

Evaluation of the impact of a social media–focused intervention on reducing mental health stigma among pharmacy students

Mark Douglass, PharmD¹

Benjamin Moy, PharmD²

How to cite: Douglass M, Moy B. Evaluation of the impact of a social media–focused intervention on reducing mental health stigma among pharmacy students. *Ment Health Clin* [Internet]. 2019;9(3):110-5. DOI: 10.9740/mhc.2019.05.110.

Abstract

Introduction: Stigma may negatively affect the treatment of people with mental illness, and pharmacists have the opportunity to play a key role in reducing mental health stigma. The purpose of this study was to determine whether a pharmacy student–focused educational intervention impacts stigma toward people with mental illness.

Methods: A 90-minute interactive learning module, which used social media and fictional case scenarios, was developed and administered to third-year pharmacy students ($n=145$) during small group class sessions. The Opening Minds Stigma Scale for Health Care Providers (OMS-HC), a validated tool to measure stigma, was administered immediately before and after the intervention. Pre-post OMS-HC scores were analyzed using related samples t tests.

Results: A total of 93 presurvey and postsurvey OMS-HC scores were paired and analyzed. Based on the 15-item version of the scale, stigma was significantly reduced, consistent with a score reduction of 4.6%, from 36.8 (95% confidence interval, 35.4-38.1) to 35.1 (95% confidence interval, 33.8-36.3), $P < .0001$.

Discussion: Educational interventions for pharmacy students that use social media applications might reduce mental health stigma. After the intervention, most participants believed that stigma impacts the treatment of mental illness, and that pharmacists may play a role in changing mental health stigma.

Keywords: educational intervention, mental health, pharmacy student, social media, stigma

¹ (Corresponding author) Associate Clinical Professor, Northeastern University, Boston, Massachusetts, m.douglass@northeastern.edu, ORCID: <https://orcid.org/0000-0002-4947-2338>; ² Graduate Pharmacist, Northeastern University, Boston, Massachusetts, ORCID: <https://orcid.org/0000-0001-8457-3938>

Disclosures: The authors have no conflict of interest or other disclosures to acknowledge.

Introduction

In 2015, the National Survey on Drug Use and Health¹ reported that approximately 43.4 million adults (17.9%) in the United States were identified as having a mental illness, excluding substance use disorders, in the previous year. However, only 41% of US adults with a mental illness used mental health services within the past year.² Among those adults with serious illness, 63% used mental health

services.² One factor that could delay help-seeking includes perceived stigma of mental illnesses. Social stigma is characterized by any discriminatory attitudes or behaviors directed toward persons with mental illnesses as a result of the label placed upon them. Perceived stigma relates to the internalization of this prejudice by a person with mental illness.³ Stigmatizing beliefs can be found in any environment, including the health care system.⁴ Perceived stigma in this setting can create distrust between patients and health care workers, which in turn may lead to poorer treatment outcomes.

Pharmacists can provide support services for patients with mental disorders, but the level of care often depends on the relationship between pharmacist and the patient. Murphy et al⁵ reported that people with a history of mental illness have expressed desire for more support

from pharmacists in decision-making for treatment, as well as general support for their health and wellness. However, in a recent survey at our institution, many third- and fourth-year pharmacy students reported feeling unprepared to communicate with patients with mental illness. Consequently, the purpose of this study was to provide an opportunity for third professional year (P3) students to discuss mental health. This intervention used elements from the Center for the Advancement of Pharmacy Education (CAPE) 2013 Educational Outcomes⁶ to emphasize the knowledge, skills, and attitudes needed for effective pharmacy practice. With appropriate training, pharmacists may play a key role in reducing the stigma of mental illnesses.

In an effort to appeal to the current generation of student pharmacists, this intervention used items from several social media platforms. The integration of social media into medical education has been explored in the past, but its use remains controversial. Health educators may be hesitant to incorporate social media content into their teaching practice because of the lack of evidence that supports its efficacy and their concern for upholding the level of professionalism that is expected of health care leaders.^{7,8} Positive research findings may encourage pharmacy educators to incorporate more social media resources into their teaching practice.

The objectives of this study were (1) to assess pharmacy students' beliefs about (a) the effect of stigma in the treatment of mental health and (b) the role of pharmacists in reducing mental illness stigma; and (2) to determine whether an antistigma intervention using social media (a) reduces stigmatizing attitudes toward mental disorders or treating people with mental disorders, (b) improves beliefs about disclosing information about mental health or seeking help for mental illnesses, and (c) reduces social distancing from people with mental disorders.

Methods

A 90-minute intervention was developed and implemented at our institution. All participants were P3 pharmacy students enrolled in the Comprehensive Disease Management course seminar. All students had previously taken a Behavioral/Educational Interventions course in their first professional year but had not completed the psychiatric disorders lecture series. The participants were divided into 9 sections with an average of 16 students in each section. Each section was facilitated by a pharmacist affiliated with the Northeastern University School of Pharmacy.

Prior to their seminar class, students downloaded a document from the course Blackboard portal that

contained instructions for the intervention. The facilitators were provided with a separate document containing the student version of the assignment, along with instructor guidance and "key questions" for the discussion. Prior to the intervention, an online presurvey was administered to assess the students' perceived stigma associated with mental illness. The intervention was divided into 3 activities (Table 1). Activities 1, 2, and 3 used a BuzzFeed video,⁹ a Reddit discussion thread,¹⁰ and an AsapSCIENCE video,¹¹ respectively, to generate discussion about mental health stigma. At the completion of all 3 activities, participants were asked to complete the postsurvey. This intervention was developed in collaboration with the psychiatric course content expert, who provided both the didactic class series and associated weekly seminar cases. This study was approved by the human subjects Institutional Review Board at Northeastern University.

The online, password-protected surveys were administered through Qualtrics (Provo, UT), the University's preferred survey platform. Each student was given the opportunity to participate or to opt out of each survey. Students created a unique identifier that preserved the anonymity of the student but allowed the researchers to track the progress of each participant. Demographic information was intentionally not collected to preserve anonymity and to avoid overgeneralization of groups who hold stigmatizing beliefs.

The surveys assessed students' stigma using the Opening Minds Stigma Scale for Health Care Providers Questionnaire (OMS-HC).¹² The OMS-HC was previously validated by Modgill et al,¹³ who found it had acceptable internal consistency and may detect positive changes in anti-stigma interventions.¹³ The OMS-HC consists of 20 statements related to the stigmatization of mental illness. Survey responses were captured for each statement using a 5-point Likert scale that assessed the respondent's degree of agreement or disagreement. Each response was graded according to the strength of its stigma; the higher the score, the higher the degree of stigma. According to the analysis by Modgill et al¹³ of the OMS-HC, 15 statements from the original OMS-HC best measured changes in stigma, and these 15 statements could be divided into 3 subcategories: *attitudes*, *disclosure/help-seeking*, and *social distancing*. The primary outcome of this study was the 15-item OMS-HC score. Related samples *t* tests were used to compare stigma scores preintervention and postintervention.

All 20 OMS-HC statements were directly incorporated into the presurvey and postsurvey, without any modifications. In addition to the OMS-HC, the postsurvey included a 2-part, open-response reflection: *What role does stigma have in the treatment of mental health, if any? What role do pharmacists have in changing the mental health stigma, if*

TABLE 1: Intervention activities and discussion topics

Activity 1: Introduction to Mental Health Stigma; BuzzFeed Video; Discussion

Think about the difference between a mental illness and a physical illness.

Imagine you're a patient. Would you feel more comfortable seeking treatment for your major depressive disorder, or for your diabetes?

Imagine you're a pharmacist. Would you feel more comfortable counseling a patient with major depressive disorder, or a patient with diabetes?

Watch video: *If physical health problems were treated like mental health problems*⁸

Have you or one of your peers ever made an unprofessional comment towards someone with mental health?

Have any of your coworkers made any unprofessional comments towards a member of the mental health population? Have you observed any other health professional make these kinds of comments?

Activity 2: Pharmacist/Patient Roleplaying; Reddit Analysis; Discussion

Imagine you're a community pharmacist. A patient with a newly diagnosed bipolar disorder is picking up her medication. She has never visited your pharmacy before.

How should you establish rapport with this patient?

The patient expresses concern that she will become "dependent" on her medication, and that she will not be able to afford the medications because she is paying out-of-pocket. She does not want to use her mother's insurance because she is afraid that she will find out about it.

How should you address the patient's concern about dependence?

How confident are you that you would be able to talk to the patient's mother about her daughter's mental illness and her medications?

Evaluate the following interaction between a patient (Pt) and a pharmacist (RPh).

Pt: "I actually can't afford my medications. I'm so stupid. I don't know why I even bothered getting a prescription. I'm sorry for wasting your time."

RPh: "Calm down, there is no need to apologize. You're not stupid. I know how you are feeling right now. I was depressed when I was in college."

Pt: "I've given up a long time ago. I am never going to get better, even if I do take these medications."

RPh: "You can choose to get better. You just need to have a positive attitude."

Pt: "It's hard to be positive. I really hate my bipolar disorder."

RPh: "It could be a lot worse. You just need to appreciate what great health that you *do* have."

Pt: "Great health? My sister likes to remind me of how much weight I've gained recently. It plays over and over in my head, like a broken record."

RPh: "Just try not to think about it."

Pt: "I don't know how. Sometimes, during a manic episode, I hear voices. They narrate everything that I do, in the third person. It's really embarrassing."

RPh: "That's actually nice because you always have someone to keep you company. There is no reason to feel ashamed."

Which responses are appropriate? Which responses are inappropriate?

Match an inappropriate response with a comment from the following Reddit thread: *Fellow mentally ill people of Reddit, what's something you wish non mentally ill people would understand?*⁹

What are some responses that are more appropriate for the pharmacist to say?

Activity 3: AsapScience Video; Creating SMART Goals; Discussion

Watch the following video: *5 ways to reduce mental health stigma*¹⁰

Consider your own self-development as a future health care leader. Create 2 simple "SMART Goals" to reduce the health disparities in the mental health population.

S: specific, significant, stretching

M: measurable, meaningful, motivational

A: agreed-upon, achievable, action-oriented

R: realistic, rewarding

T: timely, tangible

TABLE 2: Open-ended responses to postintervention reflection: What role do pharmacists have in changing the mental health stigma, if any? (n = 102)

Example Response	CAPE 2013 Outcome ²³	No. of Participants (%)
“Pharmacists are important in counseling how to take medications and the perception of handing these medications to patients.”	2.2. Medication use systems management	12 (11.8)
“Pharmacists can play a huge role in education and spreading awareness of mental health in order to reduce stigma.”	3.3. Patient advocacy	22 (21.6)
“Pharmacists should help reduce the stigma by directing patients to resources for mental health and encouraging any steps that their patients take in treating their mental illnesses.”	3.4. Interprofessional collaboration	12 (11.8)
“Pharmacists can change the stigma by offering their help, providing empathy, and treating them as if they would any other patient they were to see with a physical illness.”	3.5. Cultural sensitivity	37 (36.3)
“It is important as a pharmacist to ensure proper language is used when talking about an individual with a mental illness and to correct others to try to end/decrease the stigma.”	4.1. Self-awareness	17 (16.7)
“As pharmacists are typically regarded with respect, it is important that they work to eliminate personal bias and act in a manner that reduces stigma in their practice.”	4.4. Professionalism	14 (13.7)

CAPE = Center for the Advancement of Pharmacy Education.

any? For the first part of the reflection, responses were interpreted and categorized as either “stigma impacts the treatment of mental health” or “other.” For the second part of the reflection, each response was analyzed and matched to a corresponding CAPE 2013 Educational Outcome (Table 2).⁶

Results

Among the 145 students who participated in the activities, 89.0% (n = 129) and 78.6% (n = 114) fully completed the presurvey and postsurvey. Additionally, 64.1% (n = 93) of the scores were able to be paired and analyzed. A total of 15 scores were unable to be paired because of duplicate participant identifiers; another 6 scores were unable to be

paired because those participants did not fully complete both surveys. Overall, mental health stigma significantly decreased for the class, and the 15-item OMS-HC survey scores showed a significant reduction in stigma of 4.6%, from 36.8 (95% confidence interval, 35.4-38.1) to 35.1 (95% confidence interval, 33.8-36.3), $P < .0001$. Stigma significantly decreased according to the *attitudes* and *disclosure/help-seeking* subcategories, but not the *social distancing* subcategory (Table 3).

Of the 114 participants who completed the postsurvey, 102 participants provided a response to the reflection question about the role of stigma in mental health and the pharmacist’s role in changing the stigma (Table 2). Eighty-two of these students reported that stigma impacts the treatment of mental health. There were 85 participants

TABLE 3: Preintervention and postintervention scores of 15-item Opening Minds Stigma Scale for Health Care Providers (OMS-HC) subcategories (n = 93)

	Pre (95% CI)	Post (95% CI)	P Value ^a
Attitude ^b	13.3 (12.6, 14.0)	12.5 (11.9, 13.2)	<.0001
Disclosure/help-seeking ^c	12.0 (11.4, 12.5)	11.1 (10.5, 11.7)	<.0001
Social distancing ^d	11.5 (11.1, 12.0)	11.5 (11.0, 11.9)	.3
Total ^e	36.8 (35.4, 38.1)	35.1 (33.8, 36.3)	<.0001

CI = confidence interval.

^aRelated samples *t* tests were used for preintervention and postintervention scores; significance set at $\alpha < .05$.

^bOMS-HC item Nos. 1, 12, 13, 14, 18, 20.

^cOMS-HC item Nos. 4, 6, 7, 10.

^dOMS-HC item Nos. 3, 8, 9, 17, 19.

^eOMS-HC item Nos. 1, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 17, 18, 19, 20.

who affirmed that pharmacists should have an active role in reducing mental health stigma, whereas 4 participants did not believe that pharmacists were qualified to minimize stigma.

Discussion

This study showed that a brief, social media–focused, antistigma intervention for pharmacy students may reduce their stigma of mental health disorders. Most students agreed that stigma has a significant impact on the treatment of mental health, with substantial implications on patient quality of life. From the perspective of the patient, stigma can deter one from seeking treatment for mental illness, for reasons such as fear of being discriminated against by providers, fear of being perceived as weak by friends or family, and/or not seeing their illness as a real medical condition. From the perspective of the health care provider, stigma may affect quality of care and the relationships between the patient and the provider. Pharmacy students identified a key role of the pharmacist to support initiatives that reduce social stigma and stigma perceived by persons with mental illness.

Our intervention effectively reduced OMS-HC scores for the stigma subcategories of *attitude* and *disclosure/help-seeking* but not *social distancing* domains. This disparity is consistent with other antistigma interventions for pharmacy students^{14,15} and with the analysis by Modgill et al¹³ of the OMS-HC. Modgill et al proposed that this was because most antistigma interventions, including the one described here, do not focus specifically on reducing social distancing. To attempt to reduce social distancing, future antistigma interventions should explicitly include messages such as, *Developing relationships with people with mental illnesses may benefit both parties, or Avoiding relationships with people with mental illness is harmful.*

This study adds to the collection of successful antistigma interventions found in pharmacy literature.¹⁴⁻¹⁸ The intervention discussed here is unique because it took place during one seminar class, divided students into groups, and was solely focused on stigma. The smaller group size allowed participants to feel more comfortable discussing sensitive topics, such as mental illness, and the separation of this intervention from the classroom lecture allowed for maximal time efficiency. The facilitators were valuable to the intervention because they brought experience from their own pharmacy practices to the discussion.

Another unique aspect of this intervention was the incorporation of social media content. Social media can be a powerful resource in an educational setting for any age range, but particularly for this current generation of

students, who developed alongside social media technology.¹⁹ Clauson et al²⁰ surveyed first-year pharmacy students in 2013 and found that 75% of the respondents indicated that the integration of social media into their education would positively impact their learning ability. Similarly, El Bialy and Jalali²¹ surveyed medical students and educators and found that 95% of the educators and 70% of the students believed that social networking sites enhanced the learning experience. The Internet offers unlimited access to any student who requires supplemental information, and social media platforms like BuzzFeed⁹ or Reddit¹⁰ are able to offer content that is relatable to this generation of students and can enhance the students' learning experience.

There were several limitations to this study. First, each group in this study had students and facilitators with varying experiences, knowledge of mental illness, and readiness to talk about mental health. To increase the consistency of the discussion across the groups, a comprehensive guidance document was provided to each seminar facilitator. Second, response bias may have affected participants' answers to the OMS-HC or reflection questions. To minimize social desirability bias, the survey was anonymous, and confidentiality was reassured in the beginning of the survey. Because no demographic information was collected, the generalizability of the results to other pharmacy students is limited. Third, the postsurvey was conducted immediately at the end of the intervention. Evidence of long-term effects is scarce in the current literature, so similar studies should follow up with participants after extended periods of time. Finally, there was no control group, so the results of this study may not necessarily be attributable to the unique aspects discussed. More research is needed to support the use of social media in education, and future studies should compare lengthier, comprehensive interventions to shorter interventions focused on stigma.

Conclusion

To provide professional, culturally sensitive care, pharmacists should reflect on their skills, attitudes, and beliefs of mental health treatment and actively participate in changing the stigma of mental illnesses. Brief interventions for pharmacy students that use social media applications, which are relatable to current-generation pharmacy students, might reduce negative attitudes toward mental illness and increase readiness to seek help for a mental illness. The generalizability of the results of this study are limited to P3 pharmacy students who have not completed a psychiatric disorders course module. Future antistigma interventions should especially focus on reducing the social distancing aspect of mental health stigma.

References

1. Substance Abuse and Mental Health Services Administration [Internet]. Reports and detailed tables from the 2015 National Survey on Drug Use and Health (NSDUH) [cited 2017 May 16]. <https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.pdf>
2. Insel TR. Assessing the economic costs of serious mental illness. *Am J Psychiatry*. 2008;165(6):663-5. DOI: [10.1176/appi.ajp.2008.08030366](https://doi.org/10.1176/appi.ajp.2008.08030366). PubMed PMID: [18519528](https://pubmed.ncbi.nlm.nih.gov/18519528/).
3. Davey GCL. Mental health & stigma: mental health symptoms are still being viewed as threatening and uncomfortable [Internet]. 2013 Aug 20 [cited 2017 May 16]. <https://www.psychologytoday.com/blog/why-we-worry/201308/mental-health-stigma>
4. Svensson B, Brunt D, Bejerholm U, Eklund M, Gyllensten AL, Leufstadius C, et al. Health care students' attitudes towards people with schizophrenia—a survey of eight university training programs. *OJPsycho*. 2014;4(04):309-16. DOI: [10.4236/ojpsych.2014.44038](https://doi.org/10.4236/ojpsych.2014.44038).
5. Murphy AL, Martin-Misener R, Kutcher SP, O'Reilly CL, Chen TF, Gardner DM. From personal crisis care to convenience shopping: an interpretive description of the experiences of people with mental illness and addictions in community pharmacies. *BMC Health Serv Res*. 2016;16(1):569. DOI: [10.1186/s12913-016-1817-4](https://doi.org/10.1186/s12913-016-1817-4). PubMed PMID: [27729051](https://pubmed.ncbi.nlm.nih.gov/27729051/); PubMed Central PMCID: [PMC5059973](https://pubmed.ncbi.nlm.nih.gov/PMC5059973/).
6. Medina MS, Plaza CM, Stowe CD, Robinson ET, DeLander G, Beck DE, et al. Center for the Advancement of Pharmacy Education 2013 educational outcomes. *Am J Pharm Educ*. 2013;77(8):162. DOI: [10.5688/ajpe778162](https://doi.org/10.5688/ajpe778162). PubMed PMID: [24159203](https://pubmed.ncbi.nlm.nih.gov/24159203/).
7. D'Souza K, Henningham L, Zou R, Huang J, O'Sullivan E, Last J, et al. Attitudes of health professional educators toward the use of social media as a teaching tool: global cross-sectional study. *JMIR Med Educ*. 2017;3(2):e13. DOI: [10.2196/mededu.6429](https://doi.org/10.2196/mededu.6429). PubMed PMID: [28778841](https://pubmed.ncbi.nlm.nih.gov/28778841/); PubMed Central PMCID: [PMC5562930](https://pubmed.ncbi.nlm.nih.gov/PMC5562930/).
8. Cartledge P, Miller M, Phillips B. The use of social-networking sites in medical education. *Med Teach*. 2013;35(10):847-57. DOI: [10.3109/0142159X.2013.804909](https://doi.org/10.3109/0142159X.2013.804909). PubMed PMID: [23841681](https://pubmed.ncbi.nlm.nih.gov/23841681/).
9. BuzzFeedYellow. If physical health problems were treated like mental health problems [Internet]. YouTube. 2015 May 23 [cited 2017 May 24]. <https://www.youtube.com/watch?v=oB5nfaeplc>
10. Fellow mentally ill people of Reddit, what's something you wish non mentally ill people would understand? r/AskReddit [Internet]. 2016 Oct [cited 2017 May 24]. https://www.reddit.com/r/AskReddit/comments/59bol4/fellow_mentally_ill_people_of_reddit_whats?st=IUV6AAMT%3Bsh=bd33cod5
11. Brown G, Moffit M. 5 ways to reduce mental health stigma! AsapTHOUGHT [Internet]. YouTube. 2016 Jun 9 [cited 2017 May 24]. https://www.youtube.com/watch?v=5MG_HDNqZAo
12. The Mental Health Commission of Canada [Internet]. Opening Minds [cited 2017 May 16]. <http://www.mentalhealthcommission.ca/English/initiatives/11874/opening-minds>
13. Modgill G, Patten SB, Knaak S, Kassam A, Szeto ACH. Opening Minds Stigma Scale for Health Care Providers (OMS-HC): examination of psychometric properties and responsiveness. *BMC Psychiatry*. 2014;14:120. DOI: [10.1186/1471-244X-14-120](https://doi.org/10.1186/1471-244X-14-120). PubMed PMID: [24758158](https://pubmed.ncbi.nlm.nih.gov/24758158/); PubMed Central PMCID: [PMC4024210](https://pubmed.ncbi.nlm.nih.gov/PMC4024210/).
14. Bamgbade BA, Ford KH, Barner JC. Impact of a mental illness stigma awareness intervention on pharmacy student attitudes and knowledge. *Am J Pharm Educ*. 2016;80(5):80. DOI: [10.5688/ajpe80580](https://doi.org/10.5688/ajpe80580). PubMed PMID: [27402983](https://pubmed.ncbi.nlm.nih.gov/27402983/); PubMed Central PMCID: [PMC4937975](https://pubmed.ncbi.nlm.nih.gov/PMC4937975/).
15. Muzyk AJ, Lentz K, Green C, Fuller S, May DB, Roukema L. Emphasizing Bloom's affective domain to reduce pharmacy students' stigmatizing attitudes. *Am J Pharm Educ*. 2017;81(2):35. DOI: [10.5688/ajpe81235](https://doi.org/10.5688/ajpe81235). PubMed PMID: [28381895](https://pubmed.ncbi.nlm.nih.gov/28381895/).
16. Buhler AV, Karimi RM. Peer-level patient presenters decrease pharmacy students' social distance from patients with schizophrenia and clinical depression. *Am J Pharm Educ*. 2008;72(5):106. DOI: [10.5688/ajp7205106](https://doi.org/10.5688/ajp7205106). PubMed PMID: [19214260](https://pubmed.ncbi.nlm.nih.gov/19214260/).
17. Skoy ET, Eukel HN, Frenzel JE, Werremeyer A, McDaniel B. Use of an auditory hallucination simulation to increase student pharmacist empathy for patients with mental illness. *Am J Pharm Educ*. 2016;80(8):142. DOI: [10.5688/ajpe808142](https://doi.org/10.5688/ajpe808142). PubMed PMID: [27899838](https://pubmed.ncbi.nlm.nih.gov/27899838/); PubMed Central PMCID: [PMC5116794](https://pubmed.ncbi.nlm.nih.gov/PMC5116794/).
18. O'Reilly CL, Bell JS, Chen TF. Consumer-led mental health education for pharmacy students. *Am J Pharm Educ*. 2010;74(9):167. DOI: [10.5688/ajp7409167](https://doi.org/10.5688/ajp7409167). PubMed PMID: [21301601](https://pubmed.ncbi.nlm.nih.gov/21301601/).
19. Guraya SY. The usage of social networking sites by medical students for educational purposes: a meta-analysis and systematic review. *N Am J Med Sci*. 2016;8(7):268-78. DOI: [10.4103/1947-2714.187131](https://doi.org/10.4103/1947-2714.187131). PubMed PMID: [27583234](https://pubmed.ncbi.nlm.nih.gov/27583234/); PubMed Central PMCID: [PMC4982355](https://pubmed.ncbi.nlm.nih.gov/PMC4982355/).
20. Clauson KA, Singh-Franco D, Sircar-Ramsewak F, Joseph S, Sandars J. Social media use and educational preferences among first-year pharmacy students. *Teach Learn Med*. 2013;25(2):122-8. DOI: [10.1080/10401334.2013.770742](https://doi.org/10.1080/10401334.2013.770742). PubMed PMID: [23530673](https://pubmed.ncbi.nlm.nih.gov/23530673/).
21. El Bialy S, Jalali A. Go where the students are: a comparison of the use of social networking sites between medical students and medical educators. *JMIR Med Educ*. 2015;1(2):e7. DOI: [10.2196/mededu.4908](https://doi.org/10.2196/mededu.4908). PubMed PMID: [27731847](https://pubmed.ncbi.nlm.nih.gov/27731847/); PubMed Central PMCID: [PMC5041347](https://pubmed.ncbi.nlm.nih.gov/PMC5041347/).