Pilot Studies

Internal Medicine Physicians and Social media: Knowledge, Skills, and Attitudes

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Abstract
Objective: Increasing adoption of social media have revolutionized communications between individuals, groups, and organizations. This research study was designed to assess the knowledge, skills, and attitudes of internal medicine physicians' awareness and engagement with social media (sometimes referred to as #SoMe) within the digital landscape of healthcare delivery. Methods: An audience-response survey focused on social media “Social media in Healthcare: Physician Survey,” was administered during the “A Systematic Approach to Medically Unexplained Symptoms” continuing medical education conference. The Conference took place between August 22, 2019 and August 24, 2019. Data was collected on August 23, 2019. A range of 103 (59.5%) to 112 (64.7%) of the total 173 attendees participated in this cross-sectional audience-response survey, depending on the questions answered. Results: Most responders were between the ages of 35 and 65 years (79.6%) and female (60.2%). A majority of responders were aware of social media terminology (88.7%), and many had used it personally (46.7%), but only 12% knew how to use social media to search medical topics, 18% used it to network professionally and most (68.9%) had a distrust of social media when it came to the protection of their privacy or their patients' privacy. Overall, about 29.6% indicated an interest in future continued medical education focused on social media (and 27.4% were neutral). Conclusions: Approximately half of the responders used social media but far less engaged its platforms for professional use likely due to privacy related concerns. Distance from academic institutions, where professional social media use is more common likely, played a role in aversion. Awareness of social media’s role in healthcare has increased among physicians in practice, however their participation and knowledge of opportunities remains limited.

Keywords
social media, healthcare, twitter, facebook, podcasts, primary care

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Introduction
The digital age and increasing adoption of social media have revolutionized communications between individuals, groups, and organizations. Approximately 70% of people in the United States use social media, with the majority accessing Facebook, Twitter, Instagram, or LinkedIn daily.¹ Podcasts and blogs (first forms of social media) are increasing in prevalence as a means of propagating thoughts and ideas.² The reach and impact of social media platforms on society is limitless, including politics, marketing, and entertainment, and there is increased recognition of its role and impact in healthcare.³ Physicians, in particular, are becoming increasingly aware of their digital presence as a part of their professional identity.³ Remaining up to date with medical knowledge that nearly doubles every 73 days can be a source of stress for physicians.⁴ Twitter, considered a “micro-blogging” platform, is perfectly suited to leverage learning through incremental knowledge gains, especially in the setting of increasing time constraints in professional lives of physicians. Tweetorials (tweet-length tutorials) serve as brief, informative, and sometimes comprehensive

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mini-lectures. Consequently, medical students, residents, fellows, and practicing physicians are using Social media to consume and generate educational content. There are numerous applications of Social media besides acquisition of medical knowledge. The ability to connect with an online community of peers and learners of all levels while gaining knowledge within minutes has the potential to generate sense of community. As a result, dissemination of medical knowledge and literature via Social media is expanding at a rapid pace. Several medical journals have developed Social media accounts to ensure timely release of and ability to share publications and emerging guidelines. Furthermore, they encourage engaging authors in online forums and discussions. Many journals now track and generate metrics (Altmetrics) of uptake and engagement of published scholarly work based on social media platform engagements such as tweets, retweets, likes, and shares to in case of twitter. Physician organizations, such as the American College of Physicians (ACP), are now offering continuing medical education (CME) credits for listening to podcasts. Medical conferences develop hashtags so that content from their presentations has a common place to be quickly reviewed, followed, and disseminated worldwide. The use of hashtags developed by conference committees allow for a method of rapid review of related content generated on Social media. This can provide a strong platform for advocacy, and physician and other healthcare leaders it to champion and advocate for important issues in healthcare such as diversity and inclusion, patient safety, antimicrobial stewardship, mental health, and physician burnout. Many graduate medical education training programs have created official Social media accounts as a strong recruitment tool to widely share timely information about their residency program with potential future and current trainees.

While the potential benefits of social media seem to be expanding within medicine, what remains unclear is the extent of awareness of its benefits and opportunities among physicians. The purpose of this study was to determine the knowledge, skills and attitudes regarding Social media within the digital landscape of healthcare among clinicians attending an internal medicine continuing medical education conference.

**Methods**

We conducted a cross-sectional survey of clinicians attending an international conference on “A Systematic Approach to Medically Unexplained Symptoms” between August 22, 2019 and August 24, 2019 in Marina Del Rey, California. Clinicians in attendance on August 23, 2019 completed a survey presentation, “Social media in Healthcare: Physician Survey.”

This study was reviewed by The Institutional Review Board (IRB) and determined to be exempt under section 45 CFR 46.101, item 2.

**Survey Development**

The survey focused on knowledge, skills and attitudes around social media use by conference attendees. It consisted of 18 questions created by the project team and developed via several rounds of peer review and internal validation among co-investigators utilizing the Knowledge-Skills-Ability (KSA) framework.

Survey length was approximately 10 min. The majority of the questions had Likert scale responses (“strongly agree,” “agree,” “neutral,” “disagree,” and “strongly disagree”). The 5 overarching components of the survey were: (1) Demographics; (2) Type of practice; (3) Knowledge/Awareness; (4) Skills; and (5) Ability/Attitudes.

**Data Collection and Response Rate**

The conference attendees consisted of 140 physicians and 33 non-physicians and came from 26 different US States and 5 International Countries. Survey responses were collected via audience-response system participation. Respondents had the option to opt out at any point during the survey. A range of 103 (59.5%) to 112 (64.7%) of the total 173 attendees participated in this audience-response survey, depending on the individual questions.

The questions could not be linked together nor could they be linked to an individual responder due to the nature of its anonymity.

**Data Analysis**

Baseline demographics and practice background information provided by the responders were summarized using frequencies and percentages. All questions assessing respondent attitudes and behaviors were assessed using a 5-point Likert scale (answers ranging from “strongly disagree” to “strongly agree”). All analyses where performed in JMP® 14.01 (SAS institute, Cary, NC).

**Results**

Among the responders, 79.6% were between the ages of 35-65 and 60.2% self-identified as females. In addition, 72% had been in practice for greater than 11 years, 40% were in private practice, and 75.5% had mostly an outpatient clinical practice (Table 1).

Among the participants, 89% were aware of social media terminology and 61.6% were aware that social media could be used for professional development and academic
promotion/advancement. Less than half of the participants used personal social media accounts within the week prior to the conference, and 18.7% of responders indicated that they had professional profiles present on social media platforms, while 74% of participants did not have or actively use a professional social media account. Only 12.8% agreed and 16.6% strongly agreed that they possessed the skills to engage in searching and curating social media for medical topics of interest and 18% agreed that they used it for professional networking and collaboration. Importantly, 68.9% did not feel comfortable navigating Social media while simultaneously protecting their own personal and patients’ privacy. Finally, 29.6% were interested in future CME activities related to Social media education with 27.4% being neutral on the concept. These data are summarized on Table 2.

**Discussion**

These results indicate that many practicing physicians are aware of the concept of Social media and its increasing adoption by medical societies, journals and professionals. Awareness regarding specific medical hashtags and potential CME opportunities is much lower. Fewer than half of the participants use Social media for personal or professional reasons and, not surprisingly, almost three-quarters of participants lacked the skillset to create and curate content for Social media. The Social media skills deficiencies reported by participants seems to be mirrored in the primarily negative attitudes towards using Social media, due to concerns about patient and personal privacy, and little confidence in the ability to use Social media for professional networking and scholarly projects. These concerns of privacy were more pronounced with increasing age and years out of training.

This data infers that some physicians lack comfort with the platforms and thus, even among physicians who engage in Social media, it is an infrequent engagement. This trend has been observed in other health professionals. When asked, many professionals indicate that lack of skills and perceived inefficiency are main barriers to use or more frequent use of Social media. A study of Johns Hopkins public health officials revealed near universal awareness of social media tools and platforms but significant hesitation in regards to professional engagement. This reservation is not without cause. Even with efforts to de-identify patients, privacy violations can occur. There are policies in Health Insurance Portability and Accountability Act (HIPAA) and the American Medical Association (AMA) for guidance and consultation with practice or organizational social media/public relations for official guidance is highly recommended social media. Additionally, it is important to note that

| Table 2. Demographics. |
|------------------------|
| Participants N (% participating of total 173 attendees) | Responses N (%) |
| Age | | |
| 18-34 | 103 (59.5) | 6 (5.8) |
| 35-55 | 48 (46.6) | |
| 56-65 | 33 (20.2) | |
| >65 | 16 (15.5) | |
| Gender identity | | |
| Male | 103 (59.5) | 41 (39.8) |
| Female | 62 (60.2) | 0 (0.0) |
| Other | | 0 (0.0) |
| Chose not to disclose | | |
| Time since residency (years) | 108 (62.4) | |
| 1-5 years | 15 (13.9) | |
| 6-10 years | 15 (13.9) | |
| 11-20 years | 25 (23.1) | |
| 21-29 years | 30 (27.8) | |
| >30 years | 23 (21.3) | |
| Type of practice | 105 (60.7) | |
| Private | 42 (40.0) | |
| Academic center/teaching institution | 19 (18.1) | |
| Other | 44 (41.9) | |
| Type of patients in practice | 110 (63.6) | |
| Outpatients | 83 (75.5) | |
| Inpatients | 11 (10.0) | |
| Combined | 16 (14.6) | |
| Knowledge, Skills and Attitude. | Participants N (% participating of total 173 attendees) | Responses N (%) |
|--------------------------------|----------------------------------------------------------|----------------|
| **Knowledge**                  |                                                          |                |
| Awareness of social media terminology | 110 (63.6)                                                | 12 (11.2)      |
|                                 |                                                          | 0 (00.0)       |
|                                 |                                                          | 0 (00.0)       |
|                                 |                                                          | 18 (16.8)      |
|                                 |                                                          | 77 (72.0)      |
| Awareness that many institutions/societies/journals have a social media presence | 112 (64.7)                                                | 6 (5.4)        |
|                                 |                                                          | 7 (6.3)        |
|                                 |                                                          | 10 (8.3)       |
|                                 |                                                          | 39 (34.8)      |
|                                 |                                                          | 50 (44.5)      |
| There is the ability to utilize elements of social media to promote professional accomplishments | 107 (61.8)                                                | 6 (5.6)        |
|                                 |                                                          | 16 (15.0)      |
|                                 |                                                          | 19 (17.8)      |
|                                 |                                                          | 34 (31.8)      |
|                                 |                                                          | 32 (29.9)      |
| Use of hashtags for medical education | 109 (63.0)                                                | 32 (29.4)      |
|                                 |                                                          | 29 (26.6)      |
|                                 |                                                          | 20 (18.4)      |
|                                 |                                                          | 12 (11.0)      |
|                                 |                                                          | 16 (14.7)      |
| **Skills**                     |                                                          |                |
| Currently hold a Social media account | 109 (63.0)                                                | 41 (37.6)      |
|                                 |                                                          | 11 (10.1)      |
|                                 |                                                          | 6 (5.5)        |
|                                 |                                                          | 10 (9.2)       |
|                                 |                                                          | 41 (37.6)      |
| Currently interacted with social media account | 109 (63.0)                                                | 73 (67.0)      |
|                                 |                                                          | 8 (7.3)        |
|                                 |                                                          | 5 (4.6)        |
|                                 |                                                          | 9 (8.3)        |
|                                 |                                                          | 14 (12.8)      |
| Search for medical content     | 108 (62.4)                                                | 40 (37.0)      |
|                                 |                                                          | 22 (20.4)      |
|                                 |                                                          | 12 (11.1)      |
|                                 |                                                          | 16 (14.8)      |
|                                 |                                                          | 18 (16.7)      |
| Create and curate for medical topics within social media | 107 (61.8)                                                | 79 (73.8)      |
|                                 |                                                          | 13 (12.1)      |
|                                 |                                                          | 5 (4.7)        |
|                                 |                                                          | 3 (2.8)        |
|                                 |                                                          | 7 (6.5)        |
| **Attitudes**                  |                                                          |                |
| Preference toward specific social media platforms | 104 (60.1)                                                | 38 (36.5)      |
|                                 |                                                          | 8 (7.7)        |
|                                 |                                                          | 22 (21.2)      |
|                                 |                                                          | 22 (21.2)      |
|                                 |                                                          | 14 (13.5)      |
| Significant portion of professional profile present on social media | 107 (61.8)                                                | 52 (48.6)      |
|                                 |                                                          | 23 (21.5)      |
|                                 |                                                          | 12 (11.2)      |
|                                 |                                                          | 13 (12.2)      |
|                                 |                                                          | 7 (6.5)        |
| Interact with other physicians through social media | 105 (60.7)                                                | 74 (70.5)      |
|                                 |                                                          | 7 (6.7)        |
|                                 |                                                          | 5 (4.8)        |
|                                 |                                                          | 13 (12.4)      |
|                                 |                                                          | 6 (5.7)        |
| Comfortable navigating social media while protecting personal and patient privacy | 106 (61.3)                                                | 61 (57.6)      |
|                                 |                                                          | 12 (11.3)      |
|                                 |                                                          | 12 (11.3)      |
|                                 |                                                          | 9 (8.5)        |
|                                 |                                                          | 12 (11.3)      |
| Wish to learn more about social media to enhance skills | 106 (61.3)                                                | 26 (24.5)      |
|                                 |                                                          | 9 (8.5)        |
|                                 |                                                          | 29 (27.4)      |
|                                 |                                                          | 24 (22.6)      |
|                                 |                                                          | 18 (17.0)      |
concerns for personal privacy can be addressed in the settings of many social media applications. A recent qualitative study including 44 physicians who used Social media for their research recruitment, observed that awareness and visibility of social media had increased among physicians; however, the top cited disadvantages of Social media use were administrative burden and risk of misinformation, as well as lack of evidence that Social media was a benefit to the medical professional. During an interview study, physicians reported a need for more training on the use of social media using evidence-based approaches, facilitators for professional social media use, a need to address the lack of time, as well as lack of evidence of benefit.

Some organizations are addressing this need with opportunities for certification in Social media and healthcare with provision for in depth training on these topics, including privacy. The Mayo Clinic Social media Network offers online and in-person training opportunities to address this need through the Social media Residency and Fellowship. The Journal of Hospital Medicine offers a year-long Digital Healthcare fellowship to chief residents and early career faculty. Furthermore, Boston University has a graduate program structured around digital health care. As more healthcare organizations recognize the value of their clinicians and employees engaging meaningfully in social media, these types of trainings should be disseminated and made more accessible. A recent study found that among physicians who engage in Social media daily, only about 24.1% of physicians scan or explore medical information, 14.2% contribute new information daily, 46.0% contribute new information less than daily. However, over 57.5% view Social media knowledge, skills and attitudes. Each response demonstrates how and why online scholarly activity should be documented and considered for academic promotion. Traditional currency of academics includes research grants, journal publications, and conference presentations; scholarly contributions on Social media can be collated in to portfolios documenting content creation and impact through data analysis. This in turn has the potential to be utilized in conjunction with traditional means of promotion. With the potential impact of information shared on social media in health care, it is extremely important to be cautious about misinformation and confirm accuracy of content.

Several groups of physicians, such as radiologists, already have a prominent presence and community on social media. The importance of this study is that it investigates the engagement of practicing internal medicine physicians, where there is limited data. Additionally, the survey questions delineate between personal and professional use. This is a significant undertaking in trying to understand why those with skills would avoid professional social media activities. Comprehension of the barriers will lead to improved studies and strategies on how to engage internal medicine physicians with the digital healthcare community.

In addition to the small numbers, one of the limitations of this study was the inability to track individual responses for each question. Anonymous audience-response design guaranteed anonymity and hopefully truthfulness, as well as ease of data collection (increased responses); but prevented us from linking and better understanding potential associations of demographics, years of experience etc. with Social media knowledge, skills and attitudes. Each response in our survey was independent of another, thereby limiting the analysis of this data. This study also had an inherent limitation in generalizability because the data was collected during a CME conference and CME participants audience are active knowledge seekers; additionally the participants were predominantly women, therefore the cohort may not be fully representative of the general internal medicine population. To address these limitations, in the future we would need to design surveys and other studies that would have a larger reach of medical professionals.

**Conclusion**

The awareness and knowledge around social media in healthcare is increasing across all career stages. However, it appears that the depth of social media knowledge and participation remains limited, demonstrating the need for increased training of the medical professional on meaningful professional use of social media.

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Authors’ Contributions
All the authors participated in at least one of the following: the project concept and design, analysis and interpretation of data, and/or drafting and revising the paper. They have all seen and approved the final version of the manuscript.

Declaration of Conflicting Interests
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Ethics and Consent to Participate
This project utilized passive consent for participant participation. All participants had the option of not participating/responding to any or all questions.

Ethical Standards
This study was determined to be EXEMPT under 45 CFR 46.101, item 2 by the Institutional Review Board which had ethical oversight for this study. In addition, the authors assert that all procedures contributing to this work comply with the ethical standards of the Institutional Review Board guidelines on human experimentation in accordance with the Declaration of Helsinki of 1975, as revised in 2008. Protocol-approved passive consent was obtained from all study participants prior to study initiation.

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Availability of Data and Materials
All data supporting the project findings are contained within this manuscript.

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