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Relationship between Health Information Sharing Behavior Using Social Media and Breast Cancer Screening

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Abstract

Background: Despite established screening guidelines, breast cancer screening rates are below targeted goals. Pharmacists and other health care providers can promote breast cancer screening using tools such as social media. However, little is known about the use of social media among the breast cancer screening eligible population. **Objective:** To describe the health information sharing behavior using social media of the breast cancer screening eligible population, and to identify if sharing health information on social media was associated with breast cancer screening. **Methods and materials:** Data from the 2013 Health Information National Trends Survey were analyzed using descriptive statistics and bivariate logistic regression to evaluate the association between sharing health information on social media and receipt of a mammogram. **Results:** Women sharing health information via social media were significantly younger than those who did not. A significantly higher percentage of Hispanics (17.8%) and other races (27.0%) chose to share health information on social media compared to African Americans (8.6%) and Whites (12.9%). Mammogram rates did not differ based on social media health information sharing habits. **Conclusion:** Race and age differences were noted in health information sharing behavior. No association was found between health information sharing behavior and breast cancer screening.

Keywords: breast cancer screening; social media; health information sharing

Introduction

Social media, a means of electronic communication where users can share information and ideas online, is increasingly being used for sharing health information.^{1, 2} A Pew Research Center report found that 4 out of 10 people who commented on their health online have shared their personal health experiences online with others.³ Social media can increase engagement and access to health information to broader and more diverse audiences, as 71% of adults over 18 years old who use the internet also use social media.^{2, 4} Communicating health information on social media is a rapid, low-cost method that can easily offer a large amount of information to a large audience and can impact their health and health behaviors.^{2, 5, 6}

Social media has also been promoted as a way for pharmacists to foster engagement and dialogue about medications and public health topics with their patient population.⁶ Many pharmacy organizations use social media to reach out to their followers about their products, provide reminders about preventive services, and distribute health information.⁷ Walgreens has almost 1 million followers on Twitter, while Duane Reade, a subsidiary of Walgreens Boots Alliance, has almost 1.2 million followers.

Social media has also been used by local health departments to engage the public in a dialogue on public health issues.^{5, 8, 9} One such public health issue is breast cancer. It is the second leading cause of cancer mortality in women, with an estimated 230,815 new cases and 40,860 associated deaths in 2013.¹⁰ Since breast cancer treatment can be expensive and not 100% effective, timely screening and prevention should be a focus for pharmacists and other healthcare professionals.¹¹ The United States Preventive Services Task Force (USPSTF) recommends that women 50-74 years old receive a mammogram every 2 years. However, only 69.1% of women over 50 had a mammogram within the past 2 years in 2013.¹² Rates are even lower among minority women and other ethnic minority groups.¹³ These numbers remain well below the Healthy People 2020 goal of 81% for breast cancer screening, demonstrating a need for further improvement.¹⁴

Pharmacy organizations can play a critical role in facilitating breast cancer awareness and prevention activities, assessing breast cancer risk, providing education, and collaborating with medical teams to provide appropriate care.^{15, 16} Pharmacy organizations can contribute to achieving this goal by communicating with women through public and/or community outreach activities, which can be accomplished by the use of tools such as social media.¹¹

Previous research assessing the benefits and limitations of using social media for health education and communication in the general population have been conducted.^{2, 5, 6, 8, 9, 17} However, the actual effect of social networking technologies on health promotion and patient outcomes is unclear. Our goal was to describe the social media habits of breast cancer screening

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eligible patients to identify the utility of this approach to promoting preventive services. Further, we assessed whether the sharing of health information on social media was associated with breast cancer screening behavior.

Methods

Data Source

Data for this study came from the 2013 Health Information National Trends Survey (HINTS). The HINTS is conducted by the National Cancer Institute and is a nationally representative survey of U.S. adults 18 and older containing information about the use of cancer-related information and social media communication trends.

Study Sample

Using the USPSTF guidelines, we limited our study sample to women 50-74 years old.¹⁸ Women with a history of breast cancer or breast surgery were excluded. We excluded those who did not use the internet, as questions related to social media use were only asked to women who were internet users.

Study Measures

The dependent variable was receipt of breast cancer screening, which was operationalized as having received a mammogram within the last 2 years, as recommended by the USPSTF guidelines.¹⁸ The primary independent variable of interest was sharing health information on social media, which was based on the question: "In the last 12 months, have you used the Internet to share health information on social networking sites, such as Facebook™ or Twitter™?"¹⁹

Other independent variables were included to describe the study population. Race was defined as non-Hispanic White, non-Hispanic African American, Hispanic, and other race. Marital status was categorized into married, divorced/widowed/separated, or single/never married. Education was classified as less than high school, completed high school, some college, or college graduate. Household income was categorized into three groups: \$0-34,999 per year, \$35,000-74,999 per year, and \$75,000+ per year. Insurance status was categorized as insured or uninsured. Perceived general health was classified as excellent, very good, good, fair, or poor. Smoking status was categorized into former smoker, current smoker, or never smoked.

Data Analysis

Descriptive statistics were used to evaluate the health information sharing habits of the sample. T-tests and chi-squared tests were used to test for differences in health information sharing using social media and our independent variables. Bivariate logistic regression was used to assess the association between our independent variables and receipt of a mammogram. *A priori* statistical significance was determined at the $p < 0.05$ level. Data analysis and statistical tests were completed using Stata 14.²⁰ HINTS replicate weights were used

to account for the complex survey design and to produce nationally representative estimates.

Results

A total of 731 women ages 50-74 years old were included in the study. Table 1 describes the breast cancer screening eligible population and their health information sharing habits using social media. The average age was 61 years old with a majority of women being White, married, college graduates, and in very good health. Seventy-eight percent of women had a mammogram within the last 2 years. Those who used social media to share health information were significantly younger than those who did not share health information on social media (58.8 years vs 61.9 years, $p < 0.001$). The sharing of health information on social media also differed based on race. A significantly larger percentage of Hispanics (17.8%) and other races (27.0%) chose to share health information compared to Whites (12.9%) or African Americans (8.6%). Only 13% (95/731) of breast cancer screening eligible women used social media to share health information. There were no differences in health information sharing rates based on marital status, insurance, education, income, perceived general health, and smoking status of the participants.

Table 2 shows bivariate relationships between breast cancer screening behavior and the independent variables. Women who were divorced/widowed/separated were 49% less likely to get a mammogram compared to those who were married (OR: 0.51, CI: 0.28 - 0.91). Additionally, women who had some college education were 51% less likely to get a mammogram compared to those who were college graduates (OR: 0.49, CI: 0.26 - 0.92). Women with a household income of \$0-34,999 per year and those with a household income of \$35,000-\$74,999 per year were significantly less likely to have had a mammogram than women with a household income of \$75,000+ per year (OR: 0.15, CI: 0.06 - 0.05 and OR: 0.26, CI: 0.12 - 0.53, respectively). Lastly, current smokers were 72% less likely to obtain a mammogram than women who had never smoked (OR: 0.28, CI: 0.12 - 0.67). There was no association between breast cancer screening behavior and health information sharing status (OR: 0.79, CI: 0.35 - 1.80).

Discussion

Pharmacists are increasingly taking on greater involvement in public health initiatives, particularly in the community pharmacy setting. Social media has been promoted as a way for pharmacists to foster engagement and dialogue about medications and public health topics, such as breast cancer, with their patient populations.⁶ However, we found that a minority (13%) of breast cancer screening eligible women used social media such as Facebook™ or Twitter™ to share health information. It is likely that privacy and confidentiality concerns about sharing personal health information on social media may have contributed to this result.⁶ Another study examining the sharing of health information online found that only 23% of

respondents reported using Twitter™ to share health information.²¹ This is an important limitation of using social media to communicate preventive health information to patients.

Content analyses of breast cancer specific Facebook groups show that a majority of groups are created for fundraising or raising awareness about the disease.²² Only 7% of these groups were devoted to support groups for individuals who have survived, are battling or have died from breast cancer.²² Another study found that tweeting about breast cancer did not promote any specific preventive behavior and is mostly used as a one-way communication tool.⁹ However, anonymous online forums, such as message boards and support groups, provide information, emotional support and an avenue for self-expression.²³ Future research could focus on determining why individuals choose to share health information on social media and what they hope to obtain from it, as well as why others choose not to do so. A better understanding of how and why people share health information from sources such as pharmacies or health departments is necessary before widespread use of this approach can be recommended.

We identified racial differences in the sharing of health information using social media, where a higher percentage of Hispanics and other races chose to share health information on social media compared to African Americans and Whites. This finding corresponds with research showing that a higher percentage of Hispanics use Facebook™ and Twitter™ compared to Whites.⁴ Hispanics come from a collectivistic culture and they tend to prefer group activities, shared responsibility and collective accountability.²⁴ Therefore, it is possible that the tendency for Hispanic populations to look to others to help guide decisions may make it more likely for them to consider reaching out through social media. Thus, pharmacists trained in providing culturally competent care may be able to advocate breast cancer screening to this population using social media.²⁵

Women who used social media to share health information were also significantly younger than those who did not. A 2014 report found that 65% of adults age 50-64 years used social media, whereas only 49% of adults age 65 and older used social media.²⁶ This indicates that social media may be a better tool for health promotion in younger women, although it may still reach a subpopulation of older women. Our findings were also consistent with previous studies, which found lower rates of cancer screening among women who have low income, currently smoke, and are uninsured.²⁷

Even though no association was seen between social media use and mammogram rates, social media holds potential for health support, intervention and promotion campaigns. For example, Attai et al. found that participation in a breast cancer Twitter™ support group increased patient knowledge regarding the

disease condition and management and significantly decreased anxiety levels.²⁸ The use of social media for professional purposes is underutilized and holds promise for the field of pharmacy.^{6, 29} Further exploration is needed to identify the potential of how social media use by pharmacists and pharmacy organizations can have a meaningful impact on public health initiatives.

Limitations

This is a cross-sectional study and causal relationships between social media and breast cancer screening cannot be established. The HINTS provides information about who did and did not share health information on social media; however, we do not know the reasons why women chose to share health information. This makes it difficult to assess the feasibility of using social media as a tool for promoting mammograms. Only a small proportion of women in our sample shared health information on social media, limiting our ability to detect a significant relationship between breast cancer screening and health information sharing behavior. Lastly, the data do not specify whether the shared health information was “specific” or “general” in nature. It is likely that a tweet from a relative about breast cancer diagnosis (specific) may have a larger impact than a tweet from CDC about breast cancer awareness (general).

Conclusion

Women who used social media to share health information were significantly younger and varied by race. However, no association was evident between health information sharing behavior and breast cancer screening. Future research is needed to understand why people share health information online and what they hope to obtain from it.

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Conflict(s) of Interest: None

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Table 1: Demographic characteristics: Sharing health information on social media

Characteristic	Shared Health Information on Social Media		
	Overall Sample	YES	NO
	Unweighted n= 731 Weighted N= 33,634,797 N (%) or mean (S.D.)	Unweighted n= 95 Weighted N = 5,341,048 N (%) or mean (S.D.)	Unweighted n=628 Weighted N = 27,787,864 N (%) or mean (S.D.)
Age***	61.1 (8.1)	58.8 (6.3)	61.9 (8.4)
Race*			
Hispanic	73 (6.5)	13 (17.8)	60 (82.2)
White	431 (78.1)	55 (12.9)	372 (87.1)
African American	108 (9.5)	9 (8.6)	96 (91.4)
Other	37 (5.9)	10 (27.0)	27 (72.9)
Marital Status			
Married	354 (68.3)	51 (14.5)	302 (85.6)
Divorced/Widowed/ Separated	298 (24.4)	36 (12.4)	255 (87.6)
Single	75 (7.3)	7 (9.3)	68 (90.7)
Insurance			
Insured	679 (92)	85 (12.7)	587 (87.4)
Uninsured	45 (8)	10 (22.7)	34 (77.3)
Education			
Less than High School	24 (3.6)	3 (12.5)	21 (87.5)
Completed High School	132 (21.6)	13 (9.9)	118 (90.1)
Some College	247 (35.7)	29 (12)	213 (88)
College Graduate	326 (39.1)	50 (15.4)	274 (84.6)
Income			
\$0-34,999	196 (22.6)	19 (10)	172 (90)
\$35,000-74,999	238 (35.7)	42 (17.8)	194 (82.2)
\$75,000+	205 (41.7)	30 (14.6)	175 (85.4)
Smoking Status			
Current	75 (10.7)	15 (20.3)	59 (79.7)
Former	233 (31.3)	33 (14.3)	197 (85.7)
Never	415 (58)	47 (11.4)	365 (88.6)
General Health			
Excellent	87 (12.2)	10 (11.5)	77 (88.5)
Very Good	269 (39.8)	35 (13.2)	230 (86.8)
Good	264 (38.7)	33 (12.7)	227 (87.3)
Fair	75 (8.4)	11 (14.7)	64 (85.3)
Poor	12 (0.97)	0 (0)	12 (100)
Mammogram			
Yes	572 (78)	72 (12.7)	495 (87.3)
No	148 (22)	21 (14.4)	125 (85.6)

t-tests and chi-square tests assess the difference between sharing health information on social media and independent variables
*p<0.05, **p<0.01, ***p<0.001

Table 2: Bivariate relationships: Associations with obtaining a mammogram

Characteristic	Unadjusted Odds Ratio (95% CI)
Age	0.99 (0.96 to 1.03)
Race	
Hispanic	0.56 (0.21 to 1.52)
African American	1.69 (0.68 to 4.14)
Other	1.89 (0.28 to 12.65)
White	Reference
Marital Status	
Divorced/Widowed/Separated	0.51* (0.28 to 0.91)
Single	1.09 (0.43 to 2.80)
Married	Reference
Insurance	
Insured	13.06*** (4.52 to 37.69)
Uninsured	Reference
Education	
Less than High School	1.24 (0.33 to 4.67)
Completed High School	1.07 (0.42 to 2.70)
Some College	0.49* (0.26 to 0.92)
College Graduate	Reference
Income	
\$0-34,999	0.15*** (0.06 to 0.05)
\$35,000-74,999	0.26*** (0.12 to 0.53)
\$75,000+	Reference
Smoking Status	
Current	0.28** (0.12 to 0.67)
Former	1.18 (0.70 to 2.00)
Never	Reference
General Health	0.72 (0.50 to 1.04)
Shared health information on social media	
Yes	0.79 (0.35 to 1.80)
No	Reference

*p<0.05, **p<0.01, ***p<0.001