

ORIGINAL PAPER

Social Media and the Orthopaedic Surgeon: a Mixed Methods Study

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ABSTRACT

Introduction: Social media continues to grow in size, and popularity, The prevalence of social networking continues to develop and will likely play an increasing role in all aspects of society and business, including in healthcare services. This rapid growth has directly influenced healthcare professionals in the clinical setting. **Aim:** To assess the perceptions and usage of SM (SM) by OSs (OS) in Jeddah, Saudi Arabia, and its impact on their profession, and to evaluate their level of awareness of the potential risks on their practice. **Methods:** Quantitative: A cross-sectional survey was distributed to practicing OSs in 15 healthcare centers in Jeddah, Saudi Arabia ($\mu=323$) using convenience sampling. Data was analyzed using SPSS. Qualitative: Eight OSs were recruited by purposive and snowball sampling and interviewed using a semi-structured approach. Data was analyzed using thematic content analysis. **Results:** The Quantitative survey revealed that 165 OSs participated (RR=51%). OSs who use SM partly or entirely for professional purposes represent 53.7% (n=87). The remaining OSs were excluded. Virtually 90% were 40 years old or younger. Residents were less likely to reply to medical questions on SM ($p=0.035$). It was found that 74.7% of OSs use SM daily. The most commonly used platform was Twitter (75.9%), with Instagram and Snapchat being significantly more used by younger OSs ($p=0.013$ and 0.003 , respectively). The results of the Qualitative interviews revealed four themes: Guidelines, Ethics and Professionalism; Usage and Perceptions; Doctor-Patient Relationship; Quality of Online Content. **Conclusion:** OSs' perceptions and usage were generally cautious. The major concerns were patient confidentiality, along with ethical and legal consequences. The need to contribute to quality online content was evident. Lack of formal guidelines was a continuous theme. The development of national guidelines on SM use in the orthopaedic profession is recommended.

Keywords: Social media, Orthopaedic, Mixed-methods, Ethics, Liability.

1. 1. INTRODUCTION

Social media continues to grow in size, and popularity. As of the second quarter of 2018, Facebook had 2.23 billion monthly active users (1). When examining social media use in Saudi Arabia specifically, we can see that in the span of a year starting from January 2017, there has been an increase of 6 million active social media users (a 32% increase) (2). Moreover, the total number of active social media users in the Kingdom reached 25 million users as of January 2018, making up 75% of the total Saudi population (2). The prevalence of social networking continues to develop (3) and will likely play an increasing role in all aspects of society and business, including in healthcare

services (4). This rapid growth has directly influenced healthcare professionals in the clinical setting (5). This development includes the field of orthopaedic surgery (6). When focusing on the prevalence of social media use with orthopaedic surgeons in particular, Duymus (7) found that 34.2% of patients consulted with an orthopaedists using the Internet and 48.5% preferred websites that allow patients to directly ask their physicians questions. Franko (4) advises orthopaedists to take advantage of this trend by expanding their use of social media to better reach their patients. One of the many uses of social media is to seek medical advice. Around 80% of patients will use the Internet to seek health-related infor-

mation within their lifetime (8). Healthcare providers; including orthopaedic surgeons should now take advantage of patient interest in the numerous social media avenues to increase practice accessibility (6). With many potential benefits, orthopaedists can use it for educating patients, to promote their practice (9), and to reduce patient anxiety. For example, Mayo Clinic created a virtual hospital experience where primary total hip and knee joint replacement patients are introduced to the preoperative experience through YouTube videos, which resulted in patients presenting with less anxiety (10). Another study examined social media as a tool for education and support among breast cancer patients. The study reported a significant decrease in patients with extreme anxiety, and an increase in overall knowledge (80.9%) about breast cancer (11). Similarly, the results of a study in Saudi Arabia show that an integration of professional breast-feeding support, and educational programs through social media could be an effective tool in promoting breast-feeding (12). Another study that analyzed the feeds of Saudi-based Twitter accounts to promote women's health showed an increased level of health awareness and comprehension among Twitter followers (13).

Social media is recognized as a tool that can improve communication between healthcare providers and their patients (14). Healthcare processes supported by social media can also create increased trust (8), and can allow patients to become more active participants in their own care (14). However, this two-way involvement should not give undue credence to the accuracy of information delivered by the patients. Most surgeons (85%) have experienced a patient bringing information to an appointment from the Internet (15). The efficacy of this information and the impact any inaccuracies may have on the doctor patient trust is at stake. Physician participation on social media is therefore crucial to providing high-quality health information online (14). One way to defuse the impact of misleading or inaccurate content is for physicians to direct their patients to reliable sources for medical information, or sites that are moderated by a trustworthy person (16). Referencing a website with controlled information can increase patient education, while reducing time spent re-educating patients the clinic (6). Physicians can also take control of online content by including a patient education section on a social networking page to provide accurate information about care and the orthopaedic practice's services (6).

Despite benefits and advantages of social media for the patient-physician relationship, legal liability and possible harms or risks of the shared information should be born in mind (7). Concerns regarding patient confidentiality and the lack of experience with the platforms have made physicians skeptical (14, 17) and unsure of the ethical and legal responsibilities (5), as sufficient evidence related to the efficacy of social media is currently limited (18).

This, along with lack of awareness of the potential ramifications, can lead physicians to unintended consequences (19). Healthcare scientific communities such as the American Association of Orthopedic Surgeons (20), the American Medical Association (21), and the British

Medical Association (22) have all issued social media guidelines in order to help doctors avoid harmful repercussions. However, a thorough review of the literature revealed no Saudi guidelines concerning this topic. The authors were motivated to examine the availability of any similar guidelines in Saudi Arabia, and to understand the level of awareness of orthopaedic surgeons of the availability-or lack thereof-of such guidelines.

Previous studies have examined orthopaedic surgeons and their use of social media (23, 24), yet little is known about their awareness of the potential associated risks. Most of what is discussed in the literature addresses the patients' perspective on social media (6, 8, 25). Even more rare are studies dedicated to address how orthopaedic patients in particular use social media (7). Further research is warranted as to what extent and how social media can be used with orthopaedic patients (7). This study assesses the usage of and perceptions about social media by orthopaedic surgeons in Saudi Arabia, and its impact on their profession. The study also evaluates their level of awareness of the potential risks involved with using social media on their patients, and by extension at their practice.

2. METHODS

A mixed methods approach was applied using a self-administered quantitative questionnaire and qualitative semi-structured interviews. For the purpose of this study, only the following platforms were considered 'social media'; Twitter, Facebook, Snapchat, Instagram, LinkedIn, Periscope, and YouTube. Included were practicing orthopedic surgeons from 15 centers (public and private) in Jeddah, Saudi Arabia. Excluded by screening question were those who do not use social media, or who use it only for personal purposes.

2.1. Quantitative Methods

A cross-sectional online survey was administered involving orthopaedic surgeons in Jeddah. The subjects were of varying levels of training (Residents, Specialists, Senior Specialists, and Consultants). Some of the survey questions were adopted from two other studies (26, 27) with the authors' consent. Data was collected using convenience sampling. The entire population ($\mu=323$) was approached by distributing an online questionnaire (Google Surveys) via e-mail, WhatsApp, and in person over a period of one month. Participation was voluntary and no form of identification was requested from the participants. The questionnaire consisted of 25 questions pertaining to the orthopaedic surgeons' demographics, use of social media in their practice, their attitudes towards social media and its use, along with their perceptions of the associated risks.

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) IBM version 21. Descriptive statistics were applied using means, standard deviations, frequencies, and percentages, while inferential statistics were analyzed using Chi-square, T-test, ANOVA, and logistic regression. Microsoft Excel was used for data entry. Chronbach's Alpha test was used to measure internal consistency and reliability of the scale.

Themes	References	Interviewee Quotes
1	83	<p>“If it is just for advertising then I’m against it. If it’s just for discussing, teaching or educating then its fine”. “Mentioning these guidelines; I think if they were to be implemented here in Saudi Arabia that would also be beneficial” “There’s a very big controversy about this topic, some people say pictures should be consented, some people say pictures should be consented only if the patient’s face is visualized”.</p>
2	53	<p>I don’t think it’s commonly used. Actually, a lot of orthopaedic surgeons are busy all day not using social media properly. I think there’s few numbers of surgeons who like social media”.</p> <p>“For professional use you can just use it for the awareness of the people, but not for diagnosis, not for treatment. For sure just to give advice, to give awareness about the medications, how to prevent the diseases”.</p> <p>“Before I started working in the private sector, I never used Facebook or Twitter. I use LinkedIn, but Instagram, Twitter and Facebook I just used them recently when I started to work in the private sector”.</p>
3	35	<p>“That’s really beneficial for the patient himself, to prepare for example for the surgery ... and for the postoperative recovery”.</p> <p>“If he gave me an x-ray through social media, I can give general information regarding the x-ray, but I cannot advise him for the treatment using only an x-ray”.</p> <p>“They use it to explain certain procedures, surgeries, what are the indications for surgeries and what are the indications for non-surgical management”.</p>
4	30	<p>“Actually it’s 50/50; there is good quality from some people; they write good quality... and it’s controversial; some people they write bad things; bad quality”.</p> <p>“This is the problem of social media, you cannot really know if this is an orthopaedic surgeon, if he’s qualified to give certain information, if he has a fellowship or a certificate; you don’t know”.</p> <p>“Our people especially in the Middle East or Arab countries, they don’t have scientific websites in the Arabic language to get information from”.</p>

Table 1. Qualitative Themes

2.2. Qualitative Methods

Semi-structured open-ended interviews were conducted with eight orthopaedic surgeons of varying training levels and experience (Residents, Specialists, Senior Specialists, and Consultants). Participants were recruited through purposive and snowball sampling. All participants were consented and signed a consent form. The interview questions focused on participants’ attitudes towards social media, their opinions on its use,

and their thoughts on the associated risks. An interview guide was created to ensure a similar range of topics was discussed with each participant. Probing questions were used when needed to encourage the participants to expand on their answers. Examples of the questions asked include; What are the boundaries that should be set on social media between the orthopaedic surgeon and the patient? What is your opinion on providing medical advice/consultation through social media? Are there any risks, harm or liability issues for orthopaedic surgeons when using social media? All interviews were audio recorded with the permission of each participants, and conducted either in-person or over the phone. Research notes were taken and recordings were transcribed verbatim in preparation for analysis. Interviews were conducted over a period of two weeks in August 2018 until theoretical saturation was reached.

The interviews were analyzed using Grounded Theory (28, 29) analysis. Inductive free coding was performed after meticulous reading of the transcripts. The codes were reviewed and compared with each other and also against the data. After various stages of reorganizing and coding, the codes were then grouped under broader themes according to content similarity and agreed upon after discussion among the research team. Disagreements regarding the themes between members of the research team were resolved by voting. After several round of analysis, the data was coded to four broad themes; Doctor-Patient Relationship, Peer-to-Peer Relationship, Quality of Online Content, and Guidelines for Ethics and professionalism. Data was analyzed using NVivo 12 qualitative data analysis software by QSR International.

	Variables	Count	Percentage
Type of Use	Personal use only	72	43.6%
	Professional use only	4	2.4%
	Both	83	50.3%
	I don’t use social media	6	3.6%
Age	20-34	68	78.2%
	35-50	12	13.8%
	>50	7	8.0%
Sex	Male	83	95.4%
	Female	4	4.6%
Marital Status	Single	32	36.8%
	Married	55	63.2%
Level of training	Resident	68	78.2%
	Specialist	6	6.9%
	Senior Specialist	2	2.3%
	Consultant	11	12.6%
Place of work	Public	58	66.7%
	Private	11	12.6%
	Both	18	20.7%

Table 2. Demographics

Variables		Count	Percentage
Sharing work experiences	No	29	33.3%
	Yes	58	66.7%
Sharing medical knowledge	No	18	20.7%
	Yes	69	79.3%
Interacting with patients	No	57	65.5%
	Yes	30	34.5%
Professional meetings	No	60	69.0%
	Yes	27	31.0%
Discussing cases with colleagues	No	24	27.6%
	Yes	63	72.4%
Posting presentations	No	48	55.2%
	Yes	39	44.8%
Replying to patients	No	38	43.7%
	Yes	49	56.3%

Table 3. Social Media Usage

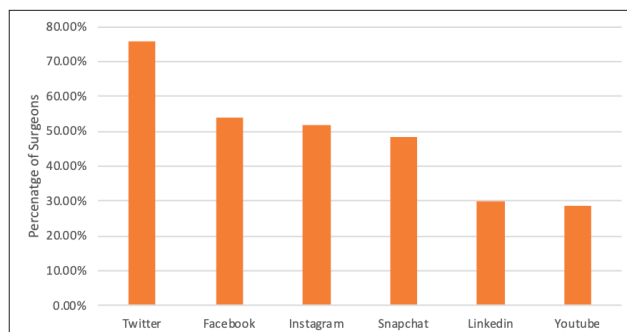


Figure 1. Social Media Platforms Used in Practice

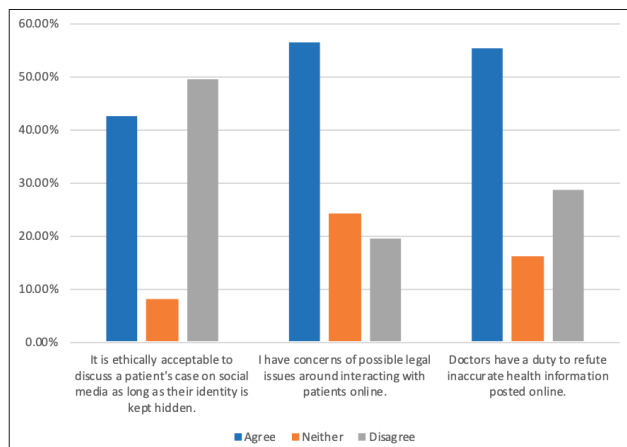


Figure 2. Legal and Ethical Perceptions of Orthopedic Surgeons

3. RESULTS

3.1. Qualitative Results

The detailed qualitative analysis of the interview transcripts resulted in inductively categorizing the findings into four broad themes as outlined in the Table 1. The table shows each theme with the number of times each was referenced in the transcripts based on the generated NVivo 12 analysis reports. Corresponding representative interviewee quotes are included to support each theme.

3.2. Quantitative Results

Table 2 shows the respondents' demographics. Out of the 323 orthopaedic surgeons who were approached, 51% (n=165) participated in the study. A screening question was used to exclude those who do not use social media, or who use it only for personal purposes. It was found that 43.6% (n=72) of orthopaedic surgeons use social media for

personal purposes only, and 3.6% (n=6) do not use social media at all, thus excluding them from the survey. Orthopaedic surgeons who use social media partly or entirely for professional purposes represent 53.7% (n=87) of the sample. Of the orthopaedic surgeons that use social media professionally, 89.7% (n=78) were 40 years old or younger. Residents made up the majority of respondents 78.2% (n=68), with the remainder being specialists and consultants at 9.2% (n=8) and 12.6% (n=11) respectively. The majority worked in the public sector only (66.7%, n=58). On their usage patterns and frequency of use, it was found that the majority of orthopaedic surgeons (74.7%, n=65) use social media daily. Younger orthopaedists (<=40) were significantly more likely to use social media at least 5 days per week (p=0.027) and orthopaedic surgeons were significantly more likely to post videos on YouTube for the sake of sharing medical knowledge (p=0.018).

When examining their habits on social media as depicted in Table 3, the findings show that orthopaedists mostly use social media for sharing medical knowledge (79.03%, n=69), for discussing cases with colleagues (72.4%, n=63) and for sharing work experiences (66.7%, n=58). Least of all uses for social media was interacting with patients (34.50%, n=30). As shown in Figure 1, the most commonly used platform was Twitter (75.9%, n=66), followed by Facebook (54%, n=47) and Instagram (48.3%, n=45). Instagram and Snapchat were significantly used more by younger orthopaedic surgeons (p= 0.013 and 0.003, respectively).

As depicted in Figure 2, when asked if it was ethically acceptable to discuss a patient's case on social media as long as their identity was kept hidden, 49.43% (n=43) disagreed and thought it was ethically unacceptable, while 42.53% (n=37) agreed that it was acceptable. The findings also show that over half of the participants (56.32%, n=49) have concerns over possible legal issues around interacting with patients on social media, of those 89.65% (n=78) have not read any guidelines for social media use in their profession. While 55.2% (n=48) agreed that doctors have a duty to refute inaccurate health information posted online.

The data also revealed that resident doctors were less likely to reply to medical questions on social media (p=0.035). Most of the survey participants (66.7%, n=58) were not comfortable with the notion of conducting a consultation with a patient via social media. The results also confirmed that only 14.9% (n=13) of all participants have actually read any guidelines related to social media in their profession,

4. DISCUSSION

4.1. Usage and Perceptions

The interviewees mostly viewed themselves as "too busy" and not having time to use social media for professional purposes, as Interviewee 8 rationalized; "Maybe only we share discussions sometimes, but very; very little... maybe once every 3 or 4 months". Interviewee 6 had similar views, saying; "I don't think it's commonly used. Actually, a lot of orthopaedic surgeons are busy all day... I think it's very few numbers of surgeon who like social media. Maybe just

to see work, updates and news; that's all. Nobody is writing and talking to the people.". Despite the potential benefits of using social media for marketing, networking, and research, a previous study reported that social media is infrequently used for marketing the orthopaedic practice (30). Conversely, our study found that the use of social media for advertising is more likely to be of interest to orthopaedists who work in the private sector. Interviewee 2 explained that; *"For us who work in the public sector, we might not need to advertise since we get patients by default. If I'm working in a private practice, advertising may help in recruiting patients which will help the practice. For those of us who work in the public sector, it's not going to help"*.

As for orthopaedic surgeons' use of Twitter, a previous study (4) published in 2011 found that only a small percentage of board-certified orthopaedic surgeons use Twitter for professional purposes, while maintaining that the use of social networking for orthopedic communication is likely to play an increasing role in future clinical practice. The evidence presented in this study found that Twitter was the most widely used social media platform, highlighting a possible shift in usage habits during the time ensued between both studies. Interviewee 3 explains why Twitter is a practical tool; *"I think for example the Twitter, if you have a particular message and you want to send it to a big number or group, I think that would be useful now"*.

4.2. Quality of Online Content

Active physician participation has been previously proven to be crucial in providing high-quality health information online (14). This study reveals that the majority of orthopaedic surgeons who use social media professionally are residents, and under the age of forty. Comparably, Curry and colleagues (6) reported that patients who use social media sites are under the age of forty. This shows that social media use is most common in relatively younger orthopaedic doctors and patients. However, our findings also show that resident doctors are less likely to reply to medical questions online. Interviewee 2 who is a resident explained that he is *"not very active on social media"*. This hesitance might pose a problem with the resulting wealth (or lack thereof) of quality online information. Previous literature also shows that physicians are encouraged to review Internet health-related sites and make directed site referrals to their patients (15). A good example of the advocacy of surgeons to direct their patients to quality online content is evident in what Interviewee 1 said; *"there are so many societies that have a part for patient information. So, they can read from there the right information, but if they read from any website they will take wrong information"*. When it comes to contributing to online material, our findings revealed that only the established or senior orthopaedists should contribute, and cautioned patients from reading health-related information from unverified online sources. Interviewee 6 explained that *"not everything on the Internet is true"*, and Interviewee 5 asserted his concern saying; *"this is the problem of social media, you cannot really know if this is an orthopaedic surgeon, if he's qualified to give certain information, if he has a fellowship or a certificate; you don't know"*. The issue of trustworthiness

as related to medical knowledge and practice was echoed in a previous study (16), which demonstrated that physicians do not easily trust others on social media, and underscored the need to foster online trust.

4.3. Doctor-Patient Relationship

The results of this study show that orthopaedic surgeons are more likely to post online for the sake of sharing general medical knowledge, as opposed to giving specific treatment advice. The interviews further revealed that orthopaedic surgeons viewed social media as appropriate for education, awareness and general advice, but not for consultations with their patients. All interviewees corroborated this finding, as Interviewee 4 explains; *"usually we prefer to see the patient because we can't give advice unless the patient is fully examined and investigated; we cannot treat relying only on the x-rays"*. Interviewee 1 explained that they use social media, but *"not for prescribing medication, or advising for surgery"*. As suggested by a previous study (6), social media was viewed as a tool mostly suitable for educating patients and reducing time spent re-educating patients in the clinic. Ultimately, as much of what is emphasized in the literature, physicians should limit online content to general advice and medical information that is supported by published evidence (14).

4.4. Guidelines, Ethics and Professionalism

The interviewees were concerned that the use of social media may pose ethical, liability, reputation or misinformation issues, as Interviewee 3 explained; *"I think there are some risks, because as I told you just now, sometimes people misunderstand the things that you are trying to say... and it might affect his reputation"*. Malpractice liability for medical information provided online has been reported in other studies (14) as a cause for limiting physician engagement with social media. One study found that the majority of respondents did not think it ethically acceptable to interact with patients over social media for either social or patient-care (26). Other concerns have also been identified relating to privacy and security concerns, usability, the manipulation of identity, as well as misinformation (18). With that, several professional associations such as the Federation of State Medical Boards (31) published guidelines to discourage physicians from interacting with patients on social media. This study reveals that over half of the respondents have concerns over legal issues around online interactions with patients, while the vast majority of them have not read any formal guidelines related to social media use in their profession. When asked about guidelines in Saudi Arabia specifically, Interviewee 6 said; *"as far as I know there are no guidelines"*. This theme was the most extensively discussed by the interviewees, who unanimously recommended the creation of formal guidelines in Saudi Arabia, many of them echoing similar sentiments. Interviewee 8 said; *"I think it's very important to have the guidelines"*, while the view of Interviewee 3 was *"mentioning these guidelines; I think if it were to be implemented here in Saudi Arabia that would also be beneficial"*.

4.5. Limitations of the Study

A key limitation of the study was that the residents formed the majority of the respondents, while they also

said that they were least likely to use social media. This means that those users (the residents) who actually used social media the most were the least likely to use it to interact with patients. Collecting more responses might have resolved this limitation, however there was another limitation which was the amount of time that the authors were able to keep the survey online. More time might have yielded a higher response rate.

5. CONCLUSION

This study provided insights into the usage of social media for orthopaedic surgeons in their practice in Saudi Arabia. Their perceptions and habits were generally cautious; however, most were open to the possibilities of utilizing social more with their patients for the sake of education, knowledge sharing, and improving patient outcomes. Since Twitter was reported as the most widely used social media platform, further investigation is warranted into specifically examining orthopaedic surgeons' usage of Twitter for professional purposes. A key issue was the need for Saudi orthopaedic surgeons to contribute to quality online material. However, the major concerns were patient confidentiality, along with worry over possible ethical and legal consequences. The findings corroborate similar opinions from studies conducted elsewhere, leading us to speculate that the ethical and liability concerns cited in this study are universally common for orthopaedic surgeons. Lack of formal guidelines for Saudi Arabia specifically was a continuous theme that was emphasized as an important issue. No previous studies have postulated or proven definitively that there are no formal guidelines in Saudi Arabia on the use of social media and orthopedic surgeons. This is a significant finding of this work that adds to the growing body of literature. Based on the outcomes of this study, we recommend the creation of Saudi national guidelines. This work can have a future impact on the practice of orthopaedists in Saudi Arabia if these recommendations are taken into consideration by the Saudi Orthopaedic Association as a rationale to form the basis of national guidelines.

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