

2015

Organizational Twitter Use: A Qualitative Analysis of Tweets During Breast Cancer Awareness Month

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ORGANIZATIONAL TWITTER USE: A QUALITATIVE ANALYSIS OF TWEETS
DURING BREAST CANCER AWARENESS MONTH

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Mass Communication

in

Theanship School of Mass Communication

by

Pratiti Diddi

M.A, Guru Gobind Singh Indraprastha University, 2009

May 2015

I dedicate this thesis and the work entailed to my parents, Manoj Kumar Diddi and Sheela Diddi. I can't thank you both enough for your unconditional love and support in everything I do. You have taught me through your own examples the importance of passion, persistence and honesty in all endeavors of life. Thank you so much for always being there by my side, guiding, encouraging me and for supporting my decisions. You two mean the world to me, and I love you both beyond words. I will always strive hard to make you two proud of your daughter.

ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge my committee chair, Dr. Lisa Lundy. Thank you for always believing in me, and for showing support that people would be interested in learning about my research. Thank you so much for investing in my research interests, providing invaluable guidance throughout the process and for always wishing me best for a bright future. Your encouragement, work ethics, teaching style and passion, inspire and motivate me to go beyond and above. Over the course of these two years- working with you as your Research assistant, attending the classes that you taught and finally having you as my thesis chair has been an incredibly rewarding journey. I have learnt so much from you. You are forever appreciated.

I would like to thank my committee members, Dr. Christopher Mann and Dr. Kasey Windels, for their feedback and commitment to my study and research interests. I appreciate your sound advice, insightful comments, and understanding throughout the thesis process and for all that you two have taught me in the classroom studies.

A special thanks to Dr. Meghan Sanders for being an exceptional mentor and advisor, for always answering every one of my questions and for helping me strengthen my research skills. Thanks for always providing guidance, support and encouragement academically and beyond. I'm really grateful that you gave me the opportunity to be a part of the Media Effects research group. I have learned so much through this research experience and by working with a wonderful team.

I would like to thank Dr. Amy Reynolds for always being there for me from the moment I inquired about the Manship Masters Program in June 2013 to throughout my studies. Your

encouragement, support and steadfast council has helped me navigate the Masters program effectively.

I would also like to thank fellow graduate students in the Manship School who have been tremendously supportive throughout my studies and research.

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ABSTRACT

One in eight women will develop breast cancer in her lifetime. The best-known awareness event to fight the health issue is Breast Cancer Awareness Month (BCAM). Twitter is a growing source of health information amongst users; however, little research exists into understanding how various organizations use their Twitter accounts to communicate about breast cancer during BCAM, as well as implications of this use for the health information consumers. In this context, there is also a dearth of research about if, and how organizations use behavioral change theories to tailor their social media content or not.

The paper explored through qualitative content analysis how four different health related organizations- Susan G. Komen, US News Health, Woman's Hospital and Breast Cancer Social Media use their Twitter accounts to talk about breast cancer during the Breast Cancer Awareness Month (BCAM). In this study, all the tweets by these organizations were analyzed through the framework of behavioral change theory- Health Belief Model (HBM). The main purpose of this research study was to examine the tweets of the varied organizations for the presence or absence of theoretical constructs of Health Belief Model such as perceived threat, perceived benefits, perceived barriers and cues to action, which inform about the potential for users to take protective action against breast cancer.

A content analysis based on theoretical lens of Health Belief Model (HBM) of 2916 tweets revealed that majority of the tweets posted by these organizations did not reflect the theoretical constructs of Health Belief Model. Out of all the tweets that represented the theoretical constructs, it was observed that "perceived barrier" (n= 781, 26.37%), was in the maximum number. This was followed by "cues to action" (n= 711, 24.01%), "perceived benefits" (n=397, 13.40%) and "perceived threat" (n=230, 7.76%). Overall the study

demonstrated that different organizations shared valuable breast cancer related content on Twitter and each Twitter outlet took a different approach to its use of Twitter, evident through focus on different types of breast cancer related content, use of elements like hashtags and videos etc.

CHAPTER 1: INTRODUCTION

Breast cancer is the most common type of cancer in women worldwide, regardless of race and ethnicity (Centre of Disease Control and Prevention, 2014). With an estimate of more than 1.7 million new cases of breast cancer occurring in women worldwide in 2012 (IARC & WHO, 2012), it is estimated that one in eight women develop breast cancer in their lifetimes (Altekruse et al 2007). In 2013 alone, over 39,000 women died from breast cancer (Siegel et al, 2013). In 2014, it is estimated that there will be 40,000 breast cancer deaths among U.S. women and 430 breast cancer deaths among U.S. men (American Cancer Society, 2014).

Today the spread of breast cancer awareness messages is not limited to traditional media outlets as people are increasingly using social media platforms for both finding and sharing information (Thackeray et al, 2013). The use of these platforms for accessing health related information has grown in recent years (Harris et al, 2014). Online media have become popular in health communication as eight-in-ten Internet users look online for health information (Shapiro, 2007). Social media sites are the new health communication channels that enable people to find and share information about their health and medical conditions, communicate and interact with a larger number of people, and receive health messages (Moorhead et al., 2013).

Although the social media platforms are relatively new, these applications have already shown some changes in health communication patterns (Chou et al., 2009) vis-a-vis interaction between patients and doctors (Hawn, 2009). Public health practitioners and healthcare providers use social media platforms (Harris et al, 2013) for a variety of purposes ranging from sharing information with each other during training and practice (Chu et al, 2010; Kapp et al, 2009) to managing large-scale emergency situations (Hagar, 2013; Yates & Paquette, 2011) and facilitating behavior change (Frost & Madagli, 2008). In addition, social media platforms are

also used for conducting surveillance (Signorini et al., 2011; Moorhead et al, 2013) and reaching the wider public to inform, educate and empower about health issues (Jones, 2011; Sublet et al, 2011; Vance et. al, 2009).

The web and mobile-based features and application of the social media platforms facilitate quick dissemination of health information (Robillard et al, 2013). Not only are these platforms easy to use and access, they can reach a wide array of audiences in a very short span of time facilitating information exchange. As per Robillard et al., social media allows for new channels of information that range from traditional top-down dissemination to peer-based discussion and exchange (2013).

According to the Pew Internet Project (2014), 74 percent of online adults are using social networking sites. Pew Report (2011) suggests that “23% of adult social media users follow their friends’ personal health experiences or updates, 17% use social media to remember people with a specific health condition, and 15% obtain health information from social media sites” (as cited in Harris et al, 2014, p.1). People prefer social media over traditional media like television when seeking health-related information in pandemic situations (Biswas, 2013). According to Pew Research News Interest Index Survey results, almost half of the American public sought information from the Internet about the H1N1 flu virus alongside television channels, and about 25% respondents reported to find the online information more useful and informative than the cable news (Kohut et al, 2009). In similar vein, Chou and colleagues (2009) indicate in their research findings that the majority of people seeking health information online are more likely to use social networking sites than online support groups and blogs.

One of the most popular social media applications available today is Twitter. The microblogging service, twitter.com, lets users broadcast their thoughts, ideas etc. in the form of

status messages known as tweets. Rather than being seen as a platform to update your friends about what you had for breakfast—as it was seen during its early days—Twitter today is a powerful channel for communication and information in 140 characters or less.

There is an increasing interest in analyzing social media data, Twitter in particular, to gain insights about online activities and their impact (Takhteyev et al, 2012; Prochaska et al, 2012). While research into Twitter is still in its infancy, creative new uses of this platform are clearly emerging. Twitter content has been used in a wide range of contexts, from the detection of real-time events, such as earthquakes (Sakaki et al, 2010), to the evaluation of word-of-mouth communication about corporate brands (Jansen et al, 2009). The potential impact of Twitter on offline behaviors has been demonstrated in the context of emergency events such as hurricanes and floods, where Twitter is used for information broadcasting and brokerage (Hughes, 2009; Vieweg and Palen, 2009).

While little data focus specifically on microblogging and health, Twitter content has been studied for tracking flu epidemics (Chew and Eysenbach, 2010) and to assess public misunderstandings surrounding antibiotic use (Scanfeld et al 2010). Despite its widespread use by the public and public health professionals, there remains a shortage of evidence regarding the influence of social media on public health (Moorhead et al., 2013; Thackeray et. al, 2013; Neiger et al, 2012). Some studies suggest that analyzing content such as tweets can be a productive way to evaluate discourse surrounding health and disease (Chew and Eysenbach, 2010; Scanfeld et al, 2010). Examining social media like Twitter can provide unique insights into the health information reaching, and possibly influencing, large segments of the general population (Shive et al. 2013). This indicates that Twitter can potentially have a big role to play in online health

campaigns. This research study will examine if Twitter works as an effective social media platform communicating about Breast Cancer.

Given the opportunities, social networking sites like Twitter can provide for communication about health issues, this study, in particular will attempt to explore how varied organizations like non-profits, media sources, health care providers/hospitals and online support groups use Twitter to communicate about the health issue of breast cancer during the Breast Cancer Awareness Month (BCAM).

In addition to exploring the kind and type of communication that happens via the tweets of these organizations in context of breast cancer, this paper also examines if the content of these tweets are based on some kind of theoretical models of behavior change or not. Research has shown that behavioral change theories play a pivotal role in designing effective health promotion activities online (Korda & Ithani, 2013) and for “developing communications designed to promote healthy and/or prevent or alter unhealthy behaviors” (Fishbein & Capella, 2006, p.51). Kreuter et al. (2000) suggest that when health messages are tailored based on behavioral theories, they can improve behavioral outcomes, including “public adherence to cancer prevention and detection recommendations” (as cited in Jensen et al., 2012, p.1).

Webb et al. (2010) conducted a meta-analysis of 85 studies and his findings revealed that when the health-related interventions are guided by theories of social and behavioral change, they are more likely to trigger desired health-related change in comparison to interventions that are not based on any theoretical foundations. Popular theoretical models for behavior change such as the Health Belief Model (HBM), Theory of Reasoned Action (TRA), and the Transtheoretical model are known to “advance intervention efficacy for both social media and traditional health promotion approaches” (Korda & Ithani, 2013, p. 19).

While many health-behavior change theories were examined as potential theoretical lens for this study, theory of Health Belief Model really stood out because of its well-explained definitions of the constructs and variables they proposed to influence health behavior change that consequently could be useful in evaluating tweets posted by the organizations. Even though Health Belief Model is one of the most important health communication theories used in regard to promoting breast cancer awareness and screenings (Pasick & Burke, 2008), not much work has been done in context of how social media platforms of health-related organizations use this theoretical intervention to communicate about breast cancer to audiences. For this reason, this paper aims to fill that gap by understanding how varied health-related organizations tailor their tweets/content about breast cancer during Breast Cancer Awareness Month (BCAM) as per the behavioral change theory of Health Belief Model.

An analysis of such organizations' use of Twitter is likely to enhance our understanding of the kind of roles social media platforms can play towards health communication on issues like breast cancer. This study, therefore, contributes valuable insights into how platforms such as Twitter can be used by organizations for running effective online health awareness campaigns, trigger the necessary health behavioral change, and promote a healthier society by improving health literacy about breast cancer.

The paper begins with a literature review that explores the topics of Twitter, its role in health communication, theoretical framework of Health Belief Model (HBM) and the role of theory in understanding health communication in the context of breast cancer. The paper then explains the methodology of the content analysis of a sample from a month of tweets from the Twitter feeds of organizations such as Susan G. Komen [@SusanGKomen], Woman's Hospital [@WomansHospital], US Health News [@USHealthNews] and Breast Cancer Social Media

[@BCSMChat] followed by a report of the findings. The paper concludes with an analysis and discussion of the findings and implications for the future of online health communication and health literacy.

CHAPTER 2: REVIEW OF LITERATURE

About Twitter

Among a multitude of social media platforms, Twitter is the world's largest microblogging service and third largest social network site after Facebook and YouTube (Parmalee & Bichard, 2012). Jansen et al. (2009) describes Twitter as a microblog i.e. a small derivative of a regular blog, albeit with content in form of short tweets comprising 140 characters or less. These short messages in form of tweets are often delivered to a network of associates, enabling the users to share updates with a network of followers (Jansen et al., 2009). Miller (2008) describes tweets as "kind of a cross between social networking, blogging and text messaging. It allows people to keep in touch with friends through internet and mobile devices" (p. 396).

According to Kwak et al. (2010), a tweet can be categorized as a 'Singleton', a 'Mention', a 'Reply' or a 'Retweet'. Kwak and colleagues describe singleton tweet as tweet posted by a specific user without the use of the '@' sign. While they describe 'Reply' as a tweet which has '@' sign followed by username, 'Retweet' is the tweet marked with RT (Kwak et al., 2010). Larsson et al.(2012) further elaborates on the typology of Twitter, explaining various characters that are used in conjunction with tweets to signify a particular form of communication. The users annotate "@" sign as a marker of addressivity and to facilitate conversations. For instance, if a tweet includes "@username" it symbolizes that the content of the tweet is directed for or relevant to a particular user (Larsson et al.,2012).

Tweets are often known to include hashtags (#), which are simply the words or phrases that help the content of the tweet to be connected to some specific theme. Hashtags facilitate the users to search Twitter for particular topics that interests them and also enable them to follow the

varied discussions happening on the Twittersphere related to those specific topics (Larsson et al., 2012). Retweets (RT), on the other hand simply means to repost the tweet content already posted by some other user (Kwak et al., 2010). In this context, retweeting is akin to “the act of copying and rebroadcasting,” (Boyd, Golder, & Lotan, 2010, p. 1). Retweeting thus helps in engaging new people in a certain conversation as “a form of information diffusion and as a means of participating in a diffuse conversation” (p. 1). The act of following someone on Twitter is not automatically reciprocal (Larsson et al., 2012). In simple words, while a user can follow any number of people on Twitter, it’s not necessary that the one being followed will have to follow back. Twitter offers a glossary of terms on its website to help new users better get acquainted with and better understand the varied features of Twitter (see Table 1).

Table 1.- Applications and features of Twitter

Term	Definition
Twitter	A social media platform where users share information in 140 characters of text or less
Tweet (noun)	A message posted via Twitter containing 140 characters or less. A tweet may contain photos, videos, links up to 140 characters of text.
Tweet (verb)	The act of sending a Tweet. Tweets get shown in Twitter timelines or are embedded in websites and blogs.
Mention	Mentioning other users in your Tweet by including the @sign followed directly by their username is called a “mention”. Also refers to Tweets in which your @username was included. The user is notified of all the mentions
Reply	Reply is similar to mention. It is presented as @username being included in a tweets as a way to reply to user, therefore enabling a conversation
Retweet	A tweet that you forward to your followers is known as Retweet (RT). Often used to pass along news or other valuable discoveries on Twitter, Retweets always retain original information. A highlighted green symbol of two looping arrows denotes a retweet.
Hashtag	A hashtag is any word or phrase immediately preceded by the # symbol. Hashtags are clickable and display tweets containing same keyword or topic. Hashtags can be searched by other users

(Table 1 contd.)

Photo	A photo can be included in a tweet and will expand in users' twitter feed.
Video	A video can be included in a tweet and can play right in a users' twitter feed.
Link	A clickable link can be added to a tweet and will take up the necessary character space.
Favorite	Favoriting a tweet sends a positive notification to the message's author showing that a user has liked a tweet. A favorite is shown as a star symbol.

Source: <https://support.twitter.com/articles/166337-the-twitter-glossary>

Twitter is quite different from social networking sites like Facebook and YouTube, and has particular potential to be a strong force in adding to public discourse due to its open, horizontal, and broadly-networked architecture. Unlike Facebook, which defaults to restricted access due to its various privacy settings and where, in-network exposure to other users' posts that are limited to 'friends' alone, Twitter posts are disseminated publicly and can be easily viewed by all users (unless they are restricted from public view) (Park, 2013). Users can set their Twitter profile to private or they can keep it public, enabling the entire Twitterverse to view their tweets/updates (Park, 2013).

Consequently, Twitter users are more likely to interact with people who are friends of friends, celebrities, politicians, and strangers, thereby providing a unique opportunity to determine who participates in online communication. This open system of Twitter creates a venue for users to respond to other users, thereby making it a vibrant forum for friendship driven online participation, political information sharing and public discourse (Kim, 2011). This open system of Twitter, therefore can also have implications for health communication.

Updates or posts on Twitter are made by succinctly describing one's current status within a limit of 140 characters. Due to the advantage of brief messages, Twitter lowers users' requirement of time and thought investment for content generation, facilitating communication

flexibility, interactivity, and speed. Users are able to post links to news stories, share and discuss those topics instantaneously (Park, 2013). Although the tweets are limited to only 140 characters, the content by tweets is shared is often very rich, especially through providing links to full length stories, relevant websites, pictures, and videos (Lyles et al., 2013). Majority of the early studies pertaining to Twitter are largely focused on describing various everyday uses of the service. Larsson et al. (2012) cites few such studies. For instance, Marwick and Boyd (2010) analyzed different audience management techniques as employed by Twitter users. Java et al. (2007) identified four general categories of Twitter use: Daily chatter, i.e. posts regarding daily events and thoughts; sharing information where URLs are distributed via the posts; conversations using the @ character, and reporting news, where ‘users report latest news or comment about current events’ (2007) (as cited in Larsson et al., 2012, p.731). In addition, some of the studies tried to link Twitter with professional use (Grace et al., 2010), and education and grades (Junco et al., 2011).

Twitter and Health communication

According to Fox and Jones (2009), more than half of the adult population (57%) tries to look for answers for health-related queries and information exchange on the Internet. Out of these 57%, 12% of them turn to Twitter and other services to get information about varied health issues. These numbers have gone up in the recent years. Researchers Dredze and Paul (2011), revealed that out of 2 billion messages that were posted on Twitterverse during the time period between May 2009 and October 10, approximately 1.5 million tweets were about health issues (as cited in Sneiderman, 2011). According to PWC Health Research Institute’s 2012 report, a full one-third of U.S. consumers are using YouTube, Facebook and Twitter to find medical information, research and share their symptoms, and offer opinions about doctors, treatments,

drugs, and health plans. The role of Twitter as a health communication platform is not limited to providing health information to people or guiding them in avoiding potential health risks. It is increasingly serving as a communication bridge between public and healthcare providers, enabling interaction between the two via means of asking questions online (Jessen, 2008).

One of the biggest factors that allow Twitter to be an effective health communication tool is its ability to deliver information to a large group of audiences, enabling organizations to reach the target audience with no significant amount of effort in no amount of time (Park, 2013). According to Park and colleagues (2013), the short yet informative tweets often emerge as important topics of discussion in the Twitter-sphere consequently becoming trends through retweeting. This process facilitates the “flow of health information by virtue of a dynamic and evolving ecology of networks” (Park, Rodgers & Stemmler, 2013, p.412).

According to Jessen (2008), Twitter is a cost effective and convenient way for health organizations to reach out a wider public when it comes to dissemination of health information like medical alerts. Biswas (2013) reports that social media was extensively used by health departments and health agencies like WHO (World Health Organizations) and CDC (Center for Disease Control and Prevention) to provide regular updates during the outbreak of H1N1 in 2009. In addition, there are various popular healthcare campaigns, and organizations, that use the media platform of Twitter for promoting health education and literacy. Some of the prominent health organizations are National Institutes of Health (@NIHforHealth), Agency for Healthcare Research and Quality (@AHRQNews) and Centers for Disease Control and Prevention (username, @CDCgov) (Lyles et al., 2013).

On one hand there is a section of research that paints an optimistic picture about the usage and potential of Twitter in information dissemination, and communication of health issues.

On the other hand there is another competing set of research that suggests otherwise. According to a recent Pew Research Study (2015) focusing on how Twitter serves as a source of news and how it enables the local residents to become participants in it, it revealed that it is difficult to find local news on Twitter. The study gives a sneak peek into understanding the media environment through the lens of Twitter, suggesting that there is lack of spread of local news/information on the Twitter account of the news organizations. While the findings have significant implications for news organizations in context of ineffective Twitter use, it also clearly questions the wide reach that Twitter is generally estimated to have. The study suggests that Twitter's potential reach is not as huge and overreaching as generally thought to be. Twitter's reach and engagement with the audience is limited to only those people who opt-in, which more than often are very few in numbers.

In another similar study related to news media, organizations and their use of Twitter, scholar Kreiss (2014) focusses on the agenda setting effect that happens on this social media platform. The study discusses how digital staffers working on the presidential campaigns use strategic communication on Twitter in way that "influences the agendas and frames of professional journalists," (p.1) consequently priming them to choose what to cover and what to exclude. His findings suggest that Twitter can be used by organizations as a tool of manipulating the media as well. It appears that the way information flows from digital staffers to the professional journalists is quite similar to two-step flow of communication theory proposed by Katz and Paul Lazarsfeld in early 1940s. According to the two-step model theory, mass media doesn't exert direct influence on the audience, rather, the effect of media is indirectly established via the personal influence of the opinion leaders. In the case of Kresis's (2014) study, the digital staffers, instead of being typical opinion-leaders who are usually influencers, they form another

intermediary layer between the organization and the media. Thus, the communication pattern becomes more like a chain where the flow of information is now between the organization, the influencers and the audience. In context of this study where Twitter is being used for manipulation purposes, the optimism regarding Twitter's reach and engagement should be surely kept under check.

While both the aforementioned studies are in the realm of politics and news media organizations using Twitter, it is quite likely that similar effects can be seen when Twitter is used for the purpose of health communication. Since, Twitter's reach and impact is not the same as engagement and is heavily dependent on the opt-in of the followers, Twitter's use and potential as a communication platform for spreading breast cancer awareness might be overrated as well.

Even if we assume that there is a growing adoption of Twitter among Internet users for health related purposes, little is known about the broader representation of the type of health discussions that takes place on the Twitter feeds of organizations. The existing literature on organizations has largely focused on a small number of specific breast cancer conditions that have primarily taken one of two approaches. Either the health discussions on Twitter are from the public relations perspective of breast cancer non-profits building transparency, and credibility with publics on social media (Sisco & McCorkindale, 2013), or from the point of view of the detailed analysis of communication between breast cancer patients on Twitter (Sugawara et al., 2012).

There is also extant literature exploring how social media, particularly, Twitter, is being used to increase awareness about health issues, including those identified as part of national health observances (NHO) which are days, weeks, or months dedicated to a focus on specific health topics in the United States (Thackeray et al., 2013). In the early 1990s the United States

government recognized the month of October as an official national health observance for breast cancer awareness- BCAM (Jacobsen & Jacobsen, 2011). The BCAM campaign aims to reiterate the importance of breast self-exam and screening, alongside promoting existing resources that can help motivate people to adopt these health behaviors (Catalano et al., 2013). BCAM campaigns have played a great role in improving care of the breast cancer patients, by facilitating effective and timely preventive measures, diagnoses, research funding, expanding knowledge base of the treatments available, etc. (Lancet, 2007).

BCAM is often associated with increased online searching of information about breast cancer. A study by Glynn and colleagues (2011) showed that during October (i.e. BCAM) there were more on-line searches for the topic of breast cancer than during other times of the year. The findings also indicated that the same trend did not hold for searching for prostate cancer or lung cancer during their respective awareness months. This indicates that over two decades of BCAM activities have resulted in significant awareness levels of breast cancer as a leading cause of death among women (Thackeray et al., 2013).

Currently, breast cancer is the cancer most commonly searched for on the Internet (Quinn et al., 2013). However, there is little research on how various organizations talk about breast cancer during BCAM on social media sites, in particular Twitter. This paper aims to fill that knowledge gap in the literature by attempting to understand and analyze the diversity of Twitter communication by varied organizations viz-a-viz breast cancer.

Theoretical Framework

Health Belief Model (HBM)

Since one of the most important aims for Breast Cancer Awareness Month is to spread awareness about the health condition about breast cancer and to bring about the desired health

behavior change, Health Belief Model theory of behavior change seems to be the most befitting framework for this study. While according to Becker (1974), Health Belief model is the most commonly cited theory in studies related to mammography use in diverse groups, according to Champion and Skinner (2008), Health Belief Model is amongst the most commonly used and well-researched theories that has given direction to explaining changes in health-related behavior modifications.

Health Belief Model was developed by several social psychologists like Hockbaum, Lenventhal, Kegeles and Rosenstock in the early 1950s (Rosenstock, 1966). According to Rosenstock (1974), Health Belief Model (HBM) is a value-expectancy theory that can effectively explain “why people participate in efforts to prevent and detect diseases” (as cited in Brian et al., 2012, p.12). Holwerda (2012) elaborates further, stating that this theory was formulated to answer questions for the health related behavior at the level of individual-decision making. The model sought explanations for why few people utilized health services and why some followed up on health care recommendation and others did not. Most importantly it looked into why some people refused to participate in preventive health care programs like immunizations, screenings etc, that can facilitate timely diagnosis and treatment (Jantz and Becker, 1984). This model emphasizes individuals’ subjective experiences in the context of their perceptions and cognitions as the decision making factors for whether individuals will partake in particular health related behavioral change (Mikhail, 1981).

The Health Belief Model was initially developed with four major constructs or parameters- perceived susceptibility, perceived severity, perceived benefits, and perceived barriers that can play a role in influencing any change in the perception of individuals towards any health related behavior (Corcoran, 2007). Simply put, these cognitive based constructs are

the specific factors that people tend to consider the most, before they finally decide to either adopt or not adopt a recommended change in the health related behavior. Adding to the aforementioned four constructs in Health Belief Model as devised by Rosenstock (1966), Becker (1974) modified and expanded on the model to incorporate a new construct called self-efficacy.

Review of Health Belief Model Constructs

Perceived susceptibility- Perceived susceptibility indicates a “person’s view of the likelihood of experiencing a potentially harmful condition” (Champion, 1984, p.74). Quite simply, this construct refers to an individual’s assessment of their subjective perception of risk of contracting a particular health issue/illness/condition. In the context of breast cancer, perceived susceptibility means to what extent the person assesses that he/she is at risk of contracting and succumbing to breast cancer.

Perceived severity- Perceived severity indicates an individual’s view towards seriousness associated with contracting a particular health condition, how threatening it can be, and its varied potential consequences when left untreated. Becker and Janz (1985) explain that the possible consequences include clinical and medical repercussions like disability, disfigurement, and the social consequences like negative impact on family, social relationships etc.

Perceived Benefits- Perceived benefits refer to the positive results associated with individuals adopting health related behavior. It also indicates the individual’s beliefs that when they adhere to effective actions and proposed preventive behavior, and conversely not perform unhealthy actions, they can reduce their vulnerability to the possible threats and negative outcomes of specific health conditions and illnesses (Rosenstock, 1974; Mattson, 1999).

Perceived Barriers- Perceive Barriers refers to the factors that discourage the individuals from adopting preventive health-related behavioral action (Quick et al., 2012). The barriers can

be of various types ranging from financial, physical, psychological factors, or simply the belief that the “threat does not exist for a particular individual, group or region for specific reasons” (Wheeler, 2011, pg. 29). In context of breast cancer, any factor that decreases individual’s ability to engage in preventive behavior like screenings, treatments can be a perceived barrier.

Cues to Action- Cues to action refer to the specific stimuli that allows and triggers individuals to take action against a health condition or to adopt appropriate health behavior (Quick et al., 2012). The cues to perform the required health behavioral action can be both internal (i.e. body states, symptoms) or external like public events, media programs, conversations with friends etc. (Dutta-Bergman, 2005). These prompts to initiate the desirable health-related action are most effective when they are salient and relevant to the individuals (Naidoo and Wills, 2000).

Self Efficacy- Self-efficacy refers to how confident individuals feel about their ability to execute a recommended health-related behavioral action or preventive behavior. (Dutta-Bergman, 2005). Bandura (1977) explains that self-efficacy beliefs “also determine how obstacles and impediments are viewed.” People who have “low efficacy are easily convinced of the futility of effort in the face of difficulties,” while, people who have “high efficacy” will persevere in the face of deterrents” (p. 194).

All the constructs of the Health Belief Model are integral in predicting in the likelihood of individuals engaging in health related behavioral action. Simply put, this theory indicates if individuals believe that they are at risk, the associated repercussions are very threatening, and there are few preventive methods available that they can adopt to avert the negative outcomes; they are more likely to respond to the cues that prompt them to take action of adopting the healthy behavior (Quick et al., 2012).

The Health Belief Model has been extensively used to study risk behaviors such as dietary compliance, dental hygiene, medication compliance in diabetes and hypertension, contraceptive use, and smoking and alcohol use (Becker et al., 1977; Sheeran & Abraham, 1996) (as cited in Wood, 2008, p.91). This theoretical model has also been used to study breast cancer. Vienot & Manderachia (2004) used this model to study the varied factors that affects women's compliance to the mammography screening guidelines. In their study of 179 participants they observed that health care provider recommendations coupled with information and awareness about the potential risks and benefits associated with mammograms, are likely to increase the chances of women's compliance to screening guidelines. (as cited in Wood (2008), p 91). Similarly, Cappelli et. al. (2001) used Health Belief Model to study varied perceptions of increased personal risk, greater perceived benefits, and fewer perceived costs that were associated with interest in gene testing in women who were at higher risk of breast cancer. In their study of 193 women, the researchers found that more women belonging to the high-risk group preferred being tested in comparison to the women in the general population (as cited in Wood (2008), p 91). In another study by Ersin and Bahar (2011), researchers used the Health Belief Model to investigate the perceived facilitating and inhibiting factors concerning early diagnosis of breast cancer in Turkish women over the age of 40 years.

The most compelling rationale for selecting Health Belief Model as the theoretical framework for this research is that most of the prior researches have used this behavioral change theory from a limited perspective of understanding and studying the audience better, and as predictors of health related behaviors. As explained above, this theory when used in various experiments and survey research sought to answer what compels and stops people from adopting a desirable health related preventive and protective behavior. While the focus and usage of the

constructs of this theory have been from audience perspective alone, its potential to be utilized from the perspective of the organizations remained unexplored. While Health Belief Model has been extensively used in the realm of health, there are not many studies that use it as the theoretical foundation to examine content posted via online communication technologies such as social media platforms, in particular Twitter. Using this theory to examine tweets, which can further indicate about the potential of users to take required protective and preventive action against breast cancer might provide insight into this academically unknown void.

Importance of theory based interventions in health communication

In all these aforementioned studies, researchers used the theoretical framework of Health Belief Model as guided by the study of the audiences. The researchers mostly questioned and identified women's cognitive, affective and behavioral predictors without introducing any message intervention that might affect these factors. Simply put, the emphasis on these studies is about the audience's health beliefs, knowledge, behaviors etc., but there's no focus on if the health messages reflect those health attitudes and behaviors or not.

In order to ensure efficacy of health messages in context of breast cancer, it is important to understand that simple communication about varied aspects of breast cancer is not enough. It is integral to tailor the health messages based on the constructs of behavioral theories of change for maximum impact. Some examples of tailoring, and theory based interventions include the work of Skinner et al. (2000) who tailored the content of breast cancer messages based on the constructs of Health Belief Model for older and lower income African American women. Skinner and colleagues found that exposure to the tailored theoretical intervention increased the intent of low income, African American women to engage in mammography (2000). Similarly Jensen et al. (2012), found that pamphlets containing breast self-examination messages tailored

based on the constructs of Health Belief Model were more effective in increasing the intentions to utilize mammography in comparison to pamphlets which were not tailored in accordance with any theory of behavior change.

There are a dearth of studies that examine the health messages from the perspective of presence or absence of theories of behavior change. One study that focused on analyzing the message/content from the perspective of theoretical components, was conducted by Whitten et al. (2008). Whitten and his colleagues conducted a study to analyze both design tenets and the presence of components of theoretical behavior change theories to motivate healthy breast cancer behavior for users of the most frequented breast cancer websites. In this study, researchers evaluated the content of the breast cancer websites for the presence of components of behavioral change theories such as The Extended Parallel Process Model, Theory of Planned Behavior, and the Transtheoretical Model. While this study did not utilize the Health Belief Model, it concluded that majority of the content and messages of the breast cancer websites are not designed based on the theoretical frameworks of behavior change theories. This has implications for health communications considering incorporating theoretical constructs in health messages are “useful in planning, implementing and evaluating interventions” (Trifiletti et al, 2005, p.299), which in turn advances health promotion and health literacy (Corcoran, 2007).

While Whitten et al. (2008) study focused on the content of breast cancer websites, there is a dearth of studies that have examined the content of social media platforms, in particular tweets for the presence or absence of components of theoretical behavior change theories. This study aims to bridge that knowledge gap as it attempts to examine the content of the tweets posted by varied health related organizations during Breast Cancer Awareness Month through the theoretical lens of Health Belief model.

The benefit of broadening the scope of analysis of tweets from the perspective of theoretical framework of behavior change theories such as Health Belief Model is more than just an academic exercise. The results from such analysis can help decrease the “incidence and mortality of breast cancer” (Whitten et al., 2008, p. 883) by offering a feedback to the breast cancer related health organizations for tailoring content, in particular tweets that can induce desirable behavioral change and run effective online health awareness campaigns.

Research questions

This study is mainly exploratory which attempts to identify the type of communication that happens on Twitter feeds of various organizations during the breast cancer awareness month. On the basis of the aforementioned literature, the following research questions will be addressed

RQ 1: How do different health related organizations including non-profits, media groups, healthcare providers, online support groups communicate about breast cancer on Twitter during Breast Cancer Awareness Month (BCAM)?

RQ 2: How well does the content of the tweets by these organizations align with the parameters/constructs of the Health Belief Model?

CHAPTER 3: METHODS

Study setting: Twitter

According to Huberman, Romero and Wu (2009) ever since the birth of Twitter in 2006, it has changed the dynamics of web-based communication, “by expanding the scope of sending and receiving information via computers and mobile phones” (as cited in Park, 2013, p. 411). According to Rao (2009) tweets can be posted and sent across both via the Twitter website as well as the Twitter app on smartphones. The twitter application enables “users to streamline notifications, track popular issues, and even manage their status across social networks without visiting the Twitter website” (as cited in Park 2013, p.412).

Sampling frame

The sampling frame of this study consisted of breast cancer related tweets, derived from the Twitter accounts of four different organizations during the time-period of Breast Cancer Awareness Month (BCAM) i.e. from October 1-31, 2014. The four different Twitter sources used for the purpose of sampling were: US Health News (media source), Susan G Komen (non-profit), Woman’s Hospital (hospital for women), Breast Cancer Social Media (online support group). All of these organizations differ from one another in terms of their size, structure, dynamics and most importantly functions and services. The rationale behind choosing a variety of these sources was to get a perspective of how different types of organizations communicate on Twitter about breast cancer, during the Breast Cancer Awareness Month and if the tweets/content posted match the parameters laid out by the theoretical framework of Health Belief Model (HBM). Choosing different types of organizations also increases the scope for a broad range and diversity of tweets about breast cancer. For the current study, I conducted content analysis of the tweets (including replies and Retweets) from the following Twitter sources:

Health non-profit: Susan G. Komen Foundation (@SusanGKomen)

Susan G. Komen, formerly known as Susan G. Komen for the Cure and originally as The Susan G. Komen Breast Cancer Foundation, often referred to as simply Komen, is the most widely known, largest and best-funded breast cancer non-profit organization in the United States (Gayle, 2010). Founded in 1982, the mission of the Susan G. Komen Breast Cancer Foundation is to eradicate breast cancer as a life-threatening disease by funding advancing research, education, screening, and treatment. To date, Komen has invested more than \$2.5 billion in groundbreaking research, community health, global outreach, advocacy, public policy initiatives and programs in more than 30 countries (Source- <http://ww5.komen.org/AboutUs/>). Susan G. Komen has one of the largest and most successful online campaigns promoting their pink ribbon for breast cancer awareness (Sisco & McCorkindale, 2013). The Twitter account had 94.2K followers as on October 2014. Going by the huge number of Twitter followers, it seems like this breast cancer non-profit organization has a big target audience ranging from breast cancer survivors, family members and most importantly potential and previous sponsors and donors.

Women health organization/Healthcare provider: Woman's Hospital (@WomansHospital)

Woman's Hospital is an obstetrics and gynecology hospital in Baton Rouge, Louisiana established in November 1968. The mission of Woman's Hospital is to improve the health of women and infants by offering exceptional care and resources from birth to mammography, from cancer care to surgery. This private, not-for-profit organization, known for running a series of innovative programs for women and their families, is one of the women's specialty hospitals in the United States (Source- www.womans.org). The Twitter feed of Woman's Hospital had 1844 followers as on October 2014. The small number of followers indicates that the hospital has a local reach. Most of its target audience seems to be patients, visitors, hospital staff and doctors,

indicating primarily internal communication on Twitter. The rationale behind choosing a local healthcare provider such as Woman's Hospital in Baton Rouge was to open the possibilities of conducting interviews for a later follow-up study.

Media source: US Health News (@USHealthNews, #USNBreastCancer)

Founded in 1933, the U.S. News Media Group is a multi-platform publisher of news analysis, research and rankings which includes the U.S. News & World Report magazines and guidebooks, the digital-only U.S. News Weekly magazine, and the company's websites, www.usnews.com and www.rankingsandreviews.com. (Source- <http://www.usnews.com/>). US News Health is the healthcare section of U.S. News. This media source offers the latest news on healthcare, finding the best doctors, health insurance, diets and wellness, etc. US News Health hosted a breast cancer tweet chat on October 22 at 2pm EST to observe Breast Cancer Awareness Month (BCAM). The chat had experts discussing everything about the disease from symptoms, preventive measures, diagnosis, to treatments and risks. The Twitter feed of US Health News had 18K followers as on October 2014. The number of followers indicate that this media source has a huge target audience. A big part of the audience seems to be the people who are news seekers.

Online support group: Breast Cancer Social Media (@BCSMChat, #BCSM)

BCSM stands for Breast Cancer Social Media. It is an intersection of breast cancer and all things social media. The tweet chat platform started in the year 2011 holds a tweet chat related to varied aspects of breast cancer for an hour every Monday at 9 p.m. on Twitter. BCSM is a dynamic online network and community dedicated exclusively to women and men affected by breast cancer. The tweet chat mission is to work as an open forum to hold discussions on breast cancer research, culture, treatments and survivorship. The chat is moderated by Jody

Schoger, Alicia Staley and Dr. Jeanna J. Attai, who are themselves breast cancer survivors. These healthcare chats include inputs and discussions from steady and supportive base of physicians, including medical oncologists, radiation oncologists, and breast surgeons (<http://www.bcscommunity.org/>). The Twitter feed of Breast Cancer Social Media (#BCSM) has 2296 followers. The small number of followers for this organization indicates a limited reach. However, the number of followers seem to be quite diverse ranging from breast cancer patients, survivors, family members, care givers, surgeons, oncologists, radiologists, other organizations working for breast cancer etc.

Qualitative coding

Initially, Storify was employed to collect the tweets from the aforementioned sources. However, while collecting tweets, it was found that this Twitter API often missed out on the tweets that were either too new or more than seven days old. Since, Storify did not show all the relevant tweets in the display results, I switched to manually collecting tweets by taking screen shots of each day's tweets from all the individual Twitter sources. The sampling procedure resulted in a total number of 2961 tweets for analysis- 136 from Woman's Hospital [@WomansHospital], 180 from US Health News [@USHealthNews], and 280 from Susan G. Komen [@SusanGKomen] and 2365 from Breast Cancer Social Media [@BCSMChat] over the course of one month (Oct 1-31, 2014).

For the purpose of analysis, all the tweets, replies and retweets related to any aspect of breast cancer were included. All tweets written in languages other than English were excluded. Any tweets not related to breast cancer were excluded from the analysis. In case the tweets had any external links to articles, photos or videos, the additional material was analyzed, coded and categorized too. However, the analysis of photos and videos is not included in this study. After

retrieving all the breast cancer related tweets from these aforementioned Twitter sources, content analysis was employed to code, analyze, and categorize the tweets. The technique of content analysis is defined as “any qualitative and sense making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings” (Patton, 2002, p. 453).

Evaluation of coding frame

Using an inventory of tweets on Twitter accounts of the four organizations- Susan G. Komen, Breast Cancer Social Media, US Health News, and Woman’s Hospital, between October 1, 2014 through October 31, 2014, a codebook was developed to serve as an assessment tool for each tweet. The codebook was developed based on the core assumptions and parameters of the Health Belief Model as outlined by Rosenstock (1966). A codebook is a tool for the development and evolution of the coding system and “its main purpose is to catalogue the category definitions, the codes used in identifying each category, etc.” (Lindolf & Taylor, 2011, p.251). The main categories that emerged for this study were from a careful study of the core assumptions of the Health Belief Model (as previously outlined in the theoretical framework section) – Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Cues to Action and Self Efficacy. Each category was explained in detail in the codebook, so that it is comprehensible to the future researchers.

A pilot study using 100 tweets assessed the applicability of the coding scheme, and few categories in the codebook were modified. Since, perceived severity of breast cancer is directly related to chances of falling prey to this health issue (susceptibility), both these constructs of the Health Belief Model were collapsed to form one category. One of the parameters of the Health Belief Model –“Self Efficacy” was eliminated from the analysis. This category talks about how confident people feel about their ability to successfully perform behaviors to prevent health

threat. Since the focus of this study is on what organizations communicate about breast cancer awareness and prevention rather than how individuals take actions about it, the category of “self-efficacy” was excluded from analysis. An additional subcategory, “Others” was created for the tweets that did not match any of the parameters as specified in the Health Belief Model. Using the modified coding frame, all the tweets by varied organizations were read several times in a chronological order. While many tweets were mutually exclusive and met more than one parameters/codes of the codebook, they were not coded in separate categories. The most dominant theme was chosen and coded for the final analysis.

Intercoder reliability

Krippendorff’s alpha was calculated to ensure the intercoder reliability. For this purpose a randomly selected 10% of the total tweets (296 tweets), were independently coded by a second coder. The data were compiled into an Excel spreadsheet to directly compare the categorization of the tweets across coders. In the absence of perfect agreement on the coding category of the tweets with the fellow coder, the coders discussed the tweets at length and resolved any discrepancies. The final coding category for the tweet was agreed upon by consensus and the resolution was noted so that it could be used in the future coding. The inter-coder reliability analysis resulted in an alpha of 0.83, confirming an acceptable agreement between the coders (Wimmer & Dominick, 2006). The primary analysis of the final data was for the frequency counts. The tweets representative of the coding scheme/category were determined and written verbatim.

CHAPTER 4: RESULTS

There were a total of 2961 tweets from the aforementioned Twitter accounts of the four organizations. The highest number of tweets was posted by Breast Cancer Social Media (n=2365, 79.87%). This was followed by Susan G. Komen (n= 280, 9.45 %), US Health News (n= 180, 6.07 %) and Woman’s Hospital (n=136, 4.59 %). Figure 1 shows the relative frequencies of the tweets posted by four organizations across one-month period from Oct 1-31.

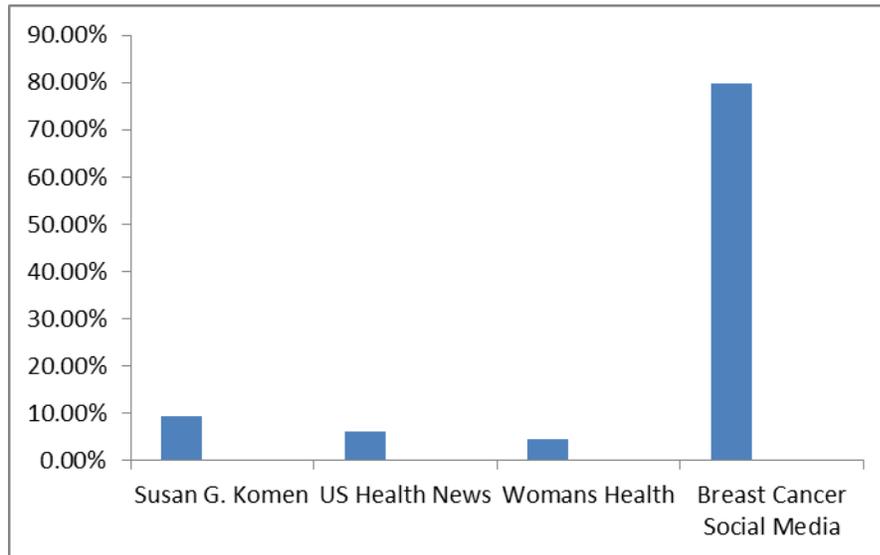


Figure 1- Relative frequencies of tweets by the four organizations for a period of Oct 1-31, 2014

A qualitative content analysis using the theoretical framework of Health Belief Model revealed that the majority of tweets did not include the constructs of theoretical framework and hence belonged to the “Others” category (n= 842, 28.43%). The most prevalent construct of Health Belief Model exhibited in the tweets was “perceived barriers” (n= 781, 26.37%), followed by “cues to action” (n= 711, 24.01%), “perceived benefits” (n=397, 13.40%) and “perceived threat” (n=230, 7.76%). Figure 2 shows the relative frequencies of the coding constructs in the tweets across four organizations as a percent of the overall Twitter posts. Examples of various

constructs of the Health Belief Model and their corresponding representative tweets across the four organizations are in Table 2.

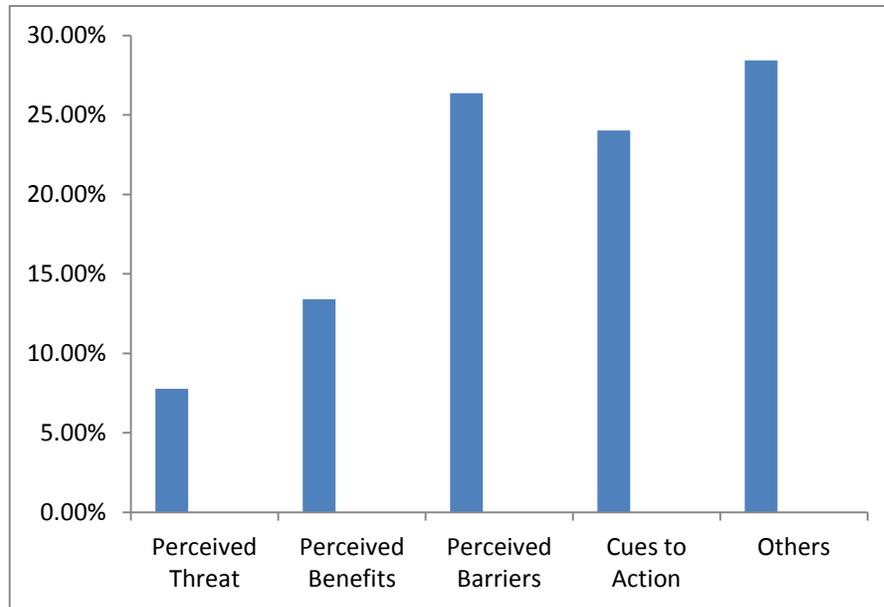


Figure 2- Relative frequencies of coding categories as percentages of total posts coded

Susan G. Komen

Susan G. Komen posted a total number of 280 tweets (n=280, 9.45%) over a period of one month from Oct 1-31, 2014. For the breakdown of tweets across various constructs of Health Belief Model, see Table A1 (Appendix). The most prominent construct of Health Belief Model reflected in the tweets was “cues to action” (n= 84, 30%). Mostly the expected “cues to action” focus on going for screening and adopting preventive behaviors, however, for this organization the cues to take some action were in context of encouraging people to donate for the cause and help the organization fund for breast cancer research. In this context, several tweets by the organizations reflected upon the monetary or the commercial aspect of Breast Cancer Awareness Month.

Being a non-profit, a lot of its tweets were directed at raising funds and encouraging others to contribute to end the battle with breast cancer forever. For example it tweeted- “Over 80 cents of every dollar SGK spends goes to our mission work. More about the work Komen does sgk.mn/yzwkNU” and “This month Walgreen is supporting BC Awareness Month w/their checkout donation program supporting Komen. More sgk.mn/1qOjD7Z.”

The foundation also tweeted about its monetary investments in furthering the cause of breast cancer. For example- “In just past 8 years, we have invested over \$91m in nearly 200 grants focused on metastasis” and “In 2013 we paid for over 370K mammograms, that’s over 1000 a day!” One commonality that exists among majority of tweets by Susan G. Komen foundation is that it tries to direct the audience back to its websites and blogs, again perhaps in an attempt to connect them with the cause at large and in the process encourage them to contribute towards it. (ex-“5 survivors who attended Race for the Cure events in Europe share their #WhatGivesMeStrength stories in latest blog: sgk.mn/10LSkpW”)

The heavy emphasis on tweets related to donations for research suggests that the organization is trying to reach out to its supporters and potential donors through the fund raising tweets, asking them to join in the organization’s endeavor of fight against breast cancer. Another reason that the organization is trying to reach out to potential donors and sponsors through the fund raising messages could be that the organization had been facing a drop in their rankings and overall funding ever since they were embroiled in the controversy with Planned Parenthood. In the year 2012, Susan G. Komen announced that it would discontinue providing grants to Planned Parenthood for breast cancer screenings. This decision drew them a lot of opposition and backlash from abortion right activists as well as Komen affiliates (Watt, 2012). While the

organization later announced to continue providing grants to Planned Parenthood, they suffered quite some loss due to a major drop in their rankings. According to Harris Interactive (2013), the non-profits ranking “fell from the top spot in 2011 Harris Poll Equitrend Study Nonprofit of the year to number 14 in the health category” (as cited in Cisco & McCorkindale, 2013, p. 290).

Apart from fundraising and monetary investment, some of the tweets were focused on the kind of research work the foundation is doing for taking the cause forward. Tweets like “SGK rschrs are discovering new methods for predicting or detecting metastasis using urine, blood tests or body scans” and “Today we annc new grants to more than 50 early-career #breastcancer researchers. Learn more ab these research grants :sgk.mn/YMAMzq” fit in this category.

The Foundation also retweeted the tweets of individuals/partner organizations who supported and appreciated Komen’s Foundation work in the areas like holding marathons, organizing walks and joining other organizations to raise awareness for the cause. For example, SGK retweeted “@WarriorsinPink has been our partner for 20 years. Since 1990, BC mortality rates have declined 34% in the US #WWE moms.”

The next prominent Health Belief Model construct reflected in the tweets was perceived benefits (n=67, 23.9 %). The least evident theoretical construct was “perceived threat” (n=15, 5.35%). Overall, in comparison to other organizations, Susan G. Komen posted the least number of tweets that reflected the construct of “perceived threat.” It seems that its overall tweet pattern reflected that breast cancer as a health condition should not be feared, as it can be cured. Perhaps it is for this reason that the tweets didn’t focus much on the likelihood of threat of breast cancer. Tweets such as “#breastcancer can be treated and cured. With all the treatment advances, BC is no longer a death sentence,” and “Not to be scared. It is curable in most cases and the earlier it is diagnosed/treated, the more likely the cure” echo the sentiment.

In similar context, it was observed that Susan G. Komen had the highest number of tweets that talked about sharing stories of strength and breast cancer survivorship. While most of the sharing stories tweets were in text format, some of them also presented the stories of survivorship and coming out cancer free in form of photos and videos. In comparison to Twitter accounts of other organizations, Susan G. Komen shared/tweeted the maximum number of videos and photos of breast cancer survivors. The organization focused mostly on the positive stories where survivors talked about what and who gave them strength to fight the deadly disease and emerge victorious (ex- “After Mandi was dx with BC at 30, her husband helped keep her sane. [sgk.mn/YUTtta](https://www.sgk.mn/YUTtta)”). There was no mention of any negative stories where patients succumbed to the breast cancer battle.

One possible explanation for the organization to focus on feel good factor survivorship stories and to carefully avoid any kind of negative stories pertaining to breast cancer struggle could be due to its nature of being an advocacy group. Since Komen is in the business of fighting against breast cancer and providing hope to end the illness forever, it is quite likely that it focuses on positive stories and stays away from bad and tough news of people losing out to breast cancer battle.

Woman’s Hospital

In comparison to other organizations, Woman’s Hospital shared the smallest number of overall tweets (n=136, 4.59 %). For the breakdown of tweets representing various Health Belief Model constructs for this organization, refer to Table A1 (Appendix).

The most prominent Health Belief Model construct evident in the tweets by this organization was “perceived threat” (n= 56, 41.17 %). The tweets were mostly about breast cancer risks, seriousness, severity, and some of them presented statistics on susceptibility to

breast cancer. For instance, Woman's Hospital tweeted that Caucasian women are at higher risk of breast cancer, but it is the African American women, who die of the disease most often due to late diagnosis. It also tweeted severity associated with varied types of breast cancer and how they spread. In one of the posts, it tweeted, "The most common type of #breastcancer is ductal carcinoma, which begins in the cells that line a breast duct." This and such similar tweets sharing factual information did not mention the sources or research from which the facts were derived. The emphasis on tweets exhibiting perceived threat seems to tie down to organization's role as a health care provider. It appears that by talking about threats pertaining to breast cancer, the hospital wants people to be aware of the dire consequences of the disease, if left untreated or ignored. This way it can consequently compel people to take the desired preventive and protective action.

The next major construct of Health Belief Model evident in the tweets posted by this organization was the "perceived benefits" (n= 36, 26.47%). This section mostly focused on tweets about the benefits of variety of breast cancer treatments available to the patients nowadays. For instance, the organization tweeted "With a digital mammogram, markers on a screen point to the areas the radiologists should check more closely." In similar vein, Woman's Hospital tweeted, "Computer-Aided Detection was developed to help radiologists find suspicious changes on mammograms."

Surprisingly, despite being a healthcare provider, the least predominant construct of Health Belief Model exhibited by the tweets of this organization was "cues to action" (n= 20, 14.70 %). Out of the less number of tweets that focused on "cues to action," a section of them focused on getting the users to donate and financially contribute for the cause of breast cancer. Tweets like - "@inRegister is donating \$5k to 5 nonprofits! Please vote to support woman's

community programs and services ow.ly/Ca3v1” and “We’re busting #breastcancer at our bra art #fashion show tonight! 6PM at the Renaissance Hotel. Tickets at womans.org/bbc!” reflect the hospital’s outreach efforts to raise money to fight breast cancer.

A section of “cue to action” tweets by Woman’s Hospital focused on encouraging people to avail the type of breast cancer related research, services and treatment that it offers to fight breast cancer. For example it tweeted that each mammogram at Woman’s is reviewed by two radiologists and computer aided detection system. In another tweet, “Use Woman’s 3-step approach (breast self-exam, clinical breast exam, mammogram) to catch #breastcancer early,” it shared information about the range of treatments available at Woman’s. In regards to treatments and surgeries, it said “When possible, Woman’s promotes a more conservative #breastcancer surgery option to preserve the shape/feel of natural breasts.” Some tweets like -“Woman’s #breastcancer navigator assist with appointments, surgery preparations and more. Call 225-924-8754” were directly asking people to take action to fight breast cancer by using the facilities and services of the hospital.

While, overall, the tweets focused on breast cancer statistics and treatments offered by the organization, it was observed that majority of the tweets didn’t contain any external link to an article, picture or video. Also, the organization focused more on tweeting than on retweeting, favoriting or replying to tweets by any other organization or individuals. Also, the organization did not use any hashtag beyond #breastcancer in any of the tweets over the month long period. Absence of retweeting, external links and limited use of hashtags and interaction with the public seem to demonstrate that the organization’s overall tweet pattern is limited to one-way communication. This observation is consistent with previous findings and literature. Neigher et al. (2013) analyzed tweets of local healthcare providers and found that when it comes to

organizational related tweets, majority of them focused on one-way communication and tried to communicate with their followers in an attempt to promote their organization, services and encourage them to take part in activities like donations and attending events that can benefit the organization.

Breast Cancer Social Media (BCSM)

The online support group- Breast Cancer Social Media posted the highest number of total tweets- 2365 tweets (n=2365, 79.87 %) in comparison to other organizations over a period of one month from October 1-31, 2014. For the breakdown of tweets across various constructs of Health Belief Model, see Table A1 (Appendix). Each week this tweet chat platform discussed a different breast cancer topic for an hour-long period on Monday starting at 9 p.m. While week 1 and week 2 were more like open discussion tweet chats focusing on effective ways to spread breast cancer awareness and talking about varied topics related to breast cancer, week 3 and week 4 were more centered on specific discussions about metastatic breast cancer and radiation therapy for cancer respectively.

The maximum number of tweets posted by this organization did not contain any constructs of the Health Belief Model and hence belonged to the others category (n= 702, 29.68 %). The maximum number of tweets by the organization that exhibited theoretical construct was in context of “perceived barriers” (n= 678, 28.66%). These tweets comprised of various factors that limits effective breast cancer awareness and associated preventive and protective behaviors.

In the context of tweets representing construct of “perceived barriers,” it was observed that this online support group, tweeted a lot about stories of people struggling with breast cancer. While the organization did not tweet about stories of dire consequences or extreme struggle, they did share stories of people explaining how difficult it is to battle with breast cancer. In the

weekly tweet chat, many women and family members opened up about how painful and traumatic the experience can be (ex – “behind every pink ribbon is a real live cancer fighter #bcsm; ex- “@GLF64 @stales I feel your pain sister #bcsm”). In another tweet, the organization posted “every time a woman is diagnosed with BC, her entire universe learns about BC. It’s such a shock #bcsm.” Tweets such as “2.5 years out of diagnosis. But had an ovarian cancer scare last year. So it doesn’t feel like 2.5 years. #bcsm” and “I vomited so much my electrolytes got dangerously low. Hospitalized 2x thru ER then hospitalized for every chemo after #bcsm” shared specific details of what do people go through while battling breast cancer. It seems that such barriers create a fear in the minds of women, preventing them to fight the cause effectively by adopting required protective behaviors like treatments, etc.

One of the possible reasons that people really opened up and shared their stories and struggles of battling breast cancer can be due to the fact that this weekly tweet chat was moderated by doctors who are themselves breast cancer survivors. This might have opened opportunities for more reliable, deeper and meaningful conversations. Perhaps it’s the emotional connection of these stories that draws audience towards such tweets and in the process fulfills the purpose of educating people about various aspects of breast cancer, consequently increasing their overall awareness. This reasoning is consistent with Putnam’s (2000) core idea of social capital theory, which states that success of societies depends on strong and dense network of reciprocal social relations. Simply put, social capital enables people to collaborate, socialize, share, establish communities and live together (Putnam, 2000). These beneficial connections among individuals and features of social life- networks, norms and trust, enable people to act together more effectively to pursue shared objectives, which in the purview of this research study is breast cancer awareness.

While, organizations like Susan G. Komen and Woman's Hospital reflected the Health Belief Model construct of "cues to action" by posting tweets about fundraising, donation etc to advance the cause, it was only BCSM, that highlighted the "perceived barrier" of commercialization related to Breast Cancer Awareness Month. With tweets like, "Does anyone remember the terrible "pink" products –eg KFC bucket?," "BCAM as just a sea of pink without accurate messaging is just noise," and "Prior to dx, meant solidarity and support for my mother and others before me. Now only crass profiteering and misinformation," the organization aimed to highlight that how the pink ribbon awareness campaigns often serve as money-making instruments instead of real breast cancer awareness mediums. Interestingly, it was the only this organization that brought forth the construct of "perceived barrier" in the context of BCAM burn-out. The chat resulted in some interesting tweets such as "Being a cancer advocate is exhausting. Need to enlist others to help-not easy sometimes #bcsm" and "yes it (breast cancer awareness) is exhausting. I have been blogging for four years." Some focused on how the original breast cancer awareness movement are succumbing to burn out. Tweets such as "Lots of frustration with pink campaigns. So- how do we keep the focus on true awareness, education and action?#bcsm, " "Does anyone feel like they are running up a sand pile, trying to push awareness to action during October? Just me?#bcsm" and "Tried sharing some articles in my FB and strangely women I know with BC objected. Pinkwashing is fine with them #bcsm" exhibited this sentiment.

The next prominent construct of Health Belief Model reflected in the tweets by this organization was "cue to action" (n= 562, 23.76%). In this context, a sample of tweets talked about varied aspects of the awareness event itself. While many tweets focused on introducing the BCAM ("Here starts the BCAM, stay glued for more info on #breastcancer) most of them went a

step beyond. Some talked about how to optimally utilize BCAM to spread awareness (ex- “From Awareness to Action: how do we make October attention meaningful?#breastcancer #pinktober” and “Change name of month to BC Action Month”). Other tweets focused on specific action that can help spread awareness. Examples of such tweets include- “A better breast cancer awareness 1)educates on fact, not myth 2)deals with evidence 3)deals with all stages of BC #bcsm,”; “Need to get the word out about connection between breast and ovarian cancer during Oct. #bcsm, ” and “I’d love to do media training for all news outlets. Watching them trying to outpink one another was demoralizing. #bcsm.”

The tweet chat in week 1 was primarily dedicated to understanding what does it really mean to have a successful Breast Cancer Awareness Month and steps to make it happen. During this week the tweets focused on how can cancer advocates and audience move from creating awareness to taking meaningful action (Ex- “One tactic that has proven effective is calling out companies and campaigns on #socialmedia. #youarenotaware #fauxwareness #BCSM”).

In addition to posting the maximum number of tweets every week and overall in general, this online support group had the most rich, deep and varied conversations about different aspects of health issue of breast cancer. The overall tweet pattern of this organization is in sync with the functions, goals and services of an online-support group which aims to offer consistent emotional and informational support to people. Consistent with the previous literature on how health organizations and online support groups provide emotional support through the social media platforms, indicating significant two-way communication, interpersonal support and personal communication (Klemm et al., 2003; Greene et al. 2011; Bender et al., 2011), this organization offered a lot of emotional support to the participants of the tweet chat. Tweets such as, “Finding a lump in the lymph node. Friends just got referred to the surgeon. Any tips on

resources for her? Thanks in advance #bcm,” and “Need a boost? A hug? Extra confidence? Tweet it to #bcm- we’ve got you covered” demonstrate that strongly.

US Health News

The media source @USNewsHealth posted a total number of 180 tweets (n=180, 6.07 %) during one-month span of October. For the tweets breakdown for other constructs of Health Belief Model, refer to Table A1 (Appendix). While the organization tweeted about a variety of health issues, including breast cancer during the entire month of October, it celebrated the Breast Cancer Awareness Month by exclusively hosting and moderating a tweet chat on October 22, 2014. This Twitter source exhibited the least tailoring of tweets based on the constructs of the Health Belief Model. Just like the aforementioned online support group- Breast Cancer Social Media, majority of the tweets posted by this organization did not reflect the Health Belief Model theoretical parameters. The maximum number of tweets belonged to the ‘Others’ category (n=65, 36.11%). This category comprised of tweets such as inviting people to chat and thanking them for their participation in the conversation. Tweets such as, “I’m moderating a Twitter chat on breast cancer today at 2 pm. Join me and @USNewsHealth using #USNBreastCancer bit.ly/1sOLeu9” and “Thanks to @UCHealthNews @MontefioreNYC, @MedStarGUH and everyone else for the great chat. See you next time” belonged to this category.

Some of the tweets that reflected usage of constructs of Health Belief Model had a close tie between “cue to action” (n=45, 25 %) and “perceived barriers” (n=40, 22.22%). The least reflected construct in the tweet was “perceived threat” (n= 23, 12.77 %). Most of the tweets by the organization during this tweet chat were about sharing information about breast cancer facts through retweets. It mostly retweeted the factual and statistical breast cancer tweets by several health care centers and hospitals. For examples U.S. Health News retweeted tweet of Pathway

Genomics- “80% of families with a pattern of breast cancer and ovarian cancer have been attributed to BRCA 1/2 mutations @USNewsHealth #USNBreastCancer.” The organization’s focus on retweeting content as posted by health experts and professionals again reflects its role and identity as a media outlets that often depends on reliable sources for information dissemination to a target audience who mostly comprises news and information seekers.

CHAPTER 5: DISCUSSION

Discussion and Conclusion

Twitter's growth and relevance as a health communication tool is a trend that is quite likely to grow in the coming years since an increasing number of people are using this social media platform to get health related updates and information. In addition to individuals, a large number of organizations are using Twitter to disseminate health-related information, each representing a unique perspective based on its services, structure and target audiences. It is, therefore, quite important to understand how varied organizations utilize the platform of Twitter for disseminating information and health related behaviors vis-a-vis issues like breast cancer.

The paper explored through qualitative content analysis how four different organizations- Susan G. Komen, US News Health, Woman's Hospital and Breast Cancer Social Media use their Twitter accounts to talk about breast cancer during the Breast Cancer Awareness Month (BCAM). In this study, all the tweets by these organizations were analyzed through the framework of behavioral change theory- Health Belief Model (HBM). The main purpose of this research study was to examine the tweets of the varied organizations for the presence or absence of theoretical constructs of Health Belief Model such as perceived threat, perceived benefits, perceived barriers and cues to action, which inform about the potential for users to take protective action against breast cancer. As described previously in the literature section, prior research has demonstrated the importance of tailoring the content of health messages in accordance to behavior change theories. Tailoring based on theoretical constructs helps bring about the desired health related behavior change, ensuring maximum efficacy of the health communication campaign.

Overall, the study demonstrates that the majority of the tweets didn't represent any of the constructs of the Health Belief Model. Out of all the tweets that represented the theoretical constructs, it was observed that "perceived barrier" (n= 781, 26.37%), was in the maximum number. This was followed by "cues to action" (n= 711, 24.01%), "perceived benefits" (n=397, 13.40%) and "perceived threat" (n=230, 7.76%). While majority of the tweets belonged to the "other category," overall the study demonstrated that different organizations shared valuable breast cancer related content on Twitter. The tweets posted by all the organizations exhibited the use of the varied constructs of Health Belief Model such as perceived threat, perceived benefits, perceived barriers and cues to action. However, it was observed that each Twitter outlet took a different approach to its use of Twitter, evident through focus on different types of breast cancer related content, use of elements like hashtags and videos etc.

For instance, majority of the tweets by the organization Susan G. Komen exhibited the use of construct- "cues to action." Health care provider organization Woman's Health demonstrated the construct of "perceived threat." In similar fashion, majority of the tweets by online support group- Breast Cancer Social Media focused on the construct "perceived barriers" and media organization US Health News focused on "cues to action." These differences in approach of how each organization design their breast cancer related tweets and emphasize on particular theoretical constructs during Breast Cancer Awareness Month is a representation of their respective identity and the type of organizations they are. Simply put, their tweets are reflective of their unique target audiences, goals, functions and services they are known to offer as an organization.

Since, Susan G. Komen is a breast cancer non-profit, majority of the tweets that demonstrated the construct of "cue to action" was in context of raising funds and donations for

research. The focus on posting tweets that encourages people to join them into taking action by contributing and donating towards the cause of breast cancer, ties back to organization's overall goal of eradicating breast cancer by raising money for funding research, screenings and treatments. Similarly, since Breast Cancer Social Media is an online support group, majority of its tweets reflected construct of "perceived barriers," so that people can open up and can have rich, deep, meaningful conversations around various aspects of breast cancer. Here again, the overall focus of tweets is in sync with identity of the organization as an online support group that aims to give and receive informational and emotional support to people and to foster two-way communication. Typical to what an online support group does, the tweets reflected that the organization extended consistent support of all types during, after and even years after breast cancer diagnosis for patients as well as care givers and family members. The platform served as a venue for people to share experiences with others facing similar breast cancer related situations. In the process of such two-way conversations and giving and receiving support, the organization's use of Twitter facilitates the overall increase in knowledge base and awareness levels of the followers and participants in the tweet chat.

Similar to how Breast Cancer Social Media focused on perceived barriers in its tweets, in congruence to its organizational goals, Woman's Hospital kept perceived barriers as its focal point in its tweets, again in sync with its identity as a health care provider. By focusing on the dire consequences of not adopting required preventive behavior and leaving breast cancer untreated, the tweets are likely to compel people to take up health improvement and protection opportunities. In addition, the organization's overall tweet pattern demonstrated that it aligned with its role as a small, local hospital, which mostly focuses on one-way pushing of updates to their followers about its services, treatments, research, events information without replying,

retweeting and making favorites to share with others. The tweet pattern is reflective of the organizational goals by serving more as a medium of internal communication with patients, doctors, visitors and hospital staff than communicating with a global audience about various aspects of breast cancer at length.

In similar context, the tweets posted by US Health News exhibited the theoretical construct of cues to action. Their overall tweet pattern reflected that it talked about various breast cancer facts and statistics primarily through re-tweeting what other professionals in the health care field were tweeting about breast cancer. The focus on the retweet pattern ties down to organization's identity as a media outlet which, generally focusses on citing known, reliable sources for information dissemination.

This study can enhance our understanding of how different health related organizations with different missions, goals and target audiences use Twitter differently to communicate about the same health issue of breast cancer during the same time-frame of Breast Cancer Awareness Month. From a theoretical perspective, this study reveals that currently there is not a substantial usage and applicability of behavior change theory of Health Belief Model in the breast cancer related tweets posted by these health-related organizations. The findings of this qualitative content analysis demonstrates that varied health related organizations are still not fully utilizing the potential of theoretical intervention of behavior change theories while designing their content, in particular tweets to communicate about breast cancer during Breast Cancer Awareness Month.

Overall, the study suggests that the said health related organizations are using their social media presence on Twitter to further their motives and achieve their organizational goals. Their mission during the breast cancer awareness campaign, fits within the scope of organization's

mission generally. The findings reveal that creating awareness about breast cancer is not organization's end goals especially when viewed through the lens of Health Belief Model. In this context, the idea of spreading effective awareness about breast cancer through Twitter is only met to a limited extent, and that too indirectly during the process of achieving the overall organizational goals. On one hand breast cancer non-profit (Susan G. Komen) and online community support group (Breast Cancer Social Media) still appeared to spread some awareness about the issue by actively interacting with the wider group of target audience and posting relevant breast cancer related tweets to induce health related behavioral change. On the other hand, health care provider (Woman's Hospital) and media outlet (US Health News) mostly adhered to a one-way communication about breast cancer not exclusively aiming to change health beliefs and behaviors of the specific audience they often cater to.

The reason for the latter group not being effective enough can be explained from the fact that their target audience is quite limited and niche. For instance, the target audience for Woman's Hospital on Twitter mostly comprise of patients, visitors and hospital staff for internal communication. In this context, since the overall tweet pattern seems more organizational goal and target audience driven, it is quite unlikely if the tweets posted by this organization will change breast cancer related behavior for a more general audience on Twitter. Similarly, the target audience for US Health News is mostly news seekers. It's not necessary that all news seekers followers are using the medium equally for health purposes. When it comes to Twitter followers for media organizations, it is mostly the journalists, community elites and hyperaware followers that are using the platform optimally. As explained in the literature review, this seems to add another layer in the information flow in the form of elites between the organizations and the general audience. This additional element of elites in the Twitter communication pattern,

tend to dilute the direct impact and interaction that might have otherwise happened between the organization and the audience. In this context, again it is quite debatable if health related media organizations like US Health News are changing health related behavior of general audiences as effectively when viewed from the theoretical framework of Health Belief Model.

Even though we discuss that health-related organizations having limited number and niche audience as followers on Twitter can have an adverse impact on the overall reach of Twitter for health communication, it is imperative to note that Breast Cancer Social Media emerged as the only organization to have an optimal reach and impact despite the limited number of followers. This again can be explained by its identity as an online support group, which thrives on a cohesive network aiming to spread awareness and support about the issue at hand.

The findings of this study provide important implications for scholars and practitioners in understanding the effective use of theoretical frameworks and social media platforms, in particular Twitter in promoting health communication of breast cancer related health issues. Even though the overall tweet pattern didn't reflect tailoring based on the behavior change theory of Health Belief Model, the findings suggest that the health related organizations engage in lot of quality and diverse content related to breast cancer during Breast Cancer Awareness Month on Twitter. This indicates that Twitter can be a rich source of real-life health experiences—not limited to events such as hurricanes or flu outbreaks (Hughes, 2009; Biswas, 2013) alone. It has the potential to examine personal behaviors and hence regulate health related decision-making processes. In particular, understandings of the deep, rich and varied communication about breast cancer on Twitter could facilitate “(1) understanding real time reactions of people to health issues and (2) design of new health behavior interventions that deliver messages through the online social networks directly” (Lyles et al., 2013, p. 132).

While organizational use of Twitter might have the potential of shaping health communication and creating awareness in context of breast cancer during Breast Cancer Awareness Month, it's imperative to understand that the reach and impact would vary depending on the type of organization it is. Not all health related organizations (like Woman's Hospital and US Health News) engage with audience directly or employ the use of behavioral change theories such as Health Belief Model. However, they might engage with the audience via an informational flow model where communication flows through community elites and hyperaware followers to the general audience. In this regard, the potential of Twitter as a health communication tool and as a platform for spreading awareness matters, despite the fact that it might have indirect reach and impact on general audience, and even if it lacks the usage of behavioral change theoretical intervention. However, in this context it is also essential to understand that while health related organizations might share diverse and important content related to breast cancer, this communication on Twitter cannot be assumed to be a solution to bringing about desirable health related behavioral change. This assertion is consistent with Neigher et al. (2012) that suggests that social media platforms should not be viewed as panacea to all the complexities of health related behavior change and improved health outcomes even though "they can help in getting people involved in creating environmental and social conditions conducive to health" (p.162).

This research also has implications for health related organizations since the study reveals their lack of usage of theoretical intervention of Health Belief Model while designing the tweets. The results offer feedback that there is a lot of scope to go a step beyond the approach of simple communication about varied aspects of breast cancer on Twitter during the Breast Cancer Awareness Month. While the organizations can continue tweeting the way they normally would

to meet their organizational goals, they can also consider designing tailored health messages/tweets for their target audience based on some form of theoretical intervention of behavior change theories such as the Health Belief Model. This can result in running effective online health awareness campaigns that can consequently bring about the required health related behavioral change and also promote a healthier society with improved health literacy and awareness levels about breast cancer.

Limitations and Future research

The study has several limitations to note. It was based on a qualitative content analysis of the text tweets alone. For an effective and accurate analysis, all the pictures and videos posted as tweets should be included in the study as well. This study opens doors for future research as it can be followed up by another quantitative study that can effectively quantify how differently these organizations are using Twitter to communicate about breast cancer in context of the types and usage of hashtags. Also, future research should consider surveying or interviewing practitioners working in the abovementioned organizations to get a better picture of why and how they are using Twitter to communicate about breast cancer during Breast Cancer Awareness Month (BCAM). In addition, future studies should consider running a comparative exploratory analysis of Twitter communication of breast cancer by these organizations during the Breast Cancer Awareness Month and the rest of the year. Furthermore, to better understand the potential and reach of social media sites to promote health communication and literacy about health issues like breast cancer, the study must be extended to include other social media platforms such as Facebook, Tumblr, Pinterest, etc. Another possible extension of this research could be to see the applicability and replicability of the results of this study in context of other organizations. Perhaps a comparative analysis between the tweets of health related organizations like Centres

for Disease Control and Prevention (CDC) and World Health Organization (WHO) can help capture the nuances of tailoring of content on the basis of theoretical intervention better.

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APPENDIX

Table A1- Sample Tweets

Organization	HBM Constructs	Representative Tweets	Number and % age of tweets	
Susan G. Komen	Perceived Threat	<ul style="list-style-type: none"> • In 2014, more than 40,000 people will lose their battle with #metastatic #breastcancer • African Americans are more likely 2 have TNBC, which is aggressive and mets early & there are still diff in access 2 care 4 some • 1 in 8 women will get BC in her lifetime komen.org/wwe #CourageConquerCure • Women< 40 & some minorities are at higher risk for aggressive forms of BC #WWE moms 	15	5.35%
	Perceived Benefits	<ul style="list-style-type: none"> • Chemotherapy and radiation can be used to shrink or slow the growth of tumors or ease symptoms of the cancer itself #MBCChat • The goal w/MBC treatment is to control the tumor growth and prolong life while maintaining quality of life. #MBCChat • @MauraBivens has #metastatic BC and as a third degree blackbelt, she knows how to fight. Bit.ly/IxLYPIK #WhatGivesMeStrength • MBC patients are often first to benefit from new treatments. Several new drugs for MBC have been FDA approved over the past 2 years. 	67	23.9%
	Perceived Barriers	<ul style="list-style-type: none"> • Question from @imatriskc, yes there is a shortage of MBC researchers in the field? #MBCchat • Early diagnosis does not guarantee a cure. Being cancer free is not the same thing as being cured #letstalkMBC • @Saludtoday Latinos face 39% uninsured rate in Texas and face many barriers because of this. #SaludTues • There is a culture of silence, not wanting to worry or alarm family with a diagnosis. #saludTues • Breast feeding and pregnancy can also affect risk, It's important to know family history, #WWE moms 	39	13.92%
	Cues to	<ul style="list-style-type: none"> • Select @Yoplait products will carry a pink lid in 		

	Action	<p>Oct and codes incid can be redeemed 4 a donation! Sgk.mn/uxpEft</p> <ul style="list-style-type: none"> We're working to find even better treatments, new screening tests and ways to prevent BC #WhatGivesMeStrength Be aware of your body and report any unusual changes to your doctor, leading to early detection bit.ly/10Maczs #SaludTues We encourage you to get involved in the discussion by asking and answering q's re: metastatic #breastcancer using #MBCChat 	84	30.0 %
	Others	<ul style="list-style-type: none"> Thank you Shirley Mertz from @MBCNBuzz and SGK scholar Dr. Neil Spector for joining us today to talk about #metastatic #breastcancer Join us in 5 minutes for the chat #komen #WhatGivesMeStrength 	75	26.78%
Total			280	100%
Woman's Hospital	Perceived Threat	<ul style="list-style-type: none"> Breast cancer can spread to other parts of the body by invading nearby healthy tissues, such as the chest wall A modified radical mastectomy removes entire breast & lymph nodes under the arm to determine if cancer has spread Most women who have breast cancer surgery followed by radiation will still have sensation in their breasts 2+ relatives with breast or ovarian #cancer is a #breastcancer risk factor 	56	41.17%
	Perceived Benefits	<ul style="list-style-type: none"> When possible Woman's promotes a more conservative #breastcancer surgery option to preserve the shape/feel of natural breasts Breast cancer surgery & radiation therapy have = success rate as invasive surgery for Stage I & II #breastcancer Radiation lowers occurrence risk for women with early-stage #breastcancer who choose breast conservation surgery 	36	26.47%
	Perceived Barriers	<ul style="list-style-type: none"> Recurrent cancer is often harder to treat than the original cancer, but it is not always advanced 	24	17.64%

	Cues to Action	<p>cancer</p> <ul style="list-style-type: none"> • A patient’s ability to have conservation surgery depends on the size and stage of the #breastcancer • Swollen lymph nodes can appear even before the original tumor in the breast is large enough to be felt • Woman’s encourages women ages 40+ to receive a screening mammogram every year • Women w/a higher than average #breastcancer risk should ask their doctor about having mammograms before age 40 • Start breast self-exam at age 20. Do each month to become familiar with the regular look/feel of your breasts. 	20	14.70%
	Others	<ul style="list-style-type: none"> • No representative tweets 	0	
Total			136	
US Health News	Perceived Threat	<ul style="list-style-type: none"> • Breast cancer symptoms include palpable lump, inverted nipple, skin changes, skin dimpling, abnormal mammogram #USNBreastCancer • BRCA is a rare genetic mutation affecting 1 in 1000 women overall, or 1 in 40 Ashkenazi Jewish women #USNBreastCancer • Back to genetics, men are at higher risk of developing breast cancer if they carry a BRCA gene #USNBreastCancer • Having a mother with breast cancer nearly doubles your relative risk of developing breast cancer #USNBreastCancer 	23	12.77%
	Perceived Benefits	<ul style="list-style-type: none"> • Here is a story about a young woman who is BRCA + & had preventive mastectomy to avoid future BC #USNBreastCancer • Regular exercise reduces the risk of pre-and postmenopausal breast cancers #USNBreastCancer @JamieDLewisMD • Early #breastcancer detection increases the probability of a favorable prognosis #USNBreastCancer • Mammography is the most effective tool to detect #breastcancer before lumps can be felt or cancer 	7	3.8%

	Perceived Barriers	<p>symptoms appear #USNBreastCancer</p> <ul style="list-style-type: none"> • When it comes to breast cancer, men are often forgotten in a sea of pink bit.ly/1yI5nJT • Often there are no symptoms and breast cancer is first detected on screening mammogram @JamieDLewisMD #USNBreastCancer • There are options to reduce #breastcancer risk but none are 100%.Ex chemoprevention, bilateral mastectomy, exercise #USNBreastCancer • #BreastCancer myth “Breast cancer affects only older women” WRONG! Get the facts at bit.ly/IsfxdSG #USNBreastCancer #WomensHealth 	40	22.22%
	Cues to Action	<ul style="list-style-type: none"> • If a man is diagnosed w/ #breastcancer, he should be tested for the gene #USNBreastCancer • For a surgery, see a breast surgery specialist, not a general surgeon #USNBreastCancer • It’s overwhelming. Write Q’s down before appts. Bring someone to help you hear all the info and discuss after #USNBreastCancer • Ask 4 referral to a breast specialist. Understand your cancer, research and discuss best options. Rely on support system #USNBreastCancer 	45	25%
	Others	<ul style="list-style-type: none"> • Less than an hour until our #USNBreastCancer chat! Don’t forget to join us ow.ly/DaTdr • Hi I’m Dr Jacob Radiologist and CMO of Breast Health at @GEHealthcare. Look out for me tweeting from here #USNBreastCancer 	65	36.11%
Total			180,	100%
BCSM	Perceived Threat	<ul style="list-style-type: none"> • Cancer is a rare disease. #LC has 700 sub-types, #BC has 30k mutations. Sharing data=critical #bcsm • 2000+ men in the US are diagnosed w/breast cancer each year. #bcsm #MenHaveBreastsToo • On the 26th oct, it marks the 27th year since my mon died of MBC. I will be little more emotional than usual #bcsm • BC doesn’t progress linearly stage I, II, III, IV; it jumps #bcsm 	136	5.75%

	Perceived Benefits	<ul style="list-style-type: none"> • RT@Groz_P: Goal: BCSM repeat of clinical trial chat. 1st one was very helpful, informative for me. Made a differenc in my treatment plan • My sis was diagnosed with bc but has had great success w/radiation #bcm • Sometimes pink is useful for loved ones who don't have an obvious way to help.. it gives them something #bcm • I don't pass judgments on pink efforts. If it weren't for pink & #BCAM, 30 yr-old me wouldn't have known to see a physician #bcm • One thing awareness has done it make BC a socially acceptable disease... allows us to talk about it. Much harder with mental illness #bcm 	287	12.13%
	Perceived Barriers	<ul style="list-style-type: none"> • Normal to worry after treatment ends, but so much unknown fear can linger even decades later #bcm • Too much repeating definitions of cancer and stages. Info on side effects and dealing with them harder to find, esp for met pts. #bcm • Issue of (perceived) empowerment, I think; some rely on pinkwashing emotionally/don't realize the co-opting #bcm • Many don't realize BC is multiple diseases, still see it as one monolithic disease #bcm • @thecancergeek plus #cancer is the number one cause of bankruptcy in this country. Financial burden on pts is horrible #bcm 	678	28.66%
	Cues to Action	<ul style="list-style-type: none"> • Register for Breast Cancer:Treatment &Management to gain subject knowledge fast http://t.co/q33nhMahd #bcm #medtech • More focus required for breast cancer disparities & education on all types of breast cancer #bcm • BCAM wishlist: MEDIA TRAINING for all networks, journalists etc. pink rallies further exacerbating the problem #bcm • Need to include male BC in the discussion, too #bcm • Funding from @CDCgov will help increase awareness of and support for young women with #breastcancer http://t.co/WsoeLLwblC #bcm 	562	23.76%
		<ul style="list-style-type: none"> • Want to learn more ab metastatic #breastcancer? 	702	29.68%

	Others	Join us & @MBCNBuzz 10/13 @8PM for a Twitter chat using #MBCChat		
Total			2365	100%
Overall Total			2961	

VITA

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