

## Internet and social media usage of orthopaedic patients: A questionnaire-based survey

Tahir Mutlu Duymus, Hilmi Karadeniz, Mehmet Akif Çağan, Baran Kömür, Abdullah Demirtaş, Sinan Zehir, İbrahim Azboy

Tahir Mutlu Duymus, Department of Orthopaedics, Haydarpaşa Numune Training and Research Hospital, 34668 Istanbul, Turkey

Hilmi Karadeniz, Department of Orthopaedics and Traumatology, Bahçelievler Medikal Park Hospital, 34160 Istanbul, Turkey

Mehmet Akif Çağan, Department of Orthopaedics, Bitlis State Hospital, 13000 Bitlis, Turkey

Baran Kömür, Department of Orthopaedics, Kanuni Sultan Süleyman Training and Research Hospital, 34330 Istanbul, Turkey

Abdullah Demirtaş, Department of Orthopedics and Traumatology, Göztepe Training and Research Hospital, Istanbul Medeniyet University, 34320 Istanbul, Turkey

Sinan Zehir, Department of Orthopaedics and Traumatology, Hitit University Faculty of Medicine, 19200 Çorum, Turkey

İbrahim Azboy, Department of Orthopaedics and Traumatology, Dicle University Faculty of Medicine, 21000 Diyarbakır, Turkey

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**Correspondence to:** Tahir Mutlu Duymus, MD, Department of Orthopaedics, Haydarpaşa Numune Training and Research Hospital, Tıbbiye Cad. No: 23, 34668 Istanbul,

Turkey. [dr.tahirmutlu@gmail.com](mailto:dr.tahirmutlu@gmail.com)

Telephone: +90-532-3542534

Fax: +90-216-3360565

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### Abstract

#### AIM

To evaluate social media usage of orthopaedic patients to search for solutions to their health problems.

#### METHODS

The study data were collected using face-to-face questionnaire with randomly selected 1890 patients aged over 18 years who had been admitted to the orthopaedic clinics in different cities and provinces across Turkey. The questionnaire consists of a total of 16 questions pertaining to internet and social media usage and demographics of patients, patients' choice of institution for treatment, patient complaints on admission, online hospital and physician ratings, communication between the patient and the physician and its effects.

#### RESULTS

It was found that 34.2% ( $n = 647$ ) of the participants consulted with an orthopaedist using the internet and 48.7% ( $n = 315$ ) of them preferred websites that allow users to ask questions to a physician. Of all question-askers, 48.5% ( $n = 314$ ) reported having found the answers helpful. Based on the educational level of the participants, there was a highly significant difference between the rates of asking questions to an orthopaedist

using the internet ( $P = 0.001$ ). The rate of question-asking was significantly lower in patients with an elementary education than that in those with secondary, high school and undergraduate education ( $P = 0.001$ ). The rate of reporting that the answers given was helpful was significantly higher in participants with an undergraduate degree compared to those who were illiterate, those with primary, elementary or high school education ( $P = 0.001$ ). It was also found that the usage of the internet for health problems was higher among managers-qualified participants than unemployed-housewives, officers, workers-intermediate staff ( $P < 0.05$ ).

### CONCLUSION

We concluded that patients have been increasingly using the internet and social media to select a specific physician or to seek solution to their health problems in an effective way. Even though the internet and social media offer beneficial effects for physicians or patients, there is still much obscurity regarding their harms and further studies are warranted for necessary arrangements to be made.

**Key words:** Patient; Internet; Orthopedist; Social media; Communication

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**Core tip:** There is an ongoing increase in the use of social media and internet for health information. Patients can share their health-related experiences or issues online *via* social media and discussion forums or can consult with experienced physicians. Despite benefits and advantages of social media for patient-physician relationship, legal liability and possible harms and risks of the shared information and communication should be born in mind.

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### INTRODUCTION

The effects of patient-physician communication through social media or internet have long been of interest<sup>[1,2]</sup>. Facebook, Twitter, My Space and Linked In have been reported to be the most commonly used social networking sites around the world, being Facebook the most popular, whose use has increased rapidly in recent years<sup>[3]</sup>. Social media tools enable patients to communicate with their physicians faster online and help them clarify their understanding of their illness, express themselves better and share their problems visually or in writing<sup>[4,5]</sup>. Social media tools have been increasingly used as a means to share their health issues and seek solutions and have changed the nature

of traditional patient-physician relationship<sup>[6-8]</sup>. On the other hand, problems arising from the interpretation and implementation of the information shared online have recently gained attention. In addition, there are possible risks associated with the spread of unnecessary and inaccurate information easily and the legal gaps in this area<sup>[9,10]</sup>. Therefore, further research and specific arrangements should be made on how, to what extent and when social media and internet to be used. As far as we are aware, there are few studies dedicated to address how orthopaedic patients use social media for their health issues, choice of hospital and physician and patient-physician relationships. The identification of how orthopaedic patients view and use social media can shed light on studies and arrangements of physicians, health bureaucracy and health legislation committees in our country.

The objective of this study was to identify the prevalence of orthopaedic patients' usage of internet and social media and the effects of internet and social media on hospital and physician selection, patient-physician communication and choice of treatment.

### MATERIALS AND METHODS

A face-to-face questionnaire with a total of randomly selected 1890 patients aged over 18 years who were admitted to the orthopaedic clinics of private and public hospitals in different regions of Turkey between January 2016 and March 2016 was conducted. The participants were informed about the content and purpose of the questionnaire and were asked to fill in the questionnaire. Patients' identity information was not included in the questionnaire and each questionnaire was numbered. All data were collected and analyzed. Participants received no financial or educational incentive. The questionnaire consisted of a total of 16 questions pertaining to patients' personal information (age, sex, educational level, occupation), the healthcare institution the questionnaire was conducted, patients' complaints on admission, duration of complaints, the effects of social media and internet on patients' choice of hospital and physician and patient-physician communication and patients' usage of internet and social media (Table 1).

#### Statistical analysis

Statistical analysis was performed using NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, United States). Data were analyzed using descriptive statistics (mean, standard deviation, median, frequency, rate, minimum, maximum) whereas qualitative data were compared using the Pearson  $\chi^2$  test, Fisher Freeman Halton test and Yates' continuity correction test (Yates corrected  $\chi^2$ ).  $P$  values of  $< 0.01$  and  $0.05$  were considered statistically significant.

### RESULTS

Of all participants, 52% ( $n = 982$ ) were females and 48% ( $n = 908$ ) were males. The mean age of the

**Table 1** Questions designed to identify patients' usage of internet and social media

Age
Sex
Occupation
Educational level
Place of residence
Hospital where the questionnaire was administered
Question 1: What's your complaint?
Question 2: How long have you had this complaint?
Question 3: Have you ever been examined in an orthopaedic clinic?
Question 4: Have you ever had an orthopaedic surgery?
Question 5: Did the internet have an impact on your choice of this hospital?
Question 6: Which one(s) of the following had an impact on your choice of hospital? (you can select more than one option)
Question 7: Which one(s) of the following had an impact on your choice of physician? (you can select more than one option)
Question 8: Have you ever asked an orthopaedist his/her opinion about your disease using the internet?
Question 9: Which options do you prefer to ask an orthopaedist his/her opinion? (you can select more than one option)
Question 10: With which of the following you can describe the answers you were given? (you can select more than one option)
Question 11: Have you ever sent a friend request to an orthopaedist on Facebook?
Question 12: Do you have orthopaedist friends on Facebook?
Question 13: Do you think that orthopaedists should keep in contact with you through the internet?
Question 14: Which one(s) of the following do you use to ask your physician a question? (you can select more than one option)
Question 15: Have you ever attempted to treat your disease/orthopaedic problem based on the information you obtained from the internet?
Question 16: What do you think about having X-rays performed in the nearest hospital and sending them to your physician over the internet for your post-operative follow ups?

**Table 2** Participants' demographics

		<i>n</i>	%
Educational level	Illiterate	119	6.6
	Primary school	598	33.2
	Secondary school	214	11.9
	High school	500	27.7
	Undergraduate	330	18.3
	Master's degree	42	2.3
Occupation	layperson (unemployed or retired)	546	28.9
	Officer	80	4.2
	Housewife	587	31.1
	Worker - Intermediate staff	342	18.1
	High-status position in the public sector	139	7.4
	Manager in the private sector - Qualified	116	6.1
	Other	80	4.2
Hospital where the study was conducted	Training and Research Hospital Public	400	21.2
	University Hospital	694	36.7
	City Public Hospital	546	28.9
	Province Public Hospital	135	7.1
	Private Hospital	115	6.1
Complaint(s)	Knee pain	469	24.8
	Low-back pain	329	17.4
	Shoulder pain	217	11.5
	Foot pain	346	18.3
	Fracture treatment	217	11.5
	Hip pain	147	7.8
	Prosthesis surgery	38	2.0
	Arthroscopy	32	1.7
	Fracture surgery	98	5.2

participants was 40.64 ± 15.35 years (18-88 years) (Table 2).

The rate of the effect of internet on participants' choice of hospital was 50.9% (*n* = 962) and on participants' choice of physician was 39.4%. It was found that 14.4% (*n* = 273) of the participants preferred the Ministry of Health's (MH) Centralized Hospital Appointment System whereas 2.9% (*n* = 54) used Facebook to select a physician online. Of all

participants, 34.2% (*n* = 647) reported having asked an orthopaedist his/her opinion about their diseases using the internet and the question-askers most often preferred the web-sites allowing question-asking. In addition, 48.5% (*n* = 314) of the question-askers reported that the answers given were helpful (Table 3).

Of the participants, 46.7% (*n* = 883) thought that orthopaedists should keep in contact with patients over

**Table 3** The distribution of participants' choice of hospital or physician and the distribution of data about asking an orthopaedist his/her opinion about a disease (*n* = 1890)

	<i>n</i>	%
The effect of the internet on hospital choice	962	50.9
<sup>1</sup> Which one(s) of the following had an impact on your hospital choice		
Centralized Hospital Appointment system	212	22.0
Website of the hospital	100	10.4
Hospital rating websites	100	10.4
Peer advice on the internet	66	6.9
Facebook	57	5.9
Other (182MHRS call center)	487	50.6
<sup>1</sup> Which one(s) of the following had an impact on your physician choice		
Random choice from the MHRS system	723	14.4
Other patients' advices on the internet	169	8.9
Physician rating websites	101	5.3
Website of the hospital	123	6.5
Physician personal website	110	5.8
Facebook	54	2.9
Other( MHRS 182 call center)	1146	60.6
Asking an orthopaedist his/her opinion about a disease using the internet	647 (n)	34.2 (%)
<sup>1</sup> Which option(s) do you prefer to ask an orthopaedist his/her opinion?		
Websites allowing asking physicians questions	315	48.7
Physician's personal website	149	23.0
Facebook	103	15.9
E-mail	72	11.1
With which of the following can you describe the answers you were given?		
Helpful	314	48.5
Effective in my choice of hospital/physician	137	21.2
I became more confused	102	15.8

<sup>1</sup>More than one option was selected.

the internet. The rate of asking an orthopaedist his/her opinion about their diseases in participants aged between 18-30 years was statistically significantly higher than that in patients aged between 31-45 years, 46-60 years, 61-75 years and older than 75 years ( $P = 0.001$ ;  $P = 0.001$ ;  $P = 0.001$ ;  $P < 0.01$ , respectively). It was noted that males used internet more often for asking questions compared to females ( $P < 0.01$ ). Of all participants, 19.5% ( $n$ : 368) attempted to treat their orthopaedic problems/diseases using the information they obtained online. There was a strong statistically significant relationship in the rate of participants' using online information to treat their orthopedic problems/diseases according to the age groups ( $P = 0.001$ ;  $P < 0.01$ ). The rate of attempting to treat their orthopedic diseases/problems using online information was statistically significantly higher in the participants aged between 18-30 years than that in those aged between 61-75 years and older than 75 years ( $P = 0.030$ ;  $P = 0.003$ ;  $P = 0.049$ ;  $P < 0.05$ ) (Table 4). Thirty-four percent of the patients wanted to get postoperative X-ray controls performed using the internet whereas 66% of the participants stated that postoperative follow-ups should be face-to-face.

There was a strong statistically significant difference in the rates of answering "yes" to the question of "Have you ever asked an orthopedist his/her opinion about your disease" according to the educational level of the participants ( $P = 0.001$ ;  $P < 0.01$ ). The rate of answering "yes" to the question of "Have you ever asked an ortho-

pedist his/her opinion about your disease using the internet" was statistically significantly lower in participants who were illiterate compared to that in those with secondary, high school and undergraduate education ( $P = 0.004$ ;  $P = 0.003$ ;  $P = 0.001$ ;  $P < 0.01$ ). Similarly, the rate answering "yes" to the question of "Have you ever asked an orthopedist his/her opinion about your disease using the internet" was statistically significantly lower among participants with elementary level of education compared to that in those with secondary, high school and undergraduate education" ( $P = 0.022$ ;  $P = 0.010$ ;  $P = 0.001$ ;  $P < 0.05$ ) (Table 5). The rate of reporting that the answers given was helpful was significantly higher in participants with an undergraduate degree compared to those who were illiterate, those with primary, elementary or high school education ( $P = 0.014$ ;  $P = 0.001$ ;  $P = 0.004$ ;  $P = 0.001$ , respectively). The rate of stating "I became more confused" was significantly lower in patients with an undergraduate degree compared to those with elementary and secondary education ( $P = 0.006$ ;  $P = 0.001$ ) (Table 5).

According to the occupational status, the rate of internet use for asking an orthopaedist a question was higher in managers-qualified employees compared to unemployed-housewives, officers, workers-intermediate staff ( $P = 0.001$ ;  $P = 0.013$ ;  $P = 0.001$ ). The rate of reporting that the answers given by the orthopaedist were useful was significantly higher in managers-qualified employees compared to unemployed participants-

**Table 4** The distribution of data about befriending with an orthopaedist, utilizing the information obtained and postoperative follow-ups (*n* = 1890)

	<i>n</i>	(%)
Sending friend request to an orthopaedist on Facebook	162	(8.6)
Befriending with an orthopaedist on Facebook	142	(7.5)
Do you think that orthopaedists should keep in contact with you over the internet?		
Not necessary	1007	(53.3)
Necessary	883	(46.7)
<sup>1</sup> Which one(s) of the following do you prefer to ask your physician a question?		
LinkedIn	17	(0.9)
Twitter	54	(2.9)
Facebook	144	(7.6)
Text-message to cell-phone	150	(7.9)
E-Mail	176	(9.3)
What's App	204	(10.8)
Call his/her cell-phone	814	(43.1)
Other	301	(15.9)

<sup>1</sup>More than one option was selected.

**Table 5** Asking an orthopaedist his/her opinion over the internet and interpreting the information obtained according to educational level *n* (%)

	Educational Level						<i>P</i>
	Illiterate	Primary	Secondary	High-school	Under graduate	Post graduate	
Participants who asked an orthopaedist his/her opinion about a disease?							
Yes	26 (21.8)	173 (28.9)	80 (37.4)	181 (36.2)	147 (44.5)	14 (33.3)	<sup>1</sup> 0.001 <sup>b</sup>
No	93 (78.2)	425 (71.1)	134 (62.6)	319 (63.8)	183 (55.5)	28 (66.7)	
With which one(s) of the following can you describe the answers you were given?							
Helpfull							
Yes	5 (19.2)	34 (19.7)	12 (15)	29 (16)	10 (6.8)	1 (7.1)	<sup>2</sup> 0.021 <sup>a</sup>
No	21 (80.8)	139 (80.3)	68 (85)	152 (84)	137 (93.2)	13 (92.9)	
I became more confused							
Yes	11 (42.3)	71 (41)	24 (30)	89 (49.2)	102 (69.4)	7 (50)	<sup>1</sup> 0.001 <sup>b</sup>
No	15 (57.7)	102 (59)	56 (70)	92 (50.8)	45 (30.6)	7 (50)	
Participants who attempted to treat their orthopaedic diseases based on the information they obtained from the internet							
Yes	17 (14.3)	92 (15.4)	32 (15)	112 (22.4)	78 (23.6)	8 (19)	<sup>1</sup> 0.004 <sup>b</sup>
No	102 (85.7)	506 (84.6)	182 (85)	388 (77.6)	252 (76.4)	34 (81)	

<sup>a</sup>*P* < 0.05, <sup>b</sup>*P* < 0.01. <sup>1</sup>Pearson  $\chi^2$  test; <sup>2</sup>Fisher Freeman Halton test.

housewives and workers-intermediate staff (*P* = 0.001, *P* = 0.002). The rate of stating "I became more confused" about the answers they were given was significantly lower in unemployed participants-housewives than managers-qualified employees (*P* = 0.003) (Table 6).

## DISCUSSION

In recent years, social media or internet have evolved as a new communication tool between patients and physicians that is becoming increasingly popular and developed<sup>[11]</sup>. About 4% of daily searches on the internet daily are health-related globally<sup>[12]</sup>. The prevalence of the social media usage in patient-physician communication and the effects of the social media and internet on patients' choice of physician and hospital and their search for treatment options have been increasingly addressed in recent studies<sup>[11,13]</sup>.

In the United States, 41% of the adults use forums,

blogs and websites allowing patients to ask physicians questions whereas 35% make online research for the physician who will treat them, and 28% for the hospital they will be treated at<sup>[14]</sup>. The internet or social media and Facebook were reported to be the most commonly used social media tools in England<sup>[10]</sup>. A similar study of orthopedic patients by Curry *et al*<sup>[15]</sup> reported that over 50% of patients had used social media for their orthopedic issues and 26% had seen a physician review site before their initial visit. Similar to these findings, 34.2% of all orthopaedic patients used internet to ask a physician questions about their diseases and 46.7% reported that orthopaedists should keep in contact with their patients over the internet. It was found that patients prefer websites allowing asking questions to orthopaedists (48.7%). On the other hand, social networking sites of a private type such as Facebook was less commonly used in patient-physician communication and only 7.5% of the patients friended

**Table 6** The comparison of the participants' asking an orthopaedist his/her opinion and applying the information they obtained according to their occupations

	Occupations										P
	Unemployed - Housewife		Officer		Worker		Manager-Qualified		Other		
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	
Participants who asked an orthopaedist his/her opinion about a disease											
Yes	349	30.8	26	32.5	97	28.4	123	48.2	52	65	<sup>1</sup> 0.001 <sup>b</sup>
No	784	69.2	54	67.5	245	71.6	132	51.8	28	35	
Which one(s) of the following do you prefer to ask an orthopaedist his/her opinion?											
Facebook											
Yes	59	16.9	3	11.5	24	24.7	14	11.4	3	5.8	<sup>2</sup> 0.018 <sup>a</sup>
No	290	83.1	23	88.5	73	75.3	109	88.6	49	94.2	
Twitter											
Yes	12	3.4	1	3.8	4	4.1	8	6.5	2	3.8	<sup>3</sup> 0.645
No	337	96.6	25	96.2	93	95.9	115	93.5	50	96.2	
Physician's personal website											
Yes	76	21.8	9	34.6	17	17.5	32	26	15	28.8	<sup>1</sup> 0.236
No	273	78.2	17	65.4	80	82.5	91	74	37	71.2	
Websites allowing asking physicians questions											
Yes	177	50.7	13	50	35	36.1	62	50.4	28	53.8	<sup>1</sup> 0.113
No	172	49.3	13	50	62	63.9	61	49.6	24	46.2	
With which one(s) of the following can you describe the answers you were given?											
I became more confused											
Yes	67	19.2	5	19.2	11	11.3	9	7.3	10	19.2	<sup>2</sup> 0.012 <sup>a</sup>
No	282	80.8	21	80.8	86	88.7	114	92.7	42	80.8	
Helpful											
Yes	150	43	12	46.2	42	43.3	79	64.2	31	59.6	<sup>1</sup> 0.001 <sup>b</sup>
No	199	57	14	53.8	55	56.7	44	35.8	21	40.4	
Participants who attempted to treat their orthopaedic diseases based on the information they obtained from the internet											
Yes	193	17	19	23.8	86	25.1	58	22.7	12	15	<sup>1</sup> 0.005 <sup>b</sup>
No	940	83	61	76.3	256	74.9	197	77.3	68	85	

<sup>a</sup>P < 0.05, <sup>b</sup>P < 0.01. <sup>1</sup>Pearson  $\chi^2$  test; <sup>2</sup>Fisher Freeman Halton test.

an orthopaedist on Facebook. Since websites such as Facebook are social networking tools based on close-friendship, a friend request from a patient is accepted only by few physicians<sup>[16]</sup>, the reason of which may be physicians' concerns about patient privacy and ethical considerations. A review by Moorhead *et al.*<sup>[1]</sup> reported that effective mechanisms should be developed for the maintenance of privacy and confidentiality of the information exchanged online between patients and physicians and there are several gaps in the use of social media for health communication. Bacigalupe suggested that physicians should limit social media contact with their patients *via* social networking tools such as Facebook<sup>[17]</sup>. It should be born in mind that smartphones, particularly, enable rapid access to social networking sites, thus creating legal risks resulting from rapid spread of an inaccurate content online without verifying it before. Accordingly, Terry reported that a content shared online could be found and exploited, no matter what your privacy setting was, and be used against you in a suit filed in a possible violation of privacy<sup>[18]</sup>. We believe that physicians should be careful about the accuracy and transparency of the content shared online and respect for patients with regard to personal liability and the protection of patient privacy, should avoid appearing to provide medical advice and

should routinely monitor their social media accounts backward.

The WhatsApp messenger available for smartphones enables an effective and rapid communication between patients and physicians. Jagannathan *et al.*<sup>[19]</sup> reported that the WhatsApp application of smartphones enables sending patient X-rays and clinical photographs or sharing problems effectively and emphasized patient privacy as a disadvantage of the application. A study on how doctors view and use social media in Australia showed that 67% of physicians preferred e-mail to communicate with their patients<sup>[20]</sup>. In our study, a majority of the patients preferred to communicate with their physicians using mobile phones (43.1%), which were followed by the WhatsApp (10.9%). Contact *via* e-mail was less common (9.3%), the reason why can be the common use of mobile phones for communication in our country, physician's or patients' finding it more difficult to communicate *via* e-mail or patients' desire to reach their physicians easily and rapidly. Similarly, physicians have to give out their personal cell-phone numbers to patients to communicate *via* WhatsApp, which can bring patient-physician relationship to an informal level. Therefore, we believe that communication *via* e-mail is more formal.

With the advancements of the internet and the creation of various social networks, patients today

have the opportunity to do their routine follow ups online with the physician. Curry *et al*<sup>[15]</sup> concluded that orthopaedic patients who travelled between 120-180 miles from the hospital were more likely to use social media for health communication. In this study, 34% of the patients reported that it would be better to send X-rays performed in a hospital to the physician *via* social media tools, which can be attributed to transportation difficulties or easy communication through social media. On the other hand, a majority of patients in our country reported (66%) that follow-ups should be face-to-face with the physician. In light of these data, even though the internet and social media are predicted to be increasingly used in patient follow-ups in our country, in consistent with advances around the world, we believe that the traditional physician-patient relationship is still important for patients.

In this study, the use of the internet and social media was highest in patients aged between 18-30 years and those with an undergraduate level of education. Consistent with our findings, the literature documents that the prevalence of internet and social media usage was higher among young adults and those with high educational level<sup>[15,21,22]</sup>. Of the participants who asked physicians questions using social media tools, 45.5% stated that the answers given were helpful. In addition, patients with an undergraduate degree were less confused with the answers they were given whereas illiterate participants or those with primary or secondary education became more confused with the answers they received. We believe that as the educational level increases, so does the capacity to understand and interpret the information in communication between individuals. Younger patients with high educational level particularly showed higher tendency to treat themselves based on the responses they were given by physicians. Accordingly, we believe that physicians should be aware of the patient's age, educational level and expectations before giving patients treatment-related information using social media tools in order to avoid being placed in legal or ethical jeopardy.

There is an ongoing increase in the use of social media and internet for health information. About 61% of United States adults looked online for health information in 2008, which reached 72% in 2013<sup>[23]</sup>. Patients can share their health-related experiences or issues online *via* social media and discussion forums or can consult with experienced physicians. In addition, physicians have the opportunity to have more information about their patients<sup>[24-26]</sup>. Motivation, encouragement and shared experiences are important features of social network services, particularly for patients<sup>[27]</sup>. It has been reported that patients who had access to accurate information about their diseases over the internet displayed higher motivation and treatment compliance<sup>[28]</sup>. On the other hand, it appears to be difficult to reach high-quality and reliable information due to the probability of the collection or spread of unnecessary and inaccurate information

through social media, resulting in confusion in patient-physician relationship<sup>[24,29]</sup>. Therefore, even though automated scanner tools and alerting systems have been developed by social network servers to prevent harms of the internet and social media, users should compare and verify the accuracy of the information shared<sup>[30]</sup>. Moen *et al*<sup>[31]</sup> reported that communication over the internet may cause asymmetric results in the patient-physician relationship. Kietzmann *et al*<sup>[32]</sup> suggested that long-term results of social media are yet to be fully explored, therefore, how social media activities vary in terms of function and impact should be monitored and understood and a congruent social media strategy should be developed and the social media setting and the frequency of conversations as well as being aware of what other users do in that platform and acting accordingly are of importance for a reliable health communication<sup>[32]</sup>.

There is a distinct difference between the culture of traditional medicine (which values privacy, confidentiality, one-on-one interactions and professional conduct) and that of social media (which values openness, informality and transparency, connection)<sup>[33]</sup>. Accordingly, several professional associations published guidelines to discourage physicians from interacting with their patients on social networking sites, such as Facebook<sup>[34,35]</sup>. It is beyond doubt that patients' desire to contact with their physicians about their diseases and maintain the communication over the internet and social media will continue increasing. Therefore, possible advantages and disadvantages should be highlighted to enable physicians to use social media effectively and safely. Further comprehensive studies are warranted to fully elucidate physicians' usage of the internet and social media and to identify current problems and to propose options and solutions. In addition, we believe that professional associations should play an active role regarding studies and necessary arrangements for identifying how patient-physician communication should be on the internet and social media.

In conclusion, even though internet and social media usage among orthopaedic patients for health communication or seeking solutions to health issues varied according to age, educational level and occupational status, its prevalence was found to be high in this study. Despite benefits and advantages of social media for patient-physician relationship, legal liability and possible harms and risks of the shared information and communication should be born in mind. Therefore, future comprehensive studies are warranted for establishing a healthy and effective communication between patient and health-care provider over the internet and social media and for the execution of necessary arrangements.

## COMMENTS

### Background

Social media tools enable patients to communicate with their physicians faster online and help them clarify their understanding of their illness, express

themselves better and share their problems visually.

### Research frontiers

Of all participants, 34.2% ( $n = 647$ ) reported having asked an orthopedist his/her opinion about their diseases using the internet and the question-askers most often preferred the web-sites allowing question-asking. The rate of asking an orthopedist his/her opinion about their diseases in participants aged between 18-30 years was statistically significantly higher than that in patients aged between 31-45 years, 46-60 years, 61-75 years and older than 75 years. According to the occupational status, the rate of internet use for asking an orthopedist a question was higher in managers-qualified employees compared to unemployed-housewives, officers, workers-intermediate staff.

### Innovations and breakthroughs

The use of the internet and social media was highest in patients aged between 18-30 years and those with an undergraduate level of education. Younger patients with high educational level particularly showed higher tendency to treat themselves based on the responses they were given by physicians.

### Applications

There is an ongoing increase in the use of social media and internet for health information. Physicians should be careful about the accuracy and transparency of the content shared online and respect for patients with regard to personal liability and the protection of patient privacy, should avoid appearing to provide medical advice and should routinely monitor their social media accounts backward.

### Terminology

Facebook, Twitter, My Space and LinkedIn have been reported to be the most commonly used social networking sites around the world, being Facebook the most popular. Social media tools are commonly used by orthopedists to communicate with their patients.

### Peer-review

This is a very interesting manuscript.

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