objective was to react to different events, sometimes in real time, or to inform people who follow us of what we are doing during the day, our mood, feelings. (8,9). Similarly as previous social networks, thanks to different updates, Twitter now counts more than 300 million active users monthly.

1.3.6 Instagram

Turning a simple image into a true masterpiece through a preconceived filter in the app is possible with Instagram. This social network uses visual communication and social interaction to connect people around the world, indeed. It allows users to upload and share photos and videos in their stories or as publications.(10)

1.3.7 Tik Tok

TikTok is a mobile video sharing and social networking app launched in September 2016. It is developed by the Chinese company ByteDance for the non Chinese market. Its counterpart for the Chinese market bears the name Douyin. Its logo evokes a musical note. TikTok counts 800 million users worldwide (11). Tiktok is widely used nowadays, it allows to post videos from 15 to 180 seconds.

Social networks have flourished, especially during the Covid-19 crisis, which first hit Wuhan in november 2019 and spread all around the world.

The world's population was confined for many weeks. To overcome the lack of sociability, new technologies were widely used.(12) For entertainment, to think about something else or to help days seem shorter. However, it led people to aim for Ideal body vision, perfect teeth seen on social medias. It led to desires to fulfil those fantasies once the period of isolation ended, this was fueled by social networks. (13)

1.4 E-reputation

The impact of the development of digital modes of communication is often beneficial to dental offices. In fact, it acts as a positive image vector. However, anyone who posts information about oneself online is vulnerable to unfavourable comments that can put their work and reputation as a dentist at jeopardy. Too many positive comments might occasionally come out as suspicious. It is advisable for practitioners to differentiate their private accounts from professional accounts as a mismanagement can harm his professional and, or private image. Following the exponential growth of social networks these last 10 years, social networks use makes it possible on one hand, to show one's work, as well as acquiring new knowledge thus attracting new patients. On the other hand, patients can also comment on their experiences with practitioners, whether it was good or bad. It can be beneficial or negative then. In some countries, competition in health exists just as competition between restaurants. Studies have also revealed that with the introduction of social networks, some people's fear of criticism has increased with the sharing of personal and professional experiences. As a result, a new tension emerged: the worry of deciding what to say and how it will be perceived by others. Along with the development and evolution of social networks, stress has grown and changed.(10,14,15) The fact that disproportionate amounts of interactions with strangers exist adds to the tension produced by social networks. Even though comments made on social media using fictitious names are not always real they have an impact. As a matter of fact, fake reviews of a hospital or doctor can be posted for competitiveness between medical facilities. Users' identities are not always verifiable. The reputation of the private entity or person can be impacted, with repercussions on the practice as well as the psychological and financial aspects of the accused, if false negative opinions about a healthcare professional or institution, are shared today on social networks.(15)

1.5 Benefits of social media use in dental education

Collaboration and information sharing exist in a wide range of possibilities in social networks. They enable the informational interactions between students and professors, according to previous research. Social networks make it possible to submit images, videos, audio files, edited attachments, and files with content descriptions thanks to their features.(1,16,17)

Social networks also give people the opportunity to advance their knowledge of new technology and medicine treatments, not just among professionals but also for students who are actively learning.(16,18)

There is a lot of instructional content available on Facebook and YouTube that can be used for learning purposes, allowing students to enhance their knowledge and learn more without being restricted to the classes provided by the school indeed. This is infact helpful for all students.(3,4,16)

Professionals and patients can communicate information more quickly and effectively by forming networks. The Covid-19 pandemic, which occurred from the end of 2019 and had both positive and harmful consequences, is the best example of this notion. Social media platforms were utilized to transmit information about health prevention as well as health instructions needed to protect populations. They contributed to improving public knowledge about health issues, correct handwashing procedures, and viral transmission. As a result, it benefited the entire medical sector, not just the dental profession.(19,20)

When a keyword related to a topic is mentioned in a video or written after a hashtag, it appears in the category associated with that keyword. As an example, in the case of the word crown appears after the hashtag, I will be redirected in the category dentistry to several examples of crowns. Anyone searching for information on the subject will have access to all the information shared on the subject if they enter the keyword. This enables patients to better determine whether they require treatment or to learn a new technique for dental students or professionals.(21)

1.6 Inconvenient and barrier of social media use

The enormous social network that exists has both many benefits and disadvantages. In fact, a study has demonstrated that social networks cause an addiction that reduces students' participation in sports and physical exercise(16,17).

Maintaining some level of physical fitness in the dentistry context is important due to the ergonomics of dentists sitting while working all day.(16)

A new patient will now go on social networks and the internet for a diagnosis when they exhibit any symptoms, when medical advices or diagnoses were once spread orally. This has added an additional responsibility to specialists. Social media can spread false information to people who will then come to the dentist thinking they already know what needs to be diagnosed and, who occasionally will reject the dentist's diagnosis. (3,16,17,19,22)

Additionally, people who have self-diagnosed after obtaining a diagnosis on online forums may have worsened their primary pathology or harmed their health in some situations.(22)

As previously said, a dentist's online reputation has become at risk in the modern world. This internet reputation heighten stress. Given that fake criticism cannot always be proven, those who receive it may experience traumatizing psychological, social, and professional effects.

2 JUSTIFICATION

Social media have become ubiquitous in contemporary society with many people using these platforms to access information, share content, and interact with other users. However, their influence on education and health, particularly regarding oral health, remains largely unexplored. This is why it is important to conduct a specific study on this topic.

First and foremost, dental education is essential for promoting oral health and preventing dental diseases. Healthy oral habits acquired from a young age can have a lasting impact on oral health throughout life. It is therefore crucial to understand how social media can influence knowledge, attitudes, and behaviors related to dental education.

Furthermore, social media can be a source of information on oral health for many people. Social media users often share tips, tricks, and personal experiences related to health, including dental health. However, the reliability and quality information can vary greatly, which can impact individuals' understanding and practices related to dental education. It is therefore important to evaluate the accuracy and quality of dental health information disseminated on social media.

In addition, social media can also influence individuals' attitudes and behaviors towards dental healthcare professionals. Social media users may share their positive or negative experiences with dentists, dental hygienists, and other dental healthcare professionals, which can influence individuals' perception and trust in these professionals. It is therefore important to study how social media can shape individuals' attitudes and behaviors towards dental healthcare professionals and their impact on dental education.

Finally, it is worth mentioning that social media are particularly popular among young people, who are a target population for dental education. This study will also allow us to understand the leverage social media can have in higher education having significant advantages in terms of education.

3 OBJECTIVES AND HYPOTHESES

3.1 Hypotheses

- H0: Increased use of social media does not have an impact on dental education.
- H1: Increased use of social media leads to a new tool for education and prevention.

3.2 Primary objective

In the first instance, we established a primary objective: Do social networks have an impact on dental education? To provide the best possible response, we established sub-objectives that will allow us to understand the factors to consider in the event of a potential influence.

3.3 Secondary objective

Our second objective is to determine the degree of authenticity that users attach to information obtained through social media networks. It will also help us to determine whether the trustworthiness of information has an impact on the influence of social networks, which is our main objective.

3.4 Tertiary objective

Our third objective is to find out if we can use social networking in dental education and trainings at higher education levels. With the resources that we have today, perhaps we can imagine networking will create a new era of higher education, using these advances for educational purposes throughout the world.

4 MATERIAL AND METHODS

We looked for a pre-existing questionnaire that was alike our research topic and had been approved by a committee in order to conduct our survey and ensure ethical compliance. We used the keywords "dental education," "social media," "survey," and "e-learning" to search through PubMed, Medline, and Google Scholar databases for relevant information. During our research on the various social networks, we used the term "evolution."

We used a variety of criteria to choose the questionnaire that would serve as the foundation for our study, including the data collection method. We decided to use the "SNOW-BALL TECHNIQUE" in line with our social media research topic after careful consideration. This method involves observing spread of information, waiting for it to be shared among participants. As more information is shared, the greater the impact.

To establish the groundwork for our questionnaire, we extensively reviewed relevant literature to gather as much data as possible on our research topic. We specifically focused on the methodologies used in previous studies, such as participant selection, question formulation as a way to obtain precise responses, and finally response collection to capture diverse perspectives.

We identified a suitable questionnaire that met our criteria very early on after conducting searches, excluding revisions, and focusing on relevant studies. Thanks to the recent publication time, the questionnaire was quickly discovered. The questionnaire was originally developed by Henna Mir et al. and was titled "The Impact of Social Media Use on Dental Education." It was an online survey conducted from December 10, 2019, to January 10, 2020, to investigate the impact of social media use on dental treatment. We used this existing questionnaire for our study, with slight modifications, such as adding a question to determine the profession of the respondents (students, professors, or others) in order to analyze the responses considering the users' background.

The questions in the selected questionnaire were designed to assess the users' perception of the impact of social media networks and their trustworthiness in the

information obtained from these platforms. We found these questions to be relevant and retained most of them, with some slight changes.

The original questionnaire had 14 questions (Table 1), and with our modifications, our had 16. We started by asking participants if they were willing to participate in our research. We inquired about their current professional situation to explore if it had any influence on their social media usage, aiming to identify any differences in social media use based on professional status.

We retained questions 1 and 2 from the original questionnaire (Table 3), as well as question 3. We added a subsection to question 4 in our study (Table 2) to determine the most frequently used social media network and the one with the most influence according to users, as this information would enable us to conduct a more in-depth analysis of the characteristics that constitute an influential social network.

We also kept question 4, as it is relevant to understanding the trust placed by users in information obtained from social media networks. Question 5 "Does the activity of their account influence your decision to choose a dentist or dental clinic?" (Table 3) was retained as it directly relates to our research topic. Questions 6 and 7 were also kept, as they pertain to how social media networks allow users to promote their activities, express opinions, and share experiences, while considering the potential impact of these opinions, given the various factors involved.

Question 8 from the original questionnaire (Table 3) was saved: "Would you visit a dental clinic because you visited or read their page on a social media site?" This question was modified to become question 11 in our questionnaire (Table 2), as it helps us understand whether social media networks influence people's decision to visit a dental clinic based on the information obtained.

We included the question "Would you visit a dentist because you saw before and after pictures on social media?" (Table 3: Question 9; Table 2: Question 11) in our study to explore if there is a factor that influences people's decisions based on social media content. This question relates to the photos and videos that are commonly found on social media platforms and websites. We acknowledge that these visual elements can

be significantly altered using specialized software, which is a common technique used by professionals. Considering these factors, we wanted to investigate if they have any effect on our research topic.

Continuing our exploration on the influence of social media, we questioned whether the influence comes from networks themselves or from users. As a result, we chose question number 10 (Table 3), which became question number 13 in our study (Table 2), as it aligned with our research criteria.

We did not include question 11: "Reliance on the accuracy of the results and the display of cosmetic treatment advertisements?" (Table 3); question 12: "Do advertisements containing special offers for various esthetic treatments attract you, regardless of treatment quality?" (Table 3); and question 13: "If you saw a friend or family member on social media with a new smile, would you ask about the esthetic dentist or dental clinic where they were treated?" (Table 3) in our study, as we did not believe they were directly relevant to our research topic. However, question 13 mirrored question 14 on the original questionnaire (Table 3). We did not want to differentiate between celebrity and familial influence on social media, so we used question 14 again: "Would you choose a dental clinic or dentist based on an advertisement by a celebrity on social media?" This was sufficient for us to determine whether the influence came from users on social media or the networks themselves. On one hand, as we focused more on social media, we realized familial influence can also manifest through messages, phone calls, or word-of-mouth, not just limited to social media. On the other hand, celebrities and their influence are mainly transmitted through representations, advertisements, or public posts on the internet and social media platforms. Therefore, we included it in question 13 of our survey (Table 2).

To gain a better understanding of users' trust in information found on the internet, we added some questions. Question 14 (Table 2) asked: "Would you choose a dentist or dental clinic based on their social media presence?" This aimed to determine if patients or potential patients refer to social media networks when choosing a practitioner.

Question 15 was specifically aimed at the role of social media in dental health education: "Do you feel more concerned about your dental health after seeing information about

it on social media?" (Table 2). We included this question to investigate if educational information about dental health distributed through social media has an impact on patients' responsibility towards their oral health.

The final research question was formulated as, "Do you search for information about dentistry on social media?" (Table 2: question 16). We structured it in this way to investigate if social media networks are utilized by users for learning, staying informed, and expanding their knowledge in dentistry. Additionally, we aim to explore if social networks are being used for educational purposes by medical students today. This hypothesis is worth investigating due to the increasing digitization and informatization of healthcare. However, a more in-depth study with larger resources will be needed to fully explore this question.

Data Collection: After obtaining permission from the Ethics Committee of the University of Europe in Madrid, the questionnaire was made available on various platforms, including Instagram, through temporary publications that lasted for 24 hours. The distribution of the questionnaire took place on January 20, 2023. In addition, the questionnaire was distributed through different WhatsApp groups of students from the European University of Madrid from various levels of study (first, second, third, and fifth year).

Exclusion Criteria: Participants under the age of 18 were excluded from the study. Although it would have been beneficial to include minors in the study to better understand the impact of age on information-seeking behavior related to dental health and education, obtaining parental consent and identity verification would have required additional resources that were not available at our level.

Data Collection Platform: The questionnaire was created, distributed, and completed using the Google Forms platform (www.docs.google.com). The link to the questionnaire was shared across different platforms such as Facebook, WhatsApp, and Instagram to maximize reach and participation.

Table 1: Questionnaire conducted in the study: "The impact of using social media on dental treatment,2020(23)

QUESTIONS		RESPONSES(%) (n=477)	8. Would you visit a dental clinic because you visited or read their page on social media sites?	
1. Do you follow (dentist/dental clinic) in social media?			Yes	328 (68.8%)
Yes	182 (38.2%)		No	130 (27.3%)
No	80 (16.8%)		No response	19 (4%)
No response	215 (45.1%)		9. Would you go to a dentist because you saw a before and after pictures in the social media?	
2. Do you think that dentists should communicate with people through social media rather than conventional media (TV, newspapers, magazine)			Yes	276 (57.9%)
Yes	400 (83.9%)		No	178 (37.3%)
No	68 (14.3%)		No response	23 (4.8%)
No response	9 (1.9%)		10. If you need to get an esthetic dental treatment, is your first choice a clinic that a celebrity tried or talked about in social media?	
3. If you want to get information about an esthetic dental treatment or clinic, is social media your first choice for information?			Yes	230 (48.2%)
Yes	290 (60.8%)		No	224 (47%)
No	158 (33.12%)		No response	23 (4.8%)
No response	29 (6.1%)		11. Reliance on the accuracy of the results and displays advertisements which belong to cosmetic treatment?	
4. Do you trust the information you get from social media about dentistry and treatment options?			Yes	230 (48.2%)
Yes	270 (56.6%)		No	218 (45.7%)
No	184 (38.6%)		No response	29 (6.1%)
No response	23 (4.8%)		12. Does advertisement that contain special offers for different esthetic treatment attract you, regardless of the quality of treatment?	
5. Does your decision of choosing a dentist or dental clinic affected by the activity of their account?			Yes	144 (30.2%)
Yes	260 (54.5%)		No	310 (65%)
No	194 (40.7%)		No response	23 (4.82%)
No response	23 (4.8%)		13. If you saw on social media a friend or family member with a new smile, would you ask about the esthetic dentist or dental clinic they were treated in?	
6. Do you write about your visit to the dentist or dental clinic in social media?			Yes	396 (83.0%)
Yes	134 (28.1%)		No	58 (12.2%)
No	324 (67.9%)		No response	23 (4.8%)
No response	19 (4%)		14. Would you choose a dental clinic or dentist based on an advertisement by a celebrity on social media?	
7. When you read a criticism to a dentist or dental clinic in social media, would that affect your personal decision to visit the dentist or clinic?			Yes	164 (34.4%)
Yes	314 (65.8%)		No	288 (60.4%)
No	140 (29.4%)		No response	25 (5.2%)
No response	23 (4.8%)			

5 RESULTS

We will compare our results with literature reviews and previous studies. We observe that as part of a cohort study conducted by the University of Oxford in 2020, a questionnaire was distributed in 2014, 2017 and 2019 to show the evolution of social networks impact on behaviour of patients whom underwent breast augmentation. This study was selected since it represented all the keywords that were in our research and that it intended to study the influence of social networks on the practice of a medical act. (24)

There were 1,646 female patients who used the internet to research procedures before appointments, from 68 percent in 2014 up to 94.1 percent in 2019. A significant rise that happened quickly. Most surgeons surveyed (62%) think many of their patients had read and/or used information from the internet before the appointment. One of the advantages of social networks, which we will examine in a later section, is brought up by this. The main social network that has had an impact is the clinic's official website, which is regarded as a social network since it allows for the exchange of patient experiences, explanation of treatments, and interactions between patients and practitioners. Additionally, we note that from 2014 to 2019, patients' perceptions of the influence of social and online networks on medical practice have improved over time. We'll investigate the mechanism behind this affect. (8)

The questionnaire was made available on various platforms in addition to being distributed to various WhatsApp groups of students from the European University of Madrid at various levels of study (first, second, third, and fifth year). We received 113 responses over a 20-days period, with the average response time being two minutes and 13 seconds.

In response to the first question (Table 2), 108 people agreed to have their data collected anonymously, while 5 people refused.

We want to know each participant's situation so that we can see if it has an impact on their use of social networks during the data analysis. There are 64 students and 44

dentists among the 113 responses, with only four professionals and one other person in another situation.

We noticed that among participants, there are three groups: students, professionals, and dental students. We thought it would be interesting to separate them to see what effect dental education information circulating on social media had on various profiles. Analyzing if being in the workforce, learning, or studying in this field had any influence, and if they were acknowledged in the same way. So, we combined the data from questions 2 and 3 of our questionnaire to see if there was any correlation.

We discovered that among 39 dental students, 1 people out of 5 followed a dentist or a clinic on social media. Results for students pursuing advanced studies in different fields other than dentistry are comparable, with 34 people following a dentist compared to 30 people who do not. We have noticed for most part of dental students, that they follow an account related to their field of study. This is also valid for professionals.

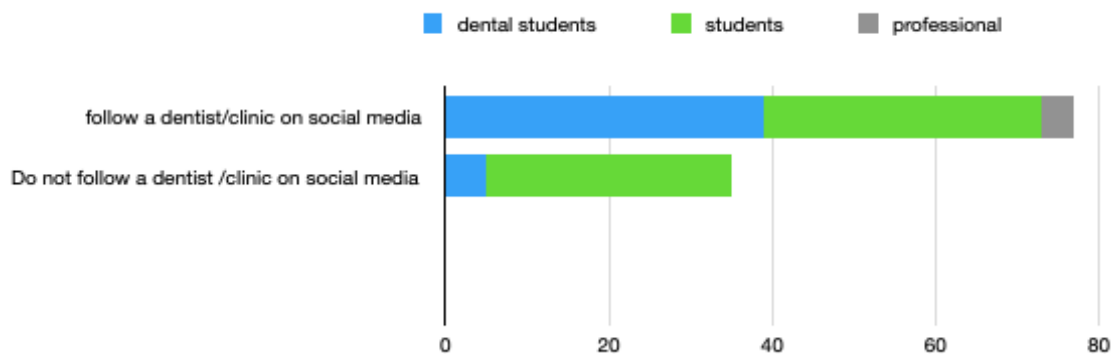


Figure 1: Number of people who follow a dentist or not according to their situation in our questionnaire (dental students, students, professional).

The third question (Table 2) concerned social media, and we discovered that 73 people followed a specific dentist or dental clinic on social media, compared to 39 who did not. (Figure 2)



Figure 2: Response to the question “Do you follow dentist or dental clinic in social media (n=number of people).

There are 91 participants who believed that dentists should communicate through social media rather than traditional media (TV, Newspaper or magazine). 7 people had no opinion on the situation, compared to 15 who were opposed. (Table 2). The collected feedback can be seen on this graph (Figure 3).

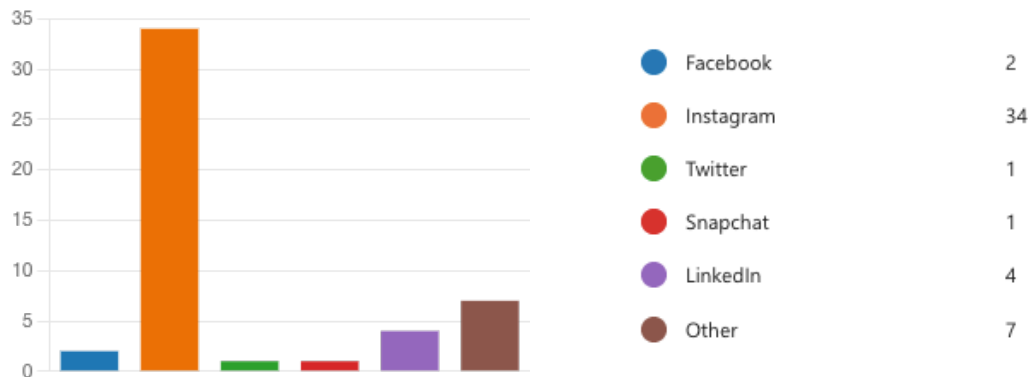


Figure 3: Response to the question “Do you think dentist should communicate through social media rather than traditional media (TV, Newspaper, or magazine), (n=number of people).

In the context of attempting to learn more about dental treatments or different clinics, 37 people used social media to conduct their research, while 74 people used another method. Nobody had an opinion on the subject. In the case of a social media search, Instagram was the first network for 32 people, followed by Facebook for 2 people and LinkedIn, Twitter, and Snapchat for 2 people. (Table 2)

We examined the responses to question 6. (Table 1)

Table 3: Social medial more used according to the answers of the questionnaire (number of people).. Blue: Facebook (2); Orange: Instagram (34); Green: Twitter (1); Red : Snapchat (1); Purple : LinkedIn (4) ; Brown : Other (1)



The use of social networks varies depending on the age of users as well as the time of day. We can see from our research that the application Instagram is the most popular amongst those looking for information on cosmetic dentistry on social media, accounting for the majority of responses (68 percent). In the case of the 2021 study, most responses (263 out of 477 participants) were obtained via the WhatsApp platform.

Table 4: social media more used according to our study.

Which one? (Question 6; Table 2)	Number of answers (n=number of people)
Instagram	25
Instagram; Others	3
Other	3
Instagram; LinkedIn	3
Instagram; Facebook; LinkedIn	1
Twitter; Snapchat; Other; Instagram	1
Facebook; Instagram	1

"Do you trust the information you get from social media about dentistry and treatment options?" 39 people said "yes," 47 said "no," and 25 said they didn't know. (Figure 4)



Figure 4: Answers to the question: "Do you trust information you get from social media about dentistry and treatment option?". (n = number of people).

We were wondering if the activity of accounts on social media influenced the decision to choose a dentist or a dental clinic. On social media, information is not only published by the authors, but opinions can also be published by third parties. We asked the question to find out how many people shared their experiences with a dentist or a clinic on social media. 8 people said "yes" to 98 people who said "no," with 6 people not responding. (Table 2). Answers are expressed in figure 5.

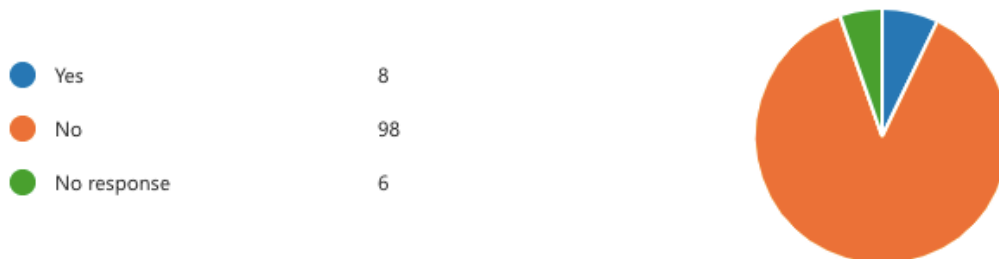


Figure 5: Answers to the question: "Do you write about your visit to the dentist or dental clinic in social media?". (n= number of people)

We asked participants if reading negative reviews and feedback about a dentist or dental clinic influenced their decision to visit or be treated by these professionals, and 86 percent said "yes," while 11 percent said "no," and four said they had no opinion on the matter. (Table 2). Answers are expressed in the figure 6.

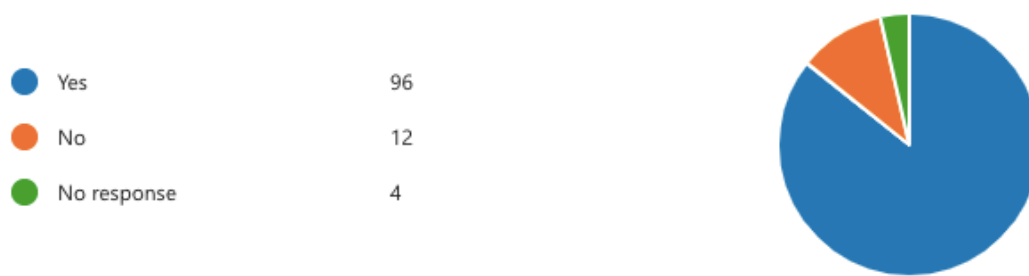


Figure 6: Answers to the question: “When you read a criticism to a dentist or dental clinic, would that affect your personal decision to visit the dentist or clinic?” (n= Number of people).

We asked if the decision to see a doctor or go to a clinic was influenced by a visit to their social media accounts, and 35 people said no, while 64 percent said yes. 4 percent, or 5 people, had no opinion on the subject. (Table 2).



Figure 7: Answers to the question: “Would you go to the dentist because you visit or read their page on social media site ?”. (n= number of people)

To better understand the aftereffect, we asked participants if they went to see a dentist or a clinic after seeing photos before and after on social media. 57 percent, or 64 people, responded positively, while 41 participants responded negatively. Six percent did not respond to the question. (Table 2).

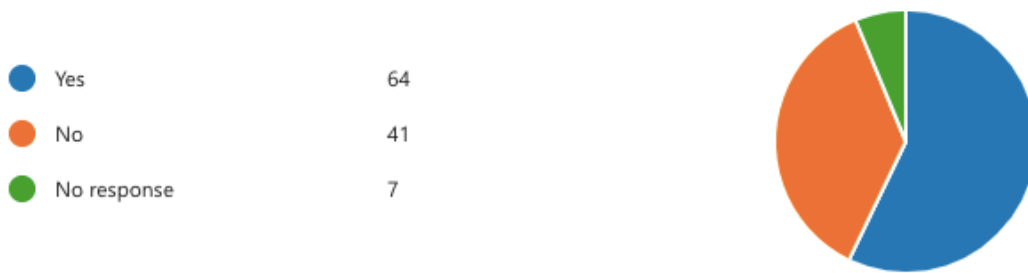


Figure 8: answers to the question: “Would you go a dentist because you saw a before and after pictures in the social media? (n=number of people).

Social media networks are also well-known for following popular personalities or celebrities to determine whether they have influence in the future. For the question «if you need to get an aesthetic dental treatment, is your first choice a clinic that a celebrity tried or talked about in social media?». 74 percent of respondents said no to the question, while 23 said yes. Six people have not responded to our request. (Table 2).



Figure 9: Responses collected to the question 13 of our study (Table 2).

We asked participants if they found their dentist or clinic through social media on the question 14 in our questionnaire. There is a distinction with question number 8, which we will explain in the next section. 32 percent of those polled, or 42 people, said yes and 54% (60 people) answered « no ». Ten people did not respond to the question. (Table 2).



Figure 10 : Answers to the question “ Would you choose a dental clinic or dentist on social media?”. (n= number of people).

In comparison to question 8, which nuanced this question, we obtained much more mitigated results with the response yes and not comparable. We received 46 percent negative responses, or 51 people, compared to 48 percent positive responses. We also received 7 people who did not want to respond, accounting for 6% of all responses to this question. (Table 2).

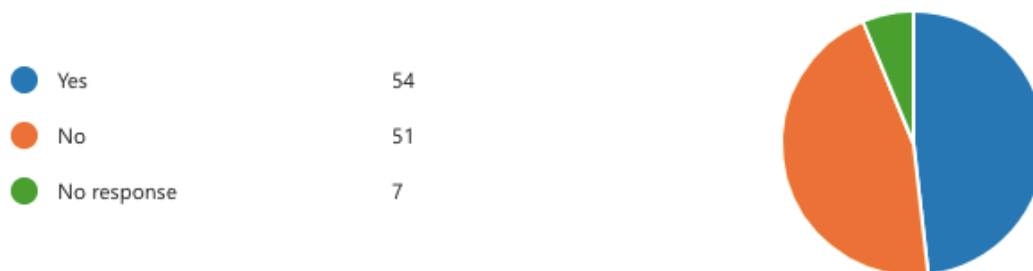


Figure 11: Answer to the question “ Does your decision of choosing a dentist or dental clinic is affected by the activity of their account?” (n=Number of people).

In order to determine whether social media platforms have an impact on users' dental education, we asked if they were more concerned about their dental health after viewing information about it on social media platforms. The result was a majority of "yes" responses with 80 people, with "no" responses accounting for 24 percent or 27 people. (Table 2).

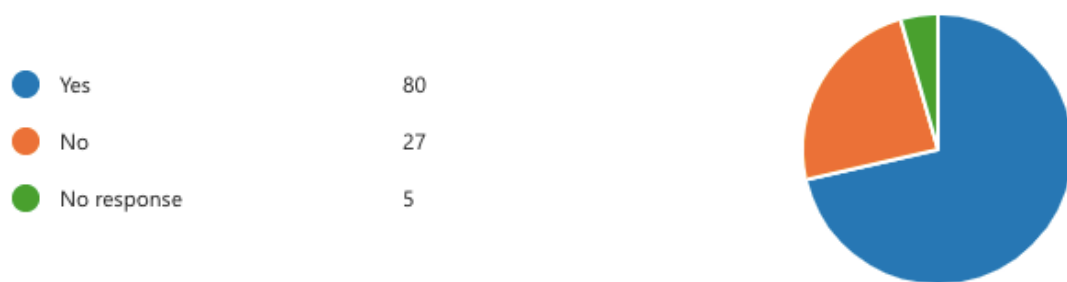


Figure 12 : Answer to the question :“ Do you feel more concerned about your dental health after seeing information about it on social media?” (n=Number of people).

To complete the questionnaire, we know that social networks work by algorithm, and it is, they change based on what you look at and the searches you conduct. The platform will automatically suggest topics, videos, photos, and other publications that may interest you, and the platform will learn about your areas of interest. We brought up the question: Do you look up dental information on social media? The results were balanced, with 59 positive responses to 50 negative responses. Only three people did not respond to this question. (Table 2).

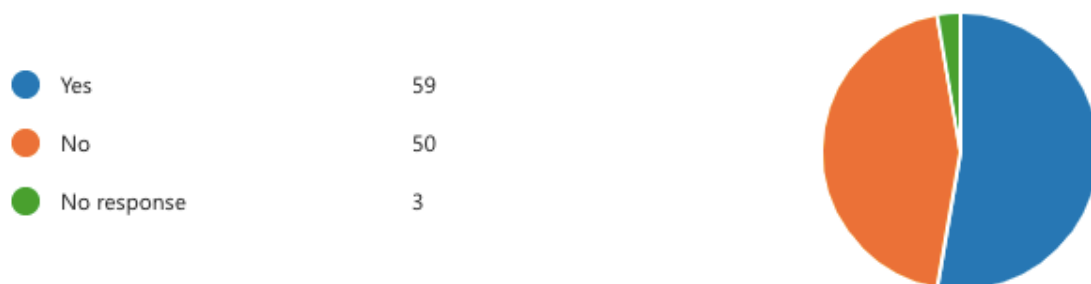


Figure 13: Answer to the question “Do you search information about dentistry on social media?” (n=Number of people).

6 DISCUSSION

We can currently compare our results and attempt to analyze them. In the first instance, we can see that the questionnaire was widely disseminated in a relatively short period of time. The questionnaire was distributed electronically rather than on paper, and the link to the questionnaire was distributed online. We can conclude that information shared on social networks spreads quickly.

In terms of participant profiles, the great majority of those who responded are students, with a smaller proportion studying dental surgery. Can we assume that students use social media more than professionals in the workplace? Or, in addition to the use of social media, are students looking for information on the topics in which they are studying? To answer these questions, we need to conduct a larger-scale study with more substantial resources. We also discovered that most dental students followed a clinic or a dentist on social media. (Table 2)

We revealed in the results that most dental students (39 people versus 5) follow a dentist or a clinic on social media, and the same is true for dental professionals (n=4). One hundred percent of them follow a dentist or a clinic on social media. We can assume that students use networks to learn new information or stay informed, because technological advances are prevalent in medicine. Concerning the other students, we could see that the results were balanced, with one half following dentists or clinicals and the other not. Developing this theory with a more in-depth study of the subject using more resources would be interesting in order to learn why students in dentistry and other fields, which could also provide us with important information in order to achieve our objectives, if social media networks can be a new educational tool for students in higher education.

The fourth question sought to ascertain whether participants believed that dentists should communicate using new information technologies rather than traditional formats (TV, Magazines, Journal). Four out of five people responded positively to this question. In contrast to the previous question (question number 4, Table 2), the first search for information about a dental or other treatment does not take place directly

on social media. In comparison to the Mir H and Al study, we find the same results, seeing as 83.9 percent of participants in their study responded positively to this question. (23)

We can conclude from the results of the most popular networks (Table 1) that the most popular social network is dependent on the time and the appearance of new networks. Because the internet and its applications are constantly evolving, its use will become more "fashionable" as new applications are released. This is already the case because, since the introduction of TikTok, its use has grown and health-related information, among other things, has become more widely disseminated, as demonstrated by a study published in Health Education Research in 2021 and the International Journal of Adolescent Medicine and Health in 2022. (10,20).

Another element that has been brought to our attention is that 86 percent of people are influenced by the comments left on the activities and accounts of a specific dental clinic or dentist (Question 10, Table 2). On the contrary, many participants believe they will not share their personal experiences with a practitioner, so we ask: Can we make decisions based on the comments made, and what factors encourage patients to share their experiences? We can see from the results that in the reference study, 67.9 percent of participants do not leave a comment after their visits to the dentist, compared to only 28.1 percent who do. We can see from the results that 98 people do not leave a comment versus 8 people who do. We can also establish a connection with the results of question 7 (Table 2) are mixed; 39 people trust the information they get from social media about dental issues; this information may be influenced by the person sharing the information's belief that he or she is a professional. We, on the other hand, have on the other hand, we have 47 other people who do not believe the information they find on social media. Certainly, a more thorough study involving more patient contact is required. This may also be influenced by the fact that they are aware that information posted on social media networks can be accessed by anyone. Furthermore, as previously stated, user identities are not always controlled and verified, allowing anyone without a degree or qualification to disseminate health-related information. The remaining 23%

of people have not expressed an opinion on the subject, which could be due to a combination of factors.

We can also see that our findings parallel those of the reference study, with 314 people (65.8 percent) influenced by negative comments posted on social media. We can ask what factors are important to consider and what motivates patients to share their positive or negative experiences on social media. With the knowledge that most people do not share their experiences, how can they trust the veracity of these comments? This is a question to which a more thorough study with greater resources could provide an answer.

The desire to believe a professional's words without knowing whether he is truly qualified, and thus the doubt. All these reasons are related to question 8 (Table 2), which seeks to determine whether the activity of accounts on social networks influences their decisions. As previously stated, social media platforms enable the sharing of educational information, photos, and videos. All of this is visible to potential patients. As a result, for-profit clinics have a vested interest in disseminating positive information or even removing negative comments or feedback.

Furthermore, question 14 (Table 2) confirms that 54 percent of people do not choose their dentist or dental clinic through social media, compared to 38 percent of participants who do. Ten people do not have an opinion on the question; a larger study could determine which factors to consider, and which information influences their decision.

Question 11 and 12 (Table 2) confirm, at the scale of our study, that users are influenced by information seen on social media networks. In fact, 72 people out of 113 (64 percent) will visit a dentist or dental clinic to follow up on information gleaned from social media. For 57% of them, it's as a result of seeing photos before and after. The power of social media is clearly demonstrated here. We can also see this by comparing our findings to the results of a similar study conducted on a larger scale; in fact, 328 people out of 477, or 68.8 percent, answered "yes" to the question "would you visit a dental clinic because you visited or read their page on social media?". This is consistent with the fact that more than half of the participants in their study visit a clinic after seeing before/after

photos. The two studies yield the same result at different intervals on two different populations. It would be interesting to investigate this based on age and origin country to see how the influence of social networks varies.

The influence of a celebrity is an important factor to consider when using social media. As a result, we must investigate whether social media networks have an impact on dental education or whether public celebrity has an impact as well. We discovered that for 74% of participants, their first choice of information for a cosmetic treatment, for example, is not the result of a celebrity announcement, and they will not seek information from these people.

In the field of dental education, we asked question 15 (Table 2) « do you feel more concern about your dental health after seeing information about it on social media?", The outcome was unanimously positive with 71 percent participants who responded « yes ». Millions of people use social media every day, and if information about dental health circulates, we can see from our small study that it affects a large portion of the participants. We want to know if larger-scale dental health campaigns will be carried out, and what impact that will have on the population and patients. If there is doubt about the veracity of the information disseminated.

The last question 16 emphasizes the importance of patients' involvement in their dental education (Table 2), we added this question in order to properly focus on our topic and understand the importance that the patient places on dental education. We discovered that the results were somewhat mitigated, with slightly more than half (53 percent) seeking information on dental health on their own freewill, but the previous question allows us to see if there is still an impact on potential patients. Because, according to our findings, 71% of people are more concerned about their dental health after viewing information on social media. A larger-scale study is needed to determine which information captures the attention of patients and at what frequency information must be seen in order to influence them.

Based on the results obtained from the study, we can draw several conclusions. Firstly, the questionnaire was disseminated widely and quickly through electronic means, specifically social media networks, indicating that information shared on social media

spreads rapidly. Secondly, it was observed that most respondents were students, with a smaller proportion being dental professionals, suggesting that students may use social media more frequently than professionals in the workplace, possibly for information related to their studies. However, further research with larger sample sizes and more resources is needed to confirm these assumptions.

Additionally, it was found that most dental students and professionals follow dentists or clinics on social media, indicating that social media networks may be used as a source of information or to stay updated on relevant topics.⁽²⁵⁾ However, the results were mixed regarding the trustworthiness of information obtained from social media, with some participants expressing belief in the information shared by professionals while others were skeptical. This highlights the need for more in-depth studies involving patient contact to understand the factors that influence trust in social media information.

Furthermore, the popularity of social media networks varied depending on the time, appearance of new networks, and age of users, with Instagram being the most commonly used platform for information related to cosmetic dentistry in the current study. However, it is important to note that the popularity of social media platforms can change over time with the introduction of new applications, as demonstrated by previous studies.

The influence of comments on social media activities and accounts of dental clinics or dentists was also noted, with a majority of participants being influenced by comments. However, it was observed that not all patients share their experiences on social media, and the trustworthiness of comments may be questionable due to the lack of control over user identities and qualifications. This raises questions about the factors that motivate patients to share their experiences on social media and how their trust in the veracity of comments can be established.

In conclusion, the findings of this study suggest that social media networks play a significant role in disseminating information related to dentistry, particularly among students and young professionals. However, further research with larger sample sizes, more resources, and patient contact is needed to understand the dynamics of social

media use in the dental field, including factors that influence trust in social media information and patient experiences shared on social media.

When we compare our results to those of the reference study, we see that we get nearly the same percentages. In both studies, information spreads quickly, but the influence is mixed. When we asked question 7 (Table 2) whether they trusted information obtained from social networks, the results were mixed, but when we asked about real influence, many responses showed that participants were influenced (whether by photos posted on social networks, the activity of the practitioner/clinic itself, or reading criticism of a third party). In contrast, most participants do not share their experiences, but they trust the experience of other people, either consciously or unconsciously; we would need to investigate this further to accurately answer each point.

Table 2: Answers collected in this study. Numbers of people (Percentage of answers).

1 - Do you give your consent to participate in the survey as a volunteer for the results to be used in the Final Degree Project Trend in the use of social media in dental education?	<ul style="list-style-type: none"> ➤ Yes: 108 (96%) ➤ No: 5 (4%) ➤ No response: (0%) 	2- Actual situation?	<ul style="list-style-type: none"> ➤ Student: 64 (57%) ➤ Professional: 4 (4%) ➤ Dental student: 44 (39%) ➤ Another situation: 1 (1%)
3 - Do you follow dentist or dental clinic in special media?	<ul style="list-style-type: none"> ➤ Yes: 73 (65%) ➤ No: 39 (35%) ➤ No response: 1 (1%) 	4 - Do you think that dentist should communicate with people through social media rather than conventional media (TV, Newspaper, Magazine)?	<ul style="list-style-type: none"> ➤ Yes: 91 (81%) ➤ No: 15 (13%) ➤ No response: 7 (6%)
5 - If you want to get information about an aesthetic dental treatment or clinic, is social media your first choice of information?	<ul style="list-style-type: none"> ➤ Yes: 37 (33%) ➤ No: 74 (66%) ➤ No response: 1 (1%) 	6- Which one?	<ul style="list-style-type: none"> ➤ Facebook 2 ➤ Instagram 34 ➤ Twitter 1 ➤ Snapchat 1 ➤ LinkedIn 4 ➤ Another 7
7 - Do you trust the information you get from social media about dentistry and treatment options?	<ul style="list-style-type: none"> ➤ Yes: 39 (42%) ➤ No: 47 (35%) ➤ No response: 25 (23%) 	8 - Does your decision of choosing a dentist or dental clinic is affected by the activity of their account?	<ul style="list-style-type: none"> ➤ Yes: 54 (48%) ➤ No: 51 (46%) ➤ No response: 7 (6%)
9 - Do you write about your visit to the dentist or dental clinic in social media?	<ul style="list-style-type: none"> ➤ Yes: 8 (7%) ➤ No: 98 (88%) ➤ No response: 6 (5%) 	10 - When you read a criticism to a dentist or dental clinic, would that affect your personal decision to the visit the dentist or clinic?	<ul style="list-style-type: none"> ➤ Yes: 96 (86%) ➤ No: 12 (11%) ➤ No response: 4 (4%)
11 - Would you visit a dental clinic because you visit or read their page on social media sites?	<ul style="list-style-type: none"> ➤ Yes: 72 (64%) ➤ No: 35 (31%) ➤ No response: 5 (4%) 	12 - Would you go to a dentist because you saw a before and after pictures in social media?	<ul style="list-style-type: none"> ➤ Yes 64 (57%) ➤ No: 41 (37%) ➤ No response: 7 (6%)

11 - Would you visit a dental clinic because you visit or read their page on social media sites?	<ul style="list-style-type: none"> ➤ Yes: 72 (64%) ➤ No: 35 (31%) ➤ No response: 5 (4%)
13 - If you need to get an aesthetic treatment, is your first choice a clinic that a celebrity tried or talked about in social media?	<ul style="list-style-type: none"> ➤ Yes: 23 (21%) ➤ No: 83 (74%) ➤ No response: 6 (5%)
15 - Do you feel more concerned about your dental health after seeing information about it on social media?	<ul style="list-style-type: none"> ➤ Yes: 80 (71%) ➤ No: 27 (24%) ➤ No response: 5 (4%)
12 - Would you go to a dentist because you saw a before and after pictures in social media?	<ul style="list-style-type: none"> ➤ Yes: 64 (57%) ➤ No: 41 (37%) ➤ No response: 7 (6%)
14 - Would you choose a dental clinic or dentist on social media?	<ul style="list-style-type: none"> ➤ Yes: 42 (38%) ➤ No: 60 (54%) ➤ No response: 10 (9%)
16 - Do you search information about dentistry on social media?	<ul style="list-style-type: none"> ➤ Yes: 59 (53%) ➤ No: 50 (45%) ➤ No response: 3 (5%)

7 LIMITATIONS

We had to face several limitations during this study. For example, by initiating with questionnaire responses, we only wanted to reach a large population in the first place, especially for ethical and consent questions. Admittedly, we cannot determine the legal age of the participants as everything was completed online. We also had limitations in terms of our resources, to respond to our objectives more precisely with more precise data, we would need to conduct a larger study, specifically on the factors to consider in order to determine what impacts patients' good oral health. We believe that conducting research with people who are experts in the social domain, or even on human behavior in relation to social networks, is essential. To better understand and utilize social networks and placing them to use in the domain of public prevention.

8 CONCLUSION

We believe the answer to the question "Do social networks have an impact on dental education?" is "yes." Influence between social networks and the population cannot be classified as conscious or unconscious. Although the opinions of others on social media and the impact of health-related photos have an impact on the population, when asked directly if social media has an influence, the answer is no. A more extensive and in-depth investigation would assist us in understanding the specific factors that determine this influence and when it can be considered as such.

The second objective is inextricably linked to the first and second objectives. Because social media is not the primary source of information that patients seek, the degree of authenticity that participants attach to information received on social media is not necessarily trustworthy. On the contrary, users have trust in certain topics and shared web experiences. A more in-depth investigation would be extremely beneficial in determining which factors reinforce or undermine this trust.

Now, in terms of effectively utilizing social networks for higher education, this is a prime opportunity because students of all ages use them nowadays. It is a method of storing large amounts of data in one location, and as technology advances, there are various educational applications that allow learning on any subject at any time, with vast and constantly expanding databases. This would be a massive benefit in the educational field. Unfortunately, the issue of user trust can be a barrier. As a result, we believe that regulation is required to remove any doubts about the reliability of educational data found on the internet. As a result, this could become a reliable method of education.

In general, our investigation has shown that there is significant potential with several questions and concerns. Because of their innovativeness, social networks have a lot to offer in terms of knowledge sharing and education. More extensive studies with larger sample sizes and resources, however, are necessary to properly understand and harness

the potential of social networks for educational purposes, as the influence of social networks will continue to grow in this connected society over time.

We cannot confirm hypothesis H1, but regarding the null hypothesis we don't have enough information.

9 ACKNOWLEDGMENT

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11 ANNEXES

Tables :

Table 1: Questionnaire conducted in the study: “The impact of using social media on dental treatment,2020.

Table 2: Answers collected in this study. Numbers of people (Percentage of answers).

Table 3: Social medial more used according to the answers of the questionnaire (number of people). Blue: Facebook (2); Orange: Instagram (34); Green: Twitter (1); Red: Snapchat (1); Purple: LinkedIn (4) ; Brown : Other (1) Table 4: social media more used according to our study.

Figures :

Figure 1: Number of people who follow a dentist or not according to their situation in our questionnaire (dental students, students, professional).

Figure 2: Response to the question “Do you follow dentist or dental clinic in social media (n=number of people).

Figure 3: Response to the question “Do you think dentist should communicate through social media rather than traditional media (TV, Newspaper, or magazine), (n=number of people).

Figure 4: Answers to the question: “Do you trust information you get from social media about dentistry and treatment option?”. (n = number of people).

Figure 5: Answers to the question: “Do you write about your visit to the dentist or dental clinic in social media?”. (n= number of people)

Figure 6: Answers to the question: “When you read a criticism to a dentist or dental clinic, would that affect your personal decision to visit the dentist or clinic?” (n= Number of people).

Figure 7 : Answers to the question: “Would you go to the dentist because you visit or read their page on social media site ?”. (n= number of people)

Figure 8: answers to the question: “Would you go a dentist because you saw a before and after pictures in the social media? (n=number of people).

Figure 9: Responses collected to the question 13 of our study (Table 2).

Figure 10: Answers to the question “Would you choose a dental clinic or dentist on social media?”. (n= number of people).

Figure 11: Answer to the question “Does your decision of choosing a dentist or dental clinic is affected by the activity of their account?” (n=Number of people).

Figure 12: Answer to the question:” Do you feel more concerned about your dental health after seeing information about it on social media?” (n=Number of people).

Figure 13: Answer to the question “Do you search information about dentistry on social media? “ (n=Numbers of people).