RESEARCH ARTICLES

The Effects of a Social Media Policy on Pharmacy Students' Facebook Security Settings

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Objective. To examine how students entering a doctor of pharmacy (PharmD) program used Facebook privacy settings before and after the college's social media policy was presented to them.

Methods. The Facebook profiles of all entering first-year pharmacy students across 4 campuses of a college of pharmacy were evaluated. Ten dichotomous variables of interest were viewed and recorded for each student's Facebook account at 3 time points: before the start of the semester, after presentation of the college's social media policy, and at the end of the semester. Data on whether a profile could be found and what portions of the profile were viewable also were collected.

Results. After introduction of the policy, a significant number of students increased their security settings (made information not visible to the public) related to Facebook walls, information pages, and links.

Conclusions. Making pharmacy students aware of a college's social media policy had a positive impact on their behaviors regarding online security and privacy.

Keywords: Facebook, professionalism, social media, policy

INTRODUCTION

Social media as a means of communication continues to grow in the United States and globally, with more than 500 million active users on Facebook alone. Approximately 50% of active users log on to Facebook daily and 30 billion pieces of content are shared on Facebook each month.[1] Each Facebook user has an average of 130 friends who have access to their postings, which may be available to friends of friends or the public depending on the user's privacy settings. With this amount of content being shared, the impact of what is posted and the use of privacy settings to control the viewing of Facebook postings is potentially enormous. Facebook is particularly attractive to young adults, with over half of members being in the 18- to 34-year age range.[2] This age group generally is made up of individuals who are just starting or further establishing their professional lives, whether in a university setting or in the workplace, and are developing their professional identities.

Health care professionals and health professions students often are held to a higher standard of behavior than those not engaged in or training for a profession. The characteristics of a profession include: an ideology based on the original faith professed by members, and an ethic that is binding on the practitioners.[3] Beardsley and colleagues state that "An expanded sense of professionalism is critical to the practice of pharmaceutical care because of its patient-centered focus." [3] They describe the 10 traits of a professional, which include conscience, trustworthiness, and ethically sound decision making. The American College of Clinical Pharmacy (ACCP) published a set of professionalism tenets for pharmacy students that includes the following: "display honesty and integrity in all that you do," "treat others as you would want to be treated," and "instill trust through professional presence."[4] These tenets all can be undermined by the public online posting of comments or images that are contrary to these statements. Further complicating the matter, healthcare professions students struggle with the line between their professional identity and their personal identity[5] as is reflected by unprofessional postings seen on the profiles of professional students. In a study of medical student and resident Facebook accounts, Thompson and colleagues found that a small proportion of the students belonged to groups that had unprofessional names and had posted photos depicting drunkenness and/or overt sexuality, and/or used foul language in messages.[6]

Students may be unaware of how information from postings on social networks is used by universities, admissions committees, potential employers, supervisors, etc. Universities have disciplined professional students regarding

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the content of social media postings, with punishment ranging from informal warnings to dismissals. Also, the development and revision of university guidelines regarding professionalism and social media has increased.[7] In one legal case, Snyder v. Millersville University, a student teacher was denied a teaching certificate based on photos and comments posted on MySpace.[8] Similarly, employers consider the social media behaviors of potential employees. A survey by career builders.com found that 22% of employers used social media sites to screen applicants. In 34% of those cases, information was used to exclude an applicant.[9]

In the case of Snyder v. Millersville University, the defendant had no MySpace privacy settings in place so her information was available for public viewing. Controlling who is able to view information, photos, and videos posted on one's profile (while not foolproof) may keep personal information out of the public domain. Acquisti and Gross found that 30% of college students surveyed in 2006 were not aware that privacy controls were available that could be used to protect their information.[10] Because of the media attention that online privacy issues have received, students may be better informed now about privacy controls. Nevertheless, some students who use social media still are unaware of how privacy settings are used and of who has access to their posted information. In a 2009 study, Thompson and colleagues found that only a third (37.5%) of medical students and residents surveyed made their social media accounts private.[6] While the use of privacy settings may not eliminate "outside" access to what is posted on social media sites, if privacy settings are not used, there is no barrier or line between what is posted and what the general public can access. Appropriate use of privacy settings is one step in the appropriate management of social media content.

As part of helping students to develop professionally and understand the impact of social media, the University of Florida College of Pharmacy implemented a new social media policy for students at all campuses in the spring of 2010.[11] The college's social media policy does not discourage students from having Facebook profiles, but rather provides students with a lists of forbidden and discouraged activities. The college has 1 main campus and 3 distance campuses. The policy was presented in August 2010 to entering first-year pharmacy students at the college's new student orientation held at the main campus. Students from all 4 campuses attended this orientation session. This study looked at how students entering a doctor of pharmacy (PharmD) program used Facebook privacy settings at the beginning of the program and then again at 2 time points after presentation of the college's social media policy. The presentation included a discussion about the potential

impact of unprofessional postings and the possibility of those postings being viewed by future employers, faculty members, peers, etc.

METHODS

The Facebook profiles of all entering first-year pharmacy students across the college's 4 campuses (Gainesville, Jacksonville, Orlando, and St Petersburg) were evaluated. Ten dichotomous variables of interest were examined on each student's Facebook profile at 3 time points: before the start of the semester (pre-semester), after presentation of the college's social media policy on August 19, 2010 (post-intervention), and at the end of the semester (post-semester). During their first semester, students at the main campus received an e-mail reminder regarding the social media policy and distance students received a verbal reminder from a faculty member. Prior to study initiation, the institutional review board granted the study exempt status.

Researchers created one "research" Facebook profile to use to search for student profiles. All researchers used the same profile to collect data. The research profile did not have any Facebook friends; thus, student security profiles allowing visibility to "friends of friends" was not a factor in the data collection process. At each of the 3 data collection points, researchers searched for each entering student on Facebook using student names and university e-mail accounts. Student-built Facebook groups for each entering class at each campus also were identified and searched. Data were collected on whether a profile could be found for a student and what portions of the student's profile were viewable. If a profile could be located and confirmed to be the student in question, it was considered "found," and if no profile was located or there were too many profiles and a profile could not be confirmed as belonging to the student in question it was considered "not found." Portions of the profile were referred to as "profile variables" and were noted as viewable or not viewable. Descriptions of the profile variables observed are listed in Appendix 1.

Statistical analysis was performed by the University of Florida Biostatistical Consulting Laboratory. McNemar's exact test was used for matched-pairs data to determine whether the proportion of students whose profile pages were visible differed from pre-semester to post-intervention, from post-intervention to post-semester, and from pre-semester to post-semester. Because the proportion of students whose profiles had unsecure variables and changed them to secure was small across all variables, Fisher's exact test was used to make those comparisons. To control the Type I error rate for each set of variable comparisons, Bonferroni's method for multiple pairwise comparisons

was used. Photo and video variables were not tested because the frequency of unsecure behavior in those variables was negligible. For the comparison of all 4 campuses, logistic regression was used to determine whether the campus at which students attended classes was a significant predictor of Facebook security status at the beginning of the semester. In all analyses, the variable being tested was used as the dependent variable and campus was used as the independent variable. For the comparison of the Gainesville campus to the other campuses combined, a chi-square test of independence between variable status and campus was used.

RESULTS

The data set contained observations on 297 students from 4 campuses (Gainesville, Jacksonville, Orlando, and St. Petersburg). The Gainesville campus had 132 students, while the Jacksonville campus had 51 students, the Orlando campus had 57 students, and the St. Petersburg campus had 57 students.

A Facebook profile was found for 73% of the students pre-semester, 78% of the students post-intervention, and 83% of the students post-semester. Significantly more students went from not found to found than from found to not found in the post-intervention period and post-semester period compared to the pre-semester period ($p < 0.01$ and $p < 0.01$). A significant difference also was found when comparing the post-intervention period to the post-semester period ($p < 0.01$).

Facebook profiles were found by searching by name for 18% of the students pre-semester, 19% post-intervention, and 20% post-semester. No significant differences in whether profiles changed from could be found to could not be found by name or profiles that changed from could not be found to could be found by name were identified in

the 3 comparison periods. Similarly, Facebook profiles were found by searching by university e-mail address for 39% of the students pre-semester, 40% post-intervention, and 43% post-semester. No significant differences in whether profiles changed from found to not found or not found to found by university e-mail address were identified in the 3 comparison periods.

Students' Facebook profiles could be found by searching for group membership in student-built Facebook groups for 53% of the students pre-semester, 68% post-intervention, and 71% post-semester. Significantly more students went from not found to found than from found to not found by group membership in the post-intervention period and post-semester period compared to the pre-semester period ($p<0.0001$ and $p<0.0001$). A significant difference was not found when the post-intervention period was compared to the post-semester period.

Students' Facebook walls were visible for 18% of the students with found profiles pre-semester, 11% with found profiles post-intervention, and 8% with found profiles post-semester. Significantly more students went from wall pages being visible to not visible than from not visible to visible in the post-intervention period and post-semester period compared to the pre-semester period (Table 1). There was also a significant decrease in wall pages being visible between the post-intervention period to the post-semester period.

Personal information pages were visible for 99.5% of the students with found profiles pre-semester, 99% post-intervention, and 93% post-semester. Significantly more students went from personal information pages visible to not visible than from not visible to visible in the pre-semester period and post-intervention period compared to the post-semester period. A significant difference

Table 1. Changes in Pharmacy Students' Facebook Profile Settings After the College's Implementation of a Social Media Policy

Facebook Feature	Change in Profile Settings		
	Not Visible to Visible	**Visible to Not Visible**	***P***
Wall			
Pre-semester to post-intervention	1	15	<0.001
Post-intervention to post-semester	0	8	<0.01
Pre-semester to post-semester	1	23	<0.0001
Information			
Pre-semester to post-intervention	1	2	1
Post-intervention to post-semester	1	14	< 0.001
Pre-semester to post-semester	1	15	<0.001
Links			
Pre-semester to post-intervention	4	17	<0.01
Post-intervention to post-semester	7	33	<0.0001
Pre-semester to post-semester	7	44	<0.0001

was not found for this variable when comparing the pre-semester period to the post-intervention period (Table 1).

The Facebook users' links were visible for 70% of the students with found profiles pre-semester, 64% post-intervention, and 52% post-semester. Significantly more students went from having the links on their Facebook page visible to not visible than from not visible to visible in the post-intervention period and post-semester period compared to the pre-semester period. A significant difference was also found for this variable between the post-intervention period and the post-semester period (Table 1).

The number of students with friends, photos, or videos visible post-intervention was unchanged from pre-intervention. There was no significant difference in the number of students who went from having the total number of Facebook friends not visible to visible compared with the number who went from having the total visible to not visible in any time period comparisons. This also was true for the photo and video variables.

Students at the Gainesville campus were significantly more likely to have their Facebook profile visible at the start of the semester than students at the other campuses combined ($p = 0.0258$). Students at the Gainesville campus were significantly more likely to be locatable on Facebook by e-mail than students at the St. Petersburg campus (Bonferroni-adjusted $p < 0.0001$) and students at the Gainesville campus were significantly more likely to be locatable by e-mail than students at the Orlando campus (Bonferroni-adjusted $p = 0.0006$). Also, students at the Gainesville campus were significantly more likely to be locatable on Facebook by e-mail at the start of the semester than students at the other campuses combined ($p < 0.0001$). All other campus-to-campus comparisons on whether profiles were found and by what method those profiles were found were not significant.

The proportion of students who switched to more secure behavior on Facebook was compared among the 4 campuses, and between the Gainesville campus and the distance campuses combined (Table 2). Significant differences were seen in the "found by group" variable change from pre-semester to post-semester between the Gainesville and Orlando campuses and between the Gainesville campus and the combined distance campuses. Significant changes also occurred in the "info visible" variable from pre-semester to post-semester when comparing the Gainesville campus to the combined distance campuses. When comparing the "info visible" variable change from pre-semester to post-semester between the Gainesville and St. Petersburg campuses, and the Gainesville and Orlando campuses, significance was seen in the uncorrected

p values, but not in the Bonferroni-adjusted p values. All other significant p values in this comparison remained significant when adjusted.

DISCUSSION

Facebook profiles were found for the majority of the entering students at the start of the semester, and those for whom profiles were not found were likely to have profiles that were found post-intervention and/or post-semester. Most students' profiles could not be located by name or by e-mail both before and after the introduction of the social media policy, but there is some evidence that more students could be found by e-mail by the end of the semester. When searching by name, researchers often found multiple profiles and were unable to determine which profile belonged to the student for whom they were searching. Students are assigned a university e-mail account at admission, so many who were new to the university may have not associated their Facebook page with that e-mail address pre-semester. More students may have changed their Facebook e-mail to the university e-mail address as they progressed through their first semester. Those students who completed the previous semester undergraduate coursework at the Gainesville campus already would have had a university e-mail address and more would have their university e-mail addresses associated with their Facebook profile. Significantly more students could be found by Facebook group membership as the semester progressed, even though more than half already could be found by group membership at the start of the semester. The college's social media policy does not discourage students from having Facebook profiles or joining student-built Facebook groups for their pharmacy class. Thus, the increase in number of profiles found by these methods as the semester increased was not considered a negative result.

For those students whose profiles were found, most did not have their wall, photo, and video information visible. Many of the entering students already had tight security settings in place for these features on their Facebook accounts. However, most did have demographic information, links, and number of friends visible. Why these features were more visible and had lower security settings is unclear. Status updates on walls, photos, and videos probably are considered more personal than basic information, links, and number of Facebook friends. The temporal relationship between the introduction of the policy to students and the modifications to their Facebook settings suggests that the changes were made in response to the educational intervention. Photos and videos already were not visible on almost all students' Facebook accounts at the start of the semester and remained that way throughout the term. Number of Facebook friends was visible for about two-thirds of

Table 2. Comparison of Pharmacy Students Who Changed Their Facebook Settings From Unsecure to Secure After Being Informed About the College's Social Media Policy

Facebook Variable	No. of Students Who Switched to Secure Setting/No. of Students Who Started With Unsecure Setting[a]				
	Gainesville Campus	St. Petersburg Campus	Orlando Campus	Jacksonville Campus	3 Satellite Campuses[b]
Profile					
Pre-semester vs. post-intervention	6/105	0/39	1/37	2/36	3/112
Pre-semester vs. post-semester	3/105	1/39	0/37	0/36	1/112
Name					
Pre-semester vs. post-intervention	10/29	2/11	2/9	4/5	8/25
Pre-semester vs. post-semester	13/29	5/11	4/9	3/5	12/25
E-mail					
Pre-semester vs. post-intervention	4/73	0/9	2/14	3/17	5/40
Pre-semester vs. post-semester	10/73	0/9	2/14	3/17	5/40
Group					
Pre-semester vs. post-intervention	4/68	0/25	0/33	2/31	2/89
Pre-semester vs. post-semester	0/68	0/25	6/33[c]	2/31	8/89[c]
Wall					
Pre-semester vs. post-intervention	5/20	3/5	4/6	3/6	10/17
Pre-semester vs. post-semester	10/20	3/4	6/7	4/6	13/17
Info					
Pre-semester vs. post-intervention	0/99	0/39	1/36	1/34	2/109
Pre-semester vs. post-semester	13/101	0/38	0/37	2/36	2/111[c]
Links					
Pre-semester vs. post-intervention	7/66	2/27	5/27	3/26	10/80
Pre-semester vs. post-semester	16/66	10/26	10/28	8/28	28/82
Friends					
Pre-semester vs. post-intervention	1/73	0/27	1/25	0/25	1/77
Pre-semester vs. post-semester	6/73	0/20	0/23	1/26	1/69

[a] Each ratio represents the number of students at that campus who switched to secure settings out of all students with unsecure settings, eg, at the Gainesville campus, 105 students had unsecure profile settings at the beginning of the semester, and of those, 6 changed their settings to secure after being informed about the college's social media policy (post-intervention).
[b] Findings from the 3 satellite campuses were combined.
[c] Bonferroni-adjusted $P < 0.05$, comparison to Gainesville campus.

students at the start of the semester, and few students changed their security level on this variable after the intervention.

There are a few exceptions at specific time points at individual campuses, but the overall trends noted above did not differ by campus. A significantly higher proportion of main campus students than distance students had switched their info status setting in Facebook to not visible by the end of the semester, but a higher proportion of distance students than main campus students who had been locatable by group before the semester no longer had this variable set to not visible by the end of the term. Otherwise, student behavior across campuses on all variables was similar.

One possible limitation of this study is that all students with Facebook accounts may not have been found with the methodology used and thus were not included in the analysis. Because the statistical analysis was designed to compare changes in Facebook usage in and between groups of students rather than compare changes in individual student behavior, this also may be considered a limitation.

SUMMARY

Pharmacy students with fewer secure Facebook settings strengthened their security settings to make certain information and content less visible after the introduction of a social media policy. Although other factors may have influenced students' decision to tighten their security settings, the introduction of the social media policy probably played a role in educating the students about the importance of security settings and what content should be visible to the public. Social media policies at colleges and

schools of pharmacy may be a valuable tool in helping students appropriately manage social media communication.

ACKNOWLEDGEMENTS

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Appendix 1. Facebook variables identified and observed in a study of the impact on Facebook behaviors of educating pharmacy students' about the college's social media policy.

Profile: Whether the student's Facebook profile could be found by the researchers.
Name: Whether the student's Facebook page could be found by searching Facebook for the student's name.
Email: Whether the student's page could be found by searching Facebook for his or her university email account.
Group: Whether the student's page could be found through a Facebook student group page.
Wall: Whether the student's Facebook Wall was visible to the public.
Info: Whether the student's Facebook Personal Information was visible to the public.
Links: Whether the student's favorite links were visible to the public.
Photos: Whether the student's personal photos were visible to the public.
Videos: Whether the student's personal videos were visible to the public.
Friends: Whether the student's number of Facebook friends was visible to the public.