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Predictors of Use of Pap Tests Among Ghanaian Immigrant Women in Ohio

Baaba Forson
Walden University

Walden University

College of Health Sciences

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Baaba Forson

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Review Committee
Dr. Chinaro Kennedy, Committee Chairperson, Public Health Faculty
Dr. Anuli Njoku, Committee Member, Public Health Faculty
Dr. W. Sumner Davis, University Reviewer, Public Health Faculty

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Sue Subocz, Ph.D.

Walden University
2020

Abstract

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by

Baaba Forson

MSN, The College of New Jersey, 2007

BSN, Seton Hall University, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

In the United States, cervical cancer disproportionately affects members of ethnic minorities, including immigrant women from Ghana. Overall cervical cancer incidence and mortality rates have declined in the United States due to opportunistic screening with Pap tests; however, rates have not declined for Black women and immigrant women, who continue to experience higher than average mortality rates. Immigrant women, including Ghanaian women, use screening less than nonimmigrant women. Several factors including poor acculturation, low educational level, certain personal attitudes, and lack of health insurance are known to reduce participation in screening. Using the theory of planned behavior as a guide, the purpose of this quantitative study was to determine if acculturation, level of education, and individual attitude predict Pap test use by Ghanaian immigrant women in Ohio while controlling for age, income, and health insurance status. A total of 247 participants aged 18 to 65 years completed questionnaires that included demographic questions and a 10-item attitude scale. Descriptive statistics and logistic regression were used to examine associations between the dependent and independent variables. Statistically significant associations were found between Pap test use and educational level ($p = .001$) and acculturation ($p = .014$); individual attitudes did not predict Pap test use, although overall attitudes were favorable toward screening. The social change implications of the study include advancement of knowledge regarding how Ghanaian immigrant women use preventative health care in the United States, which public health educators, policy makers, stakeholders, and governmental agencies can use develop programs for health promotion and disease prevention that influence members of this population.

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Dedication

I give thanks to Almighty God who has been the source of all my resources throughout this dissertation journey. To my mother, the late Mrs. Elizabeth Nana Koofie Forson, my biggest cheerleader, who taught me to believe in myself, and never to give up even when all seemed bleak. "Mommee", you taught me that being humble does not mean weakness, but rather love and strength. Wherever you are, I pray that you are smiling, and you are glowing with pride.

To my beautiful daughters, Lorraine Adjoa, Wendy Ekua, Vennessa Ama and Michelle Aba who have supported me through this journey, I say thank you. Thank you for believing in me and celebrating this moment in my life. To my grandchildren, Autumn-Eve Nana Koofie, Geody Aseda, Jerrell, Luka Aseda, and those to come, this is for you. I have passed the baton, run with it. To my sons-in-law, Ebow, Dominique, Chris, and those to come, I say thank you for your support and encouragement and putting up with me. I love you all from the bottom of my heart.

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Finally, to my late father, Francis Mensah Forson and the entire Forson family, we can finally say we have a doctor in the family. The path has been paved; I invite all to follow. To God alone be the Glory.

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And lastly, to my younger self. Thank you for never giving up on your dream and rising above every, oftentimes, unexpected life circumstances to achieve the impossible.

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Chapter 1: Introduction to the Study

Introduction

Although cervical cancer has been the second most prevalent cancer affecting women worldwide, it has been the leading cause of cancer-related deaths among women in the developing world (World Health Organization [WHO], 2016). The disease is preventable with early and routine screenings with tools such as Pap tests; however, many women, especially those in developing countries, have died from the disease as a result of a lack of screening or under screening (International Agency for Research on Cancer [IARC], 2018; WHO, 2016). According to 2012 estimates, approximately 1,000,000,000 women aged 30 to 49 years had never been screened even once in their lifetime, and approximately 1,000,000 of these women had cervical cancer (WHO, 2014). Many of these women were in resource-poor countries which accords with the high incidence rates observed in developing countries (WHO, 2014). For Ghanaian women who have immigrated to the United States, a review of literature revealed no data on how they access and use preventative health care services, particularly cervical cancer screening.

Human papillomaviruses (HPVs), specifically high-risk Types 16 and 18, cause most cervical cancer (WHO, 2016). Persistent HPV infection causes the cervix to undergo abnormal changes that, when not treated, develop into cervical cancer (American Cancer Society [ACS], 2016; American College of Obstetricians and Gynecologists [ACOG], 2016). The Pap test has proved to be a useful tool for early detection of both HPV infection and abnormal cervical changes (ACOG, 2016); however, inadequate screening leads to high morbidity and mortality, with the greatest burdens on underserved

populations (Canfelli et al., 2020; Ndejjo et al., 2016). The purpose of this study was to examine factors that predict Pap test use in Ghanaian immigrant women in the United States. The results of the study may inform public health interventions that can improve the uptake of Pap test screenings, thereby reducing morbidity and mortality in the study population and other underserved populations.

Background to the Study

Economic and social disparities in cervical cancer prevention have made it a public health priority, especially in less developed countries of the world (WHO, 2014). Cervical cancer, although preventable, has become the fourth most common cancer in developing countries (IARC, 2018). Screening for precancerous and cancerous lesions in healthy individuals is the hallmark of cervical cancer screening programs because early detection and treatment improve disease outcomes (WHO, 2016). Ferlay et al. (2018) estimated that 570,000 new cases of cervical cancer and 311,000 deaths attributable to the disease occurred in 2018; however, many new cases (85%) and deaths (87%) occurred in less developed countries.

In developed countries, organized public health initiatives, including those using Pap tests, have successfully driven down rates of cervical cancer (WHO, 2014); however, developing countries have not shared this success (Franco et al., 2003; WHO, 2014). In the United States, for instance, incidence of cervical cancer and mortality from the disease have declined by 45% and 49%, respectively, since the 1980s (National Cancer Institute [NCI], 2014). The U.S. rates have remained stable at levels far lower than those worldwide (ACS, 2020). The same has not happened in developing countries (Franco et al., 2003; Ntekim, 2012). In recent years, approximately 85% of the global burden of

cervical cancer has occurred in developing nations, with the highest risk in western, eastern, middle, and southern Africa and Melanesia (IARC, 2018). For most of these high-risk areas, the estimated age-standardized cervical cancer incidence and mortality rates have reached more than 35 per 100,000 women and 20 per 100,000 women, respectively (IARC, 2018).

In most of sub-Saharan Africa, including Ghana, resources have been limited; these limitations have created an urgent need for improvement in cervical cancer screenings, which save lives (WHO, 2013). In developing countries, lack of population-based cancer registries has compounded the problem. For example, in Ghana, researchers have primarily focused on hospital-based cancers rather than specific populations (Laryea et al., 2014; Wiredu & Armah, 2006). The lack of registries has led to limited knowledge about the prevalence of cervical cancer in these countries (Laryea et al., 2014). Cervical cancer has been a significant public health problem in Ghana due to lack of dedicated national cervical cancer screening policies, limited screening programs, and personal and cultural beliefs (Awua et al., 2017). Not only have cervical cancer screenings been rare, implementations of screening programs have been inadequate (Awua et al., 2017).

Cervical cancer has become the second most common cancer and the number one cause of cancer related deaths in women aged 15 to 44 years in Ghana (Nartey et al., 2017; WHO & Catalan Institute of Oncology [ICO], 2019). The most recent estimates from 2018 indicate that the cervical cancer burden in Ghana were 3,151 new cases and 2,119 deaths per year, predicted to rise to 5,007 new cases and 3,361 deaths per year by 2025 (WHO, 2010; WHO & ICO, 2019). These estimates are not surprising: Nartey et al. (2017) studied cervical cancer prevalence in Ghana and found that most women

diagnosed with cervical cancer had late-stage disease, and Adanu et al. (2010) reported that more than 60% of all gynecological cancers in Ghana were of the cervix. These authors stated that their findings were like those for other African populations (Adanu et al., 2010; Nartey et al., 2017). For instance, researchers have found high rates of malignancy in Kenya (Orang'o et al., 2016), Cape Province, South Africa (Learmonth & Learmonth, 2014), and Malawi (Msyamboza et al., 2016).

Researchers found that the lack of resources and low quality of implemented screening programs (Awua et al., 2017; Quentin et al., 2011), educational barriers (Paul et al., 2007), and lack of knowledge about the causes of cervical cancer and its prevention (Opoku et al., 2016) were among the primary reasons for underutilization of cervical cancer screenings in resource-poor countries. However, few researchers have conducted comprehensive studies of how sociocultural factors influence cervical cancer screening behaviors (Williams, 2014). Cervical cancer screenings have not been widely promoted in Ghana (Williams, 2014), and women in Ghana have generally demonstrated little knowledge of cervical cancer and its risk factors, signs and symptoms, and prevention strategies (Binka et al., 2016; Williams, 2014; Williams & Amoateng, 2012).

In the United States, large-scale opportunistic screenings for cervical cancer with Pap tests and public education have dramatically reduced the incidence and mortality of the disease (Centers for Disease Control and Prevention [CDC], 2013). However, these reductions may not have occurred among specific underserved and minority groups, such as Hispanic, Native American/Alaskan, and Black women, including Ghanaian immigrant women living in the United States (NCI, 2014). Among these groups, Black women have had the highest mortality rate in the United States, even though Hispanic

women have had the highest incidence rate (NCI, 2014). Rates have also varied based on geographic location, socioeconomic status, and ethnicity (NCI, 2014; Tangka et al., 2017).

Cervical cancer is largely preventable through use of the HPV vaccine and early detection with Pap tests and other screening tools (ACS, n.d.), yet it has continued to exert an enormous physical and economic burden on those affected by the disease (Shah et al., 2020). The financial burden attributed to cervical cancer in the United States in 2014 was well over $1,300,000,000 (NCI, 2014). It has, therefore, become essential to determine which groups are at the highest risk and devise strategies to reduce the disease's morbidity, mortality, and economic burden among those groups.

In this study, I examined the degree to which acculturation, level of education, and personal attitudes predicted utilization of Pap tests for cervical cancer prevention among Ghanaian immigrant women in the Ohio. Understanding how these factors play a role in cervical cancer prevention will enable public health professionals, medical professionals, and policy makers to better understand this population and its health care needs. It will also allow health care practitioners to design programs and initiatives tailored to the specific needs of this population.

Cervical Cancer Epidemiology and Prevention

Cancer of the cervix occurs when the cells lining the cervix (the lower part of the uterus) grow abnormally out of control (ACS, 2016; CDC, Division of Cancer Prevention, 2016). The disease is highly preventable, and it is curable when detected in its early (precancerous) stages with an excellent prognosis and prolonged survival (ACS, 2016). The disease is caused primarily by sexual transmission of high-risk oncogenic

HPV (Types 16 and 18, which are responsible for 70% of all cervical cancers) to the transformation zone of the cervix (CDC, Division of Cancer Prevention, 2016; WHO, 2014). The uterine cervix consists of endocervix (covered by glandular cells and ectocervix (covered by squamous cells). The region where these two kinds of cells meet is the transformation zone, which is extremely vulnerable to HPV (ACS, 2016). Persistent HPV infection can lead cells of the cervix to become precancerous; these precancerous cells can later become cervical cancer if not detected early and treated (ACS, 2016; National Institutes of Health [NIH], 2016).

Many HPV infections are asymptomatic (including high-risk Types 16, 18, 31, 33, 45, and 58). In most cases, HPV infections clear without intervention; however, a minority of infections develop into cancer after 10 to 20 years if left untreated (WHO, 2014). A recent worldwide estimate was that 291,000,000 women (10.9% of all women) had cervical HPV infections (ACS, n.d.). The primary route of exposure to the virus is through sexual intercourse with or without penetration (ACS, n.d.; WHO, 2014). Risk factors that predispose a woman to cervical cancer include having multiple sexual partners, persistent infection with HPV, risky sexual behavior, low socioeconomic status, long-term use of birth control, and smoking (ACS, n.d.; CDC, Division of Cancer Prevention, 2016; WHO, 2014).

Prevention has three main components: primary, secondary, and tertiary. Primary prevention of cervical cancer uses the HPV vaccine to reduce infections; secondary prevention uses screening tools such as Pap tests in conjunction with early treatment to reduce the incidence and prevalence of cervical cancer; and tertiary prevention reduces the number of deaths due to cervical cancer by treating the disease at any stage (WHO,

2014). The goal of cervical cancer prevention programs is to decrease the incidence, morbidity, and mortality of cervical cancer, which disproportionately affects the lives of women around the world (WHO, 2014). Poor women, who are at the highest risk for advanced disease, suffer the most from cervical cancer (WHO, 2016).

Cervical Cancer and Screening Among Immigrant Women in the United States

Researchers conducting population-based studies in the United States have classified most dark-skinned women of African descent as Black (Ndukwe et al., 2013). Race and ethnicity are significant predictors of incidence, stage at diagnosis, and survival of cervical cancer in the United States (Tangka et al., 2017; Zhan & Lin, 2014). Black women have experienced the highest mortality and highest proportion of late-stage diagnosis (ACS, 2016; CDC, Division of Cancer Prevention, 2016; Howlader et al., 2017). As aforementioned, few studies have investigated the health of African immigrant women in the United States, but Forney-Gorman and Kozhimannil (2016) found that American-born Black women were 3 times more likely than African-born Black women to have a current Pap test status, even when controlling for age, educational status, and health insurance status. Other researchers (Chan & So, 2017; Shresta et al., 2017; Tornesello et al., 2011) investigating immigrant women have reported similar findings, suggesting that immigrant women are less likely than nonimmigrant women to have a current Pap test status, irrespective of their country of origin.

Researchers have studied uptake of Pap tests in many groups of immigrants in the United States, including Hmong immigrant women (Lee et al., 2015), Latina and female Arab immigrants (Gauss et al., 2013), Mexican immigrant women (Luque et al., 2015), and Korean immigrant women (Lee & Lee, 2017). Although Ghanaian immigrant women

have been among the fastest growing subpopulations in United States, at the time of writing, investigators had conducted little research on cervical cancer screenings specific to these women, making it unclear which factors predict their uptake of cervical cancer screening. It was, therefore, essential to examine these factors in this population to provide data on which to base interventions for improving uptake.

To detect cervical precancer and cancer early, all women are recommended to begin screening at the age of 21 years (CDC, 2019). Women aged of 21 to 29 years should have a Pap test every 3 years; women aged 30 to 65 years should have a Pap test and receive HPV screening every 5 years (ACOG, 2016; ACS, 2020).

The United States has recently experienced a large and rapid influx of immigrants from all over the world (Gambino, Trevelyan, & Grieco, 2014). In 2012, an estimated 40,000,000 immigrants resided in the United States; of these, 1,600,000 (4%) originated from the African diaspora (Gambino, Trevelyan, & Fitzwater, 2014). According to the authors, although the proportion of immigrants in the United States with African origins has remained relatively small, their migrations have been rapid after 1990, and they predict this proportion to rise. In 2012, approximately 121,000 Ghanaian immigrants resided in the United States, making up approximately 8% of all immigrants with African ancestry and one of the four (Nigeria, Ethiopia, and Kenya) largest African-born populations in the country (Gambino, Trevelyan, & Fitzwater, 2014).

Few researchers have investigated the health of immigrant and vulnerable populations, which recently has provoked interest in the matter, especially from the perspective of preventative health care (MacDonald & Nelly, 2011; Vanderbilt et al., 2014). Most researchers have found that immigrants generally have lower screening rates

than nonimmigrants (Aminisani et al., 2012; De Alba et al., 2004; Khadilkar & Chen, 2013). For example, Khadilkar and Chen (2013) found that in Canada, immigrants had significantly lower Pap test rates than nonimmigrants. Rates for immigrants who had been in Canada for more than 10 years were like those of more recent immigrants. Factors associated with higher Pap test uptake among immigrants in Canada included higher income, higher educational status, having health insurance, and being married. Latif (2010) reported similar findings among immigrants in Canada.

Several U.S. researchers investigating immigrants' uptake of Pap tests have reported findings like those of their Canadian counterparts (De Alba et al., 2004; Green et al., 2005; Ivanov et al., 2010; MacDonald & Nelly, 2011). In addition to the factors that improve uptake reported by Khadilkar and Chen (2013), U.S. researchers have found associations between knowledge, acculturation, and cultural and language barriers and cervical cancer screening rates among Korean immigrants (for whom modesty is a barrier (Lee & Lee, 2017) and Hmong immigrants in the Midwest (Lee et al., 2015). For Haitian immigrant women (Green et al., 2005) and African immigrant women (Adegboyega & Hatcher, 2017), ethnicity played a significant role.

Previous researches have shown that ethnicity is an essential predictor of Pap test uptake (Tanga et a., 2017; Zhan & Lin, 2014). Even so, significant differences in racial and ethnic beliefs among Black women affect their willingness to have Pap tests (MacDonald & Nelly, 2011). This may be why immigrant women residing in the United states have had lower screening rates than American-born women. For an example, Tsui et al. (2007) reported that approximately 5% of American-born women had never been screened for cervical cancer, compared with 18% of immigrant women. Researchers have

conducted little research into cancer incidence according to country of origin (especially for many African countries, including Ghana), because the scope for such research has been limited (MacDonald & Nelly, 2011).

Problem Statement

The problem addressed by this study is that although cervical cancer is highly preventable, it has remained the leading cause of cancer-related death among women in resource-poor countries, including Ghana. In developed countries, such as the United States, cervical cancer rates have decreased markedly due to widespread screening supported by established guidelines and policies. The proportion of immigrants to the United States who are African born has grown rapidly from 1970 and continues to grow to date (Gambino, Trevelyan, & Fitzwater, 2014). The fastest growth of the African-born population occurred between 2003 and 2012, surpassing the typical patterns of immigration from other regions; Ethiopia, Nigeria, Egypt, Ghana, and Kenya are the countries that have supplied the highest proportions of immigrants from Africa (Gambino, Trevelyan, & Fitzwater, 2014).

According to the NCS (n.d.), in the general U.S. population for the years 2013 to 2017, Hispanic women and Latinas have had the highest incidence of cervical cancer (9.2 per 100,000 women), followed by Black women (8.7 per 100,000 women) and White women (7.2 per 100,000 women). Black women, however, have had the highest death rate from cervical cancer (3.4 per 100,000 women), compared with Hispanic women and Latinas (3.4 per 100,000 women) and White women (2.2 per 100,000 women). Harcourt et al. (2014) and Pinder et al. (2016) stated that such disparities can have a variety of causes, including cultural barriers; even though such barriers exist and significantly

influence cervical cancer screening, many researchers have categorized African-born Black women and American-born Black women together as simply Black women (Ford et al., 2016). Because of this lack of specificity, information about the health care needs of African (including Ghanaian) immigrant women in the United States—particularly regarding cervical cancer screening—has been limited (Ndukwe et al., 2013). The creation of evidence-based strategies to improve uptake of cervical cancer screening among this group depends on such information, and gathering it was the goal of this study.

Purpose of the Study

The purpose of this study was to examine whether there are associations between acculturation, educational level, and individual attitudes (the independent variables) and uptake of cervical cancer screenings using Pap tests (the dependent variable) among Ghanaian immigrant women in Ohio (the study population). I employed quantitative methods in a study with a cross-sectional survey design.

Nature of the Study

Using a quantitative, nonexperimental, and cross-sectional design, I investigated the relationships between the independent variables and the dependent variable. I collected data using surveys. According to Creswell (2009), quantitative surveys provide useful numerical descriptions of trends and attitudes that are generalizable from a sample to the corresponding population. Participants recruited from a Ghanaian church in Ohio completed their survey questionnaires themselves. Use of self-administered questionnaires, though feasible and convenient, can lead to critical problems due to illiteracy and language barriers; however, their use was the most cost-effective option

(Trochim, 2006) and the best way to reach willing participants who had difficulties with computer literacy.

A researcher conducting a nonexperimental study arrives at a description of a phenomenon by examining the influence of several predictor variables on an outcome variable and applying theory to guide the description of how the variables relate to each other (Creswell, 2009; Trochim, 2006). For the purposes of this study, educational level was measured using the number of years a participant had spent in school, acculturation was measured using the number of years a participant had resided in the United States, and individual attitudes were measured through participant's numerical ratings in response to questions about how important she regarded cervical cancer screening and utilization of Pap tests. Because I sought to examine associations between the dependent variable and the independent variables, quantitative procedures were appropriate to allow assessments of those associations numerically, which I made using logistic regression analysis. The level of statistical significance used to reject null hypotheses was .05 throughout the study.

Research Questions

Three questions guided the study.

Research Question 1 (RQ1): Is there an association between level of education, as measured by the number of years spent in school, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

Research Question 2 (RQ2): Is there an association between acculturation, as measured by the number of years spent residing in the United States, and use of Pap tests

for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

Research Question 3 (RQ3): Is there an association between attitude, as measured by the importance placed on cervical cancer prevention, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

<div align="center">

Research Hypotheses

</div>

Each research question had an associated pair of null and alternative hypotheses, described in the sections that follow.

Research Question 1

H_{01}: Level of education, as measured by the number of years spent in school, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a1}: Level of education, as measured by the number of years spent in school, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Research Question 2

H_{02}: Acculturation, as measured by the number of years spent living in the United States, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a2}: Acculturation, as measured by the number of years spent living in the United States, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Research Question 3

H_{03}: Attitude, as measured by the importance placed on cervical cancer prevention, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a3}: Attitude, as measured by the importance placed on cervical cancer prevention, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Theoretical Framework

The theory of planned behavior (TPB) underpinned this study. Originally developed by Ajzen (1985) as an extension of the theory of reasoned action (Ajzen & Fishbein, 1975, 1980), the TPB posits that a behavior performed by a person is always preceded by a behavioral intention that is guided by a belief that the said behavior will produce an intended outcome. The individual is more likely to perform the behavior when they have a strong intention (Ajzen, 1991).

The TPB, according to Ajzen (1985), has six main components: behavioral beliefs, attitude toward the behavior, normative belief, subjective norm, control belief, and perceived behavioral belief. The theory suggests that an individual's attitude, subjective norm, and perceived behavioral control predict their intention to engage in a

behavior, and the intention predicts whether they perform the behavior (Ajzen, 1985). I used the theory to explain and predict the relationships between Ghanaian immigrants' intentions and behaviors when seeking Pap tests for cervical cancer prevention and whether their attitudes predicted their intentions. Researchers have used the TPB to predict a variety of health behaviors, such as gambling (Flack & Morris, 2017), energy drink consumption (Treloar et al., 2017), exercise (Chang-Ik & Hee Sun, 2015), and cervical cancer screening (Marván et al., 2016; Roncancio et al., 2013, 2015).

Definition of Terms

Acculturation: The process by which individuals take on attitudes, values, customs, beliefs, and behaviors of another culture (Abraído-Lanza et al., 2006).

Attitude: "The degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. X).

Behavioral intention: "The perceived likelihood or subjective probability that a person will perform a given behavior" (Ajzen, 1991, p. X).

Cancer: Uncontrolled, abnormal growth in any cells of the body; *cervix,* the lower part of the uterus or womb where cervical cancer forms (ACS, n.d.).

Level of education: Number of years a participant had been in school

Human papillomavirus: HPV is a virus that can cause precancerous cell changes (CDC, 2017).

Immigrant: A person who comes to a country to live there (Merriam-Webster, 2017).

Pap test: A test that looks for precancerous and abnormal cells of the cervix that can become cervical cancer if not properly treated (CDC, 2017).

Precancerous: Abnormal cell changes that are not yet cancer (CDC, 2017).

Socioeconomic status: The social standing of an individual, often measured by factors such as education, income, occupation, or a mixture of all three (American Psychological Association, 2017).

Assumptions

This study rested on two central assumptions. The first assumption was related to the accuracy and reliability of self-reported data. I assumed that participants were accurate and reliable regarding their responses. The second assumption was that the participants understood the questionnaires and were not limited by illiteracy or language barriers.

Scope and Delimitations

The scope of the study was noninstitutionalized Ghanaian immigrant women residing in Ohio. The study was delimited to provision of information on this small segment of the U.S. population. Additional delimitations included requirements that every participant be aged at least 18 years and speak English.

Limitations of the Study

Survey research, although desirable because of its low cost and convenience, has limitations due to response bias (Trochim, 2006). With cross-sectional studies, recall bias is a problem, and inaccurate responses from participants further limit survey research (Borland et al., 2012). My use of a convenience sample also posed a threat to external validity.

Significance of the Study

Examining factors unique to Ghanaian immigrant women that influence and inhibit their use of Pap tests to screen for cervical cancer permitted identification of important gaps. Immigrants, including Ghanaian immigrant women, have continued to experience health disparities and a lack of access to health care, especially preventative health care (ACOG, 2009). These problems have particularly affected immigrants without legal immigration status (ACOG, 2009). This study advanced knowledge of the subject, and its results provide a basis for future research by identifying new gaps in the existing literature.

The results of this study can be used to improve utilization habits, improve access to health care, and develop culturally sensitive interventions and programs. Improving health outcomes for Ghanaian immigrant women requires a clear understanding of the factors that support or hinder their use of preventative health services (Williams, 2014; Williams et al., 2013).

According to WHO (2016), cervical cancer is preventable, treatable, and curable when detected in its early stages. The trajectory of the disease is not precipitous, taking 10 to 20 years to develop (WHO, 2016). So, if there is an opportunity to detect and treat the disease means that no women need die from it, as long as they make use of Pap tests and other measures. Helping more women to do so was my long-term aim in conducting this study.

Social Change Implications

The immediate social change implication of this study is expansion of knowledge about how Ghanaian immigrant women use preventative health care in the United States.

Before conducting this study, I could find no readily available data on the use of cervical cancer screening—or preventative health care generally—by Ghanaian immigrant women living in Ohio. With regard to the practice of public health, the knowledge gained from this study will inform policy makers on how to design innovative and culturally appropriate cervical cancer screening and health promotion programs that meet the needs of these women and increase their participation across the United States.

Summary

Chapter 1 discussed the problem and background of the study and established why the research was needed. Chapter 2 consists of a review of existing literature on the variables studied and cervical cancer in different immigrant populations. The chapter also discusses the theoretical foundation for the study and existing work supporting the choice of methodology and design.

Chapter 2: Literature Review

Introduction

At the time of writing, cervical cancer was the leading cancer in 45 countries and the leading cause of cancer-related deaths in 55 countries, including many in sub-Saharan Africa, Asia, and Central and South America (WHO, 2014). In 2018, 570,000 new cases of cervical cancer were reported; 311,000 of these women died (Ferlay, et al., 2018). The WHO (2020) projects that by the year 2030, new cases of cervical cancer worldwide will reach 700,000 with 400,000 deaths if prevention methods are not scaled up. The majority (85%) will occur in lower- and middle-income countries. The high mortality in such countries is due to ineffective prevention programs resulting in advanced-stage diagnosis and poor outcomes (WHO, 2014).

The economic inequalities in women's health extend beyond the contrast between developing and developed countries: Even in developed countries, such as the United States, most women who have died of cervical cancer have been poor (CDC, 2017; WHO, 2017). In the United States, overall cervical cancer mortality has declined by approximately 50% in the last 40 years due mainly to improved and opportunistic screening for early detection with Pap tests and other screening procedures (ACS, 2017). However, the disease has continued to disproportionately affect women belonging to racial and ethnic minorities, such as Hispanic and Black women, including immigrant women from sub-Saharan Africa, due to their race, ethnicity, and socioeconomic status, among other factors (CDC, 2017). In the United States, incidence has been highest among Hispanic women, followed by Black women, White women, and Asian/Pacific

Island women; however, Black women have continued to have the highest mortality rates (ACS, 2017; Tabatabai et al., 2014).

Screening rates for women belonging to minority groups, including immigrant women from Ghana, and elsewhere living in the United States, have been lower than for other women (Pinder et al., 2016). Researchers have not characterized the health care needs of immigrants well (Pinder et al., 2016). Data specific to immigrant populations such as Ghanaian immigrant women have been hard to find because most researchers have grouped American-born Black women and foreign-born Black women together in their analyses (Pinder et al., 2016). And although researchers have investigated the cervical cancer screening practices of Hispanic women, east and central African immigrant women, and Haitian women, I found no research on factors affecting Pap test use by Ghanaian immigrant women in the United States. The purpose of this study was therefore to investigate whether the selected factors of acculturation, socioeconomic status, individual attitude, and level of education predict Pap test use by Ghanaian immigrant women living in Ohio.

Literature Search Strategy

I used multiple search strategies and databases to find relevant and current literature related to the various factors that affect cervical cancer screening practices among diverse groups. Databases searched included Academic Search Complete, ScienceDirect, CINAHL, MEDLINE Complete, ProQuest, PubMed, and Google Scholar. I also searched bibliographies of works already found for pointers to additional pertinent literature. Search terms used included *cervical cancer* AND *screening*, *Pap test* AND *immigrants*, *Ghanaian immigrants* AND *cervical cancer screening*, *vulnerable*

populations AND *cancer screening*, *African immigrants* AND *cervical cancer screening*, *theory of planned behavior*, *acculturation*, *personal attitude* AND *Pap smear*, and *education* AND *cervical cancer screening*, alone or in combination. I restricted the review to work published after 2014, except for subjects for which documentation was sparse. Later, I searched books and databases of the WHO, the NCI, and the CDC to retrieve relevant data and statistics. I found little refereed literature on Ghanaian immigrant women, especially related to cervical cancer.

For this reason, I expanded my search to include findings related to other immigrants from the African diaspora, Haitian immigrants, Hispanic immigrants, Hmong immigrants, and other immigrants. I assessed the relevance of the themes and subthemes that emerged and chose the following topics to explore and discuss: theoretical frameworks and methodologies used in cervical cancer screening studies, uptake of cervical cancer screening among immigrant women and members of minorities, cervical cancer screening in Ghana, and cervical cancer screening in other parts of sub-Saharan Africa. I also reviewed research on attitudes, perceived behavioral control, acculturation, socioeconomic status, income, educational status, and immigration status, each of which I discuss in this chapter.

Theoretical Framework

Although not all researchers whose work I reviewed identified a theory or framework, several explicitly stated the theory they relied on. To better understand the use of health services, especially preventative health services among vulnerable populations, researchers have employed a variety of models and frameworks: the revised behavioral model for vulnerable populations (Harcourt et al., 2014; Lee et al., 2015); the

health belief model (Hami et al., 2014); social cognitive theory (Luque et al., 2015; Doerksen & McAuley, 2014); the TPB (Roncancio et al., 2013); and a combination of the TPB and the health belief model (McClenahan et al., 2007). The TPB underpinned this study.

The TPB (Ajzen, 1985), an extension of the theory of reasoned action, is useful for examination of attitude and perceived behavioral control. Ajzen and Fishbein (1980) suggested that a person's decision to perform an action is always preceded by a behavioral intention guided by a belief that the action will have an intended outcome. Ajzen (1985) extended the theory by including the person's beliefs and perceptions about the essential resources and opportunities available to them to perform the behavior. An important premise of the theory is that an individual is more amenable to performing a health behavior when they have control over the behavior than when they have little or no control over it (Ajzen, 1985).

Various researchers have used the TPB to understand the intentions of individuals regarding their use of preventative health services. The theory is action oriented, in that it focuses on an individual's attitude toward an action rather than on an event or object; as such, one use of the theory is to predict whether individuals intend to use health care services. According to the theory, three factors influence an individual's intention: The individual's behavioral beliefs (attitude) influence the likelihood that a behavior under consideration will have an expected outcome. Normative beliefs (social norms) are the standard expectations of others and how the individual conforms to those expectations. Control beliefs (perceived behavioral control) reflect the individual's beliefs about their ability to engage in behavior (Ajzen, 1991).

Researchers have employed the TPB to examine a wide range of populations and behaviors. Keller and Miller (2015) used the constructs of the TPB to examine the intentions of victims to report crimes. The authors reported that social norms were most beneficial for predicting the intentions of victims to report crimes. Roncancio et al. (2013) used the TPB to predict the intentions of individuals to use cervical cancer screening services. With their cross-sectional study, the authors aimed to assess the value of expanded TPB for predicting cervical cancer screening intentions among the study's 206 participants. In their expanded model, the authors included acculturation ($p = .025$), past screening behavior ($p = .001$), attitude ($p = .019$), subjective norms ($p = .028$), and perceived behavioral control ($p = .014$). Their results showed that acculturation, screening behavior, attitude, subjective norms, and perceived behavioral control positively influenced intentions and participants were more likely to screen (Roncancio et al., 2013). McClenahan et al. (2007) compared the utility of the TPB and the health belief model for predicting testicular self-exam among 195 undergraduate students. The authors concluded, based on structural equation modeling, that the TPB was better than the health belief model (McClenahan et al., 2007).

Cooke and French (2008) conducted a meta-analysis of the applicability and usefulness of the TPB in health screening programs. The authors concluded that the model was useful not only for predicting intentions but also for predicting attendance. The creator of the TPB, Ajzen (2011) cautioned that the constructs of the model do not always exhibit reliabilities more than .75 to .80, even when carefully assessed, due to random measurement errors. Figure 1 summarizes the TPB.

Figure 1

The Theory of Planned Behavior
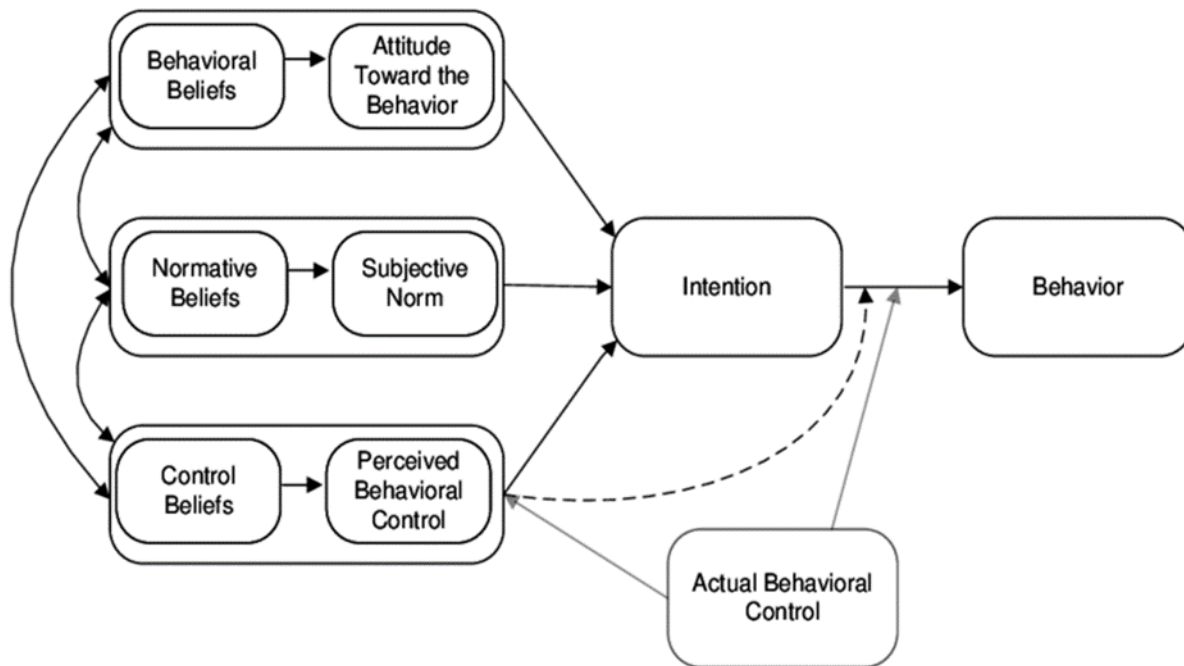
Note. From *TPB Diagram*, by I. Ajzen, 2006 (http://people.umass.edu/aizen/tpb.diag.html #null-link). Copyright 2006 by Icek Ajzen. Reprinted with permission.

Literature Review Related to Key Concepts

Current Global Trends on Cervical Cancer

Incidence and mortality of cervical cancer have trended downward in resource-rich parts of the world, such as parts of North America, Europe, Australia, and western Asia, due to effective screening programs (IARC, 2012; Vaccarella et al., 2013). Conversely, incidence and mortality have trended upward in resource-poor countries, such as those in sub-Saharan Africa and Melanesia, due to underfunded, inadequate, and disorganized screening programs (Vaccarella et al., 2013). Even though many authors have argued that lack of resources is a major contributing factor behind inadequate

screening in resource-poor places, this may not be quite so: Researchers have shown that individual, community, and health system barriers also prevent people accessing and using cervical cancer screening programs in certain resource-poor countries (Chidyaonga-Maseko et al., 2015). For example, Chidyaonga-Maseko et al. (2015) reported that the rate of cervical cancer screening in Malawi was only 5% despite the existence of comprehensive screening programs in that country; the same may be true for other low- and middle-income countries with comprehensive screening programs that have had to compete for funding with programs for other infectious and chronic diseases (Chidyaonga-Maseko et al., 2015; Finocchario-Kessler et al., 2016). It is reasonable, then, to say that such challenges could explain the wide variation in cervical cancer trends and the disproportionate geographic distribution of cervical cancer burdens across the globe.

Regions with the highest adjusted standardized rates (variations in age difference between populations), equal to or greater than 30 per 100,000 women, included eastern Africa (42.7), Melanesia (33.3), southern Africa (31.5), and central Africa (30.6); regions with the lowest rates included North America (7.0), Australia and New Zealand (5.5), and western Asia (4.4; CDC, 2014; Ferlay et al., 2012). In sub-Saharan Africa, the rate has been approximately 35 new cases per 100,000 women per year, five times that in North America, where the rate has been seven new cases per 100,000 women per year. Mortality in sub-Saharan Africa has similarly been almost 7 seven times higher than in North America—23 deaths per 100,000 per year in sub-Saharan Africa, compared with three deaths per 100,000 women per year in North America (CDC, 2014). It is clear here that cervical cancer trend in developing countries has been both astonishing and

unacceptable because as has been stated earlier the disease is preventable and highly curable in its early stages.

More encouraging is the knowledge that organized and opportunistic screenings can reduce incidence of the disease (WHO, 2014). Overall cervical cancer incidence and mortality in the United States have decreased by 45% and 49%, respectively, since the 1980s; however, the decrease has not been uniformed across all women (NIH, n.d.). Members of certain ethnic minority groups, such as Hispanic and Black women, especially those of low socioeconomic status, have experienced cervical cancer more than members of other groups (CDC, Division of Cancer Prevention, 2016; NIH, n.d.). From 2008 to 2012, the age-adjusted incidence of HPV-associated cervical cancer per 100,000 women was 10 for Hispanic women, nine for Black women, seven for White women, and six for native American Indian, Asian, and Pacific Island women (Viens et al., 2016). The disparity was perhaps due to differences in utilization of cervical cancer screening between these groups (CDC, Division of Cancer Prevention, 2016). Even though Hispanic women had the highest incidence, deaths attributable to cervical cancer were highest among Black women (CDC, Division of Cancer Prevention, 2016).

Cervical Cancer Screening Patterns in Immigrants to Developed Countries

A review of literature showed that researchers have seldom described how immigrant women from developing countries access and use cervical cancer screening services. Tornesello et al. (2011) compared the prevalence of HPV and abnormal cytology in Italian-born women with that of migrant women from Ukraine and Nigeria residing primarily in Italy. They found high prevalence of HPV (57.9% and 94.1%) and abnormal cytology (19.4% and 88.5%) among the migrant women living in Italy

compared with Italian born women ($p < .001$). Other authors have tried to understand cancer screening practices (particularly for breast and cervical cancer) of immigrants residing in other countries. For instance, Rondet et al. (2014) compared breast cancer screening and cervical cancer screening practices of French women born to French natives and those born to immigrants. The results of their population-based study indicated that women with immigrant backgrounds were at higher risk for low use of breast and cervical cancer screening. Socioeconomic factors partly explained the disparity (Rondet et al., 2014). Ogunsiji et al. (2013) and De Alba et al. (2004) conducted similar studies and reported that immigrant women were less likely to use breast and cervical cancer screening services than women who were natives of Australia and the United States, respectively. Important themes in the findings of Ogunsiji et al. were that lack of knowledge, a belief that screening was unnecessary, and negative attitudes about testing and individual beliefs were factors contributing to low use by immigrant women, regardless of country of origin. These findings agree with those of Alvarez-Nieto et al. (2015), who found that attitudes, opinions, and beliefs adopted in immigrant women's countries of origin influenced their use of health services in their host countries.

Cervical Cancer Among Immigrants and Underserved Populations in the United States

Native-born Africans have been immigrating to major U.S. cities in increasing numbers (Venters & Gany, 2011). Researchers have not characterized the health care needs of African immigrants, but such needs pose a growing concern to immigrants as they adapt to the culture's dominant in their new countries (ACOG, 2009). Several researchers have suggested that, in general, immigrants are healthier than the native

citizens of their new countries; however, this advantage wanes with time (Hamilton, 2015; Venters & Gany, 2011). One hypothesis offered by Venters and Gany (2011) to explain the waning of the health advantage is that continued assimilation into the dominant culture causes African immigrants to experience a cultural change whereby they embrace unhealthy lifestyles and negative health behaviors present in their surroundings. Others have blamed factors such as acculturation, low socioeconomic status, and environmental problems (Hamilton, 2015; Lu et al., 2017).

Health care expenditure in the United States has become the highest in the world. For example, U.S. health care costs in 2012 were more than 17% of gross domestic product. In Japan, health care costs in the same year were 9.3% of gross domestic product (Central Intelligence Agency, 2014). Despite the high total expenditure in the United States, more than 45,000,00 Americans lacked health insurance in 2012 (Cohen & Martinez, 2012). The U.S. government has not enshrined health care as a fundamental right in its constitution (Swendiman, 2010). Resulting inequalities mean that members of certain groups—such as Black, Hispanic, Native American people, and certain immigrants—have struggled to access health care more often than other people have (ACOG, 2009).

In 2017, more than 44.4 million people in the United States (13.6% of the population) were immigrants (Radford & Noe-Bustamante, 2019). ACOG (2009) stated that immigrants experienced more health care access disparities that negatively affect their health than the general population. Cervical cancer mortality among immigrant women residing in the United States increased significantly from 1985 to 1996, so much so that overall U.S. cervical cancer rates were noticeably and negatively affected (Seeff

& McKenna, 2003). This is a worrisome revelation given the continued growth in the number of immigrants and immigrant women in the United States as mentioned by Radford and Noe-Bustamante (2019). Using data from the U.S. Census Bureau, Gambino, Trevelyan, and Fitzwater (2014) found that approximately 514,000 immigrants from West Africa lived in New York City between 2008 and 2012. Of those, an estimated 121,000 were Ghanaian immigrants.

Major U.S. cities, including New York City, Washington, DC, Los Angeles, Boston, and Atlanta, have witnessed substantial increases in the migration of African-born people (U.S. Census Bureau, 2014).

I found that data were scarce regarding incidence and prevalence of cancer in immigrant populations, especially among immigrants from West Africa and particularly Ghanaian immigrants residing in developed countries. In the United States, although new cases of cervical cancer have dropped markedly to approximately 12,990 cases per year, more than 60% of new cases have been occurring among underserved populations and immigrants (NCI, n.d.; Scarinci et al., 2010). The main cause of this disparity has been a lack of screening due to lack of access to health care, poor health communication, poor health education, and cultural issues (NCI, n.d.; Freeman & Wingroove, 2005). The burden of cervical cancer has also varied geographically. In the United States, Black women in the Deep South, Hispanic women on the Texas–Mexico border, and White women in Appalachia, rural New York, and northern New England have experienced higher mortality from cervical cancer than the general population (Freeman & Wingroove, 2005).

Among foreign-born women, the cervical cancer death rate has steadily increased, whereas the death rate among native-born women has declined (Freeman & Wingroove, 2005; Seeff & McKenna, 2003). Seeff and McKenna (2003) reported that the proportion of all cervical cancer deaths in foreign-born women rose from 8.7% in 1985 to 1987 to 11.1% in 1994 to 1996. These increases among foreign-born women and women belonging to other underserved groups are disturbing given the declining cervical cancer rates in the general U.S. population (Venters & Gany, 2011) and the fact that cervical cancer is preventable (WHO, 2014). Disparities most likely exist between many ethnic groups and geographic regions in the United States, but the lack of data on certain groups, such as immigrants from Ghana and other West African countries, has made these disparities hard to identify.

Using data from the U.S. Census Bureau, Gambino, Trevelyan, and Fitzwater (2014) found that about 514,000 immigrants from West Africa lived in New York City between 2008 and 2012. Of those, an estimated 121,000 were Ghanaian immigrants.

According to the U.S. Census Bureau (n.d.), there were approximately 1,800,000 African-born immigrants in the United States in 2015, and of these, 666,775 were from West Africa, and 145,128 were from Ghana. The size of African immigrant has doubled every decade since 1970, making it one of the fastest growing immigrant populations (U.S. Census Bureau, n.d.). One of the many challenges that these immigrants have faced relates to health care (Venters & Gany, 2011). Pinder et al. (2016) stated that health care access inequalities disproportionately affect immigrants, who make up a vulnerable group, placing them at increased risk of poor health outcomes. For Ghanaian women in Ghana, cervical cancer has been the fourth most common type of cancer and the leading

cause of female cancer deaths (ACS, 2011). In Ghana, screening for cervical cancer and other cancers has remained rare (Sanghavi et al., 2008); so, this may be the reason for poor cervical cancer outcomes in Ghana. In reviewing literature, researcher reported widespread underutilization of cervical cancer services in resource-poor countries. Chidyaonga-Maseko et al. (2015) reviewed existing literature to identify barriers to cervical cancer prevention and found that individual, community, and health-system-related factors all played significant roles in the problem. The authors stated that poor knowledge, low income, poor education, and prohibitive cost were essential barriers to cervical cancer preventative services. Ackerson and Gretebeck (2007), Ndukwe et al. (2013), Seeff and McKenna (2003), and Venters and Gany (2011) all reported similar factors as causes of underutilization of Pap test cervical cancer screening.

In the United States, Black women have experienced higher proportions of late-stage diagnosis, and worse disease outcomes from cervical cancer than Hispanic or White women (CDC, Division of Cancer Prevention, 2016). This finding agrees with Nartey et al.'s (2017) finding that most women diagnosed with cervical cancer in Ghana had advanced disease. Evaluation of cervical cancer outcomes for Black women in the United States has been complicated by the lack of data on individual ethnic groups: Most authors have combined data for American-born and foreign-born Black women (Ndukwe et al., 2013). The corresponding lack of data on Ghanaian immigrant women living in the United States is not surprising, because after conducting a systematic review of the literature on cervical cancer in various African countries, Finocchario-Kessler et al. (2016) found that fewer than 11 research articles related to cervical cancer in Ghana. So,

it is evident data on Ghanaian women in both their country of origin and in the US is limited.

Cervical Cancer Practices in Ghana

According to Wiredu and Armah (2006) those in developing countries did not consider cancer and noncommunicable diseases to be significant public health problems until 1990s. Venters and Gany (2011) also stated the up until the 1990s research on African immigrant health focused on infectious diseases; however a review of data on population-based estimates have drawn a different picture. For instance, cervical cancer has become the fourth most common cancer in sub-Saharan Africa, claiming the lives of more than 50,000 women annually (Mboumba- Bouassa et al., 2017). More than 200,000,000 women aged 15 years and older have been living at risk of cervical cancer in the region (Adewole et al., 2013).

In Ghana, data on cancer patterns have been scarce (Wiredu & Armah, 2006). According to Wiredu and Armah (2006), cancer mortality trends had not been reviewed since 1953 and population-based data have also been difficult to obtain as the country has not established a population-based cancer registry. It has therefore been difficult to discover the true incidence and mortality rates for cervical cancer in Ghana (Nartey et al., 2017; Wiredu & Armah, 2006). Wiredu and Armah reviewed 3,659 cancer deaths at Korle Bu Teaching Hospital and found that cervical cancer was the third leading cause of death among women (8.47%), after breast cancer (17.24%) and hematopoietic cancers (10.97%). Of all the gynecological cancers reported at the hospital between 1995 and 1997, 64% were cervical cancer.

Most research on cancer in Ghana has been hospital-based, with no referenced population (Laryea et al., 2014). To obtain population-based cancer data, Laryea et al. (2014) the Kumasi Cancer Registry for 2012, which contained records from all clinical departments at the Komfo Anokye Teaching Hospital in Kumasi. The authors found that cervical cancer was the second most common cancer in Ghanaian women (29.4%); breast cancer was the most common (33.9%), and the rates of ovarian and endometrial cancers were 11.3% and 4.5%, respectively. These findings contrast with those of the WHO (2014), and Bruni et al. (2017), who reported that cervical cancer, not breast cancer, was the leading cancer among Ghanaian women of all ages.

Other researchers have reported similar patterns for HPV infections in other African countries. Ogembo et al. (2015) conducted a meta-analysis review of literature and found that the most prevalent types of HPV present among African women were 16, 18, 52, and 35. They also found that Africa had higher levels of infection than any other region (North American, Europe, Asia, Latin America and the Caribbean). The authors showed that HPV Types 16 and 18 individually accounted for 49.7% and 18.0% of invasive (spread of cancer to surrounding tissues) cervical cancer, respectively, and all types of HPV combined accounted for 89.5% of invasive cervical cancer. Ogembo et al. said that their analysis agreed with global estimates that HPV Types 16 and 18 cause 70% of invasive cervical cancer. They also showed that, among the regions studied, West Africa had the third highest HPV infection rate among women with normal cytology. South Africa, surprisingly, had the highest prevalence of disease (57.3%) among women with normal cytology. Nartey et al. (2017) reported similar findings in Ghana, where

high-risk HPV Types 45, 16, 18, 35, and 52 were present in more than 80% of women with cervical cancer.

The findings of various researchers agree with respect to the prevalence of infection with oncogenic HPV in Ghana and other parts of Africa (Awua et al., 2016; Laryea et al., 2014; Nartey et al., 2017; WHO & ICO, 2019). Researchers have yet to reach agreement on incidence and mortality of cervical cancer in Ghana, however, indicating that the corresponding data have been unreliable, perhaps due to the lack of population-based research (Awua et al., 2016; Nartey et al., 2017). The WHO and ICO (2017) said that cervical cancer was the most frequently diagnosed cancer in Ghana and that the crude incidence of HPV-associated cervical cancer in Ghana was 24.3 per 100,000 women per year. In 2012, they estimated 3,052 new cases of cervical cancer and 1,556 deaths from cervical cancer in Ghana (WHO & ICO, 2019).

Cervical Cancer Screening and Prevention in Ghana

Cervical cancer screening practices and strategies globally have developed differently (Bruni et al., 2017). Most developed countries, such as the United States and Canada, have established guidelines for testing with Pap tests and vaccination against HPV and both strategies have become widely available in developed countries (Mboumba-Bouassa, 2017). In Ghana, until recently, there were no comprehensive national screening protocols or programs (Adamu, 2002; Laryea et al., 2014; Nartey et al., 2017). Ghana has now made screening programs available (Bruni et al., 2017), but the author mentioned that they lack quality assurance, mandated supervision, and monitoring. Few women received screening for cervical cancer; only 2.8% of women aged 25 to 64 years screened every 3 years, even though cervical cancer was the most common cancer

among women aged 15–44 years (WHO, 2013). The WHO (2007) predicted that if the trend continued, by 2025 the incidence of cervical cancer in Ghana would rise to 5,000 cases per year, and deaths from cervical cancer would rise to 3,361 women per year. Other countries in sub-Saharan Africa have done much better. Akinyemiju (2012) studied the socioeconomic and health access determinants of the uptake of breast and cervical cancer screening among women aged 18 to 69 years in developing countries. The author found much more favorable results in Congo (56.7%), Mali (30.0%), and Chad (26.0%) than in Ghana (9.0%). Pap tests and visual inspection with acetic acid (VIA) have been the mainstays of Ghanaian cervical cancer screening, and these tools have been available in both private and public hospitals in Ghana (Williams & Amoateng, 2012). Quentin et al. (2011) reported that VIA was the more logistically feasible and cost-effective tool compared to Pap test in resource-poor countries, and therefore recommended it over the Pap test. The author cautioned that evidence indicated VIA was not as sensitive as initially thought. Nevertheless, strategies to implement a national VIA-based screening program were developed in Ghana (Quentin et al., 2011). The advent of the HPV vaccination has been promising for primary prevention, but it has been out of financial reach for many resource-poor countries including Ghana (Bruni et al., 2017; Quentin et al., 2011).

Cervical Cancer Screening and Screening Disparities in the United States

In the United States, the ACS (2016) and the ACOG (2016) have recommend screening women aged 21 to 29 years with Pap tests alone every 3 years and screening women aged 30 to 65 years with Pap tests and HPV testing every 5 years (ACS, 2016; ACOG, 2016). Screening should stop at age 65 years for women who have not had

abnormal cells and have had three negative Pap tests or two negative HPV tests in a row within the preceding 10 years (ACOG, 2016).

Despite significant advances in cervical cancer screening, mortality, and survival in the United States, the disease has continued to disproportionately impact women belonging to low-income groups (Bradley et al., 2004), particularly Hispanic women, Black women, older women, uninsured and underinsured women, and members of other underserved groups (Ackerson & Gretebeck, 2007; Bazargan et al., 2004). Researchers have reported that, in general, educational level, immigrant status, socioeconomic status, acculturation, and individual behaviors and beliefs play a significant role in these disparities (Glick et al., 2012; Shariff-Marco et al., 2010).

Key Factors Contributing to Cervical Cancer Screenings

For almost every disease, including cervical cancer, morbidity and mortality rates have remained higher than average among members of lower social classes and certain racial minority groups (O'keefe et al., 2015). The NCI (2018) referred to the disparities in cancer outcomes as "cancer health disparities," a term that covers differences in the incidence, prevalence, death, morbidity, survivorship, burden of cancer or related health conditions. The NCI (2018) also discussed differences in screening rates and stage of diagnosis between subpopulations in the United States. Cancer health disparities occur when improvements in overall health outcomes are experienced equally by all subpopulations (NCI, 2018). Researchers have identified socioeconomic status, behavior, genetics, diet, access to health care, educational level, health insurance status, acculturation, and immigration status as risk factors (CDC, 2014; NCI, 2018). Race,

ethnicity, gender, income, geographic location, and sexual identity are additional risk factors that influence cancer health disparities (CDC, 2014).

Education and Cervical Cancer Screenings

Existing evidence suggests that the higher a person's educational attainment, the more they know about cervical cancer screenings (Idehen et al., 2017; Shrestha & Dhakal, 2017). Several researchers have found positive associations between education, knowledge of cervical cancer screening, and increased use Pap tests (Idehen et al., 2017; Nguyen & Clark, 2014; Nwankwo et al., 2011). Abiodun et al. (2014) performed an interventional study of women in rural Nigeria. They aimed to determine the effect of health education on awareness, knowledge, and perception of cervical cancer. The authors found that health education increased awareness of cervical cancer, and screenings to 100% ($p < .0001$); knowledge increased from 2% to 70.5% ($p < .0001$), perception increased from 5.1% to 95.1% ($p < .0001$), and the proportion of women who got screened increased from 4.3% to 8.3%. These findings support other findings that there is a positive association between level of education and knowledge of cervical cancer screenings (Bansal et al., 2015; Nguyen & Clark, 2014; Shrestha & Dhakal, 2017). Highly educated individuals have a positive attitude toward screening, in that they are apt to seek information about recommended preventative measures (Chan & So, 2017). It seems plausible, therefore, to suppose that education and knowledge translate into perceived benefits of screenings; however, other researchers have found that educational level and knowledge are negatively associated with uptake of cervical cancer screenings (Singh et al., 2012). The reason for these negative associations could be covariates such as age, socioeconomic status, race, and ethnicity (Gawdzik et al., 2015; Zhan & Lin,

2014); personal attitudes (Harcourt et al., 2014; Shrestha & Dhakal, 2017); and acculturation (Harcourt et al., 2014; Nardi et al., 2016; Nguyen & Clark, 2014)

Acculturation and Cervical Cancer Screenings

Researchers have shown that acculturation, as measured by an immigrant's length of stay in the United States, influences the decision and willingness to have a Pap test among women belonging to ethnic minorities (Chan & So, 2017). Chan and So (2017) conducted a systematic review of factors that influence the behavior of women belonging to ethnic minorities toward cervical cancer screenings. The authors concluded that a woman's attitude toward testing depends on multiple factors viewed under different lenses. Some of the factors are English proficiency, educational level, health insurance status, recommendations by health professionals, and acculturation. Across all ethnic minorities studied, highly acculturated individuals (those who had lived in their host countries for more than 10 years) were more likely than others to undergo cervical cancer screening (Chan & So, 2017). This finding agrees with the findings of Khadilkar and Chen (2013), who found that the longer immigrants had spent in their host countries, the more likely they were to screen for cervical cancer.

Diaz-Santana et al. (2017) studied diverse postmenopausal Hispanic and Latina women to assess the role of acculturation on their uptake of recommended screenings for breast, colorectal, and cervical cancer. The authors reported that the prevalence of breast, colorectal, and cervical cancer screenings was 68.7%, 55.9%, and 47.1%., respectively. Although adjusting for socioeconomic status decreased the effect, highly acculturated women were more likely to be screened for breast cancer ($OR = 2.12$, 95% CI [1.57, 2.86]), colorectal cancer ($OR = 4.61$, 95% CI [3.27, 6.50]), and cervical cancer

(OR = 1.46, 95% CI [0.98, 2.18]) than other women. Surprisingly, subgroup analysis indicated that different levels of acculturation affected recommended screenings for breast, and colorectal cancer but not for cervical cancer.

Based on the above findings, acculturation may positively or negatively influence health behaviors. Venters and Gany (2011) argued that with prolonged exposure to the dominant culture in their host country, immigrants adopt harmful health habits that negatively impact their health. Conversely, Chan and So (2017) suggested that prolonged exposure to the dominant culture is protective, in that immigrants learn the language and adopt the culture, which improves their health outcomes in the host country.

Attitude Toward Prevention

A number of factors, such as socioeconomic status, health insurance status, language proficiency, level of education, and presence of regular health care providers, affect many subpopulations, especially ethnic minorities, in a similar way (Chan & So, 2017). However, data reviewed shows other factors specific to ethnic and cultural groups can also inhibit uptake of cervical cancer screening. These factors include fatalistic attitudes (Marván et al., 2016), conscious negligence (Abotchie & Shokar, 2009), fear of testing (Ndukwe et al., 2013; Schoenberg et al., 2013), and belief in personal invulnerability (Chan & So, 2017). In developing countries, researchers have shown that women's attitudes affect their uptake of cervical screenings (Mutambara et al., 2017). Gatumo et al. (2018) conducted a study in Kenya to assess knowledge, and attitudes of women toward cervical cancer. They found that many participants had negative attitudes, and considered Pap tests to be scary. The authors attributed the fear and negative attitudes to high levels of late-stage diagnosis of cervical cancer among Kenyan women. Early

detection of pre-cancerous lesions prevents almost 80% of cancerous lesions, and late-stage diagnosis would come with a poor prognosis (WHO, 2014).

Ndukwe et al. (2013) studied knowledge and awareness levels of cervical cancer among African-born immigrants and American-born Black women residing in, and around Washington, DC. Fear, lack of knowledge, and fatalism were primary barriers to screening uptake in both groups; however, distinctive barriers that emerged among the African-born women were a belief that cervical cancer was a curse and a need to seek spousal approval before being tested (Ndukwe et al., 2013). Mukama et al. (2017) used a cross-sectional community-based survey (the Attitudes of Women Towards Cervical Cancer Prevention Questionnaire) to assess the knowledge and attitudes of 900 Ugandan women aged 25 to 49 years in Bugiri and Mayage in the Eastern region of Uganda. Mukama et al. concluded that many women studied were knowledgeable about cervical cancer regarding cause and prevention. Attitudes about cervical cancer prevention were encouraging; however, 556 participants (61.8%) believed that nothing could be done once a woman was diagnosed with the disease. The authors argued that this perception could affect a woman's decision-making with respect to cervical cancer prevention.

Williams (2014) conducted a study in Ghana, and found that many women who participated cited lack of knowledge, shyness, fear, and belief that cancer is incurable as reasons not to use cancer screening. In England, Marlow et al. (2015) examined sociodemographic, and attitudinal barriers among women belonging to ethnic minorities regarding cervical cancer screening nonattendance and lateness. The three attitudinal barriers that emerged were that testing is unnecessary without symptoms, testing is

unnecessary if a person abstains from sexual activity, and testing conflicts with other scheduled appointments.

Summary

Many researchers have studied cervical cancer and cervical cancer screening within the general population and subpopulations (Chan & So, 2017; Gauss et al.,2013; Marlow et al.,2015). However, as aforementioned, very few researchers have studied these matters among African immigrants living in the United States, especially Ghanaian immigrant women. Researchers studying cervical cancer awareness, knowledge, attitudes, and behaviors among immigrants belonging to ethnic minorities have focused on Hispanic and Latina women (Roncancio et al., 2013, 2015), African immigrants (Ndukwe et al., 2013), and Black, Latina, and Arab women (Gauss et al., 2013). Existing evidence suggests that the culture and beliefs that immigrants bring with them from their native countries affect their uptake of preventative health care, including cervical cancer screening (Chan & So, 2017; Gauss et al.,2013; Marlow et al.,2015; Roncancio et al., 2013, 2015).

Even though researchers have established that some barriers to preventative care are common to all immigrants (discrimination, language, lack of insurance, low levels of acculturation, and socioeconomic disparities), beliefs and attitudes specific to particular cultures can create barriers, too (Chan & So, 2017). To implement culturally sensitive and appropriate preventative health care programs for Ghanaian immigrant women in the United States, it is therefore important to understand the factors that prevent or enable these women from having Pap tests. Identifying those factors was the purpose of this study.

In chapter 2, I discussed existing work and established the importance of the study. In chapter 3, I will discuss the study's methodology, research design, population, sampling procedure, data collection, and data analysis.

Chapter 3: Research Method

Introduction

In this chapter, I discuss the research design and methodology used to examine whether there is an association between the independent variables—acculturation, educational level, and individual attitudes—and the dependent variable—cervical cancer screening using Pap tests—among the study population—Ghanaian immigrant women living in the Ohio—while controlling for age, income, and health insurance status. I employed quantitative methods and a cross-sectional survey design to determine whether relationships existed between the dependent variable and the independent variables in a sample of the population. The chapter describes the population, sampling, informed consent and other ethical considerations, recruitment of participants, survey instrument used, and methods of data collection and analysis applied.

Research Design and Methodology

I used a quantitative, nonexperimental, and cross-sectional design and collected data using surveys. In addition to collecting data necessary to control for age, income, and health care status, I collected data useful for analyzing the mediating effects of other variables, such as marital status and having a regular primary care provider. According to Burkholder et al. (2016), survey research is appropriate for explaining the relationships between several variables and when access to a sample allows for collection of self-report data.

A cross-sectional study, according to Setia (2016), is a type of observational study in which a researcher measures the outcomes and exposures of study participants at a specific point in time. Setia (2016) asserted that participants in a cross-sectional study

differ in key factors of interest, such as educational level, but are similar in other characteristics, such as gender or ethnicity; selection for participation is based on inclusion and exclusion criteria.

Creswell (2013) stated that quantitative methods are used to test objective theories by examining the relationships between variables. The author also mentioned that in quantitative survey research, researchers use objective measurements and statistical procedures to analyze data collected via questionnaires. I examined the research questions in this study using quantitative procedures. A qualitative approach was inappropriate, because qualitative procedures are inductive and focus on building theories and models by exploring and understanding a phenomenon within the context of individual and group settings (Creswell, 2013).

For any research endeavor, the choice of research design must ensure that the results of the endeavor effectively address the research problem with as little vagueness as possible (Creswell, 2013). For this study, I employed a quantitative, nonexperimental design. Even though other quantitative research designs were available—such as action research designs, quasi-experimental designs, and case study designs—none were appropriate for this study because I could not manipulate the independent variables; this limitation made a nonexperimental design the most appropriate choice (Fields, 2013). Also, a nonexperimental quantitative design is useful for examining multiple variables in a large population and for generating a numerical description of a sample that generalizes well to the sampled population (Creswell, 2009).

I collected data using self-administered paper questionnaires. The self-administered web-based questionnaires as mentioned earlier was not used due to lack of

interest in that option by participants. The paper-based data collection was relatively inexpensive, simple, reached a large sample, and offered privacy for participants. However, this method had disadvantages. The main disadvantage of the self-administered questionnaire was low response rate, requiring additional days for collection of data.

Methodology

Population

The target population consisted of Ghanaian immigrant women aged 18 to 65 years living in Ohio. The age limits were based on the recommendations of CDC (2018) for average-risk asymptomatic women. The CDC (2018) recommended screening average-risk asymptomatic women aged 21 to 29 years every 3 years with cytology-based Pap tests, irrespective of onset of sexual activity or other risk factors. For women aged 30 to 65 years, the recommendation was to screen every 5 years with Pap tests and HPV tests or every 3 years with Pap tests alone (CDC, 2018).

Gambino, Trevelyan, and Fitzwater (2014) estimated that well over 120,000 Ghanaian-born immigrants lived in the United States, with the largest group of 35,970 individuals concentrated in the New York-Newark-Jersey City, NY-NJ-PA Metropolitan Statistical Area, and the next-largest group of 18,420 individuals concentrated in the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area. At the time of the study, Ohio also had a large community of Ghanaian immigrants, members of whom made up multiple church assemblies in and around Columbus, Ohio. The willingness of Ghanaian immigrants in Columbus to participate in this study contributed to my choice to investigate this population.

Sampling

I selected a convenience sample from members of a Ghanaian church in Columbus, Ohio, based on their availability and willingness to participate.

Inclusion Criteria

Every participant was required to be a mentally sound Ghanaian immigrant woman aged 18 to 65 years who lived in Ohio. Every participant had to consent to participate.

Exclusion Criteria

Potential participants were excluded if they were not women, were not Ghanaian immigrants, were not mentally sound, or would not willingly consent to participate.

Sample Size Calculation

The exact population of Ghanaian immigrant women in Ohio at the time of the study was unknown. For the purposes of this study, however, the size of the population could be considered infinite, because the true size was estimated to be over 50,000. This justified application of the Godden (2004) formula. According to Godden, the required sample size can be determined with this formula:

$$ss = \frac{z^2 \times p \times (1-p)}{c^2},\qquad(1)$$

where *ss* is the sample size, *z* is the *z*-value (e.g., 1.96 for a 95% confidence level), *p* is the percentage of the population picking a choice (expressed as decimal), and *c* is the confidence interval (expressed as decimal; e.g., .04 corresponds to ±4 percentage points). For the purposes of this study, $p = .8$, $c = .05$, $z = 1.96$, and so

$$ss = \frac{(1.96)^2 \times (.8) \times (1 - .8)}{(.05)^2} \approx 245.86.\qquad(2)$$

For the purpose of obtaining proportionate allocation, I sought a sample of 246 participants for the study.

Selection Procedures

I collected data at a single point in time by recruiting participants who fit the sampling criteria using convenience sampling from a Ghanaian church in Ohio. I also selected the church using convenience sampling by finding one with leaders willing to allow its members to participate in the study. I used convenience sampling because of the ease and cost-effectiveness of recruiting from within a limited geographic area. The church selected, based in Columbus, Ohio, had multiple assemblies in the state, and its leaders agreed for the study to be performed in those assemblies. There were two districts (East and North), each of which contained two assemblies. Every woman in every assembly aged 18 to 65 years was invited to participate in the study.

For three consecutive Sundays, questionnaires were distributed to eligible church members after each church service. Prior to data collection and to ensure privacy and anonymity, each questionnaire was sealed in an envelope. Each questionnaire packet contained an introduction letter, consent form, questionnaire, and pen. Each potential participant had ample time to read the accompanying documentation and complete the questionnaire on church premises; participants were instructed to sit in every other chair and every other row while completing questionnaires. Participants were asked to place completed surveys back in their envelopes and drop them in a sealed box by the exit of the church.

Data Collection

I collected data using a survey questionnaire that measured predictors of Pap test use by the participants. In addition to collecting data necessary to control for age, income, and health care status, I collected data useful for analyzing the mediating effects of other variables, such as marital status and having a regular primary care provider. The questionnaire began with 10 questions that sought information on a participant's demographics—such as age, marital status, and income—as well as history of their cervical cancer screening and their health insurance and primary care provider statuses. The questionnaire also gathered information on the dependent variable (Pap test use) and the independent variables (attitudes, educational level, and acculturation). The next section of the questionnaire, taken with permission from Mukama et al. (2017), consisted of 10 items that assessed the participant's attitude, knowledge, perception of risk, severity of cervical cancer, and perceived self-efficacy with regard to cervical cancer and cervical cancer screening. The questions required the participant to state their level of agreement to with each item on a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

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completed surveys back in their envelopes and drop them in a sealed box by the exit of the church.

I analyzed a total of 247 questionnaires. I coded some values as "missing" to ensure they were excluded from later analysis. Of six Ghanaian church leaders in Ohio who I telephoned, only one pastor agreed for the study to be performed in his church. I submitted a letter of cooperation to Walden University's institutional review board (IRB) as part of the application process. After receiving approval from the IRB, I met with the senior pastor and four elders of the church to introduce myself as a researcher. After that, I was introduced to the church assembly. I explained the purpose of the research project to the assembly. I stated the exclusion and inclusion criteria and invited all eligible members to participate. I stated that the study was anonymous and asked prospective participants to not write their names on the questionnaires. I also stated the time required to read the consent and complete the survey (10 minutes).

I collected data from January 26 to February 9, 2020. The initial plan was to collect data during a single visit. However, it became apparent that multiple visits would be necessary reach the desired sample size of 246. The consent forms, survey questionnaires, instructions for completing the questionnaires, and pens were placed in manila envelopes and handed to participants. The instructions directed participants to place their completed questionnaires in a locked box provided. The initial plan for data collection was to use self-administered paper questionnaires and self-administered web-based questionnaires; however, participants preferred the self-administered paper questionnaires and the web-based questionnaires went unused. To provide privacy, participants sat in every other seat of every other row while completing their

questionnaires. The procedure was repeated for three consecutive Sundays during the data collection period, at which point I had collected 247 questionnaires.

Data Management

To ensure consistency among responses from the participants, the data from the survey questionnaires were reviewed, cross-checked for accuracy, and manually entered directly into IBM SPSS (Version 25) for analysis. I coded some as "missing" to ensure they were excluded from later analysis. I coded "yes" as 1 and "no" as 0 in responses to yes/no questions. I tabulated demographics and calculated and tabulated means and standard deviations of study variables and correlations between the variables. Cronbach's alpha was .48 for the attitude items, but this was too low to permit combining the items into a single scale, I therefore evaluated each attitude item separately.

Instrumentation and Operationalization of Constructs

This section begins with detailed definitions of the independent and dependent variables of the study.

Independent Variables

Acculturation. Acculturation is the process by which individuals take on attitudes, values, customs, beliefs, and behaviors of another culture (Abraído-Lanza et al., 2006). In this study, this interval-level variable was measured by the number of years a participant had lived in the United States.

Attitude. In this study, attitude consisted of a participants' attitudes toward cervical cancer prevention. Mukama et al. (2017) measured this ordinal variable using a 10-item questionnaire that requires a participant to state their level of agreement with

statements about cervical cancer on a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). The items are as follows:

1. Cervical cancer is a very severe disease.

2. I am at risk of getting cervical cancer.

3. Cervical cancer screening is important.

4. Only women who are sexually active need cervical cancer screenings.

5. Women who have had sexually transmitted diseases are more likely to get cervical cancer.

6. Once cervical cancer has been diagnosed, something can be done about it.

7. Chances of curing cervical cancer are better when the disease is discovered at an early stage.

8. Cervical cancer is not a death sentence for most people.

9. There is much a woman can do to reduce her chances of getting cervical cancer.

10. Women who have cervical cancer will have some signs to show it.

Health Insurance Status. Health insurance status indicated whether a participant had health insurance. This nominal dichotomous variable was coded 0 for "no" and 1 for "yes."

Primary Care Provider Status. Primary care provider status indicated whether a participant had a regular primary care physician. This nominal dichotomous variable was coded 0 for "no" and 1 for "yes."

Marital Status. Marital status was a nominal variable measured using numerically coded categories: married (1), not married (2), divorced (3), widowed (4), and married but separated (5).

Ever Had a Pap Test in Ghana. Whether a participant had ever had a Pap test in Ghana was a nominal dichotomous variable coded 0 for "no" or 1 for "yes."

Level of Education. Education level pertained to the highest educational degree obtained by a participant. This ordinal variable was measured using numerically coded categories: less than a high school diploma (1), high school diploma (2), associate degree/certificate (3), undergraduate degree (4), and graduate school (5).

Age. Age was treated as an ordinal variable with four categories: 18 to 24 years old, 25 to 34 years old, 35 to 49 years old, and 50 to 65 years old.

Income Level. This nominal variable consisted of seven categories: less than $15,000, $15,000–$24,999, $25,000–$34,999, $35,000–$44,999, $45,000–$54,999, $55,000–$64,999, and $65,000 or more.

Dependent Variable: Pap Test Utilization

Pap test utilization indicated whether a participant had undergone a Pap test in the United States. This nominal dichotomous variable was coded as 0 for "no" and 1 for "yes."

Instruments

I sought and obtained permission to use the Attitudes of Women towards Cervical Cancer Prevention Questionnaire (Mukama et al., 2017). The authors did not test the reliability of the questionnaire; I therefore performed reliability testing by calculating Cronbach's alpha. Reliability of a measure relates to the ability of the measure to consistently yield the same results under the same conditions (Fields, 2013). I used

Data Analysis Plan

I used IBM SPSS (V 25) to examine, analyze, and clean the data set by identifying missing data. Any observation missing a value for one or more variables was entirely removed from analysis (listwise/casewise deletion); only observations with complete sets of data were included in the final analysis (Fields, 2013). I calculated descriptive statistics for dependent and independent variables. Descriptive statistics for categorical variables used frequencies and percentages. For continuous variables, means, standard deviations, and ranges were used.

Table 1, adapted from George and Mallery (2016), to evaluate the calculated value of Cronbach's alpha.

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categorical variables used frequencies and percentages. For continuous variables, means, standard deviations, and ranges were used.

Table 1

Interpretation of Cronbach's Alpha

Cronbach's α	Internal consistency
α ≥ .9	Excellent
.9 > α ≥ .8	Good
.8 > α ≥ .7	Acceptable
.7 > α ≥ .6	Questionable
.6 > α ≥ .5	Poor
.5 > α	Unacceptable

Note. Adapted from *SPSS for Windows Step by Steps: A Simple Guide and Reference* (p. 231), by D. George and P. Mallery, 2003, Allyn & Bacon. Copyright 2003 by Pearson Education. Adapted with permission.

To predict categorical outcomes from either continuous or categorical predictors, binary logistic regression is an appropriate tool (Fields, 2013). The assumptions of logistic regression include linearity of the continuous variable and the logarithm of the dependent variable, absence of multicollinearity (correlation of two or more predictor variables), and absence of significant outliers. I used the Box-Tidwell procedure to test for linearity. To identify multicollinearity, I employed the variance inflation factor (VIF), a collinearity diagnostic used to detect strong relationships between predictor variables; any VIF over 10 was considered evidence of multicollinearity (Fields, 2013).

I addressed the following research questions, presented here with their corresponding null and alternative hypotheses.

RQ1: Is there an association between level of education, as measured by the number of years spent in school, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{01}: Level of education, as measured by the number of years spent in school, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a1}: Level of education, as measured by the number of years spent in school, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

RQ2: Is there an association between acculturation, as measured by the number of years spent residing in the United States, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{02}: Acculturation, as measured by the number of years spent living in the United States, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a2}: Acculturation, as measured by the number of years spent living in the United States, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

RQ3: Is there an association between attitude, as measured by the importance placed on cervical cancer prevention, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{03}: Attitude, as measured by the importance placed on cervical cancer prevention, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a3}: Attitude, as measured by the importance placed on cervical cancer prevention, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Threats to Validity and Reliability

Threats to reliability and validity pose significant problems for any research endeavor and must be measured (Creswell, 2013). There are two main types of validity to consider: external and internal; external validity refers to the degree in which a study's findings extend to the study's population (Creswell, 2013). Convenience sampling presents challenges to external validity. Internal validity is a measure of how well a study's design follows the principles of the research method, that is, the validity of the findings within the research study. Testing hypotheses presents inherent threats to the validity of interpretation in quantitative research (Creswell, 2013).

Ensuring the reliability of instruments used, remaining aware of the need to address data assumptions, and collecting data from a sufficiently large sample

significantly reduce error and increase validity. Mukama et al. (2017) used the *Attitudes of Women Towards Cervical Cancer Prevention Questionnaire* in their research. Unfortunately, they did not assess the reliability of the survey; however, I conducted reliability testing by calculating Cronbach's alpha and interpreting the value according to the guidelines provided by George and Mallery (2003).

Ethical Procedures

Researchers must adhere to ethical principles and take appropriate steps to ensure that their work meets ethical research standards (Santelli, 2013). National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979) provided ethical principles for the protection of human subjects. The commission stipulated that researchers adhere to ethical principles and ensure the safety of subjects by obtaining subjects' informed consent, explaining to subjects the purpose and procedures of the research, making clear to subjects the risks and benefits of the research, and providing subjects with anonymity and the ability to withdraw from the research at any time without repercussions. According to the commission, the five main principles for conducting ethical research are:

- Respect for persons: Researchers must ensure that they respect individuals they ask to participate in their research.

- Autonomy: Researchers must guarantee that individuals voluntarily participate in research without coercion.

- Protection for vulnerable participants: Vulnerable participants—including those who are minors, pregnant, cognitively impaired, terminally ill, or

impaired—must receive extra attention to ensure that their safety and

autonomy are protected.

- Beneficence: Researchers must protect participant from harm before, during, and after the research. The benefits of the research must exceed its risks.

- Justice: Benefits and risks of research are enjoyed by all participants or all of society

Adhering to these guidelines, I submitted a proposal to the Walden University

IRB for approval. Once I received IRB approval, I proceeded with data collection. I

notified participants of their rights and that they could withdraw from study at any time. I

advised participants to not write their names on the questionnaires to ensure

confidentiality. All data have remained and will remain confidential and hard copies were

stored in a locked file cabinet. All data will be maintained for 3 years after completion of

the study after which each questionnaire will be shredded and discarded.

Summary

I conducted the study using a quantitative nonexperimental design with analysis

based on descriptive statistics and logistic regression. I used IBM SPSS (Version 25) to

analyze the data collected from a sample of Ghanaian immigrant women who attended a

church in Ohio. Chapter 4 presents the results of the data analysis.

Chapter 4: Results

Introduction

The purpose of this study was to examine whether there are associations between acculturation, educational level, and individual attitudes (the independent variables) and cervical cancer screening using Pap tests (the dependent variable) among Ghanaian immigrant women living in Ohio (the study population). Walden University's IRB approved the study before I began collecting data. The study approval number is 12-09-19-0179991. This chapter presents the results of the data analysis, including the demographic characteristics of the participants and outcomes of hypothesis testing, organized by research question.

Three research questions guided the study, presented here along with their associated null and alternative hypotheses.

RQ1: Is there an association between level of education, as measured by the number of years spent in school, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{01}: Level of education, as measured by the number of years spent in school, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a1}: Level of education, as measured by the number of years spent in school, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

RQ2: Is there an association between acculturation, as measured by the number of years spent residing in the United States, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{02}: Acculturation, as measured by the number of years spent living in the United States, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a2}: Acculturation, as measured by the number of years spent living in the United States, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

RQ3: Is there an association between attitude, as measured by the importance placed on cervical cancer prevention, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income?

H_{03}: Attitude, as measured by the importance placed on cervical cancer prevention, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

H_{a3}: Attitude, as measured by the importance placed on cervical cancer prevention, is associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Results

I analyzed primary data collected from Ghanaian immigrant women aged 18 to 65 years living in Ohio. Even though the recommended age range for cervical cancer screening using Pap tests was 21 to 65 years (ACOG, 2016; ACS, 2017), I chose to include women aged 18 years and older. According to Boardman and Robison (2013), adolescent women (younger than 20 years of age) form a unique subpopulation because they have a higher than average rate of oncogenic HPV abnormalities and sexually transmitted infections. The authors also noted that despite high incidence of oncogenic HPV and sexually transmitted infections among this subpopulation, many infections clear spontaneously.

The target sample size was 246, but 247 participants participated in the data collection. I recruited participants using convenience sampling; the sample may, therefore, not have been representative of Ghanaian immigrant women aged 18 to 65 years living in Ohio. The use of convenience sampling means the results may not generalize to the population (Creswell, 2013).

To assess the predictors of Pap tests among the participants, I measured their sociodemographic characteristics, knowledge, acculturation, whether they had regular primary care provider, and constructs of the TPB (behavioral control and attitudes toward a behavior). To assess the existence of associations between the dependent variable (Pap test screening) and the independent variables (educational level, attitude, and acculturation), I tabulated the univariate frequency distributions for each variable and performed logistic regression to test the hypotheses for each of the three research questions.

Univariate Frequency Distributions

Demographic Characteristics

Table 2 shows the frequency distributions of the variables representing

demographic characteristics. The youngest participant was aged 18 years, the oldest was

aged 65 years.

Attitudes

I performed a logistic regression to ascertain the effects of level of education on

the likelihood that participants had used a Pap test, controlling for age, health insurance

status, and income (Table 4). The regression model was statistically significant,

$\chi^2(4) = 62.03$, $p < .001$. The Hosmer–Lemeshow test indicated that the model fit the data

well, $\chi^2(8) = 4.78$, $p = .781$. The model explained 35.6% (Nagelkerke R^2) of the variance

in Pap test use and correctly classified 77.4% of cases. VIF was less than 3.0 for all

variables, indicating no collinearity problems. Level of education, age, income, and

health insurance status were all significantly associated with use of Pap tests. I therefore

rejected null hypothesis H_{01}.

Research Question 2

RQ2 asked whether there is there an association between acculturation, as

measured by the number of years spent residing in the United States, and use of Pap tests

for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after

controlling for age, health insurance status, and income. The associated null hypothesis,

H_{02}, was that acculturation, as measured by the number of years spent living in the United

States, is not associated with seeking cervical cancer screening among Ghanaian

immigrant women living in Ohio, after controlling for age, health insurance status, and income.

I performed a logistic regression to ascertain the effects of acculturation to the United States on the likelihood that participants had used a Pap test, controlling for age, health insurance status, and income (Table 5). The regression model was statistically significant, $\chi^2(4) = 59.60$, $p < .001$. The Hosmer–Lemeshow test indicated that the model fit the data well, $\chi^2(8) = 12.00$, $p = .151$. The model explained 33.9% (Nagelkerke R^2) of the variance in Pap test use and correctly classified 78.6% of cases. VIF was less than 3.0 for all variables, indicating no collinearity problems. Acculturation, health insurance status, and income were significantly associated with Pap test use. Age was not. I, therefore, rejected null hypothesis H_{02}.

Table 3 presents the frequencies of participants' responses to the survey items related to attitudes toward cervical cancer prevention. Surprisingly, more than half of the participants (51.2%) did not believe that women who have cervical cancer will have signs of it.

Statistical Analyses of Research Questions

I performed logistic regression analysis to determine whether relationships existed between the dependent variable (Pap test use) and the independent variables (educational level, acculturation, and attitudes). The level of statistical significance used to reject null hypotheses was .05.

Research Question 1

RQ1 asked whether there is an association between level of education, as measured by the number of years spent in school, and use of Pap tests for cervical cancer

screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income. The associated null hypothesis, H_{01}, was that level of education, as measured by the number of years spent in school, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Table 2

Demographic Characteristics of Participants

Characteristic	F	%
Acculturation in years		
<1	30	12.2
1–5	35	14.3
6–10	49	20.0
11–15	46	18.8
16–20	35	14.3
21–25	21	8.6
>25	29	11.8
Missing	3	
Health insurance		
No	95	38.8
Yes	150	61.2
Missing	3	
Primary care physician		
No	70	28.5
Yes	176	71.5
Missing	2	
Pap test in United States		
No	74	32.6
Yes	153	67.4

Characteristic	*F*	%
Missing	21	
Pap test in Ghana		
No	176	74.3
Yes	61	25.7
Missing	11	
Marital status		
Married	114	47.9
Not married	73	30.7
Divorced	27	11.3
Widowed	17	7.1
Married but separated	7	2.9
Missing	10	
Education		
Less than high school	21	8.8
High school diploma	81	34.0
Associate degree/certificate	97	40.8
Undergraduate degree	25	10.5
Graduate school	14	5.9
Missing	10	
Age in years		
18–24	26	11.0
25–34	85	35.9
35–49	79	33.3
50–65	47	19.8
Missing	11	
Annual income		
<$15,000	21	9.1
$15,000–$24,999	25	10.8
$25,000–$34,999	48	20.7
$35,000–$44,999	44	19.0
$45,000–$54,999	35	15.1

Characteristic	*F*	%
$55,000–$64,999	34	14.7
>$65,000	25	10.8
Missing	16	

I performed a logistic regression to ascertain the effects of level of education on the likelihood that participants had used a Pap test, controlling for age, health insurance status, and income (Table 4). The regression model was statistically significant, $\chi^2(4) = 62.03$, $p < .001$. The Hosmer–Lemeshow test indicated that the model fit the data well, $\chi^2(8) = 4.78$, $p = .781$. The model explained 35.6% (Nagelkerke R^2) of the variance in Pap test use and correctly classified 77.4% of cases. VIF was less than 3.0 for all variables, indicating no collinearity problems. Level of education, age, income, and health insurance status were all significantly associated with use of Pap tests. I therefore rejected null hypothesis H_{01}.

Research Question 2

RQ2 asked whether there is there an association between acculturation, as measured by the number of years spent residing in the United States, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income. The associated null hypothesis, H_{02}, was that acculturation, as measured by the number of years spent living in the United States, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

I performed a logistic regression to ascertain the effects of acculturation to the United States on the likelihood that participants had used a Pap test, controlling for age, health insurance status, and income (Table 5). The regression model was statistically significant, $\chi^2(4) = 59.60$, $p < .001$. The Hosmer–Lemeshow test indicated that the model fit the data well, $\chi^2(8) = 12.00$, $p = .151$. The model explained 33.9% (Nagelkerke R^2) of the variance in Pap test use and correctly classified 78.6% of cases. VIF was less than 3.0 for all variables, indicating no collinearity problems. Acculturation, health insurance status, and income were significantly associated with Pap test use. Age was not. I, therefore, rejected null hypothesis H_{02}.

Table 3

Frequencies of Attitude Responses

Item	Strongly disagree f	%	Disagree f	%	Undecided f	%	Agree f	%	Strongly agree f	%
Cervical cancer is a very severe disease.	3	1.2	5	2.0	13	5.3	83	34.0	140	57.4
I am at risk of getting cervical cancer.	38	15.7	17	7.0	33	13.6	72	29.8	82	33.9
Cervical cancer screening is important.	3	1.2	5	2.0	23	9.4	107	43.9	106	44.4
Only women who are sexually active need cervical cancer screenings.	102	41.8	109	44.7	7	2.9	15	6.1	11	4.5
Women who have had sexually transmitted diseases are more likely to get cervical cancer.	111	45.5	77	31.6	12	4.9	24	9.8	20	8.2
Once cervical cancer has been diagnosed, something can be done about it.	9	3.7	4	1.7	4	1.7	114	47.3	110	45.6

Item	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	f	%	f	%	f	%	f	%	f	%
Chances of curing cervical cancer are better when the disease is discovered at an early stage.	13	5.3	10	4.1	9	3.7	103	42.4	108	44.4
Cervical cancer is not a death sentence for most people.	16	6.7	22	9.2	41	17.1	118	49.2	43	17.9
There is not much a woman can do to reduce her chances of getting cervical cancer.	60	24.9	112	46.5	26	10.8	31	12.9	12	5.0
Women who have cervical cancer will have some signs to show it.	43	17.9	80	33.3	39	16.3	52	21.7	26	10.8

Table 4

Results of Logistic Regression for Research Question 1

Variable	B	SE	Wald statistic	e^B	p
Unadjusted level of education	0.55	0.17	10.87	1.73**	.001
Adjusted level of education	0.64	0.21	9.11	1.90**	.003
Age in years	0.87	0.22	15.97	2.38**	<.001
Annual income	0.28	0.11	6.00	1.32*	.014
Has health insurance	1.15	0.35	10.74	3.14**	.001

Note. The comparison group for the group with health insurance was the group without health insurance. Level of education was measured by the number of years in school.

*$p < .05$. **$p < .01$.

Table 5

Results of Logistic Regression for Research Question 2

Variable	B	SE	Wald statistic	e^B	p
Unadjusted acculturation	0.48	0.09	26.52	1.62**	<.001
Adjusted acculturation	0.28	0.16	6.09	1.33*	.014
Age in years	0.39	0.21	3.45	1.48	.063
Annual income	0.40	0.11	14.25	1.49**	<.001
Has health insurance	1.17	0.25	10.28	3.05**	.001

Note. The comparison group for the group with health insurance was the group without health insurance. Acculturation was measured by the number of years in the United States.

*p < .05. **p < .01.

Research Question 3

RQ3 asked whether there is an association between attitude, as measured by the importance placed on cervical cancer prevention, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income. The associated null hypothesis, H_{03}, was that attitude, as measured by the importance placed on cervical cancer prevention, is not associated with seeking cervical cancer screening among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

I performed a logistic regression to ascertain the effects of attitudes on the likelihood that participants had used a Pap test, while controlling for age, health insurance status, income (Table 6). Because Cronbach's alpha was low for the 10 attitude

items taken together, I entered each attitude item into the model separately. The logistic regression model was statistically significant, $\chi^2(13) = 63.14$, $p < .001$. The Hosmer–Lemeshow test indicated that the model fit the data well, $\chi^2(8) = 8.74$, $p = .364$. The model explained 36.9% (Nagelkerke R^2) of the variance in Pap test use and correctly classified 80.1% of cases. VIF was less than 3.0 for all variables, indicating no collinearity problems. Attitudes did not predict Pap test use. Age, income, and having health insurance were associated with Pap test use. I, therefore, could not reject null hypothesis H_{03}.

Summary

Chapter 4 presented the results of analysis of primary data collected from Ghanaian immigrant women in Ohio to examine the extent of relationships connecting Pap test use with education level, acculturation, and attitudes.

Table 6

Results of Logistic Regression for Research Question 3

Variable	B	SE	Wald statistic	e^B	p
Unadjusted attitude					
Severity	0.32	0.25	1.71	1.38	.191
Risk	0.03	0.14	0.06	1.04	.801
Screening	−0.07	0.26	0.06	0.94	.802
Sexually active	−0.14	0.17	0.66	0.87	.417
Sexually transmitted disease	0.08	0.16	0.25	1.08	.618
Diagnosed	−0.20	0.23	0.77	0.82	.380
Curing cancer	−0.04	0.20	0.03	0.96	.857
Not a death sentence	0.11	0.16	0.52	1.12	.473
Reducing chance of contraction	0.13	0.16	0.62	1.13	.433
Signs to show	0.01	0.16	0.00	1.01	.952

Adjusted attitude					
Severity	0.14	0.30	0.24	1.16	.627
Risk	−0.17	0.17	0.98	0.84	.322
Screening	0.35	0.32	1.23	1.42	.267
Sexually active	−0.10	0.23	0.21	0.90	.651
Sexually transmitted disease	0.16	0.20	0.68	1.18	.411
Diagnosed	−0.08	0.28	0.07	0.93	.789
Curing cancer	−0.33	0.26	1.63	0.72	.202
Not a death sentence	0.17	0.18	0.85	1.18	.357
Reducing chance of contraction	0.08	0.20	0.17	1.09	.677
Signs to show	0.06	0.21	0.07	1.06	.786
Age in years	0.75	0.22	11.21	2.11**	.001
Annual income	0.53	0.14	13.50	1.69**	<.001
Has health insurance	1.30	0.38	11.91	3.66**	.001

Note. The comparison group for the group with health insurance was the group without health insurance. Attitudes toward cervical cancer prevention were measured with a 10-item questionnaire.

*$p < .05$. **$p < .01$.

For RQ1, the results indicated that there is an association between level of education, as measured by the number of years spent in school, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income. For RQ2, the results indicated that there is there an association between acculturation, as measured by the number of years spent residing in the United States, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income. And for RQ3, the results failed to show that there is an association between attitude, as measured by the importance placed on cervical cancer

prevention, and use of Pap tests for cervical cancer screenings among Ghanaian immigrant women living in Ohio, after controlling for age, health insurance status, and income.

Chapter 5 discusses and interprets the results and discusses the limitations, recommendations, and implications of the study as well as contributions of the study to the research literature and the public health profession.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to examine whether there are associations between acculturation, educational level, and individual attitudes (the independent variables) and cervical cancer screening using Pap tests (the dependent variable) among the Ghanaian immigrant women in Ohio (the study population). Researchers have studied various groups of immigrant women in developed countries, including Hmong immigrants (Lee et al., 2015), Latina and Arab immigrants (Gauss et al., 2013), Mexican immigrants (Luque et al., 2015), Korean immigrants (Lee & Lee, 2017), Turkish immigrants (Uysal Toramen & Yildirim, 2018), and Russian, Somalian, and Kurdish immigrants (Idehen et al., 2017). However, at the time of this writing no researchers have investigated Ghanaian immigrant women, especially in the United States. Women who migrate from developing countries to developed countries are less likely to use preventative health screenings, such as Pap tests for cervical cancer screening (Rondet et al., 2014; Tornesello et al., 2012). Early detection of cervical cancer saves lives because it has better outcomes than late detection (WHO, 2014). Several researchers have implicated knowledge, acculturation, and attitudes as factors that influence a woman's willingness to screen for cervical cancer (Alvarez-Nieto et al., 2015; Hamilton, 2015; Lu et al., 2017; Ogunsiji et al., 2013). A woman's knowledge was defined for the purposes of this study as her educational level, and acculturation was defined as the number of years lived in the United States. It is generally understood that higher education translates to into higher knowledge. Likewise, the longer a person lives in a host country the more apt they are to adopt behaviors in their in their host countries. Researchers have demonstrated

associations between immigrant women's attitudes and their health seeking behaviors, particularly in connection with cancer prevention (Roncancio et al., 2015). In this study, I used a cross-sectional design with quantitative, nonexperimental measures to investigate the relationships between the independent variables and the dependent variable while controlling for age, health insurance status, and income. I also explored the mediating effects of marital status and primary care provider status. I collected data for analysis via paper survey questionnaires.

Interpretation of the Results

Research Question 1: Cervical Cancer Screening and Level of Education

The results indicated that a participant's level of education was directly related to the likelihood of her having had a Pap test, $\beta = 1.90$, $SE = 0.21$, $p = .003$. Other factors associated Pap test use were age, $\beta = 2.38$, $SE = 0.22$, $p < .001$, income, $\beta = 1.32$, $SE = 0.11$, $p = .014$, and having health insurance, $\beta = 3.14$, $SE = 0.21$, $p = .001$. The majority (91.2%) of respondents had a high school education or higher. The association between education level and Pap test use was unsurprising: Several researchers have suggested that such an association exists (Idehen et al., 2017; Nguyen & Clark, 2014; Nwankwo et al., 2011). These findings agree with those of Bansal et al. (2015) and Shrestha and Dhakal (2017), who found that a positive association between level of education and positive attitudes about cervical cancer screening. The findings are also consistent with those of Gallo et al. (2017), who suggested based on the results of their investigation in Italy that immigrant women who are highly educated and have intellectual professional jobs are more inclined to participate in Pap test screening than their nonimmigrant counterparts. However, contrary to the results, Singh et al. (2012)

found no association of educational level and knowledge with uptake of cervical cancer screenings. And when Vahabi and Lofters (2006) conducted an exploratory study of 30 Muslim immigrant women in Canada, they reported that although 90% of the participants had better than a 12th-grade education, their knowledge about cervical cancer causes and screening was generally poor. The authors attributed the participants' poor knowledge to factors such as cultural beliefs of the participants and primary care providers and participants' religious beliefs. Others researchers have attributed negative associations between education and use of preventative health care to covariates such as age, socioeconomic status, race, and ethnicity (Gawdzik et al., 2015; Zhan & Lin, 2014); acculturation (Harcourt et al., 2014; Nardi et al., 2016; Nguyen & Clark, 2014); and personal attitudes (Harcourt et al., 2014; Shrestha & Dhakal, 2017).

Surprisingly, when I added marital status and primary care provider status to the model, age, income, and primary care provider status failed to predict participants' use of Pap tests; however, those who reported not being married and those who had health insurance were more likely to use Pap tests than those were married and those without health insurance, respectively. This change could be the result of moderating effects of the additional variables of marital status and primary care provider status.

Research Question 2: Cervical Cancer Screening and Acculturation

Researchers have disagreed about how acculturation influences immigrant women's use of preventative health services, particularly cervical cancer screening (Chan & So, 2017; Roncancio et al., 2015). For the purposes of this study, acculturation was measured as the numbers of years a participant had lived in the United States. Venters and Gany (2011) argued that the longer immigrants live among the dominant cultures of

their host countries, the more they adopt the habits of those cultures, which can be harmful.

The study results indicated that a participant's acculturation was directly associated with her likelihood of utilizing Pap tests, $\beta = 1.33$, $SE = 0.12$, $p = .014$. Additional factors that significantly predicted Pap test use were income, $\beta = 1.49$, $SE = 0.11$, $p < .001$, and having health insurance, $\beta = 3.05$, $SE = 0.35$, $p = .001$. Surprisingly, age was not significantly associated with Pap test use, $\beta = 1.48$, $SE = 0.21$, $p = .063$.

Chan and So (2017) conducted a systematic review of existing literature to identify factors that influence the behaviors of women belonging to ethnic minorities regarding cervical cancer screening. The authors concluded that acculturation has a positive influence on screening. Women who had lived longer than 10 years in their adopted countries were more likely to have had a Pap test than those who had not. My results agree with this finding, and many participants in my study had lived in the United States for more than 10 years. My results also agree with the findings of Diaz-Santana et al. (2017) and Khadilkar and Chen (2013). Chan and So argued that the longer an immigrant stays in their host country, the more exposed they become to the dominant culture and the more they adopt positive practices of the native population.

Research Question 3: Cervical Cancer Screening and Attitude

Several researchers have shown that attitude, which is how an individual evaluates a behavior whether as negative of positive (Ajzen, 1991), influences uptake of cervical cancer screening. However, Mutambara et al. (2017) found that few of the women they studied participated in cervical cancer screening despite having good

knowledge of screening and positive attitudes toward it. They also found that other factors—such as age, marital status, and level of education—were not positively associated with uptake of cervical cancer screening. Other researchers have also reported low levels of cervical cancer screening participation despite women expressing positive attitudes about screening (Chan & So, 2017; Gatumo et al., 2018; Mabelele et al., 2018; Marlow et al., 2015; Williams, 2014). I measured attitudes of participants separately using 10 survey items; none of the individual items predicted participants' use of Pap tests.

I was surprised to find that although a participant's attitudes did not predict the likelihood of the participant having had a Pap test, participants' attitudes were overall favorable toward testing. Most (91.4%) of participants agreed with cervical being is a very severe disease, 88.3% agreed with screening being important, and 71.4% disagreed with there not being much a woman can do to reduce her chances of getting cervical cancer. Mukama et al. (2017) found that 94.7% of the eastern Ugandan women they studied thought cervical cancer was a severe disease, and 94.4% believed that screening was important. These findings corroborate with the current study.

The positive attitude among participants in my study may explain why 67.4% of participants had undergone screening in the United States, compared with only 25.7% who had undergone screening in Ghana. Another reason for the higher participation in cervical cancer screening in the United States could be availability of opportunistic and large-scale screening. Even though participants exhibited encouraging participation in cervical cancer screening and favorable attitudes toward screening, 51.8% of participants believed that cervical cancer was always accompanied by obvious signs of disease. This

belief is worrisome because cervical cancer does not always show symptoms until its late stages (CDC, Division of Cancer Prevention, 2016). In fact, Black women have had the highest proportion of late-stage cervical cancer diagnosis in the United States and worse than average disease outcomes due to inadequate screening (CDC, 2016). Several researchers have found that across sub-Saharan Africa, including Ghana, most women diagnosed with cervical cancer had advanced disease at the time of diagnosis (Gatumo et al., 2018; Nartey et al., 2017). The asymptomatic nature of early-stage cervical cancer therefore presents an opportunity for education among the studied population.

Findings in the Context of the Theoretical Framework

The results indicated that many of the participants had favorable attitudes toward cervical cancer screening, even though there was no relationship between each attitude variable and use of Pap tests. The TPB suggests that the attitude of an individual toward a behavior (in this case cervical cancer screening), in addition to applicable subjective norms (the individual's perception of the behavior), and perceived behavioral control (the individual's perceived ease of performing the behavior) predict the individual's intent to perform the behavior (Ajzen & Fishbein, 1980). Many participants believed that cervical cancer is a severe disease, considered themselves to be at risk of the disease, believed cervical cancer screening to be important, and believed that early detection of the disease increases chances of cure. It is perhaps reasonable then to state that participants would probably engage in screening if it were offered. In this study, 67.4% of participants had undergone screening for cervical cancer in the United States, compared with only 25.7% who had undergone screening in Ghana which is quite encouraging. I can agree with Venters and Gany (2011), the longer individuals live in their host country the more they

adopt the dominant behavior; it this case adopting cervical cancer screening is a positive

behavior and a protective one. I can also agree with Chan and So (2017) that

acculturation increases the likelihood that an immigrant woman will screen for cervical

cancer in their host country.

Limitations of the Study

I conducted a community-based study, collecting data from a convenience sample

of the study population recruited from one church based in Ohio. The sample was,

therefore, probably not representative of the population due to overrepresentation of some

groups and underrepresentation of others. As with most studies that rely on convenience

sampling, external validity is an issue; the main limitation is that the study's findings

cannot be generalized to the entire population of Ghanaian immigrant women in the

United States. Even though all participants were Ghanaian immigrant women, I recruited

them from a church, so their religious beliefs may have influenced their responses. I did

not address those beliefs in the study; however, Ghanaians subscribe to a variety of

religions, such as Islam, and members of other religious groups were not represented in

the study.

Recommendations

To my knowledge, this is the only study of Ghanaian immigrant women in the

United States to have assessed factors that influence their uptake of cervical cancer

screening. Researchers had studied the use of Pap tests by African immigrant women in

the United States, but none had studied the phenomenon among Ghanaian immigrants

specifically. Investigators have identified several factors that influence women's uptake

of cervical cancer screening in the United States, Africa, and elsewhere. I assessed only

three such factors: educational level, acculturation, and attitude. The results suggest that opportunities exist for education of Ghanaian immigrant women on the causes and symptoms of cervical cancer. Future studies that assessed knowledge regarding symptoms, causative factors, and prevention in this population would help guide interventions and improve the knowledge among the population, thereby improving uptake. Qualitative research may be useful to gain deeper insight into the beliefs, attitudes, and perceptions regarding cervical cancer among this population. Results from both qualitative and quantitative research could provide additional empirical data to guide creation of culturally sensitive and relevant strategies to improve uptake of cervical cancer screening among Ghanaian immigrant women in the United States.

Implications for Positive Social Change

Cervical cancer disproportionately affects immigrant women worldwide, including Ghanaian immigrant women residing in the United States (IARC, 2018; WHO, 2016). Before this study, data were unavailable regarding factors that influence or inhibit Ghanaian women's use of preventative health services, such as cervical cancer screening. Participants in this study had relatively healthy and positive attitudes toward cervical cancer and screening, but lacked knowledge of the disease's causes, symptoms, prevention, and treatment; they were therefore at increased risk for poor disease outcomes. Some of the factors positively associated with use of Pap tests by participants were educational level, having health insurance, acculturation, and income. These findings advance knowledge about Ghanaian immigrants in the United States and their use of cervical cancer screening, filling a gap in existing literature on this topic.

The contribution to knowledge is one of the social change implications of this study. Public health practitioners can use knowledge gained from this study to inform policy makers, stakeholders, and governmental agencies about how to design innovative and culturally appropriate programs for cervical cancer screening and health promotion that will increase participation among Ghanaian immigrant women across the United States and ultimately improve their health outcomes.

Conclusion

The results of this study suggest that education, having health insurance, acculturation, and income are positively associated with use of Pap test screening for cervical cancer prevention among Ghanaian immigrant women in Ohio. Participants also had favorable attitudes toward cervical cancer screening, however, their knowledge regarding disease symptoms was poor. A woman can have cervical cancer without exhibiting symptoms (WHO, 2014), therefore screening with Pap tests remains the gold standard for early detection (ACOG, 2016). Detecting precancerous lesions early and treating them prevents worse outcomes (WHO, 2014).

The study's independent variables—education, acculturation, and attitudes—are not the only variables known to influence uptake of cervical cancer screening as stated in this study so that it is important for researchers to examine the influence of other variables on Ghanaian immigrant women's use of cervical screening; such variables include cost of screening, family influences, and cultural and religious beliefs. To facilitate creation of well-rounded programs for health promotion and disease prevention, future work should rely on both qualitative and quantitative techniques to create a

comprehensive picture of factors influencing use of cervical cancer screening by immigrant women from Ghana and elsewhere.

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Appendix A

Consent Form

You are invited to take part in a research survey answering questions about the use of Pap test screening to prevent cervical cancer. The researcher is inviting Ghanaian immigrant (Ghanaian who lives in the US) women who are 18 to 65 years old, who do not have any mental illness, who live in Columbus Ohio, attend the Church of Pentecost, Columbus assembly and agree to take part in this study.

This consent form is part of a process called informed consent to allow you to understand this study before deciding whether to take part in it. Your participation in this study is voluntary. You are free to accept or turn down the invitation. No one at Church of Pentecost will treat you differently if you decide not to be in the study. You can decide to be in the study now or stop if you change your mind later.

This survey is anonymous. If you choose to participate, do not write your name on the questionnaire so that no one will be able to identify you, or trace yours answers to you.

If you choose to participate, please place your completed questionnaire in the locked box outside the main office. Questionnaires will be collected at the end of service. No one at this church has a key to this box. If you are answering the questionnaire on-line, your answers will be submitted to a secure password protected site.

The survey questions including reading this consent form will take approximately 10 minutes.

Example of question will include asking about

1. Your age
2. Your level of education
3. Number of years living in the US

4. Do you agree that only women who are sexually active need cervical cancer screenings?
5. Do you agree that cervical cancer is a very severe disease?

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk or minor discomforts that you may

encountered in daily life, such as being upset, or becoming depressed. The study will not

ask you to disclose any sensitive or personal information that will expose you to legal

risk. Included on this consent form are contact numbers for low cost and no cost

counselors in case you need to see a counselor or want Pap test to screen for cervical

cancer

For Counselling

Live Wellness Center
1335 Dublin Road Suite 212C
Columbus, Ohio 614-
437-9910 e-mail:
info@livewellnesscente
r.com

For Pap Test Screening
Ohio Association of Community Health Centers
2109 Stella Court
Columbus, Ohio
614-884-3101
Ohio University of Osteopathic Medicine
201 Grosvenor Hall
Athens, Ohio 45701
800-844-2654, 740-593-2432

This study will not provide you with direct benefit, but it may benefit Ghanaian

immigrant women and other immigrant communities at large in how they seek cervical

cancer prevention services in the US.

Payment
Light refreshment such as water, juices and cookies will be served on the day of data

collection for those involved in paper survey onsite (Church of Pentecost Columbus

Assembly). No individual gifts will be given.

Privacy:
Reports coming out of this study will not share the identities of individual participants.

Details that might identify participants, such as the location of the study, also will not be

shared. Returning a completed survey means that you have agreed to take part in this

research. The researcher will not use your personal information for any purposes outside

of this research project. Data will be kept secure by locking in a safe. Data kept on the

computer and or email will have password protection and data encryption. Data will be

kept for a period of at least 5 years, as required by the university. After this period, paper

surveys will be shredded, and electronic surveys will be completely deleted.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may

contact the researcher via phone at 609-384-5788 or by email at

baaba.forson@waldenu.edu.If you want to talk privately about your rights as a

participant, you can call the Research Participant Advocate at Walden University at 612-

312-1210. Walden University's approval number for this study is 12-09-19-0179991 and

it expires on December 8th, 2020.

Obtaining Your Consent
If you feel you understand the study well enough to decide about it, please indicate your

consent by returning a completed survey. To protect your privacy, no consent signature is

requested. Please keep this consent form for your records. For electronic surveys, please

print or save this consent form for your records.

For more information on Cervical cancer and screening please visit

https://www.cdc.gov/cancer/cervical/basic_info/screening.htm

What Should I Know About Screening?

Appendix B

Cervical Cancer Screening Survey Form

You are invited to participate in a cervical cancer screening research if you are a Ghanaian woman between the ages of 18-65 year. Please complete the entire survey. Do not leave any questions unanswered. Do not write your name on the questionnaire.

1. How many years have you lived in the United States?

❏ Under 1 year

❏ 1-5 years

❏ 6-10 years

❏ 11-15 years

❏ 16-20 years

❏ 21-25 years

❏ Above 25 years.

2. Do you currently have health insurance?

❏ Yes

❏ No

3. Do you currently have a regular primary care physician?

❏ Yes

❏ No

4. Based on the statements below, select the number that best reflects your opinion. Choose from 1 (strongly disagree) to 5 (strongly agree).

		Strongly disagree	Disagree	Undecided	Agree	Strongly agree
	Questions	1	2	3	4	5
1	Cervical cancer is a very severe disease					
2	I am at risk of getting cervical cancer					
3	Cervical cancer screening is important					
4	Only women who are sexually active need cervical cancer screenings					

5	Women who have had sexually transmitted diseases are more likely to get cervical cancer				
6	Once cervical cancer has been diagnosed, something can be done about it				
7	Chances of curing cervical cancer are better when the disease is discovered at an early stage				
8	Cervical cancer is not a death sentence for most people				
9	There is not much a woman can do to reduce her chances of getting cervical cancer				
10	Women who have cervical cancer will have some signs to show it				

5. Have you ever had a Pap test in the United States?

❏ Yes

❏ No

6. Have you ever had a Pap test in Ghana?

❏ Yes

❏ No

7. What is your Marital status?

❏ Married

❏ Not married

❏ Divorced

❏ Widowed

❏ Married but separated

8. What is your highest level of education?
❏ Less than High School

❏ High School Diploma

❏ Associate Degree/Certificate

❏ Undergraduate Degree

❏ Graduate School

9. What is your Age:

❏ 18-24

❏ 25-34

❏ 35-49

❏ 50-65

10. What is your yearly income?

❏ Less than $15,000

❏ $15,000-24,999

❏ 25,000-34,999

❏ $35,000-44,999

❏ $45,000-54,999

❏ $55,000-64,999

❏ Above $65,000

Thank you for your participation.

Appendix C

Permission to use survey instrument

From: Rawlance Ndejjo <rndejjo@musph.ac.ug>

Sent: Wednesday, July 17, 2019 2:08:31 PM

To: Baaba Forson

Subject: Re: Permission to use research instrument

 Dear Baaba,

Feel free to use the questionnaire. It is included within the manuscript.

Best wishes,

Rawlance Ndejjo

Department of Disease Control and Environmental Health,

Makerere University School of Public Health, College of Health Sciences.

P.O Box 7072, Kampala, Uganda

Email: rndejjo@yahoo.com or rndejjo@musph.ac.ug

Mob: +256-777-783971, +256-701-783971.

On Wed, Jul 17, 2019 at 9:09 AM

Baaba Forson <baaba.forson@waldenu.edu> wrote:

Dear Mr. Ndejjo

I hope this e-mail finds you well.

My name is Baaba Forson. I am a current doctoral student at the proposal stage of my dissertation on cervical cancer at Walden University in the US.

I am writing to request permission to use the "Attitudes of Women towards Cervical Cancer Prevention" questionnaire in your research entitled "Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda".

My population of interest is Ghanaian immigrant women residing in the US. One of the variables in my study is attitude. I have read your study and your definition of the consent aligns well with the objectives of by study.

I will be more than happy to send you a copy of my research abstract should you require one.

I am looking forward to hearing from you favorably. Thank you for your time

Sincerely

Baaba Forson