

Online Health Information Seeking in Hand and Upper Extremity Surgery

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Purpose Information gathering is a key component of shared decision making and has a measurable effect on treatment decisions. Access to health information might improve quality of care in hand surgery. Our purpose was to identify socio-demographic, condition-related, and psychosocial factors associated with online information-seeking behavior in patients with hand and upper-extremity conditions.

Methods From June 2015 to February 2016, we enrolled 134 patients with an upper-extremity condition who presented to an outpatient hand surgery office at an urban level I trauma center in this cross-sectional study. Participants provided socio-demographic information and completed online questionnaires assessing their online information-seeking behavior, pain intensity, symptoms of depression, and pain interference, and an upper extremity—specific, patient-reported outcome measure.

Results A total of 57 patients (43%) sought information regarding their condition online before their visit. Compared with patients with no online information-seeking behavior, patients who sought information online were more educated. Psychosocial and condition-related factors were not associated with online information seeking. In multivariable analysis, education in years and involvement of the dominant upper limb were independently associated with online information-seeking behavior.

Conclusions Education in years and involvement of the dominant upper limb were independently associated with online information-seeking behavior but psychosocial and condition-related factors were not.

Clinical relevance As health information seeking is becoming an integral part of the modern day clinical experience, efforts to make online information more appealing and useful to people of all education levels are merited. (*J Hand Surg Am.* 2016; ■(■): ■—■. Copyright © 2016 by the American Society for Surgery of the Hand. All rights reserved.)

Key words Information seeking, hand surgery, pain intensity, upper-extremity function.

 Additional Material
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THE ABUNDANCE OF MEDICAL INFORMATION online¹ helps patients actively gather information about their illness.² Information gathering is a key component of shared decision making³ and has a measurable effect on treatment decisions.^{4,5} Access to

health information can empower patients and help them determine preferences based on their values, and might improve quality of care.⁶

Hageman et al⁷ reported that 45% of outpatients presenting to 3 hand surgeons investigated their

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symptoms online and that an online diagnostic tool was more accurate for such patients. To inform efforts to make online health information more accessible and useful, we sought to identify patient- and condition-related factors associated with online information-seeking behavior in patients with hand and upper-extremity conditions. Because information-seeking behavior is considered to be a psychological rather than medical construct,⁸ we also looked at psychosocial aspects affecting information-seeking behavior. This study tested the null hypothesis that there are no socio-demographic (eg, age and education), condition-related (eg, diagnosis and level of disability), and psychosocial (eg, pain interference and depression) factors associated with seeking health information online before a visit with a hand and upper-extremity surgeon.

MATERIALS AND METHODS

Study design

The institutional review board of the Massachusetts General Hospital approved this observational cross-sectional study. From June 2015 to February 2016, 141 patients who presented to 2 outpatient hand surgery clinics in an urban academic level I trauma center were approached for participation in this cross-sectional study in a consecutive manner to prevent selection bias. Inclusion criteria were: (1) age 18 years or greater, (2) English fluency and literacy, and (3) the ability to provide informed consent. Seven patients (5.0%) declined participation owing to a lack of time, which resulted in a final sample of 134 patients. Before enrollment, we obtained informed consent from each subject.

Participants provided socio-demographic information and completed questionnaires via Assessment Center (www.assessmentcenter.net), assessing their online information seeking behavior, pain intensity (Numeric Rating Scale), symptoms of depression (Patient-Reported Outcomes Measurement Information System (PROMIS) Depression), pain interference (PROMIS Pain Interference), and upper-extremity function (PROMIS Upper Extremity Physical Function).^{9–12} For each participant, the researcher opened the questionnaire Web page and instructed the participant to tap on the answer most appropriate for his or her current situation. Socio-demographic variables consisted of age, sex, race, years of education, marital status, and work status. We also recorded the following condition-related variables: smoking status, affected and dominant side, duration of symptoms, diagnosis (traumatic vs nontraumatic), prior treatment for current

condition, and the presence of more than one pain condition.

Questionnaires

All questionnaires were completed on an electronic tablet through Assessment Center, an online data collection tool for capturing participant data.¹³

The Online Information Seeking Questionnaire is based on the measures of health information seeking and recommendations, as described by Anker et al.⁸ This questionnaire, which assesses online information-seeking behavior, is composed of questions assessing time spent on looking for information online, satisfaction with found information, perception of source credibility and quality, self-efficacy in online health information seeking, and the impact on treatment decisions (Appendix A, available on the *Journal's* Web site at www.jhandsurg.org).

The Numeric Rating Scale was used to measure pain intensity using an 11-point scale rating pain from 0 (no pain) to 10 (the worst pain imaginable).⁹

We used the PROMIS computerized adaptive tests to measure the level of depressive symptoms, pain interference, and upper-extremity physical function. A PROMIS computerized adaptive test presents a maximum of 12 questions dynamically based on responses to the presented questions. The maximum score of each PROMIS instrument is 100 points: a higher score represents higher levels of the measured concept.^{14,15} The PROMIS Depression questionnaire is used to measure patients' level of depressive symptoms by measuring negative mood, views of self, affect, and engagement.¹⁰ The PROMIS Pain Interference questionnaire measures to what extent pain interferes with achieving one's goals by asking questions about physical, mental, and social activities.¹² The PROMIS Upper-Extremity Physical Function questionnaire is used to measure the patient's degree of upper-extremity limitations by assessing the function of the shoulder, arm, or hand.¹¹

Statistical analysis

Based on the study by Hageman et al,⁷ who reported that 45% of patients included in their research searched online for information regarding their hand and upper-extremity condition, we determined *a priori* to enroll 134 patients, which would allow us to include up to 6 predictors in a multivariable model with limited risk of over-fitting.¹⁶

We analyzed the association between online health information seeking and continuous variables (age, education, duration of symptoms, Numeric Rating

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