2016

Use of Social Networking Websites and Receipt of Cervical Cancer Screening

Patricia Drayton Drayton
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Patricia Drayton

has been found to be complete and satisfactory in all respects,

and that any and all revisions required by

the review committee have been made.

Review Committee

Dr. Talmage Holmes, Committee Chairperson, Public Health Faculty

Dr. Ji Shen, Committee Member, Public Health Faculty

Dr. Diana Naser, University Reviewer, Public Health Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University

2016

Abstract

Use of Social Networking Websites and Receipt of Cervical Cancer Screening

by

Patricia Drayton

MA, University of Phoenix, 2008

BA, University of North Carolina at Wilmington, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2016

Abstract

Pap smear screening detects cervical cancer in its earliest stages, yet thousands of women in the United States die annually from this disease. Social networking websites commonly provide information about recommended health screenings. In this quantitative study, the Health Belief Model provided the theoretical framework to determine if the use of social networking websites affected nurses' decisions to receive Pap smear screening. A convenience sample of nurses was used, with the rationale that they were knowledgeable of and receptive to participating in a relevant health study. A total of 2,336 registered nurses practicing in Durham, North Carolina were invited to participate in the study. Over a period of 4 weeks, 107 participants responded to questions from the Health Belief Questionnaire and Pew Internet and American Life survey through an electronic questionnaire. Chi-square analysis determined the association between the receipt of Pap smear screening and the use of a social networking website use. Logistic regression further analyzed this association with age as a covariate. Nearly all participants reported having a Pap smear screening within the last 12 months. However, the lack of significant results showed that social networking website use was not a factor for higher screening rates. Despite the nonsignificant findings, the participants nevertheless reported a high use of social networking websites. These findings indicate that such platforms can be used to educate women on the importance of Pap smear screening. The study's implications for positive social change are to use such sites to more effectively, to promote and educate on the importance of Pap smear screening.

Use of Social Networking Websites and Receipt of Cervical Cancer Screening

by

Patricia Drayton

MA, University of Phoenix, 2008

BA, University of North Carolina at Wilmington, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2016

Dedication

I dedicate this research to my two amazing daughters, Aryanna and Avery.

Acknowledgements

I would like to thank all the people who helped me with writing this research project. Firstly, I would like to thank the members of my family for proofreading my work at interval stages of the writing process. I would also like to thank them for all the support they have given me throughout my time at Walden University. Secondly, I would like to thank all the Registered Nurses in the local area who took part in my questionnaire as a part of my data collection. Thirdly, I would like to thank my committee, Dr. Holmes and Dr. Shen, for getting me through the writing of this research project.

Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Introduction

Cervical cancer is the second most common cancer among women with majority of cases occurring in women who have never been screened or have not been screened over an extended period (National Cancer Institute (NCI), 2008). There are many noted reasons as to why women are not regularly screened including a lack of knowledge of why screenings are important along with a lack of social and emotional support (Fayed, 2007; Gamarra, Paz, & Griep, 2009; Seow, Huan, & Tray-Straghan, 2000). Social networking websites, such as Facebook and Twitter, create networks that often vary, depending on different associations (American College of Clinical Pharmacy (ACCP), 2004). In addition to family and friends, social networking websites include religious groups, neighbors, or other community members to provide support (ACCP, 2004). The objective of this study was to examine if there is an association between use of social networking websites and the decision to engage in regular Pap smear screening. Age was used as a covariate. This study has implications for positive social change as the results from the study can be used to develop social networking website interventions or promotions to reach women and provide information about the importance of regular Pap smear screening.

Background of the Study

Cervical Cancer

Cervical cancer grows slowly beginning in the cervix of women (Center for Disease Control, 2012). Despite the preventable nature of cervical cancer, 2–3 million

women are diagnosed each worldwide. Globally, cervical cancer is the second leading cause of cancer death among women behind breast cancer (Ghazal-Aswad, 2008). Within the United States, close to 5,000 women are expected to die this year alone from cervical cancer (NCI, 2008). Deaths related to cervical cancer can be prevented through regular Pap smear screening and treatment of premalignant lesions (American Mobile Nurses (AMN), 2006). A lack of Pap smear screening increases risk of cervical cancer two to six fold (AMN, 2006). The Pap smear exam can detect inflammation and infections but is primarily used to detect abnormal cells that may have been previously missed (NCI, 2008). Regular Pap smear screenings are recommended every 3 years beginning at age 21, until the age of 65, when it may be approved by a physician to stop having Pap smear screenings done (American Cancer Society, 2015).

Social Networking Websites

The marketing of health care has changed from only being promoted on television, newsprints, and radios (Hackworth, 2010). Within the public health and healthcare realm, social media has the potential to inform and educate individuals about important health issues and provide information to a large number of people quickly (Thackeray et al., 2012). Social networking websites are now used by many people as they provide an open platform for consumers to discuss their experiences and provide advice (Hackworth, 2010). Furthermore, many individuals base their health decisions on the recommendations from trusted friends and family (LaCoursiere, 2011). Social networking websites also help to encourage dialogue between experts, educators, parents, and youth, which in turn is believed to increase chances of healthy sexual experiences

and improved sexual communication (Levine, 2009). It has yet to be determined if this new trend is effective in actually providing support to women around their decision to engage in regular Pap smear screening.

Use of Nurses as Study Participants

Nurses are often used as participants in health studies as they are believed to have enough education to enable them to respond with a high degree of accuracy to questionnaires and fully participate in health studies of varying lengths (Nurse Health Studies, 2013). Use of nurses in previous health studies has produced many new insights on cancer prevention, cardiovascular disease, and diabetes (Nurse Health Studies, 2013). Furthermore, studies using nurses as participants have helped to show that heredity of a certain health condition does not mean a definite diagnosis (Nelson, 2013). Data from such studies have shown the vital role that lifestyle factors have played in the prevention of chronic diseases in women, and possibly men as well (Nelson, 2013). Studies using nurses as participants have produced changes in medical practices as well as changes in national dietary guidelines (Nurses' Health Study 3, 2013). These studies have also shown to be beneficial to nurses as well as nurses have reported self-strengthening, increased knowledge, and strengthened clinic practice as a result of research participation (Bradbury-Jones et al., 2011).

Cervical Cancer and Cross-Sectional Study Design

According to Levin (2006), a cross-sectional study design is implemented for studies carried out over a short time period and used to estimate the interest of a given population. Further, this study design is used for health planning as the data gathered

shows associations between risk factors and the outcome of interest (Levin, 2006). In researching how social networking website use was used in the decision making process to engage in regular Pap smear screening, this design was advantageous as it was relatively quick and was a good first step for a new study issue (Dodani, n.d)

Problem Statement

A recent report discovered that social networking accounts for 1 out of every 6 minutes spent online (Nelms, 2011). Specifically, Facebook and Twitter have shown consistent growth in average visitor engagement over the past years, providing evidence that social networking websites are here to stay (Nelms, 2011). Moreover, a study by the University of Bath found that women used social networking websites more than men (Soni, 2012). A primary reason cited for active use is the ability to connect with others over common interests and practices (Finn, 2011). Finn (2011) also found that young adults are likely to trust information recommended by friends. As use of social networking websites continue to skyrocket, it is believed that their use plays an integral role in increasing awareness of the importance of cervical Pap smear screening (Simpson, 2008). This strategy is used to combat the difficulties around educating women about cervical cancer and increasing participation in regular Pap smear screening. As the communication between corporations and individuals continues and grows within this realm, it is important to have established literature to show the impact.

Purpose of the Study

The purpose of this quantitative cross-sectional study was to examine if there was an association between use of social networking websites and the receipt of cervical cancer screening. This study was concerned with the ability of social networking websites to create an environment where women can learn about the importance of regular Pap smear screening. For this study, Pap smear screening was the dependent variable. The independent variable was social networking website use and age was a covariate.

Nature of the Study

For this quantitative cross-sectional study, data were gathered from participants through a survey administered through Survey Monkey. Participants were registered nurses (RNs) in Durham, North Carolina who held an active and unrestricted license. Data were gathered using the Health Belief Questionnaire (HBQ) as well as questions from the Pew Internet and American Life (PIAL) survey on social networking website use. Statistical analysis was conducted to determine if there is an association between the dependent variable and the independent variables. This research method was appropriate as it used close-ended questions to collect similar answers from participants. The answers provided from participants were measured numerically with statistical procedures that tested for an association between variables in order to accept or reject the null hypothesis about the population (Creswell, 2009).

Use of the quantitative method allowed for the use of predetermined instruments to collect data from a large sample of the study population. Further, it allowed for

inferences to be made about the target population. For this study, social networking website use and age were investigated for an association with Pap smear screenings practices of women. Survey Monkey allowed participants to electronically access the survey questions and provide data in a confidential and secure environment. The use of the online survey software versus using paper surveys saved on costs associated with printing and mailing surveys. It also allowed for the data to be received quickly. Testing for the hypotheses was conducted using chi-square analysis and logistic regression to predict the association between the independent and dependent variables.

Research Questions and Hypotheses

The research questions (RQs) and hypotheses for this study were based on the need to determine how social networking website use and age affect the receipt of regular Pap smear screening among women living in Durham, North Carolina. The RQs and hypotheses for the study were as follows:

RQ1: Does the use of social networking websites encourage women to engage in regular Pap smear screening?

$H_0$1: There is no association between social networking website use and regular Pap smear screening

H_a1: There is an association between social networking website use and regular Pap smear screening.

RQ2: Is age associated with the decision to receive regular Pap smear screening among women who regularly use social networking websites?

$H_0$2: There is no association between age and the decision to engage in regular Pap smear screening among women who regularly use social networking websites.

H_a2: There is an association between age and the decision to engage in regular Pap smear screening among women who regularly use social networking websites.

Theoretical Base

The theoretical base for this study was the health belief model. The health belief model is used to predict the reason(s) individuals take action to prevent, screen for and control illness (Glanz, Rimer, & Viswanth, 2008). When developed in the early 1950s, the model was used to understand the failure of people to adopt disease prevention strategies or screening tests for the early detection of disease (Glanz, Rimer, & Viswanth, 2008). Later uses expanded to uses for patients' responses to symptoms and compliance with medical treatments (Boston University School of Public Health, 2013). This model has been used to explain many health behaviors such as breast cancer screening, colon cancer screening, tuberculosis screening, and risky sexual behaviors (Glanz, Rimer, & Viswanth, 2008). The psychological and behavioral foundation of the model states that ultimately, an individual's course of action often depends on the person's perceptions of the benefits and barriers to the health behavior (Boston University School of Public Health, 2013). Originally, the model consisted of constructs including perceived susceptibility, seriousness, and benefits and barriers to a specific behavior (Boston University School of Public Health, 2013). Cues to action, health motivation, and

perceived self-efficacy were constructs later added on (Boston University School of Public Health, 2013). This study focused on the cues to action construct.

Cues to action are the stimulus needed to trigger the decision making process to accept a recommended health action (Boston University School of Public Health, 2013). These cues can be internal (i.e., chest pains, wheezing) or external (i.e., advice from others, media, health care provider recommendations). In a study conducted by Austin et al. (2002), the researchers found that an effective way to reach women regarding cervical cancer screening may be through media based public health campaigns as a cue to action. While these messages have to be carefully delivered and implemented in a culturally meaningful and sensitive manner, the population is likely to be receptive and campaign integrated with community-based outreach (Austin et al., 2002). It has further been found that cues to action has demonstrated an important role in cervical screening behavior as far as increasing knowledge related to cervical cancer and transforming attitudes and perceptions of the effectiveness of Pap smears (Garces, 2006). It was recommended that future research continue focusing on the assessment of the effectiveness of tailored educational material in groups of women with different social and cultural characteristics (Garces, 2006).

Definition of Terms

Age: Delineation of individuals into different groups based on their age for the purpose of calculating the health status of each group (Kazis, Anderson, & Meenan, 1989)

Cervical cancer: Slow growing cancer that forms in the tissues of the cervix that usually has no symptoms but can be found with regular Pap smear tests. Cervical cancer is almost always caused by Human papillomavirus (HPV) infection (NCI, 2008).

Pap smear screening: A procedure in which cells are scraped from the cervix for examination under a microscope. It is used to detect cancer and changes that may lead to cancer. A Pap smear can also show conditions, such as infection or inflammation that are not cancer. Also called Pap test or Papanicolaou test (NCI, 2008).

Social networking website: Web-based services that allow individuals to construct a public or semipublic profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system (Boyd & Ellison, 2007).

Assumptions

It was assumed that participants would be willing to volunteer in the study and that they would not bias the study. It was also assumed that participants would complete the questionnaires truthfully and to the best of their ability and would refrain from participation if they were not fully clear on the intentions of the study. Additionally, it was assumed that the instruments used would be appropriate means for measuring the designated variables. Generalizability of this study was limited due the nature of the cohort completing the questionnaire. Questionnaires were sent to a local cohort of actively practicing RNs. It was assumed that the participants had a steady income and access to quality healthcare.

Limitations

This research study was limited to RNs practicing in Durham, North Carolina. This population was selected as a convenience sample and for logistical management. The limitations of this quantitative study were that the findings were limited to the population studied and were not generalizable to other populations. Further, there was also the possibility of participants not providing truthful answers regarding their health practices. The online survey format had its own limitations, as there may have been difficulties in accessing the survey or reluctance by participants to complete it.

Scope and Delimitations

This study was delimited by assessing whether the use of social networking websites affects the receipt of regular cervical cancer screening. RNs of any race or ethnicity were used as participants. RNs who were over the age of 65 and still working were excluded, as their age excluded them from recommendations for cervical cancer screening. Nonrandom convenience sampling was used to recruit participants. Participants were recruited from information provided by the North Carolina Board of Nursing (NCBON). It was not within the scope of this study to develop material to educate participants on cervical cancer or the importance of regular screening. It also was not within the scope of this study to provide access to screenings or medical care. Other theories considered for the framework of this study included the transtheoretical model and the ecological approaches model. The transtheoretical model contends that in adopting healthy behaviors people progress through five levels related to their readiness to change (Prochaska et al., 2008). This model was not used because it is typically used

under the assumption that behavior change is a process that unfolds over time through a sequence of stages (Prochaska et al., 2008). For this study, the model needed to prompt a quick adoption of the health behavior. Ecological approaches include multiple levels of influence such as family, community, and social environments (Wendel, Garney, & McLeroy, 2015). This model was not used due to the complexity of its systems and the need for more sophisticated interventions (Wendel et al., 2015).

Significance of the Study

This study contributed to previous research around cervical cancer and women. After decades of research, barriers continue to exist in effectively reaching women with factual information that increases their awareness of the importance of regular Pap smear screening. Further, in spite of its treatable nature, thousands of women die each year from cervical cancer because they are not screened on a regular basis (NCI, 2008). Despite programs geared at providing screening services, education and support around regular screening continues to hinder their progress. With the inception of social networking websites, many companies and institutions have used their popularity to disseminate health information and to create support groups. This research assessed the effectiveness of this approach.

The social change impact of this research is beneficial for both women and corporations. An effective way to reach women with health information related to cervical cancer was established along with a way for organizations to receive feedback on what is working and what is not. The determination that social networking websites are effective in this manner should encourage more advertising and support groups to be

established within this realm. As the use of social networking websites as a health education tool continues to grow, it was important to determine if use of this media outlet is beneficial in spreading information about cervical cancer screening. As a tool to connect with old and new friends, there is a greater potential for the spread of information as well as the establishment and growth of support systems around good health practices.

Summary

In this chapter, I discussed the background to the study and established a premise for studying the association between social networking website use and age and its effect on the decision to engage in Pap smear screening. Literature from previous decades shows how women are affected by cervical cancer and the reasons why they do not receive regular screening. More recent research shows that in attempt to better reach this population, the internet has been used as a tool to provide education around cervical cancer and to promote the services available to make screening more attainable (Thackeray et al., 2012). In Chapter 2, I provide a review of the current literature around these topics as well as suggestions for the potential of social networking websites to bridge the gap between health care providers and women. In the next chapter, I will also present gaps in previous research and their influence on this study.

Chapter 2: Literature Review

Introduction

Previous research on cervical cancer among women has provided much information regarding the factors related to why women choose or choose not to receive regular Pap smear screening. In addition to a lack of physical resources and pertinent knowledge around cervical cancer, researchers have made many discoveries about the emotional components related to this decision. Research around the rapid growth of the use of social networking websites to provide health information, communication outlets, and support has shown the popularity of this trend as well as the future possibilities. In this literature review, I will present how there are a large number of women with cervical cancer despite having the resources to stop it. Further, I will also present the need for research to examine the effectiveness of using social networking websites as an education tool for cervical cancer and a source of support for women making the decision to have Pap smear examinations.

Search Strategy

I conducted this literature review using the Walden University Library to access the EBSCOhost (Academic Search Complete) database. Within this database, I searched for relevant research articles using key words: *cervical cancer, screening, social media, social support,* and *internet*. Google Scholar was also used to locate relevant studies with searches: *cervical cancer screening in the United States, cervical cancer screening and Facebook,* and *cervical cancer screening and Twitter*. Additionally, PubMed was used to conduct a search of research articles with the search term, *social networking and*

screening. I conducted a final search online using the Journal of Internet Research. For this final search, I used the terms *social networking* and *health*.

Cervical Cancer Screening

Pap smear screening has been effective in screening for cervical cancer as the testing is able to detect precancerous cells within the cervix (Vesco et al., 2011). Pap smear screening is able to detect changes to cells on the cervix that could become cancerous if not properly treated (CDC, 2013). This type of cervical cancer screening is known as one of the most reliable and effective cancer screening tests available (CDC, 2013). Over the past 5 decades, Pap smear screening has played a vital role in cervical cancer screening in the United States, as incidence rates and mortality rates have decreased as a result of such screening (Holcomb & Runowicz, 2005). The advances in cytological screening and HPV screening are expected to mitigate any weaknesses associated with misdiagnoses in women who are screened (Holcomb & Runowicz, 2005). In 2010, research showed that Pap smear screening was on the rise from 1987 until 2000 (Holcomb & Runowicz, 2005). However, screening rates fell slightly for Caucasians and African Americans, while rates for Hispanics remained stable (NCI, 2012). The target set by Healthy People 2020 was to have 90% of women 18 and older screened within the last 3 years (NCI, 2012). This target was not met as only 75% of women in this age group reported a screening in the past 3 years (NCI, 2012).

The U.S. Preventive Services Task Force updated its recommendation for cervical cancer screening from 2003 (United States Preventive Services Task Force (USPSTF), 2012). This recommendation is concerned with the age to begin and end screening and

well as the interval at which screening should take place (Moyer, 2012). In these recommendations, women less than 21 years were not recommended for screening (USPSTF, 2012). Cervical cancer is rare in women under age 21 and there are higher rates of false-positive diagnoses (Vesco, 2011). Women aged 21–65 are recommended to be screened every 3 years (Moyer, 2012). Screening in combination with HPV testing and cytology was recommended every 5 years for women aged 30–65 (Moyer, 2012). It was determined by the U.S. Preventive Services Task Force (2012) that screening with cytology more than every 3 years would provide little benefit, but increases in harm to women. Therefore, the timeframe of every 3 years was found to provide a reasonable balance between benefits and harms (U.S. Preventive Services Task Force, 2012). While there is not a recommendation for HPV testing alone, there have been other studies to show that HPV screening may be an effective way to prevent cervical screening (Budenholzer, 2012; Kaijan & Tay, 2011). The data from these studies show the need for different approaches to combating cervical cancer, especially among those who do not regularly receive Pap smear examinations. The research does not show how women are effectively recruited to participate in a cervical cancer screening program.

There have been many studies conducted to obtain a better understanding of the factors associated with women getting screened for cervical cancer. Ackerson (2010) found that women who received regular Pap smear screenings reported being influenced by their mothers and health care providers. The data from this study shows that choosing to provide orders to receive screening over encouragement as an ineffective means to encourage women to incorporate this health practice into their lives.

In addition to encouragement, the level of comfort with the changing recommendations of how often to receive screening is also important to assess. In a study conducted by MacLaughlin et al. (2011), one-third of women surveyed were not comfortable with screening every 2 or 3 years. Similarly, Fatone and Jandorf (2009) conducted a study to assess factors related to cervical cancer screening among women. Data from questionnaires administered to participants showed that insurance and physician referral were not a factor in receiving screening; however, spoken language was influential (Fatone & Jandorf, 2009). This study was geared towards Latina and African-American women and helped to highlight the continuing language barriers that exist and hinder adherence with screening guidelines (Fatone & Jandorf, 2009). Data from these studies does not show how support of others influenced the decision to engage in Pap smear screening. Further, there are not examinations into additional means of communication.

A recent study to examine barriers to cervical screening found that obesity may hinder some women from receiving cervical cancer screening. Wee, Phillips, and McCarthy (2012) found that severely obese Caucasian women were less likely to receive Pap smear screenings than Caucasian women with normal weight. Embarrassment and discomfort associated with the screening were cited as reasons for not undergoing testing (Wee, Phillips, & McCarthy, 2012). These findings were not the same for African-American and Hispanic women, as weight was a reason for not undergoing screening (Wee, Phillips, & McCarthy, 2012). Worthington, McLeish, and Fuller-Thomson (2012) also found lower cervical screening rates among obese women. This lower rate was not

found to be due to the lack of physician recommendation, but related to feelings of disrespect from clinicians, unsolicited lectures about losing weight, and discomfort with being weighed (Worthington, McLeish, & Fuller-Thomson 2012). For overweight women who chose to receive regular screening, it was found by Friedman, Hemler, Rossetti, Clemow, and Ferrante (2012) that certain personality traits were present such as conscientiousness, which allowed them to complete a feared task. This finding shows the need for certain health behavior interventions for this population.

Research by Byrd, Chavez, and Wilson (2007) into barriers to Pap smear screening among Hispanic women, reported that many of the barriers could be overcome if there was focus on changing how such screenings were administered. If women were put more at ease, had more privacy, and had less undue pain, researchers believed many barriers could be overcome (Byrd, Chavez, & Wilson, 2007). Additionally, it was suggested by United Healthcare, in collaboration with the American Cancer Society, that clinicians take certain steps to make the process of a Pap smear screening more comfortable (UnitedHealth Group Incorporated, 2011). As an effort to reduce the barriers to women receiving Pap smear screening, it was recommended that clinicians take the time to do things such as bond with women before performing the test, carefully tell the patient what will be done the moment before it is done, sit in a chair while talking with the patient, and wash hands before putting on gloves (UnitedHealth Group Incorporated, 2011). According Potter (n.d.), taking the time to talk with a patient that has never had a pelvic exam done previously is imperative to developing trust and dispelling any myths she may have. Additionally, it gives the chance for the clinician to discuss female

anatomy with the patient, the tools used during the screening, and the importance of the screening (Potter, n.d.). Research by Worthington, McLeish, and Fuller-Thomson (2012) found similar results regarding the role of clinicians in adherence to Pap smear screening. In their study, data reported from participants showed that having a regular primary care physician played a key role in their decision to receive Pap smear screening regularly.

The need for knowledge regarding Pap smear screening is not only important for adult women, bur for adolescents as well as adolescent females are at risk of HPV and most are not fully aware of its etiology or modes of transmission (Breitkopf, Pearson, & Breitkopf, 2005; Sathian, Bhattarai, & Chacko, 2011). According to Kahns and Emans (1999), younger patients of mixed race from urban areas are more susceptible to cervical cancer than younger Caucasian patients from rural or suburban areas. Further, the adolescent cervix is more vulnerable to HPV infections due to its unique anatomical features (Schwaiger, Aruda, LaCoursiere, & Rubin, 2012). It is important to reach adolescents with this information as sexually active adolescent girls may be at higher risk of developing cervical cancer than older women (Kahns & Emans, 1999). Factors related to this are increased sexual partners, higher rates of sexually transmitted infections, and higher rate of smoking (Kahns & Emans, 1999). As pointed out in the research by Borges et al. (2010), adolescents cannot be expected to engage in HPV prevention if the prevention methods do not make sense. The education process has to include various aspects inherent to the communicator, communication methods, and the audience (Borges et al., 2010). Research has also shown the importance of including mothers in the decision of screening adolescents as source of encouragement and support (Salz et al.,

2010). The data from these studies shows the need for more effective communication and education for health care providers and patients the same.

The Health Belief Model

The health belief model is applied to different situations to help prevent diseases and to establish health programs (Glanz, Rimer, & Viswanth, 2008). The basis of this model is the perceived relationship between an individual's health beliefs and behaviors and the model is used extensively to form interventions (Tavafian, 2012). In order for women to engage in Pap smear screening, researchers believe that women must believe that they are susceptible to cervical cancer. Further, women must believe that cervical cancer is a serious condition and that it is beneficial to receive regular Pap smear screenings (Tavafian, 2012). In a study by Akyuz and Acikel (2011), the researchers aimed to assess the effect of the health belief model for cervical cancer and Pap smear screening among Turkish women. Participants in the study were administered questionnaires to gather data about Pap smear utilization as well as health motivation (Akyuz & Acikel, 2011). Researchers found that the health belief model was a valid and reliable tool for assessing women's beliefs as they relate to cervical cancer and Pap smear screening. Similar results were found by Duran (2011), who also conducted a study among Turkish women.

The health belief model was also used in a study by Denny-Smith, Bairan, and Page (2006). In this study, the researchers assessed the knowledge, perceived susceptibility, perceived seriousness, and risk behaviors of cervical cancer and HPV among female nursing students. Using a survey to collect data from the participants,

Denny-Smith et al. found that female nursing students were likely to engage in high-risk behaviors that increased chances of HPV and cervical cancer. Additionally, the researchers found a low level of knowledge, low perceived susceptibility, and low perceived seriousness regarding HPV and cervical cancer. As pointed out by Moore (2011), the preferred path of action towards positive behaviors is through perceived benefits less barriers. Additionally, there must be a feeling of self-efficacy so that an individual believes that they are competent to implement a change (Moore, 2011). Support from family has been found to increase feelings of self-efficacy and perceived benefits (Moore, 2011). Moore discovered that Latino women who were married were more likely to adhere to Pap smear screening guidelines when compared to unmarried Latino women. The health belief model was also used in Reynolds (2010) study regarding parental acceptance of the Gardasil vaccine. Data gathered from the parents in the study showed that the support of social networks and those deemed important to them helped parents to perceive their daughter's receipt of the vaccine as beneficial. Data gathered from these studies shows that while the health belief model is a good basis for developing Pap smear screening initiatives, it is also important to consider support systems and incorporating them in the decision.

Cervical Cancer Screening and Support

Programs such as the National Breast and Cervical Cancer Early Detection Program have been developed to make cervical cancer screening accessible for all women (CDC, 2012). Participation in these programs increases the chances of detecting cervical cancer in the early stages, especially for women at high-risk (CDC, 2012). A

lack of support around cervical cancer screening affects the decision to engage in Pap smear screening (CDC, 2012). Gamarra et al. (2009) found a link between social support and the receipt of Pap smear examinations. It was found that when family and the community were included in the education process of Pap smear screening, participants were more inclined to receive the screening in comparison to when other means of education were used (Gamarra et al., 2009). These results are similar to the findings of de Bocanegra et al. (2009), which found that Latinas who had emotional support systems were more likely to engage in cervical cancer screening. Social integration among the participants was also found to increase chances of Pap smear utilization, more than a mammogram (de Bocanegra et al., 2009). The results from these studies show the value of including support systems in the education process of Pap smear screening. It is also important to point out that community was included as a part of the support system in Gamarra et al.'s (2009) study, which increased participation in Pap smear examinations. More recent times call for research in the area of incorporating the community and the use of technology.

Cancer is one of the most feared diseases despite advances in early detection and treatment (National Cervical Cancer Coalition, 2013). Family members, close friends, and other caregivers play not only in the management of symptoms after diagnosis, but in engaging in preventative behaviors as well (National Cervical Cancer Coalition, 2013). A study by Smith et al. (2011) found that women who did not have a regular heterosexual partner were less likely to have been screened in the past 2 years compared to those who lived with a partner. Family support was cited as a factor related to the decision to engage

in Pap smear screening by Gichogo (2012). In Gichogo's research, responses to a questionnaire showed that even women who had family support did not engage in regular screening due to a lack of knowledge of the importance of this practice. The need for support in engaging in this health behavior as well as in learning why receiving regular screening is important was evident in this study. Research by White et al. (2012) that access to an outreach group for women with limited access to health care and Pap smear screening helped to encourage women to set an appointment for a screening. Moreover, the support offered from the outreach program resulted in 65% of participants attending the appointment made for a Pap smear.

Support around engaging in regular Pap smear screening is viewed as a source of motivation for many women (Sakr & Adib, 2011). In a cross-sectional study, Sakr and Adib (2011) researched the effect of knowledge and perceptions on the prevalence of use of the Pap smear screening. Responses to the questionnaire showed knowing other women who had regular screening or have a diagnosis. Researchers also found that regular engagement in Pap smear screening was related to scores of advantages and motivators (Sakr & Adib, 2011). Similar results were found from a study by Cook et al. (2010). A study of women from Florida community health centers added to previous reports of low screening rates among Hispanic and African-American women. The study also showed the need for clinical data software that supported Pap smear compliance monitoring within community health centers (Cook et al., 2010). As community health centers are the primary place for health care for underserved populations, a database for monitoring compliance would be beneficial in keeping women in compliance and

providing support and encouragement around screening. Smith, Cokkinides, and Brawley (2009) had similar suggestions. Their research into ways to increase cancer screening included the creative approach of implementing reminders and other systems that support regular screening (Smith, Cokkinides, & Brawley 2009).

When researching reasons why women did not have a resent Pap smear screening, Smith, Cokkinides, and Brawley (2009) found that women did not deem the screening important since their doctor did not order the screening. This shows the need of support and encouragement during regular health examinations from health care providers as a source of structural support. Moreover, research by Everett et al. (2011) displayed that among methods used to encourage women to participate in regular screening, invitations from a physician were the most effective. In a study of primary care physician use of systems strategies for cervical cancer screening, Yabroff et al. (2011) studied the effectiveness of both patient and physician screening reminders. Health care providers are a direct connect in the process of implementing screening guidelines, however, less than 10% of physicians reported using decisions support strategies to support Pap smear screening (Yabroff et al., 2011). It was also found that physicians were more likely to encourage screening in facilities that generated performance reports of screening rates or in-practice guidelines that incorporated cancer screening. This research indicated the need for standard guidelines for health facilities and specialized training for physicians to provide support around the decision for screening.

In a study conducted by Luszczynska, Durawa, Scholz, and Knoll (2012), researchers aimed to assess how empowerment affected the beliefs and intentions to

receive cervical cancer screenings. After three studies were conducted, it was found that high levels of social support played a role in perceiving fewer barriers for receiving communication around Pap testing (Luszczynska, Durawa, Scholz, & Knoll, 2012). It was further discovered that a strong support system was associated with the perception of social benefits related to cervical cancer screening (Luszczynska et al., 2012). Using a different approach, Bloomberg et al. (2011) wanted to take a more positive approach by looking at what encourages women to get screened instead of researching factors that hinder screening. Interestingly, there was no mention in this study of the need for social support. However, all participants were described as being in their 30s and were a part of a cervical cancer screening program (Bloomberg et al., 2011). This alludes to the fact that there was a social support system developed. Bloomberg et al.'s study shows the need to identify the different types of support systems that can affect the decision to engage in Pap smear screening. These studies strengthen the perceived relationship between cervical cancer screening adherence and social support and show the importance of research that includes the support system in the decision to get screened.

Ayers, Atkins, and Lee (2010), included six categories with social support including attachment, social integration, and the ability to obtain guidance and information in stressful situations. In their study, researchers studied the influences associated with Filipino women engaging in cervical cancer screening. The findings of the study supported the hypothesis that social support was related to positive health practices except cervical screening. Similarly, in a study of the psychosocial factors related to cervical cancer, Wilkerson et al. (2009) included the lack of social support

along with stressful life events as factors associated with cervical cancer diagnoses. As in the study by Ayers et al., there was not a relationship found between social support and the decision to receive cervical cancer screening. The study by Wilkerson et al. included women who were considered to be highly educated and able to effectively handle psychosocial factors. A reason attributed to the lack of relationship between these factors includes the possible lack of education included around the importance of cervical cancer screening. Without the information around the recommended ages and intervals to receive screening, the likelihood of participation is low. This further displays that the efforts to encourage women to engage in cervical cancer screening needs to be multi-faceted.

Cervical Cancer Screening and Social Networking Websites

The way in which people gather health information has changed due to the digital age. The Internet is now used frequently to obtain health information (Fox, 2011). It is estimated that 59% of American adults search for health information via the Internet (Fox, 2011). Research by Fox (2011) also displays that people use the Internet to search for specific health conditions and/or medical treatments and procedures. The Internet is a preferable tool for health information as information can be gathered in a short time frame at the convenience of the patient. The information is also usually free and a large amount can be provided (Shneyderman, 2012). Specifically for cervical cancer, research by Shneyderman (2012) found that women who used the Internet for information related to cancer were more likely to adhere to cervical cancer screening guidelines. However, information obtained from other sources did not produce the same results. This study

demonstrates the importance of using the Internet to dissipate cervical cancer information. Tran et al. (2010) had similar results. In their research, Hawaiian women were studied for sources used to gather information on cancer. Researchers determined that participants who used the Internet to search for health information were more likely to receive regular Pap smear screenings.

Particularly, within the realm of health communication, social networking websites have changed the relationship between patients, health care providers, and health entities. Colineau and Paris (2010) conducted online surveys about the use of health-related social networking websites. From the surveys, researchers found that in addition to providing emotional support, online peers are often chosen to discuss health matters as they are able to provide support all while maintaining an appropriate emotional distance (Colineau & Paris, 2010). The results of this study indicated that as popularity of social networking websites have attracted users to communicate with other users regarding health matters instead of other health related websites. Social networking websites provide for the opportunity for users to learn about alternative approaches without relying heavily on the information provided by health care professionals. In a study by Divecha, Divney, Ickovics, and Kershaw (2012), 94 adolescents and young adults completed an audio computer-based self-interview about their use of media technologies, communication with friends about sexual health a willingness to use media technologies for such communication. African-American participants were found to be more likely than other races to share sexual health with friends through a media technology (Divecha, Divney, Ickovics, & Kershaw, 2012). Further, those who were

willing to discuss sexual information over media technologies had more Facebook friends than those who were unwilling to do so (Divecha et al., 2012).

In another study, Facebook was used to offer rapid HIV testing and sexual health screening to users who actively logged onto their account (Bradshaw, Hughes, & Day, 2013). Once participants who were actively logged into their account clicked on the advert, they were able to set an appointment for testing (Bradshaw et al., 2013). This approach reached a significant proportion (8.5%) of the targeted population and presented a cost-effective opportunity for health promotion. According to the results, Facebook can be used to reach a marginalized population in a cost-effective manner for specific health promotion behaviors (Bradshaw et al., 2013). According to Centola (2013), patients who use social networking websites are able to interact with others in a manner that allows them to compare health status, treatment, and recovery plans. Moreover, informational channels are created that allow information to travel across different geographical regions (Centola, 2013).

Social networking websites have become the preferred method of communication for many over the last five years (Marsico, 2010). The use of social media networking is considered to be a meeting place for consumers to share their experiences and for health care providers to get an idea of what consumers want and expect (Hackworth & Kunz, 2011). This is especially pertinent for cervical cancer information as one of the main reasons for the growing number of cases of cervical cancer diagnoses and deaths is due to a lack of education among women. In a study to determine possible inequalities among internet users, Kontos, Emmons, Puleo, and Viswanath (2010) found no inequalities

among users of social networking websites for health communication. Researchers feel as though this offers hope for social networking websites to be used for the promotion of public health interventions and messages (Kontos, Emmons, Puleo, & Viswanath, 2010). It is further suggested by Hackworth and Kunz (2011), that health care providers make it a goal to have an online presence to better serve patients and remain competitive within the industry. Farmer et al. (2009) conducted a study to assess the role of social networking among health care providers. The purpose was to determine if Facebook was successful in connecting users with common medical conditions. To carry out this study, researchers conducted a search of the entire Facebook using medical and lay nomenclature for the most prevalent non-communicable diseases to identify if these diseases were represented among individual Facebook users and user groups (Farmer et al., 2009). The groups identified included patient groups, support groups, fundraising/charity groups, and other groups (research, educational, or social). While researchers were successful in determining a strong presence of medical conditions of Facebook, there was no implication of how useful the information was. Further research is needed to determine if the use of social networking websites helps users to engage in good health practices such as cervical cancer screening.

Social networking websites have been identified as a preferred means for promoting health because of its capacity to reach people without geographical constraints, ability to promote communication among people with common interests, and the ability to provide tangible health information and advice (Rajani, Berman, & Rozanski, 2011). Further, there is the motivation and opportunity for people to join

groups that promote positive health behaviors (Rajani et al., 2011). Research by Fenner et al. (2012), Facebook was used to recruit participants to assess knowledge of HPV and cervical cancer. Over a 4 month period, an advertisement was placed on Facebook to participate in a health study. Those who clicked the link were able to receive more information about the study and provide their contact information for researchers to assess their eligibility (Fenner et al., 2012). Recruiting participants in this manner proved to be successful as the participants were found to be representative of the target population (Fenner et al., 2012).

In addition to Facebook, Twitter is used for social interaction and information dissemination. Twitter is a micro-blogging sited and is the second most popular social networking website behind Facebook (Lyles, Lopez, Pasick, & Sarkar, 2012). The difference between the two sites is that majority of the information on Twitter is publicly available in contrast to Facebook, where information shared between users is usually private (Lyles, Lopez, Pasick, & Sarkar, 2012). The publicity of Twitter has led to its use as a media platform for many health care organizations as well as for many health campaigns. It is further suggested that Twitter can be used as a source of disease surveillance (Louis, 2012). The millions of tweets posted daily are relaying health symptoms provide surveillance to illnesses the may not prompt a physician visit (Louis, 2012). Further research into health related dialogue regarding Pap smears and mammograms, by Lyles, Lopez, Pasick, and Sarkar (2012), showed that Twitter can be a source of real-life experiences related to having Pap smears. During a 5 week period, tweets were collected through the searches for pap smear and mammogram to filter to top

tweets (Lyles et al., 2012). The messages also showed the decision making process to engage in screening as well as the process of examining personal health behaviors (Lyles et al., 2012). As with studies that have used Facebook, research into using Twitter has not yet shown whether it is effective in adopting health practices such as Pap smear screening.

Methodologies in Previous Research

Use of Surveys in Research

Sample surveys consist of systematic, standardized approaches to collect information on individuals, households, or larger organized entities through the questioning of systematically identified samples of individuals (Rossi, Vright, & Anderson, 2013). Surveys have become widely used in a variety of social science disciplines and their associated applied fields. They are used to provide much of the data that monitor trends in our society, test our theoretical understanding of social and social psychological processes, and to provide intelligence to market researchers (Rossi et al., 2013). In studies by Gamarra, Paz, and Griep (2009); Ogunbowale and Lawoyin (2008) and Tung et al. (2008); researchers gathered data using self-administered surveys. Lee, Fogg, and Menon (2008) found that the use of self-administered surveys may lead to measurement error because of over reporting or recall bias. However, it has also been found that over-reporting may not be more common among once racial group than among another (Ross et al., 2008). It has been further found that there is a high level of agreement between self-report and actual receipt of Pap smear across several ethnic groups (Turniel-Berharlter, Finney, & Jaen, 2004).

Knapp and Kirk (2002) conducted a study in which responses to personally sensitive questions were asked to 352 undergraduate students. The sample population was assigned to respond anonymously using one of the three survey methods: pen and pencil mail in, internet survey, or automated touch-tone telephone response system on a variety of things such as sexual behavior, illegal drug use, and alcohol abuse (Knapp & Kirk, 2002). Researchers could find no significant difference among the three different response options, suggesting that for some populations, internet and touch tone systems achieve the same results as traditional pencil and paper surveys. Wright, Aqualino, and Supple (1998) also used both pencil and paper surveys and computer-assisted surveys in their research to examine substance abuse. Subjects were randomly assigned to interview mode and it was found that adolescents, who reported significantly higher levels of alcohol use, illicit drug use, and psychological distress in the computer mode than on paper and pencil mode, were more sensitive to mode of administration than older respondents (Wright, Aqualino, & Supple, 1998). Further, respondents with higher levels of mistrust in others were less likely to report substance abuse in the computer mode than in paper and pencil format (Wright et al., 1998). Specifically relating to cervical cancer, Westman, Hampel, and Bradley (2000) created a computer-based, touchscreen, family cancer history questionnaire to facilitate the provision of cancer risk assessments for ambulatory and outpatient populations of a freestanding cancer hospital. After 11 months of use, only 2% of the completed questionnaires contained insufficient information to provide a basic risk assessment and 95% of participants reported feeling very comfortable using the system (Westman, Hampel, & Bradley, 2000). It was found that the computer

family history questionnaire allowed for easy collection of family history information, provision of risk assessments to a broad population, and provided increased awareness of familial risk and appropriate surveillance (Westman et al., 2000).

Instrumentation

The Pew Internet and American Life Project (PIAL) examined the role of the Internet in everyday life in the United States (PIAL, 2015). There is particular interest in the under examined aspects of Internet use as well as the Internet's social impact. Information for this project is gathered primarily through a tracking survey, which is used in research studies. Houston et al. (2013) used data from the PIAL to assess online use of health information among Veterans in the Veterans Health Administration. It was found that the internet was used to research health issues related to Alzheimer's disease and memory loss. The PIAL was also used by Horowitz (2013) to discover that 84% of caregivers use the Internet to research health topics but only 7% use Internet tools to monitor patient medications and refill prescriptions. Additionally, Olsen et al. (2011) used the PIAL to assess age related differences in the frequency of technology use. The project displayed how younger adults use a greater breadth of technologies than older adults. However, age-related differences in usage and frequency of use depended on the technology domain.

Data Analysis

Chi-square tests are applicable to many situations in which experimental frequencies are compared to theoretical frequencies based on a hypothesis (Tallarida & Murray, 1987). There are two types of chi-square tests used in quantitative studies, the

goodness fit and the chi-square of independence. For this study, the test of independence will be used. The chi-square of independence assesses whether an association exists between the two variables by carefully examining the pattern of responses in the cells. This statistical analysis has been used for many years in studies regarding cervical cancer screening (Belinson, Qiao, & Pretorius, 2003; Clarke & Anderson, 1979; Kleinman & Kopstein, 1981). For the present study, this test was appropriate as it was in the aforementioned studies as it examined whether two measures are associated or independent.

Logistic regression is an approach to predict an outcome. This type of statistical analysis can be used to predict a categorical dependent variable on the basis of continuous and/or categorical independents; to determine the effect size of the independent variables on the dependent; to rank the relative importance of independents; to assess interaction effects; and to understand the impact of covariate control variables (O'Connell, 2005). Use of this tool help to gather information about the prevalence of health related studies and conditions and measure the frequency of conditions as well as demonstrating associations. Logistic regression analysis has been used widely among studies regarding cervical cancer screening (Decker et al., 2013; Hee et al., 2015; MacLaughlin et al., 2011; Roman et al., 2014).

Summary

In this literature review, I presented previous research around the effect of cervical cancer on women, the need for social support around cervical cancer screening, and the use of the Internet as an educational tool and source of emotional support. As the

use of social networking websites continues to grow both among women and as a health education tool, there is an obvious urgent need for research into its effectiveness. While research has shown that users are taking advantage of the data provided by these websites, there needs to be literature established that demonstrates that this approach is producing positive results. In Chapter 3, I will go into greater detail about the methodology used to study the research questions. Included in this chapter will also be a description of the participants, the procedures, tools of measurements, and analysis of the data.

Chapter 3: Research Model

Introduction

In this chapter, I will describe the research methods used to test the hypotheses. I will also describe the purpose of the study, research design and approach, sample, data collection, settings and methods, statistical analysis, and participant confidentiality. The goal of this research project was to examine the association between the use of social networking websites and receipt of cervical cancer screening, while controlling for age. Specifically, the research focused on the following central question: Is there a significant association between use of social networking websites and the receipt of cervical cancer screening? By comparing the use of social networking websites and age, as reported by the participants, with the receipt of cervical cancer screening, also reported by the participants, a decision was made to either accept the null hypothesis or contend that there is no significant association between social networking website use and cervical cancer screening.

Research Design and Approach

A quantitative cross-sectional survey research design was employed to explore the association between social networking website use and receipt of cervical cancer screening. Use of a quantitative research design helped in determining an association between the variables. The independent variable was use of social networking websites and the dependent variable was receipt of cervical cancer screening. Age was the covariate for this study. The research design of this study included an analysis of cross-sectional survey data collected on the social networking website use of participants

and receipt of cervical cancer screening as reported by the participant. A cross-sectional study design is a quantitative method of research in which two or more quantitative variables from the same group of subjects are examined for an association at one point in time (Hernandez-Sampieri, Fernandez-Collado, & Baptista Lucio, 2010). Cross-sectional study designs are typically used to describe a pattern of relations between variables as well as to establish causal relations (Frankfort-Nachmis & Nachmias, 2008).

A cross-sectional design is advantageous as research can be conducted in natural settings that can be generalized to the greater population, which also keeps costs low (Frankfort-Nachmis & Nachmias, 2008). Moreover, while research done with a cross-sectional design must be conducted at one time point, such studies have multiple health purposes, making them useful for prevalence research as well as estimating knowledge of health (Crosby, DiClemente, & Salazar, 2006). This design was appropriate for the study because of its descriptive nature and ability to allow a single researcher with limited time and funding to gather, analyze, and interpret the data (Creswell, 2009). Further, it required fewer participants to determine an association between or among variables and offered flexibility to explore numerous health outcomes and related risk factors at the same time (Creswell, 2009).

Setting and Sample

According to the NCBON, there are 2,676 registered nurses in Durham County (North Carolina Board of Nursing, n.d.). The target population for this study was female RNs aged 25 to 65 years who worked in Durham County, North Carolina. Participants were limited to this age group based on guidelines for regular Pap smear screening set by

the American Cancer Association. These guidelines recommend that women should begin receiving Pap smear screening at 21 years or no later than 3 years after becoming sexually active and that they may stop screening when they attain the age of 65 years (American Cancer Society, 2014). These guidelines further suggest that women under the age of 21 should not receive Pap smear screening. Participants were enrolled in the study if they met this age requirement. For a fee, the NCBON electronically provides statistical information including information regarding RNs practicing in the different counties of North Carolina as well as e-mail addresses of RNs. The information provided by participants contributed to the literature on how the use of social networking websites encourages women to engage in regular screening as well as possible interventions that may be used to reach populations of women previously identified to not engage in regular screening.

The targeted sample for this study was a total of 396 RNs in Durham County who had an active license that was in good standing. The sample size for this study was determined using the OpenEpi Version 2 open source calculator. Power for the study was set at 80% and the level of significance rejecting the null hypothesis (alpha) was set at 95%. An assumption of 50% for those unexposed to cervical cancer screening was set and 30% was set for those exposed to cervical cancer screening. This was used to obtain a minimal sample of 396 participants.

Data Collection Methods

At my request, information regarding RNs working in Durham County was obtained from the NCBON. This information was delivered electronically via my e-mail. Once requested and the necessary fees were paid, the NCBON provided the names of the RNs along with their e-mail addresses. This provided for the fastest way to contact potential participants to provide them with the necessary information regarding the study. Additionally, use of their e-mail addresses allowed them to be directed to the survey electronically while eliminating the use of paper forms that would have had to be filled out and mailed back in. This electronic process was convenient in that it saved time and money.

Once the names and e-mails of RNs working in Durham County were sent to me by the NCBON, I sent the RNs, via e-mail, information detailing the study. The e-mail message included a narrative that described the purpose of the study, the inclusion and exclusion criteria to participate, and my contact information (e-mail address). This e-mail message is included in Appendix A. Potential participants were invited to contact me with any questions regarding the study. Attached to the e-mail was an informed consent form that included participation procedures, information on confidentiality, and ethical considerations. The voluntary nature of the study was also included to remind participants that they could withdraw at any time and that any information provided would be kept confidential. Participants who agreed to participate in the study were directed to the survey via an Internet link to Survey Monkey.

A link to the survey was included at the end of the e-mail message that I sent to participants. This survey software tool allows users to create and send surveys that can range from a simple poll to in-depth market research (Survey Monkey, 2015). These surveys can be sent out via mobile, web, social media, or custom URL. The real time responses gathered can be presented in custom reports or charts that allow for Statistical Package for Social Sciences (SPSS) integration and text analysis (Survey Monkey, 2015). In addition to reducing costs due to elimination of printing and mailing costs and data transcription error, Survey Monkey's robust basic version is free and can provide useful results to questions sets. The security of sensitive information is ensured through Health Insurance Portability and Accountability Act (HIPAA)-compliant features, Secure Socket Layer (SSL), and validation by Norton and TRUSTe antivirus software. At the beginning of the survey, participants were asked to report their age and other demographic information. The survey had two parts that consisted of the HBQ and questions taken from the PIAL.

Instrumentation and Materials

The Pew Internet and American Life Project

The PIAL is an initiative of the Pew Research Center concerned with the social impact of the Internet (PIAL, 2015). This project is made up of several different surveys administered to examine how Americans use the internet and how their internet use affects their lives (PIAL, 2015). A large part of the project is dedicated to researching social networking website use among Americans, and there are a total of 967 survey questions related to social networking website use (PIAL, 2015). Of these survey

questions, seven questions were used to assess participants' use of social networking websites. Permission to use questions from the PIAL was granted after contacting the Pew Research Center through e-mail. A copy of this correspondence is included in Appendix B. Survey questions from the PIAL were appropriate for this study as the questions specifically assessed the use of social networking websites. Additionally, the questions assessed if the websites were used to obtain health information. This study required a tool that could adequately assess the use of social networking websites such as done by the survey questions from the PIAL. A copy of the survey questions used is included in Appendix C.

Health Belief Questionnaire

The HBQ is a questionnaire developed, by Chang, Woo, Gorzalka, and Brotto (2010), to assess Pap smear testing beliefs and behaviors. The questionnaire was appropriate for this study as it assesses common preventive health practices such as frequency of Pap smear testing (Chang, Woo, Gorzalka, and Brotto, 2010). The HBQ also assesses the accuracy of beliefs about Pap smear testing using a true/false format (Chang, Woo, Gorzalka, and Brotto, 2010). These questions were developed based on the information provided by public health agencies to the public about Pap smear testing (Chang, Woo, Gorzalka, and Brotto, 2010). There are six questions used to assess preventive health behaviors, the frequency of Pap testing, and the time elapsed since the last Pap test (Chang, Woo, Gorzalka, and Brotto, 2010). Eight questions assess the accuracy of beliefs about Pap testing (Chang, Woo, Gorzalka, and Brotto, 2010). A copy of the 14-item HBQ is included in Appendix D.

Reliability and Validity

When administering a survey, there are many things to consider such as the format, structure, visual layout, and the accuracy of elicited information (Trochim, 2006). Most importantly, the goal is to have instruments that are reliable and valid (Trochim, 2006). According to Carmines and Zeller (1979), reliability is concerned with the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials, while validity is concerned with the extent to which it measures what is intended. In this study, I gathered data through a well-established survey software tool. Survey Monkey is widely used and well known for its data collection process, security, and data analysis (Survey Monkey, 2015). This study also benefited from the advantages inherent in surveys that have already been established and used in previous research. The PIAL has been conducting research since 1990 using surveys that have been developed in multistage processes pretested in pilot studies (PIAL, 2015). The HBQ has also been used in previous research to examine cervical cancer screening behavior (Chang, Woo, Gorzalka, and Brotto, 2010). The previous use and standardization of these tools provided the advantage of asking the same questions of all participants in order to improve the reliability and validity of this design.

Research Variables

The dependent variable for this study was receipt of cervical cancer screening, which is recommended for all women aged 21–65 (American Cancer Association, 2015). The independent variables was social networking website use and age was the covariate. These variables were chosen based on the health belief model that predicts the reason(s)

individuals take action to prevent, screen for, and prevent illness; as in the case of Pap smear testing to detect cervical cancer. According to Glanz et al. (2008), a person's beliefs, attitudes, and perceptions about a disease determine their actions to seek methods to prevent, screen for, and control a disease. Table 1 provides an overview of the proposed variables.

Table 1

Descriptions of Study Related Variables

Variable	Description	Type of Variable
Dependent Variable		
Cervical Cancer Screening	Receipt of cervical cancer screening as recommended by American Cancer Society Yes: regular cervical cancer screening=1 No: non-regular/no cervical cancer screening=2	Categorical
Independent Variables		
Social Networking Website Use	Use of Social Networking Websites (Facebook, Twitter) Yes: Use of Social Networking Websites=1 No: No use of Social Networking Websites=2	Categorical
Age	18–24 = 1 25–34 = 2 35–44 = 3 45–54 = 4 55–64 = 5 65–74 = 6 75 or older = 7	Categorical

Data Analysis Plan

The following RQs were addressed in the study:

RQ1: Does the use of social networking websites encourage women to engage in regular Pap smear screening?

$H_0$1: There is no association between social networking website use and regular Pap smear screening

H_a1: There is an association between social networking website use and regular Pap smear screening.

RQ2: Is age associated with the decision to receive regular Pap smear screening among women who use social networking websites?

$H_0$2: There is no association between age and the decision to engage in regular Pap smear screening among women who regularly use social networking websites.

H_a2: There is an association between age and the decision to engage in regular Pap smear screening among women who regularly use social networking websites.

Data cleaning and screening were performed as questionnaires were submitted to ensure that errors are identified, and incomplete questionnaires were deleted prior to conducting data analyses. Possible sources of error included missed responses and incorrectly entered or coded data. Careful review of the data prior to analyses ensured that the obvious errors were quickly identified.

To analyze the data, I used SPSS version 22. All statistical tests were conducted using an alpha level of ($\alpha = .05$) for statistical significance. The decision to reject the null hypothesis was made if the *p*-value was less than or equal to the stated alpha level. If the *p*-value was greater than the alpha level, the null hypothesis would be retained and alternative hypothesis rejected. Information on the data analysis was presented using

descriptive and inferential statistics such as frequencies and percentages. To test and report the Pap smear screening behaviors of participants, I used a chi-square test was used. The dependent variable determined if participants engaged in regular Pap smear screening based on a dichotomous scale. I used a dichotomous scale to assess the independent variable of social networking website use and age as a covariate. A nominal scale assessed if participants engage in regular Pap smear screening. Use of the chi-square test was appropriate as it is a statistical test used commonly to compare observed data with data that is expected according to a specific hypothesis (Fisher & Yates, n.d). I used chi-square test of independence to test for an association between age and the decision to engage in regular Pap smear screening among women who regularly use social networking websites. I used logistic regression analysis to analyze the relationship between the two independent variables and the dependent variable. A useful feature of this method included an odds ratio that is an index of relative risk (Polit & Beck, 2006). The alpha level determined the significance of the result and the decision to reject the null hypothesis. Table 2 provides an overview of the statistical analysis of the research questions.

Table 2

Statistical Analysis of Research Questions

Research Question	Variable	Statistical Analysis
1. Does the use of social networking website encourage women to engage in regular Pap smear screening?	Social Networking Website Use	Chi- square
2. Is age associated with cervical cancer screening among women who use social networking websites?	Age	Chi-square Logistic regression

Threats to Validity

Using RNs as study participants was one the shortcomings of this research. With the study population being women, the goal was to have a representative sample of this population. Failure to have a representative sample had the potential to result in poor generalizability of the results (Patel, Doku, & Tennakon, 2003). Their involvement in the healthcare field as well as their education level made this study population more prone to know the benefits and importance of regular Pap smear screening. Their level of pre-existing knowledge may have eliminated their need to use social networking websites for information on Pap smear screening and may have also made them more likely to engage in regular Pap smear screening than the general population. Due to the nature of the questions asked, participants may have been prone to provide responses that they felt were socially acceptable. A study by Blackwell et al. (2008) displayed how participants

may not accurately report their receipt of Pap smear exams or may give responses they feel are socially acceptable.

Ethical Consideration

This study was conducted after receiving permission from the Walden University's Institutional Review Board (IRB; approval number 11-24-15-0117056). The IRB required a completed application in which I defined each process of the potential risks, benefits, and protection of the participants in detail, informing the participant that they could withdraw at any time, as well as the process of obtaining consent. Permission to contact RNs in Durham, North Carolina was received from the NCBON. Additionally, permission was received from the Pew Research Center to use questions from the PIAL. The informed consent document was created in a simple, easy-to-understand format. This allowed each participant to evaluate any risks as well as the benefits before consenting. Each participant was advised that the study was strictly on a volunteer basis and despite having consent, any participant was able to withdraw from the study at any time and for any reason. Additionally, their decision as to whether or not to participate in the study did not affect their employment or standing with the NCBON. Participants were not in threat of any physical risks from participation in the study, but there may have been emotional feelings of discomfort related to answering questions related to health practices. Consent to participate in the study was obtained once the participants proceeded to the survey provided in the informed consent, which signified that the participant agreed and understood the conditions of the study.

Every precaution was taken to maintain strict confidentiality required in conducting quantitative research. Due to the sensitive nature of the data being collected, participants in this study were protected by submitting responses anonymously through Survey Monkey. No IP addresses were accessed or stored for this research study. The questionnaires were stored securely in a password-protected file only accessible to me as the researcher. These files will be deleted or destroyed after a period of 5years or in the year 2020. Participants were also provided the phone number and e-mail address of my chair as well as the phone number of the IRB at Walden University. Additionally, all participants were notified of their right to withdraw at any time. There was no monetary compensation for participation in this study. The data collection continued until the study reached saturation in which no new information was provided.

Summary

In this chapter, I provided the procedures used to collect data for each research question. I also provided a brief description of the study design, sample frame, sampling methods, study instruments, procedures for the data analysis, limitations of the methodology, as well as ethical considerations. In Chapter 4, I will discuss the actual data collection and the findings from this study.

Chapter 4: Results

Introduction

The purpose of this quantitative cross-sectional study was to examine the relationship between social networking website use and the receipt of Pap smear screening. I created four research hypotheses from the two RQs. Two research instruments, the HBQ and PIAL survey questions, were used to collect data. These two instruments were used to collect data for analysis to answer the RQs after university IRB approval was obtained. In this chapter, I present the findings of this study, in relation to the RQs posed at the outset. Also presented are additional research findings outside the scope of the original RQs.

Data Collection

Sample Description

The sample for this study was limited to female RNs aged 25–64 who were practicing in Durham, North Carolina at the time of the study. A total of 2,676 e-mail addresses were provided by the NCBON for RNs who were in good standing with the Board and had no disciplinary actions. The sample was decreased by 308 for the names provided for male nurses. The sample was further decreased by 32 for those who did not have an e-mail address on file with the NCBON. A total of 2,336 nurses were invited to participate in the study.

Response Rates

Over a period of 4 weeks, I distributed questionnaires and collected completed ones. Two weeks after the initial invitations to participate were e-mailed out, a reminder

e-mail was sent to boost participation as the initial response rate was very low. Of those who completed the questionnaires, eight reported being aged between 65–74 years old and were automatically taken to the end of the questionnaire. They were not able to complete the questionnaire since current guidelines from the American Cancer Society do not recommend cervical cancer screening for this age group. Only questionnaires that were fully completed were included in data analysis. A total of 107 complete questionnaires were collected.

Descriptive and Demographic Statistics

Based the results of the questionnaire, a majority of the respondents were aged 25–34 years (*n* = 36, 33.64%). No respondents reported being age 75 years or older. Table 3 provides a detailed description of the demographics of participants.

Table 3

Distribution of Demographics

Characteristics	Frequency	Percent
Age		
18–24	3	2.8%
25–34	36	33.6%
35–44	20	18.7%
45–54	17	15.9%
55–64	23	21.5%
65–74	8	7.5%
75 or older	0	0%

Majority of the respondents had at least one account on a social networking website according to an analysis of social networking website use. Facebook was the

most reported account (90.91%, *n* = 90), while 28.28% (*n* = 28) reported having a Twitter account. There were only six respondents (6.06%) that reported not having a social networking website account and eight respondents skipped the question. Further analysis of social networking website use determined that respondents of the sample reported visiting social networking websites several times a day (58.24%, *n* = 53). In contrast, 19.78% (*n* = 18) reported visiting social networking websites about once a day. Sixteen respondents skipped the question. In Table 4, a distribution of the social networking website use and variables examined are presented.

Table 4

Social Networking Website Use

Characteristic	Frequency	Percent
Social Networking Site(s)		
Facebook	90	90.9%
Twitter	28	28.3%
MySpace	5	5.1%
None	6	6.1%
Other	23	23.2%
Frequency of Use		
Several Times a Day	53	58.2%
About Once a Day	18	19.8%
3 to 5 Days a Week	8	8.8%
1 to 2 Days a Week	12	13.2%
Missing	16	15.0%

Based on self-reported data, 98% (*n* = 96) of respondents reported that they had ever had a Pap smear test while 2.04% (*n* = 2) reported that they had never had a Pap

smear test done. When asked the last time a Pap smear examination had been received, 53.61% (*n* = 52) reported in the last 12 months. Ten respondents skipped this question. Respondents were also asked to report how often they have Pap smear examinations with 39.18% (*n* = 38) reporting every 12 months. Ten respondents skipped this question as well. In Table 5, a distribution of Pap smear examinations and variables examined are presented.

Table 5

Pap Smear Examination

Characteristic	Frequency	Percent
Ever Had a Pap Test		
Yes	96	98%
No	2	2%
Missing	9	8.4%
Last Time Had a Pap Test		
In the Last 12 Months	52	53.6%
In the Last 18 Months	11	11.3%
In the Last 2 years	18	18.6%
More than 2 years ago	16	16.5%
Missing	10	9.3%
Frequency of Pap Test		
Every 12 Months	38	39.2%
Every 18 Months	0	0%
Every 2 Years	30	30.9%
Less Frequently than Every 2 Years	29	29.9%
Missing	10	9.3%

Research Question 1 Results

The aim of RQ1 was to investigate if participants' use of social networking websites influenced their receipt of Pap smear screening. The null hypothesis for this RQ was that the use of social networking websites did not influence participants' decision to receive Pap smear screenings. The alternative hypothesis was that use of social networking websites did influence participants' decision to receive regular Pap smear screenings. I conducted a chi-square test of independence to determine the association between the receipt of Pap smear test and the independent variable of social networking website use. There was no statistically significant association between use of social networking websites and receipt of Pap smear screening. In Table 6, the results of the analysis of the variables are presented.

Table 6

Chi- Square Test of Independence of Dependent and Independent Variable

Social Networking Website	*Df*	*N*	X^2	*p*
Facebook	2	90	4.345[a]	.114
Twitter	2	28	.601[b]	.740
MySpace	2	5	.728[c]	.695
None	2	23	39.315[d]	.000

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .52
b. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .09
c. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .11
d. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .32

Research Question 2 Results

The aim of RQ2 was to assess how the social networking website use, when controlling for age, influenced the decision to receive Pap smear screening. For the null hypothesis, it was proposed that a woman's age did not influence the receipt of Pap smear screening, and for the alternate hypothesis, it was proposed that a woman's age does influence the decision to receive Pap smear screening. For this RQ, I conducted logistic regression analysis between Pap smear examination receipt and social networking website use, with age as a covariate. The first logistic regression analysis used the question: "Have you posted comments, questions, or information about health or medical issues on a social networking site such as Facebook or Myspace?" The model was a good fit (Hosmer and Lemeshow; chi-square =.004, $df = 1$, $p = .948$). The model correctly predicted whether participants would or would not have Pap smear screening at 65.2% percent. Based on the model results, the insignificant effect of social networking website use and age did not increase the odds of Pap smear screening among the respondents. Table 7 presents the results of this logistic regression analysis.

Table 7

Logistic Regression Analysis of Independent Variables and Dependent Variable

	b	*SE*	Wald	*df*	Sig	Exp (*b*)	95% CI for EXP (B)	
							Lower	Upper
Facebook	20.475	2840.722	.000	1	.999	.999	.000	.
MySpace	.583	.486	1.483	1	.230	1.792	.691	4.648
Twitter	-1.141	1.175	.943	1	.332	.319	.032	3.196
Age	.536	.692	.599	1	.439	.585	.151	2.273

With the question: "Thinking specifically about what you have done on social networking sites, like Facebook and Myspace, have you ever used these sites to get health information?" as the independent variable, the model was a good fit (Hosmer and Lemeshow; chi-square = .631, $df = 3$, $p = .889$). The model correctly predicted whether participants would or would not have Pap smear screening at 85.9%. Based on the model results, the insignificant effect of social networking website use and age did not increase the odds of Pap smear screening among the respondents. Table 8 presents the results of this logistic regression.

Table 8

Logistic Regression Analysis of Independent Variables and Dependent Variable

	b	*SE*	Wald	**df**	Sig	Exp (**b**)	95% CI for EXP (*b*)	
							Lower	Upper
Facebook	18.461	28420.72	.000	1	.999	10486	.000	.
MySpace	.145	.684	.045	1	.832	1.156	.303	4.413
Twitter	1.826	1.137	2.582	1	.108	.393	.669	57.612
Age	.245	.901	.074	1	.785	.782	.134	4.575

Summary

In this chapter, I reported the results of the analysis to investigate the association between social networking website use and receipt of Pap smear screening and age as a covariate. A chi-square test of independence was used to evaluate the individual relationship between social networking website use and receipt of Pap smear screening. Based on the findings, there is no association between social networking website use and receipt of Pap smear screening. I used logistic regression analysis to further evaluate the relationship of the variables with age as a covariate. The results of the analysis further show that the use of social networking websites does not increase the chances of receiving Pap smear screening. The covariate also did not increase the chances of receiving Pap smear screening among the sample. In Chapter 5, I will discuss the conclusions and significance of these findings. Interpretations for these findings based on

the literature will also be provided as well as a discussion of the limitations of study and recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative cross-sectional study was to examine if there is an association between use of social networking websites and the receipt of cervical cancer screening. In this quantitative cross-sectional study, a questionnaire was sent out to 2,336 RNs currently practicing in Durham, North Carolina. I employed convenience sampling in recruiting the nurses by obtaining their e-mail addresses from the NCBON. Information was provided to the participants via e-mail to voluntarily access an anonymous questionnaire online. In this chapter, I present the relevant findings of the study along with a detailed discussion on the extent to which the findings support the major constructs of the health belief model. In addition, I discuss the significance of the findings as well as provide a detailed discussion of the study limitations. Recommendations for future study will also be provided.

Social networking websites have been found to offer opportunities for modifying health behavior (Korda & Itani, 2014). Previous research has found that people of all demographics are using such outlets for health-related issues (Korda & Itani, 2014; Neiger et al., 2012). The use of social networking websites has been found to have considerable potential as tools of health promotion and education but require careful application and may not always achieve the desired outcomes (Korda & Itani, 2014). The purposes for use of social networking websites in health promotion include the dissemination of critical information; expansion to reach broader, more diverse audiences; and to foster public engagement and partnerships with consumers (CDC,

2010). It is important to identify appropriate uses of social networking website use in health promotion as well as evaluation into its effectiveness in promoting health behaviors (Neiger et al., 2012).

In this study, the association of the dependent variable of Pap smear screening with the independent variable of social networking website use was examined. The use of social networking websites was not significantly associated with the receipt of Pap smear screening. Age was a covariate used to further assess the association between the dependent and independent variable. Further analysis of the data using logistic regression revealed that age is not significantly associated with Pap smear screening when this variable was examined as a covariate.

Interpretation of Findings

Among the participants who reported having a Pap smear screening, 53.6% (*n* = 52) reported having a Pap smear screening in the last 12 months. There have been increased efforts to make information regarding Pap smear screenings available to all women. Among these efforts are the use of social networking websites to increase awareness and adherence to the recommended Pap smear screening guidelines. Neither the chi-square, nor logistic regression, produced statistically significant results. The high percentage of respondents who reported ever having a Pap smear screening and the frequency of which they are screened was not associated with social networking website use or the other factor looked at in this study, age. These results could be attributed to the small sample size. A sample size of at least 396 participants was anticipated at the outset of the study. However, only 107 completed the questionnaire. Moreover, there was a lack

of symmetry in the distribution of the data as nearly all of the respondents reporting receipt of Pap smear screening. The lack of symmetry shows that the data were negatively skewed, violating the normality required for most statistics.

The findings of this study should be interpreted by taking into account that the participants of the study were RNs, currently practicing in Durham, North Carolina. Nurses are the both the largest professional health group and the frontline of patient care (Hughes, 2008). The education required for the nursing profession make them more prone to being knowledgeable about the importance of Pap smear screening (Rahman & Kar, 2015; Shah, Vyas, Singh, & Shrivastava, 2012). Nurses play the unique role of educators, supporters to the general population in primary healthcare settings, and providers of care for patients. Several reports have been published to describe efforts undertaken by nurses to examine the impact of perceptions, beliefs, socio-demographics, and other factors on Pap smear screening, diagnosis, and treatment (Underwood et al., 2009).

Previous research has also found the constructs of the health belief model to be a significant factor in the decision to receive regular Pap smear screening (Denny-Smith et al., 2006; Efstathiou et al., 2010; Tay et al., 2014). Among nurses, the health belief model has been previously tested and found as an appropriate theoretical model to use for measuring attitudes and behaviors (Efstathiou et al., 2010). Particularly, in regards to Pap smear testing, previous research has found the health belief model has been successful in guiding studies to predict adherence to screening guidelines (Boonpongmanee & Jittannon, 2007). In the current study, in addition to the large percentage of nurses that

reported ever having a Pap smear screening, over half reported having a Pap smear screening in the last 12 months. Further, a majority of participants in the current study had a Pap smear screening every 12 months. These findings imply that the constructs of the health belief model (susceptibility, severity, benefits, barriers, cues to action, and self-efficacy) along with nurses' health knowledge play a significant role in their decision to engage in regular Pap smear screening.

In this study, almost all of the participants reported having at least one account on a social networking website and reported checking their social networking website account(s) several times a day. These findings support previous research that found that nurses tend to have a significant presence on social networking websites (Barry & Hardiker, 2012; Cronquist & Spector, 2011; Farrelly, 2014). While the nurses in this study reported significant use of social networking websites, it was not reported that they used these accounts to search for health information or to post health-related information. Instead, participants reported their main reason for using social networking websites was for staying in touch with family members and staying in touch with current friends. Previous research shows that while social networking websites provide opportunities for nurses to stay abreast of recent health care developments and communicate with the public about health-related issues, professional, ethical, and legal regulations limit these opportunities (Barry & Hardiker, 2012; Cronquist & Spector, 2011; Farrelly, 2014).

The logistic regression analysis for this study used age as a covariate. Previous studies have found that age was a significant determinant for receipt of screening services for cervical cancer (Lofters et al., 2011; Owosu et al., 2005). In the current study, age was

grouped into several different categories. A majority of the respondents reported being the second age group of 25–34 years old. The U.S. Preventive Services Task Force (2003) recommends screening for this age group every 3 years with three negative cytology tests. Despite these recommendations, only 29.9% (n = 29) of participants reported having Pap smear screening less frequently than every 2 years. Contrary to previous studies, my analysis from this study did not show that age played a factor in increasing adherence to Pap smear screening guidelines.

This study used the health belief model to investigate factors that affect the receipt of Pap smear screening among a sample of registered nurses practicing in Durham, North Carolina. The health belief model has been used in health research since the 1950s to explain why so few people were participating in programs to prevent and detect disease (Nursing Theories, 2013). According to the health belief model, a person's health-related behavior depends on a person's perceptions of four critical areas: the severity of the potential illness, the person's susceptibility to that illness, the benefits of taking a prevention action, and the barriers to taking that action (Nursing Theories, 2013). Previous researchers have determined that the health belief model addresses the relationship between a person's beliefs and behaviors (Glanz, Rimer, & Viswanth, 2008). It provides a way to understanding and predicting how people will behave in relation to their health and how they will comply with health care therapies (Marriner & Raile, 2005; Polit & Beck, 2007).

In this study, nearly all of the participants had had Pap smear screening at some time in their life. These findings support previous research that suggests that the health

belief model provides an approach to understanding health-related behavior. It implies that attempts to influence health behavior should be based on better knowledge of an individual's motives and health beliefs (Marshall et al., 2002; Mikhail, 1981; Sedlak et al., 2000). The high Pap smear screening rates among the study population is in contrast to previous research that found nurses to have limited knowledge about the use of Pap smear screenings to detect both cancerous and noncancerous lesions and the frequency of which the screenings should occur (Awodele et al., 2011; Singh, Seth, Rani, & Srivastava, 2012; Urasa & Darj, 2011).

The findings from this study do not support evidence that social networking websites play a role in increasing preventive health behaviors. It should be noted once again, that these results are likely due to the education, knowledge, and work involved in the nursing profession. Interventions for Pap smear screening should be targeted towards populations of women are not nurses or in the medical field and are not as knowledgeable of its importance.

Limitations of the Study

This study had several limitations. The study used a convenience sample of RNs working locally. Since this sample was working at the front-line of health care, they were knowledgeable of the importance of regular Pap smear screening. Their daily functions make nurses more likely to see the effects of choosing not be screened regularly. Further, nurses are more likely to have access to quality health care, increasing their chances of receiving regular screenings. The exclusion of women who are not nurses from the study may have implications for the interpretation of the findings. Using nurses as the sample

population created a selection bias. Based on the results from this study, nurses are not a group that can be considered at high risk of developing cervical cancer. The high rate of Pap smear screening among this population regardless of social networking website use is not generalizable to other populations of women.

I collected the data for the study from self-reported survey data from the respondents. Subjects were asked to report sensitive information regarding their preventive health behaviors. Some researchers have shown that there may be discrepancies between self-reported and actual rates of receipt of health care services (Rausher et al., 2008). The information provided by the respondents may not be accurate because the respondent maybe forgotten or did not wish to reveal it. Though the nurses may be well aware of the importance of regular Pap smear screenings, some may not have been forthcoming about certain health behaviors or may have given socially acceptable responses. This may have led to overestimation of Pap smear screening.

For this study, the NCBON provided the number of 2,676 nurses currently practicing in Durham, North Carolina. This number was reduced by 331 by eliminating male nurses and those who did not have an e-mail address on file. The sample size (based on sample size calculations) was expected to be at least 396 participants. However, there were many responses from nurses asking not to be further contacted about the study as well as those who responded back that they felt as though they did not fit the inclusion criteria. An electronic questionnaire was administered as they were easier to use and more efficient at gathering relatively large amounts of data at a low cost. Further, respondents may have felt more comfortable providing private or sensitive information

than when being interviewed by phone or face-to-face. However, it limited the data to those who provided an e-mail address and had access to the Internet. Recipients of the study invite may have also been concerned with problems such as fraud as a result of breakdowns in online security and computer viruses (Sivo et al., 2006). Further, previous studies have not found many incentives attached to the use of electronic questionnaires and have found higher response rates with mail questionnaires compared to electronic questionnaires (Schaefer & Dillman, 1998; Tse, 1998).

Despite the large number of nurses invited to participate in the study and the use of an electronic questionnaire, only 107 completed the questionnaire. The most notorious problem for Internet-based questionnaires is the failure of recipients to respond (Sivo et al., 2006). Low response rates can often lead to nonresponse bias. Nonresponse bias refers to the condition wherein people of a particular ilk are systematically not represented in the sample because such people are alike in their tendency not to respond, such as introverts, extremely busy people, or people with low self-esteem (Sivo et al., 2006). Nonresponse bias can have significant detrimental effects on survey estimates (Fogliani, 1999). It not only can bias a sample, but can also lead to low power and inaccurate effect size estimation (Sivo et al., 2006).

Recommendations

The findings from this study suggests that more research is needed to determine if social networking website use affects the receipt of Pap smear screening and if this is affected by age. Researchers should expand this research to include women who are not nurses and may not have as much knowledge and first-hand experience with dealing with

women affected by cervical cancer diagnoses. The inclusion of other women into the study might reveal variations in health behaviors that can predict how individuals use health services. There is also likely to be a higher response rate with the inclusion of women who are not nurses. Findings from this study also suggest that factors such as age may be a complex variable. In the current study, age was dominated by the 25–34 age group. Future research should look to include sample populations that can provide variations to this factor. Future research should also include additional factors such as race/ethnicity and marital status.

Implications

This study is significant because it has broadened understanding of preventive health behaviors among women in the United States. As a study that examined the association between social networking website use and Pap smear screening, this study will bring about an increased interest in this area. The findings in this study show that the use of social networking websites to disseminate health information may not be beneficial to nurses, but more research is needed to assess its usefulness to other populations. The understanding of the factors enabling or inhibiting adherence to Pap smear screening guidelines will be useful for researchers and community health professionals. This study provides a reference for future studies by providing clearer knowledge and a better understanding of the motivating factors for participating in preventive health behaviors among the study group and other groups. In addition, community health professionals can use the findings from the study to educate women on cervical cancer and improving adherence to screening practices. Additional studies

should be conducted among other groups of women to determine if the use of social networking websites affects their decision to engage in Pap smear screening.

As findings from the study have revealed, social networking website use is high among the study population. Therefore, there may, be the need to develop social networking website posts and pages that are targeted to women who are not in the healthcare field to improve adherence to Pap smear screening recommendations. The results of this study suggest that the health belief model is a useful theoretical base for investigating and predicting the use of health services. Future research should ensure that the study population used is expanded to allow for better generalization of the results.

Conclusion

This quantitative cross-sectional study investigated whether the use of social networking websites affected the receipt of regular Pap smear screening. A sample of 107 registered nurses aged 25–64, who are currently practicing in Durham, North Carolina were contacted via e-mail. Within the e-mail was a link to the questionnaire as well as a request to participate in the study. It was hypothesized that social networking website use and age were associated with the receipt of regular Pap smear screening.

Chi-square analysis determined that the use of social networking website at any capacity were not significantly associated with regular Pap smear screening among the study group. This association was supported by logistic regression analysis that further indicated that age was not a predictor of regular Pap smear screening when examined as a covariate. The study was limited by using nurses as the study population. This caused a selection bias. The study was further limited by the low response rate and the use of self-

reported data. However, the study provides an understanding of the enabling factors that affect preventive health behaviors among this study population. Future studies should continue to explore and shed light on the impact of the use of social networking websites on preventive health behaviors not only among the study group, but among all population groups. Future studies should also consider other demographic factors as covariates that could potentially affect the Pap smear screening rates.

References

American College of Clinical Pharmacy. (2008). Improving screening coverage rates of cervical cancer prevention programs: A focus on communities. Retrieved June 24, 2012 from http://www.path.org/publications/files/RH_accp_improve_screening/pdf

Ackerson, K. (2010). Personal influences that affect motivation in Pap smear testing among African American women. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 39*(2), 136–146. doi:10.1111/j.1552-6909.2010.01104.x.

Anderson, D. K. (2006). Mucking through the swamp: Changing the pedagogy of a social welfare policy course. *Journal of Teaching in Social Work, 26*(1/2), 1–17. doi:10.1300/J067v26n01_01

Austin, L., Ahmad, F., McNally, M., & Stewart, D. (2002). Breast and cervical cancer screening in Hispanic women: A literature review using the health belief model. *Women's Health Issues*, *12*(3), 122–128. doi:10.1016/S1049-3867(02)00132-9.

Awodele, O., Adeyomoye, A., Awodele, D., Kwashi, V., Awodele, I., & Dolapo, D. (2011). A study on cervical cancer screening amongst nurses in Lagos University teaching hospital, Lagos, Nigeria. *Journal of Cancer Education, 26* (3), 497–504. doi:10.1007/s13187-010-0187-6

Ayres, C., Atkins, R., & Lee, J. (2010). Factors related to health practices: Cervical cancer screening among Filipino women. *Research and Theory for Nursing Practice*, *24*(3), 197–208.

Bach Nielsen, K., Dyhr, L., Lauritzen, T., & Malterud, K. (2005). Long-term impact of elevated cardiovascular risk detected by screening. *Scandinavian Journal of Primary Health Care*, *23*(4), 233–238. doi:10.1080/02813430500336245

Barry, J., & Hardiker, N. (2012). Advancing nursing practice through social media: A global perspective. *Online Journal of Issues in Nursing, 17*(3), 5–9.

Bartlett, J., Kotrlik, J., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance, 19*(1), 43–50.

Blackwell, D. L., Martinez, M. E., & Gentleman, J. F. (2008). Women's compliance with public health guidelines for mammograms and Pap tests in Canada and the United States. *Women's Health Issues, 18*, 8599. doi:10.1016/j/whi.2007.10.006.

Bloomberg, K., Tishelman, C., Ternestedt, B., Törnberg, S., Levál, A., & Widmark, C. (2011). How can young women be encouraged to attend cervical cancer screening? Suggestions from face-to-face and Internet focus group discussions with 30-year-old women in Stockholm, Sweden. *Acta Oncologica*, *50*(1), 112–120. doi:10.3109/0284186X.2010.528790.

Boonpongmanee, C., & Jittanoon, P. (2007). Predictors of Papanicolaou testing in working women in Bangkok, Thailand. *Cancer Nursing, 30*(5), 384–389.

Borges, J., Belintani, M., Miranda, P., de Camargo, A., Guarisi, R., Maia, E., & Gollop, T. (2010). Impact of educational lectures on female adolescents' knowledge about sexually transmitted diseases and cervical cancer in the city of Jundiaí, SP. *Einstein 8*(3), 285-290.

Boston University School of Public Health. (2013). The health belief model. Retrieved February 13, 2015 from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/SB721-Models/SB721-Models2.html

Bradshaw, D., Hughes, A., & Day, S. (2013). A novel service promotion campaign using the social media site Facebook. *Sexually Transmitted Infections, 89*(104), 102–104 doi:10.1136/sextrans-2012-050877.

Breitkopf, C., Pearson, H., & Breitkopf, D. (2005). Poor knowledge regarding the Pap test among low-income women undergoing routine screening. *Perspectives on Sexual and Reproductive Health, 37*(2), 78–84.

Budenholzer, B. (2012). Adding HPV testing to cytology screening reduced greater than or equal to grade 3 cervical intraepithelial neoplasia at 5 years. *ACP Journal Club*, *156*(7), 1. doi:10.7326/0003-4819-157-2-201207170-02006

Byrd, T., Chavez, R., & Wilson, K. (2007). Barriers and facilitators of cervical cancer screening among Hispanic women. Retrieved March 1, 2013 from http://publichealth.columbus.gov/uploadedFiles/Public_Health/Content_Editors/Community_Health/Minority_Health/Hispanic%20women.pdf

Carmines, E., & Zeller, R. (1979). Reliability and validity assessment. London, England: Sage Publications.

Center of Disease Control and Prevention. (2010). The health communicator's social media toolkit. Retrieved April 25, 2016 from http://www.cdc.gov/healthcommunication/ToolsTemplates/SocialMediaToolkitBM.pdf

Centers for Disease Control and Prevention. (2012). Cervical cancer. Retrieved from http://www.cdc.gov/cancer/cervicalChang, S., Woo, J., Gorzalka, B., & Brotto, L. (2010). A questionnaire study of cervical cancer screening beliefs and practices of Chinese and Caucasian mother-daughter pairs living in Canada. *Journal of Obstetrics Gynecology, 32*(3), 254–262. Retrieved from http://www.obgyn.ubc.ca/SexualHealth/documents/Chang%20et%20al%20%282010%29%20screening%20beliefs%20mother-daugher%20%7B%7B2381%7D%7D.pdf

Colineau, N., & Paris, C. (2010). Talking about your health to strangers: Understanding the use of online social networks by patients. *New Review of Hypermedia and Multimedia, 16*(2), 173–178.

Cook, N., Kobetz, E., Reis, I., Fleming, L., Loer-Martin D., & Amofa, S. (2010). Role of patient race/ethnicity, insurance, and age on Pap smear compliance across ten community health centers in Florida. *Ethnicity & Disease, 20*(4), 321–326.

Cronquist, R., & Spector, N. (2011). Nurses and social media: Regulatory concerns and guidelines. *Journal of Nursing Regulation, 2*(3), 37–40.

de Bocanegra, H., Trinh-Shevrin, C., Herrera, A. P., & Gany, F. (2009). Mexican immigrant male knowledge and support toward breast and cervical cancer screening. *Journal of Immigrant & Minority Health, 11*(4), 326–333. doi:10.1007/s10903-008-9161-3

Decker, K. M., Turner, D., Demers, A. A., Martens, P. J., Lambert, P., & Chateau, D. (2013). Evaluating the effectiveness of cervical cancer screening invitation letters. *Journal of Women's Health, 22*(8), 687–693. doi:10.1089/jwh.2012.4203

Denny-Smith, T. T., Bairan, A. A., & Page, M. C. (2006). A survey of female nursing students' knowledge, health beliefs, perceptions of risk, and risk behaviors regarding human papillomavirus and cervical cancer. *Journal of the American Academy Of Nurse Practitioners, 18*(2), 62–69. doi:10.1111/j.1745-7599.2006

Devers, K. (1999). How will we know "good" qualitative research when we see it? Beginning dialogue in health sciences research. *Health Sciences Research, 34*(5), 1153–1188.

Divecha, Z., Divney, A., Ickovics, J., & Kershaw, T. (2012). Tweeting about testing: Do low-income, parenting adolescents and young adults use new media technologies to communicate about sexual health? *Perspectives on Sexual and Reproductive Health, 44*(3), 176–183.

Dodani, S. (n.d.). Epidemiologic study designs. Retrieved May 13, 2013, from http://www.pitt.edu/~super7/7011-8001/7031.ppt.

Duran, E. (2011). Examination with the health belief model of women's attitudes to cervical cancer and early diagnosis in Turkey: A qualitative study. *Asian Pacific Journal of Cancer Prevention, 12*(2), 1179–1184.

Efstathiou, G., Papastavrou, E., Raftopoulos, V., & Merkouris, A. (2010). Factors influencing nurses' compliance with standard precautions in order to avoid

occupational exposure to microorganisms: A focus group study. *BMC Nursing, 10*(1), 1-12.

Everett T., Bryant A., Griffin M., Martin-Hirsch P., Forbes C., Jepson R. (2011). Interventions targeted at women to encourage the uptake of cervical screening. Cochrane Database of Systematic Reviews,*5* doi:10.1002/14651858.CD002834.pub2

Fantone, A., & Jandorf, L. (2009). Predictors of cervical cancer screening among urban African Americans and Latinas. *American Journal of Health Behavior*, *33*(4), 416–424.

Farrelly, R. (2014). Nurses and social media. *Europe PMC, 23*(6), 12-15.

Farmer, A., Holt, C., Cook, M., & Hearing, S. (2009). Social networking sites: A novel portal for communication. *PostgradMed Journal*, *85*(1), 455–459.

Fayed, L. (2007). Five reasons women don't get Pap smears. Retrieved June 24, 2012 from http://www.cancer.about.com/od/cervicalcancerscreening/a/papsmearreasons.htm

Fenner, Y., Garland, S., Moore, E., Jayashinghe, Y., Fletcher, A., Tabrizi, S.,… Wark, J. (2012). Web-based recruiting for health research using a social networking site: An exploratory study. *Journal of Medical Internet Research, 14*(1), 1–14. doi:10.2196/jmir.1978

Finn, G. (2011). A portrait of who uses social networks in the US (and how social media affects our lives). Retrieved February 6, 2012 from

http://searchenginglang.com/a-portrait-of-who-uses-social-networks-in-the-US-81653.

Fisher, R., & Yates, F. (n.d.). Chi-square test. Retrieved February 12, 2015 from http://www2.lv.psu.edu/jxm57/irp/chisquar.html

Fogliani, M. (1999). Low response rates and their effects on survey results. Retrieved April 29, 2016 from www.sch.abs.gov.au

Friedman, A., Hemler, J., Rossetti, E., Clemlow, L., & Ferrante, J. (2012). Obese women's barriers to mammography and Pap smear: The possible role of personality. *Obesity (Silver Spring), 20*(8), 1611–1617.

Gamarra, C., Paz, E., & Griep, R. (2009). Social support and cervical and breast cancer screening in Argentinean women from a rural population. *Public Health Nursing, 26*(3), 269–276. doi:10.1111/j.1525-1446.2009.00779.x

Garces, M. (2006). Applying the health belief model to cervical cancer screening. *CES Medicine, 20*(1), 55–63.

Gichogo, A. (2012). Factors influencing utilization of cervical cancer screening services at Central Provincial General Hospital, Nyeri, Kenya. Retrieved March 12, 2013 from http://erepository.uonbi.ac.ke:8080/handle/123456789/7174

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). *Health behavior and health education: Theory, research, and practice* (4th ed.). San Francisco, CA: Jossey-Bass.

Hackworth, B. A., & Kunz, M. B. (2011). Health care and social media: Building relationships via social networks. *Academy of Health Care Management Journal, 7*(2), 1–14.

Holcomb, K., & Runowicz, C. (2005). Cervical cancer screening. Retrieved February 28, 2013 from http://europepmc.org/abstract/MED/16226691

Horowitz, B. T. (2013). Few caregivers use mobile, online tools to track medicines: Pew report. Retrieved April 20, 2016 from http://www.eweek.com/mobile/few-caregivers-use-mobile-online-tools-to-track-medicines-pew-report

Houston, T. K., Volkman, J. E., Hua, F., Nazi, K. M., Shimada, S. L., & Fox, S. (2013). Veteran Internet use and engagement with health information online. *Military Medicine, 178*(4), 394–400. doi:10.7205/MILMED-D-12-00377

Hughes, R. (2008). Chapter 2 Nurses at the "Sharp End" of Patient Care. Retrieved April 12, 2016 from http://www.ncbi.nlm.nih.gov/books/NBK2672/Jacobs, E., Karavolos, K., Rathouz, P., Ferris, T., & Powell, L. (2005). Limited English proficiency and breast and cervical cancer screening in a multiethnic population. *American Journal of Public Health, 95*(8), 1410–1416.

Kahn, J., & Emans, S. (1999). Pap smears in adolescents: To screen or not to screen? *Pediatrics, 103*(2), 673.

Kazis, L. E., Anderson, J. J., & Meenan, R. F. (1989). Effect sizes for interpreting changes in health status. *Medical care, 27*(3), 178–189.

Korda, H, & Itani, Z., (2014). Harnessing social media for health promotion and behavior change. *Health Promotion Practice, 14*(1), 15–23.

Knapp, H., & Kirk, S. (2002). Using pencil and paper, Internet, and touch-tone phones for self-administered surveys. Does methodology matter? *Computers in Human Behavior*, *19*(1), 117–134.

Kontos, E. Z., Emmons, K. M., Puleo, E., & Viswanath, K. K. (2012). Contribution of communication inequalities to disparities in human Papillomavirus vaccine awareness and knowledge. *American Journal of Public Health*, *102*(10), 1911–1920. doi:10.2105/AJPH.2011300435

LaCoursiere, S. P. (2001). A theory of online social support. Retrieved June 23, 2012 from http://www.ncbi.nlm.nih.gov/pubmed/11554534.

Lee, E. E., Fogg, L., & Menon, U. (2008). Knowledge and beliefs related to cervical cancer and screening among Korean American women. *Western Journal of Nursing Research*, *30*(8), 960–974. doi:10.1177/0193945908319250.

Lee, H., Ju, E., Vang, P., & Lundquist, M. (2010). Breast and cervical cancer screening disparity among Asian American women: Does race/ethnicity matter? *J Women's Health*, *19*(10), 1877–84.

Lofters, A. K., Hwang, S. W., Moineddin, R., & Glazier, R. H. (2010). Cervical cancer screening among urban immigrants by region of origin: A population-based cohort study. *Preventive Medicine*, 51, 509–516. doi: 10.1016/j.ypmed.2010.09.014

Luszczynska, A., Durawa, A. B., Scholz, U., & Knoll, N. (2012). Empowerment beliefs and intention to uptake cervical cancer screening: Three psychosocial mediating mechanisms. *Women & Health*, *52*(2), 162–181. doi:10.1080/03630242.2012.656187

Lyles, C., Lopez, A., Pasick, R., & Sarkar, U. (2012). 5 Minutes of uncomfyness is better than dealing with cancer 4 a lifetime: An exploratory qualitative analysis of cervical and breast cancer screening dialogue on Twitter. *Journal of Cancer Education, 28*(1), 127–133.

MacLaughlin, K. L., Angstman, K. B., Flynn, P. M., Schmitt, J. R., Weaver, A. L., & Shuster, L. T. (2011). Predictors of patient comfort and adherence with less frequent cervical cancer screening. *Quality in Primary Care, 19*(6), 355–363.

Marriner, T. A., & Raile, A. M. (2005). *Nursing theorists and their work* (5th ed.). The health promotion model. St Louis, MA: Mosby.

Marshall, M., Fleming, E., Gillibrand, W., & Carter, B. (2002). Adaptation and negotiation as an approach to care in pediatric diabetes specialist nursing practice: a critical review. *Journal of Clinical Nursing, 11*, 421–429.

Mikhail, B. (1981). The health belief model: A review and critical evaluation of the model, research, and practice. *Advances in Nursing Science, 4(*1). 65–82.

Moore, P. (2011). Health beliefs and socio-cultural factors that predict cervical cancer screening behaviors among Hispanic women in seven cities in the upstate of South Carolina. (Clemson University). ProQuest Dissertations and Theses, 283.

Moyer, V. A. (2012). Screening for cervical cancer: U.S. Preventive Services Task Force Recommendation statement. *Annals of Internal Medicine, 156*(12), 880-891.

National Cervical Cancer Coalition. (2013). Just for caregivers. Retrieved March 2, 2013 from http://www.nccc-online.org/index.php/caregivers.

National Cancer Institute, (2008). Cervical cancer. Retrieved January 24, 2012, from http://www.cancer.gov/cancertopics/factsheet/disparities/cancer-healgh-disparities.

Nursing Theories. (2013). Health belief model. Retrieved April 24, 2016 from http://currentnursing.com/nursing_theory/health_belief_model.html

Ogunbowale, T., & Lawoyin, T. O. (2008). Cervical cancer risk factors and predictors of cervical dysplasia among women in southwest Nigeria. *Australian Journal of Rural Health, 16*, 338–342. doi:10.111/j.1440-1584.2008.01013x

Olson, K., O'Brien, M., Rogers, W., & Charness, N. (2011). Diffusion of technology: Frequency of use for younger and older adults. *Ageing International*, *36*(1), 123–145. doi:10.1007/s12126-010-9077-9

Owusu, G., Eve, S., Cready, C., Koelin, K., Trevino, F., Urrutia-Rojas, X., & Baumer, J. (2005). Race and ethnic disparities in cervical cancer screening in a safety-net system. *Maternal Child Health Journal, 9*(3), 285–295.

Patel, M., Doku, V., & Tennakon, L. (2003). Challenges in recruitment of research participants. *Advances in Psychiatric Treatment, 9*(3), 229–238. doi: 10.1192/apt.9.3.229

Pew Internet and American Life Project. (2015). Retrieved February 10, 2015 from http://www.pewinternet.org/

Polit, D. F., & Beck, C.T. (2003). *Nursing research: Principles and methods* (7th ed.). Philadelphia, PA: Lippincott Williams & Wilkins

Potter, J., (n.d). Virtual patient 09 - A woman at midlife. Retrieved March 1, 2013 from https://research.bidmc.harvard.edu/VPtutorials/midlife/default.htm

Prochaska, J., Butterworth, S., Redding, C., Burden, V., Perrin, N., Lea, M., … Prochaska, J.M. (2008). Initial efficacy of MI, TTM tailoring, and HRI's in multiple behaviors for employee health promotion. *Preventive Medicine,* 46, 226–231.

Rahman, H., & Kar, S. (2015). Knowledge, attitudes and practice toward cervical cancer among Sikkmese nursing staff in India. *Indian Journal of Medical and Paediatric Oncology, 36*(2), 105–110.

Rauscher, G. H., Johnson, T. P., Cho, Y. I., & Walk, J. A. (2008). Accuracy of self-reported cancer-screening histories: A meta-analysis. *Cancer Epidemiology Biomarkers Prevention*, (17), 748–757. doi:10.1158/1055-9965.EPI-07-2629

Reynolds, D. (2010). Parental acceptance of human papillomavirus vaccine in 9-18 year-old girls. Teachers College, (Columbia University). *ProQuest Dissertations and Theses,* 206.

Roman, L., Meghea, C., Ford, S., Penner, L., Hamade, H., Estes, T., & Williams, K. P. (2014). Individual, provider, and system risk factors for breast and cervical cancer

screening among underserved Black, Latina, and Arab women. *Journal of Women's Health (15409996), 23*(1), 57–64. doi:10.1089/jwh.2013.4397

Ross, J. S., Nunez-Smith, M., Forsyth, B. A., & Rosenbaum, J. R. (2008). Racial and ethnic differences in personal cervical cancer screening among post-graduate physicians: results from a cross-sectional survey. *BMC Public Health, 8*, 378. doi: 10.1186/1471-2458-8-378.

Rossi, P., Wright, J., & Anderson, A. (2013). Handbook of Survey Research. Waltham, MA: Academic Press.

Sakr, R., & Adib, S. (2011). Knowledge, perceptions, and practices concerning Pap smear screening for cervical cancer in Lebanon. Retrieved March 20, 2013 from http://jech.bmj.com/content/65/Suppl_1/A154.3.short

Salz, T., Gottlieb, S., Smith, J., & Brewer, N. (2010). The association between abnormalities and attitudes toward cervical cancer prevention. *Journal of Women's Health, 19*(11), 2011-2016. doi:10.1089/jwh.2009.1790.

Schwaiger, C., Aruda, M., LaCoursiere, S., & Rubin, R. (2012). Current guidelines for cervical cancer screening. *Journal of the American Academy of Nurse Practioners, 24*(7), 417–424.

Sedlak, C. A., Doheny, M. O., & Jones, S. L. (2000) Osteoporosis education programs: Changing knowledge and behaviors. *Public Health Nursing*, (17), 398–402.

Seow, A., Huan, J., & Tay Straghan, P. (2000). Effects of social support, regular physician and health-related attitudes on cervical cancer screening in Asian population. *Cancer Causes & Control,* 11(3), 223–230.

Shah, V., Vyas, S., Singh, A., & Shrivastava, M. (2012). Awareness and knowledge of cervical cancer and its prevention among the nursing staff of a tertiary health institute in Ahmedabad, Gujarat, India. *Ecancermedicalscience, 6*(120), 1–6.

Shneyderman, Y. (2012). The internet-informed patient and cancer screening adherence: The role of patient-physician communication. University of Miami. *ProQuest Dissertations and Theses,*

Singh, E., Seth, S., Rani, V., & Srivastava, D. (2012). Awareness of cervical cancer screening among nursing staff in a tertiary institution of rural India. *Journal of Gynecological Oncology, 23*(3), 141-146.

Simpson, A. (2008). Cervical cancer vaccine advertised on teen social networking sites. Retrieved June 26, 2012 from http://www.telegraph.co.uk/news/uknews/2668174/Cervical-cancer-vaccine-advertised-on-teen-social-networking-sites.html

Sivo, S., Saunders, C., Chang, Q., & Jiang, J. (2006). How low should you go? Low response rates and the validity of inference in IS questionnaire research. *Journal of the Association of Information Systems, 7*(6), 351–414.

Smith, A., Heywood, W., Ryall, R., Shelley, J., Pitts, M., Richters, … Patrick, K. (2011). Association between sexual behavior and cervical cancer screening

Journal of Women's Health, 20(7), 1091–1096. doi:10.1089/jwh.2010.2585

Smith, R., Cokkinides,V., & Brawley, O. (2009). Cancer screening in the United States, 2009: A review of current American Cancer Society guidelines and issues in cancer screening. *CA: A Cancer Journal for Clinicians, 59*(1), 27–41.

Soni, I. (2012). Research says more women than men use Facebook and other social networking websites. Retrieved June 25, 2012 from http://tv.ibtimes.com/research-says-more-women-than-men-use-facebook-and-other-social-networking-websites/6397.html

Survey Monkey. (2015). Home. Retrieved February 10, 2015 from https://www.surveymonkey.com/mp/take-a-tour/?ut_source=header.

Tallarida, R, & Murray, R. (1987). *Manual of Pharmacological Calculations with Computer Programs.* New York, NY: Springer-Verlag

Tay, K., Tay, S., Tesalona, K., Rashid, N., Tai, E., & Najib, S. (2014). Factors affecting the uptake of cervical cancer screening among nurses in Singapore. *International Journal of Gynecology and Obstetrics, 130*(2015), 230–234.

Tavafian, S. (2012). Predictors of cervical cancer screening: An application of health belief model. Retrieved September 25, 2012 from http://cdn.intechopen.com/pdfs/30744/InTech-Predictors_of_cervical_cancer_screening_an_application_of_health_belief_model.pdf

Tran, J. H., Mouttapa, M., Ichinose, T. Y., Pang, J. K., Ueda, D., & Tanjasiri, S. P. (2010). Sources of information that promote breast and cervical cancer knowledge and screening among native Hawaiians in southern California. *Journal of Cancer Education, 25*(4), 588–94. doi: 10.1007/s13187-010-0078-x

Trochim, W. (2006). Selecting the Survey Method. Retrieved March 3, 2016 from http://www.socialresearchmethods.net/kb/survsel.php.

Tse, A. (1998). Comparing the response rate, response speed and response quality of two methods of sending questionnaires: Email vs mail. *Journal of the Market Research Society, 40*(4), 353–362.

Turniel-Berhalter, L. M., Finney, M. F., & Jaén, C. R. (2004). Self-report and primary care medical record documentation of mammography and Pap smear utilization among low-income women. *Journal of the National Medical Association, 96*(12), 1632–1639.

U.S. Preventive Services Task Force. (2012). Clinical summary of U.S. Preventive Services Task Force. Retrieved February 28, 2013 from http://www.uspreventiveservicestaskforce.org/uspstf/uspscerv.htm

Underwood, S., Ramsay-Johnson, E., Dean, A., Russ, J., & Ivalis, R. (2009). Expanding the scope of nursing research in low resource and middle resource countries, regions, and states focused on cervical cancer prevention, early detection, and control. *Journal of the National Black Nurses Association, 20*(2), 42-54.

UnitedHealth Group Incorporated (2011). Cervical cancer screening. Retrieved March 1, 2013 from https://www.unitedhealthcareonline.com/b2c/CmaAction.do?channelId=af735396368d5110VgnVCM1000007740dc0a____

United States Preventive Services Task Force. (2015). Cervical Cancer: Screening. Retrieved July 13, 2016 from http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening.

Urasa, M., & Darj, E. (2012). Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. *African Health Science, 11*(1), 48–57.

Vesco, K. K., Whitlock, E. P., Eder, M., Burda, B. U., Senger, C. A., & Lutz, K. (2011). Risk factors and other epidemiologic considerations for cervical cancer screening: A narrative review for the U.S. Preventive Services Task Force. *Annals of Internal Medicine*, *155*(10), 698–705

Wee, C., Phillips, R., & McCarthy, E. (2012). BMI and cervical cancer among White, African-American, and Hispanic women in the United States. doi:10.1038/oby.2005.152

Wendel, M., Garney, W., & McLeroy, K. (2015). Ecological approaches. *Oxford Bibliographies in Public Health*. doi: 10.1093/obo/9780199756797-0037

Westman, J., Hampel, H., & Bradley, T. (2000). Efficacy of a touchscreen computer based family cancer history questionnaire and subsequent cancer risk assessment.

Journal of Medical Genetics, (37), 354–360.

White, K., Garces, I., Bandura, L., McGuire, A., & Scarinci, C. (2012). Design and evaluation of a theory-based, culturally relevant outreach model for breast and cervical cancer screening for Latina immigrants. Retrieved March 20, 2013 from http://www.ncbi.nlm.nih.gov/pubmed/22870569

Wilkerson, J. E., Bailey, J. M., Bieniasz, M. E., Murray, S. I., & Ruffin, M. T. (2009). Psychosocial factors in risk of cervical intraepithelial lesions. *Journal of Women's Health 18*(4), 513–518. doi:10.1089/jwh.2008.0982

Worthington, C., McLeish, K., & Fuller-Thomson, E. (2012). Adherence over time to cervical cancer screening guidelines: Insights from the Canadian National Population Health Survey. doi:10.1089/jwh.2010.2090

Wright, D., Aqualino, W., & Supple, A. (1998). A comparison of computer assisted and paper and pencil self-administered questionnaires in a survey on smoking, alcohol, and drug use. *Public Opinion Quarterly, 62*(3), 331–353.

Yabroff, K., Zapka, J., Klabunde C., Yuan, G., Buckman, D., Haggstrom, D., Clauser, S., Miller, J., & Taplin, S. (2011). Systems strategies to support cancer screening in US primary care practice. *Cancer Epidemiology Biomarkers, 20*(2), 2471–2479.

Appendix A: Letter to Participate in Study

Dear Potential Participant,

My name is Patricia Drayton, a Walden University doctoral student pursing my PhD in Public Health specializing in Epidemiology. My dissertation title is "Social Networking Website use and Cervical Cancer Screening: A Quantitative Cross-Sectional Survey Study." I am inviting you to participate in a research study related to social networking website use and cervical cancer screening that will rely on your self-reporting. You have been invited to participate since you are a Registered Nurse working in Durham, North Carolina. The purpose of this study is to explore the association between social networking website (Facebook, Twitter) use and receipt of cervical cancer screening. If you agree to participate, it is requested that you complete a survey that should take no more than 10 minutes. Please know that there will be no compensation for completing this survey. Additionally, it is anticipated that the research will provide benefits for society as it addresses a health practice needed to combat the problem of cervical cancer.

This survey will cause little to no risk. The only potential risk is that you may find certain questions to be sensitive. However, the survey has been designed to protect your privacy. Participants' names will not be requested on this survey and you may skip any question you do not wish to answer. In addition, you may stop participating in the survey at any point without any penalty. The decision whether or not to participate in this study will not affect your employment or standing with the North Carolina Board of Nursing. Questions or concerns can be directed to me by phone or email. If you wish to speak privately about your rights as a participant, you may contact Dr. Talmage Holmes, my advisor, at. Please feel free to print a copy of this informed consent form.

By beginning the survey, you have acknowledged and consented that you have read and understand the information presented in the introduction message and agree to participate in this research study, with the knowledge that you may skip any question you do not wish to answer. You may also stop participating in the survey at any point without penalty. Also, by participating in this survey, you acknowledge that you are 21 years of age or older and a Registered Nurse in good standing with the North Carolina Board of Nursing. Please use the link below to proceed to the survey. If you have problems with the link, you may copy and paste the link into your web address browser.

Thank you for your time and consideration

Patricia Drayton
PhD (Candidate)
Public Health-Epidemiology
Walden University

Appendix B: Correspondence with the Pew Internet and American Life Project

From: Patricia Drayton [mailto:
Sent: Wednesday, July 25, 2012 1:20 PM
To: Pew Internet Information
Subject: [Autosave]

To Whom It May Concern:

I am a current Walden University student studying Public Health. I am currently in the process of conducting my dissertation research. My research is concerned with the ability of the Internet, specifically, social networking websites, to encourage women to engage in regular Pap smear screening. As part of my data collection process, I plan to mail out questionnaires to the participants in which I would like to include some of the questions from the Pew Internet and American Life Project Poll Database. I have identified at least 53 questions related to health and the internet that would be useful for my research.

May I have permission to use of these questions?

Thank you for your time and consideration

Patricia A. Drayton

Student

ID:

Program: Doctorate-Public Health: Epidemiology

Dear Ms. Drayton,

You have the permission of the Pew Research Center's Internet & American Life project to use our questionnaires in your academic work as indicated below in your email. Our citation guidelines may be found here:http://www.pewinternet.org/Static-Pages/About-Us/Our-Research/Use-Policy.aspx

Thanks so much for taking the time to check with us on the use of our work,

Cornelia

Cornelia Carter-Sykes

Manager, Pew Internet

Pew Research Center

http://www.pewinternet.org

Appendix C: Pew Internet and American Life Project Questions

1. Thinking about how you use social networking sites...On which social networking site or sites do you have an account? (Check all that apply)
   _____ Facebook
   _____ Twitter
   _____ MySpace
   _____ None

2. About how often do you visit social networking sites?
   _____ Several times a day
   _____ About once a day
   _____ 3 to 5 days a week
   _____ 1 to 2 days a week

3. Have you, personally, ever had an experience on a social networking site that made you feel closer to another person?

   _____Yes
   _____No

4. People use social networking sites for a number of reasons. Please tell me if each of the following is a major reason you use these sites. (Check all that Apply)
   _____ Staying in touch with family members
   _____ Staying in touch with current friends
   _____Connecting with old friends that you lost touch with
   _____Making new friends
   _____Connecting with other people who share your hobbies and interests

5. People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it?
   a. Someone you can count on to listen to you when you need to talk
      _____All of the time
      _____Most of the time
      _____Some of the time
      _____A little of the time
      _____None of the time

b. Someone whose advise you really want
   _____All of the time
   _____Most of the time
   _____Some of the time
   _____A little of the time
   _____None of the time

6. Thinking specifically about what you have done on social networking sites like Facebook and MySpace. Have you ever used these sites to get health information?
   _____Yes
   _____No

7. Have you posted comments, questions or information about health or medical issues...on a social networking site such as Facebook or MySpace?
   _____Yes
   _____No

Appendix D: Health Belief Questionnaire

The following questions are focused on some of your behaviors. Your responses will be kept in the utmost confidence. There is no right or wrong answers.

1. Have you ever had a Pap test? A Pap test is a genital (pelvic) examination performed by a physician.
Yes
No

If you answered NO, skip to question 4. If you answered YES, proceed to question 2.

2. When was the last time that you had a Pap test?
a. In the last 12 months
b. In the last 18 months
c. In the last 2 years
d. More than 2 years ago

3. How often do you have Pap tests?
a. Every 12 months
b. Every 18 months
c. Every 2 years
d. Less frequently than every 2 years

4. Have you ever performed breast self-examination? Breast self-examination is the use of your hands to examine your breasts for lumps or other abnormal tissue.
a.Yes
b.No

If you answered NO, skip to question 7. If you answered YES, proceed to question 5.

5. When was the last time that you performed breast self-examination?
a. In the last month
b. In the last 2 months
c. In the last 3 months
d. More than 3 months ago

6. How often do you perform breast self-examination?
a. Every month
b. Every 2 months
c. Every 3 months
d. Less frequently than every 3 months

Below are some statements concerning general information about cancer screening. Please read each statement carefully.
Once you have read it, indicate whether you agree or disagree with the statement by circling TRUE for those you agree with, and FALSE for those you disagree with.

7. Healthy adult women should have Pap tests every two years.
True
False

8. Pap tests are not important for a woman at my age.
True
False

9. Only women who have had many sexual partners need to have Pap tests.
True
False

10. The purpose of Pap tests is to detect early signs of cervical cancer.
True
False

11. Pap tests are necessary even if there is no family history of cancer.
True
False

12. The purpose of regular breast self-examinations is to detect potentially cancerous breast lumps.
True
False

13. Healthy breasts should have no lumps in them at all.
True
False

14. Breast examinations by a doctor are unnecessary if I am performing breast self-examinations regularly.
True
False