

What Do Patients Tweet About Their Mammography Experience?

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Rationale and Objective: The purpose of this study was to evaluate themes related to patients' experience in undergoing mammography, as expressed on Twitter.

Methods: A total of 464 tweets from July to December 2015 containing the hashtag #mammogram and relating to a patient's experience in undergoing mammography were reviewed.

Results: Of the tweets, 45.5% occurred before the mammogram compared to 49.6% that occurred afterward (remainder of tweets indeterminate). However, in patients undergoing their first mammogram, 32.8% occurred before the examination, whereas in those undergoing follow-up mammogram, 53.0% occurred before the examination. Identified themes included breast compression (24.4%), advising other patients to undergo screening (23.9%), recognition of the health importance of the examination (18.8%), the act of waiting (10.1%), relief regarding results (9.7%), reflection that the examination was not that bad (9.1%), generalized apprehension regarding the examination (8.2%), interactions with staff (8.0%), the gown (5.0%), examination costs or access (3.4%), offering or reaching out for online support from other patients (3.2%), perception of screening as a sign of aging (2.4%), and the waiting room or waiting room amenities (1.3%). Of the tweets, 31.9% contained humor, of which 56.1% related to compression. Themes that were more common in patients undergoing their first, rather than follow-up, mammogram included breast compression (16.4% vs 9.1%, respectively) and that the test was not that bad (26.2% vs 7.6%, respectively).

Conclusion: Online social media provides a platform for women to share their experiences and reactions in undergoing mammography, including humor, positive reflections, and encouragement of others to undergo the examination. Social media thus warrants further evaluation as a potential tool to help foster greater adherence to screening guidelines.

Key Words: Mammography; social media; patient experience; breast cancer.

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INTRODUCTION

Early detection of breast cancer by screening mammography is associated with reduced breast cancer mortality (1,2). In addition, the American Cancer Society currently advises regular screening mammography in average risk patients (3). However, rates of screening mammography within the United States are suboptimal, with many women failing to undergo the examination (4,5). Reasons for guideline nonadherence are multifaceted. Of note, patients' perceptions and attitudes regarding the test influence their decision whether to seek screening. For example, patients may be fearful of pain or discomfort during the examination, harbor anxiety of a possible unfavorable result, or lack awareness of screening guidelines and the examination's health benefits (6–9).

Twitter is a public microblogging social media network with an estimated 500 million Tweets per day (10). Given its rapid and open discourse among any individuals with Internet access, as well as ease of accessing prior microblogging activity on a given topic, Twitter has developed into a valuable resource for health services research (11,12). One past study used Twitter to gain insights into the patient experience in undergoing magnetic resonance imaging (13). The dominant themes represented by the tweets differed somewhat from an earlier study using a more conventional data collection method (14). In a similar fashion, Twitter may provide a means of gaining deeper understanding of patients' perception of the experience of undergoing mammography. Therefore, our aim in this study was to evaluate themes related to the patient experience in undergoing mammography, as expressed on Twitter.

METHODS

This retrospective study was completed in a Health Insurance Portability and Accountability Act (HIPAA)-compliant fashion and was approved by our institutional review board, which waived the requirement for written informed consent. Tweets were identified using Symplur (Symplur, LLC; Upland, CA), a publicly available search engine for identifying tweets based on a given hashtag [a word or phrase relating to a

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particular theme, preceded by the pound sign (#)]. Specifically, Symplur was used to identify all tweets from July through December 2015 containing the hashtag “#mammogram” (15), yielding approximately 8850 tweets. Hashtags such as “#breastcancer” and “#BCSM” (routinely used by Twitter users to reference breast cancer social media) were not used, given the study’s targeted focus on the patient experience in undergoing mammography. In addition, the hashtag “#mammogram” was selected rather than “#mammography#” based on preliminary Symplur searches demonstrating much larger search results for the former hashtag. Given the lack of geographic information regarding the tweets, no exclusions were made based on the geographic location from which tweets originated.

The tweets resulting from the initial search were then manually reviewed to identify those in which the Twitter user was posting regarding their own personal experience in undergoing a mammogram. The experience of undergoing a mammogram was considered broadly, from the time of initial scheduling through receipt of results, such that tweets in reference to upcoming, ongoing, or completed mammograms were included. Examples of excluded tweets included those by health-care organizations; those describing the experience of a different individual (eg, a family, friend, or celebrity) in undergoing a mammogram; and those relating to mammography in general, but not a specific mammogram experience (eg, the user tweeting their agreement with current screening guidelines). In addition, both formal retweets (indicated per conventional Twitter notation by a prepended “RT” string) and duplicated tweets not formally labeled as a retweet, were excluded. This process resulted in a final set of 464 Tweets for analysis.

The tweets were evaluated in consensus by a board-certified radiologist and radiology trainee, both with prior experience in health services research using Twitter (16,17). Tweets were initially coded as to whether (1) relating to a patient’s first mammogram or a follow-up mammogram, and (2) whether occurring before or after the patient’s mammogram. These items were left blank when unclear based on the Tweet’s content. In addition, all tweets were coded in terms of whether including content relating to a broad range of themes relevant to undergoing mammography. The two reviewers first reviewed the included sample of tweets without performing any coding to generate this list of themes before performing a subsequent formal assessment and coding. Individual tweets could be coded as relating to one, multiple, or none of the classified themes. When the tweet contained a link to a picture, video, or blog post by the users regarding their experience in undergoing mammography, this other linked content was also viewed and its content included in the tweet’s classification.

Data were evaluated using standard summary statistics. The frequencies of the themes were assessed for all tweets, as well as for subsets of tweets representing patients’ first and follow-up mammogram as well as tweets occurring before or after the patient’s mammogram. The most common theme in-

TABLE 1. Characteristics of 464 Included Tweets

Characteristic	Frequency
First mammogram	13.1% (61)
Follow-up mammogram	14.2% (66)
Tweeted before the examination	45.5% (211)
Tweeted after the examination	49.6% (230)
Link to other social media post	14.9% (69)

volving humor was also computed. This analysis was performed using Excel for Macintosh (Microsoft Corporation; Redmond, Washington).

RESULTS

Of the 464 included tweets, 13.1% related to a patients’ first mammogram and 14.2% related to a follow-up mammogram (Table 1). Of the tweets, 45.5% occurred before the mammogram, whereas 49.6% occurred after the mammogram. Among the Tweets relating to a patient’s first mammogram, 32.8% occurred before the examination. In comparison, among the tweets relating to a follow-up mammogram, 53.0% occurred before the examination. A link to a photo, video, or blog post by the patient regarding the experience occurred in 14.9% of tweets.

Table 2 demonstrates the frequencies of major themes relating to the experience of undergoing a mammogram. Most common themes included breast compression (24.4%), advising other patients to undergo screening (23.9%), and recognition of the health importance of the examination (18.8%). Less common themes included the act of waiting (10.1%), relief regarding results (9.7%), reflection that the examination was not that bad (9.1%), generalized apprehension regarding the test (8.2%), interactions with staff (8.0%), the gown (5.0%), and offering or reaching out for online support from other patients (3.2%). A range of other themes was present in fewer than 3% of tweets (Table 2). Of the tweets, 31.9% (148) contained humor, of which 56.1% (83/148) related to breast compression. The specific radiology practice of the examination was indicated by 14.7% of the tweets. Themes that were more common in patients undergoing their first rather than a follow-up mammogram included breast compression (16.4% vs 9.1%, respectively) and the test being not that bad (26.2% vs 7.6%).

DISCUSSION

Given the ongoing debate over the value of screening mammography among popular media, policy makers, as well as the medical community, patients themselves often have varying opinions regarding the benefits of mammography. Within this context, we used Twitter to identify major themes expressed by patients relating to their experience in undergoing mammography. These themes encompassed a range of emo-

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