

**DO INTENTIONS VARY? A COMPARATIVE STUDY OF COLLEGE
STUDENTS' HPV VACCINE INTENTIONS IN A KENYAN UNIVERSITY
AND A LARGE MIDWESTERN USA UNIVERSITY**

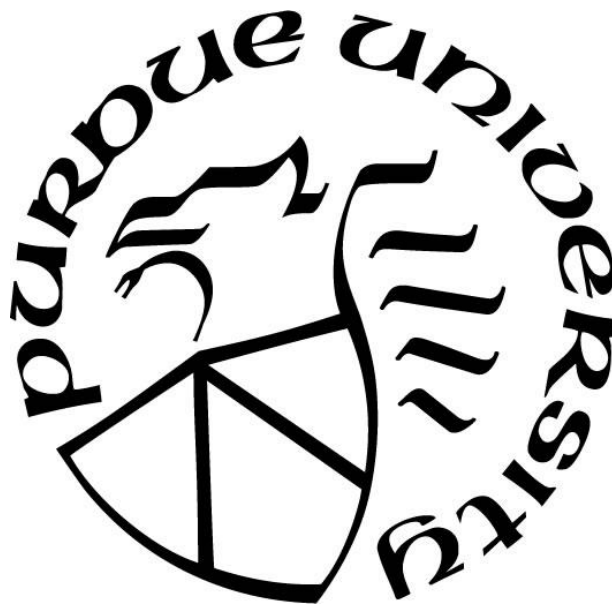
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This dissertation is dedicated to the memories of my late Dad, Nyaga, and my late grandparents who never lived to see me become a Ph.D. holder. To my Mum, Rose, who struggled to pay my primary school and high school fees and has always been supportive of my aspirations throughout my lifetime. To my wife, Flora, for all the joy and happiness that you bring into my life.

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LIST OF ABBREVIATIONS

AAP: American Academy of Pediatrics

CDC: Centers for Disease Control and Prevention

DACA: Deferred Action for Childhood Arrivals

HPV: Human papilloma virus

MSM: Men who have Sex with Men

PBC: Perceived Behavioral Control

SIT: Social Identity Theory

STI: Sexually Transmitted Infections

TRA: Theory of Reasoned Action

TPB: Theory of Planned Behavior

UK: United Kingdom

USA: United States of America

WHO: World Health Organization

ABSTRACT

This dissertation aimed at examining the predictors of HPV vaccination intentions of college students in a Kenyan university and those in a Midwest university in the United States of America (USA). Using the theory of planned behavior (TPB), the dissertation investigated the most salient factors that predict the vaccination intentions of college male and female students in Kenya and the USA. A mixed method approach was utilized to collect data from the participants. Specifically, interviews with 43 students (22 from Kenya and 21 from USA) were used to collect the qualitative data from the students. The quantitative data were collected using closed-ended surveys with 512 Kenyan students at a large university in Uasin Gishu County and 522 students at the Midwestern university, USA. The qualitative findings revealed that identification had a major influence on how students sought health, ate, and related with their peers. In particular, identification through religiosity influenced the students' attitudes toward sex and perception of oneself. Thus, many respondents reported viewing their bodies as the temple of God and sex as an activity for married couples. Thus, when they engaged in premarital sex, they often felt disconnected with God and they resulted to seeking forgiveness, minimizing their actions, and normalizing their actions.

Overall, the quantitative results suggested that college students in Kenya and the USA converged in certain health trends but differed in several others. For example, the Kenyan participants depicted a low understanding of HPV and HPV vaccine compared to the participants at the Midwestern university. The country of the participant also moderated the relationships between subjective norms and intentions, sex attitudes, vaccine attitudes, and intention to get vaccinated. The participants from the USA, for example, reported a stronger relationship between subjective norms and the intention to be vaccinated compared to the participants from

Kenya. The results of this study also showed that the gender of the participant had an influence on the attitudes of students toward sex, with male participants having more favorable attitudes toward sex compared to female participants. Overall, subjective norms and cancer worry were the only common vaccine predictors among both female and male participants from Kenya and the USA. Surprisingly, although religiosity was correlated with other variables under consideration, it did not emerge as a direct predictor of the intention to get vaccinated. This might suggest it as a probable indirect predictor.

Being a comparative study of students in two countries, this dissertation offers unique insights that can inform theory, research, practice, and policy development. Specifically, the results point to the need for health practitioners designing health campaigns to consider the unique differences that exist among male and female students in Kenya and the USA. Some of the weaknesses of the study include use of self-report measures, which are limited to the memory of participants. This study suggests that researchers continue to explore the role of religiosity in influencing health-seeking behaviors among college students.

CHAPTER 1: OVERVIEW OF THE STUDY

The goals of this dissertation are threefold: to examine the knowledge, and attitudes of college students in a Kenyan University and those in a large Midwestern University in the United States of America (USA) toward the human papillomavirus (HPV) and the HPV vaccine; to investigate the salient concepts of The Theory of Planned Behavior (TPB) that predict the intention of students to get the HPV vaccine; and to explore how religiosity as an aspect of identification can complement the existing concepts of TPB. This topic is important because there is a high prevalence of HPV infection with 50% of sexually active adults in the USA likely to get HPV infections in their lifetime (Markowitz et al., 2014). Thus, from a health communication perspective, understanding the best way to predict the intentions of students to get vaccinated can help health practitioners design effective vaccination programs that might encourage college students to get the HPV vaccine.

In this introductory chapter, a brief overview of this dissertation project is provided including the statement of the problem, the purpose of the study, and the significance of the project. In Chapter 2, the extant literature that supports this research project is discussed. The literature review progresses by explaining how HPV is transmitted, the effects associated with HPV infections, and how the HPV vaccine can help to prevent such infections. Chapter 2 also explores the policies and factors associated with the acceptance of the HPV vaccine, and how effective communication can motivate college students to get the HPV vaccine. Being a comparative study of students in Kenya and the USA, Chapter 2 also puts HPV in context within Kenya and the USA. The concepts of the TPB, which form the theoretical framework of this project, are explained followed by the research questions that stem from the theory. This study also considers identification as an additional concept of TPB, which may predict the intention of

students to engage in HPV vaccination programs. Specifically, this study explores how religiosity as an aspect of identification influences students' vaccination intention.

In Chapter 3, the methodology of the study is described including the choices that were made to maintain the validity, integrity, and objectivity of the study. Specifically, Chapter 3 presents the metatheoretical assumptions of the study, describes the study design, including the demographic characteristics of the participants, the recruitment and data collection procedures, the measures that were used to collect data, and how data were analyzed to address the research questions.

The qualitative and quantitative results are presented in Chapter 4 and 5. The qualitative findings are presented first (Chapter 4) followed by the quantitative results (Chapter 5). In Chapter 6, the results presented in Chapter 4 and Chapter 5 are summarized and discussed. Specifically, Chapter 6 highlights the practical, theoretical, and policy implications resulting from this dissertation project along with the strengths and weaknesses of the project, and suggestions for future research.

To begin, the statement of the problem is presented followed by the purpose and significance of this study.

Statement of the Problem

Immunization and vaccination programs have enhanced the prevention of most vaccine preventable diseases (Mihigo, Okeibunor, Anya, Mkanda, & Zawaira, 2017). Vaccines, for instance, are important in boosting the public's herd immunity against diseases and in the long-term, they help save on treatment costs by preventing diseases (Skinner, 2017). The HPV vaccine, for instance, has been successful in preventing the risk of genital warts and various types of cancer, such as cervix uteri, penis, vulva, and vaginal cancers (Cipriano, Scoloveno, &

Kelly, 2018; Forman et al., 2012; Kiatpongsan & Kim, 2014; Masika, Ogembo, Chabeda, Wamai, & Mugo, 2015). Compared to all cancers associated with HPV infection, cervix uteri cancer has the highest incidence and prevalence (Forman, et al., 2012). Therefore, the success of the HPV vaccine is not only important in curbing HPV, but also in preventing the risk of cancer later in a person's life course. Unfortunately, the uptake of the HPV vaccine among college students remains low and students have poor knowledge about HPV and the HPV vaccine (Khan, Buksh, Rehman & Saleem 2016; Pitts et al., 2009).

The link between HPV and various types of cancer makes the HPV vaccine a vital element of public health, especially in developing countries that continue to bear the burden of cervical cancer. For example, Sub-Saharan¹ Africa has the highest prevalence and incidence of HPV infections (24%) compared to other regions of the world, such as Eastern Europe (20%), Latin America (16%), and Western Asia (2%) (Kiatpongsan & Kim, 2014). HPV also remains the most common form of sexually transmitted infection among young adults in the USA, and the uptake of the HPV vaccine in the USA remains low compared to other developed nations, such as England and Australia (North & Niccolai, 2016). In Kenya, there has been a successful trial of the HPV vaccine in some administrative districts and the government just rolled out a national HPV vaccination program targeting girls in 2019 (World Health Organization, 2019). However, immediately after the national vaccination program was rolled out, doctors affiliated with the Catholic Church expressed their reservations with the vaccine due to the view that it could cause health-related complications and would encourage promiscuity among young adults (Njanja, 2019). However, the HPV vaccine is important because young adults and adolescents

¹ Sub-Saharan Africa refers to the countries south of the Sahara Desert (Anderson & Connor, 2018).

aged 15 to 24 years lead in both incidence and prevalence of most sexually transmitted infections (Panatto et al., 2009; Satterwhite et al., 2013).

Across the globe, governments continue to invest heavily in the prevention of diseases and illnesses as a way of saving on costs associated with treating vaccine-treatable diseases (North & Niccolai, 2016). Such governmental efforts involve the design and implementation of public health policies that govern various aspects of vaccine administration to ensure the safety for the entire population (Maltezou & Poland, 2014). Thus, the vaccines must meet the set safety standards to ensure that the public health is safeguarded without leading to significant harm (North & Niccolai, 2016). Despite these efforts, suspicion about the safety and efficacy of vaccines has been a major barrier to vaccination efforts due to systemic misinformation about vaccines, such as the association of vaccines with autism and other health effects (Kahan, 2013). These controversies showcase the importance of effective policymaking as a pillar of healthcare in that it can enhance the safety and wellbeing of the public, patients, and healthcare providers. Previous research (e.g. Lindblom, 2017) conceptualized policymaking as the conscious process of choosing among values and among instruments to be used to reach the set goals. Due to the relevance of immunization policies, from a communication perspective, this study explored the extant literature to understand how existing policies, cultural, and societal norms either encourage or discourage the public from getting an HPV vaccine.

Markowitz et al. (2014) estimated that 50% of sexually active people will get an HPV infection in their lifetime. College students, who often are in this age range and are sexually active, are at a greater risk for HPV infections. Moreover, compared with other groups, either below or above this age range, college students are also in the HPV vaccination follow up bracket for those who have already started on the vaccine (Sharma & Nahar, 2017). However,

college students, especially men, have poor knowledge and awareness about HPV and the HPV vaccine (Pitts et al., 2009). Thus, investigating the best predictors of HPV vaccine uptake among college students can help health communicators to design effective HPV campaigns that persuade the student population to be vaccinated.

Therefore, this study aims to examine the problem of low uptake of the HPV vaccine by considering the factors that motivate or hinder students from being vaccinated. Applying TPB, this study also aims to examine the most salient factors in predicting the intention of students to get vaccinated against HPV. Additionally, this study explores how perceived religiosity, as an aspect of identification, influences students' health seeking behaviors, and how it can augment the concepts of the TPB. The statement of the problem is developed further in the next section.

Purpose of the Study

The main purpose of this study is to understand how college students in Kenya and the USA make decisions about their health, especially regarding HPV vaccination. Specifically, this study examines the knowledge and attitudes of USA and Kenyan students in the two universities about HPV, HPV vaccines, and their motivation to be vaccinated. In most Sub-Saharan countries, previous HPV vaccination programs conducted in schools have indicated more success compared to those conducted in hospitals (Masika et al., 2015). Therefore, this study hopes to build on the gains realized in past research by testing the various concepts of the TPB.

Specifically, the focus of this study is on the factors that best predict the intention to get vaccinated among male and female students in Kenya and the USA. This dissertation also investigates if there are any differences by gender and country regarding vaccination intentions, knowledge about HPV and the HPV vaccine, cancer stigma, attitudes toward sex, perceived behavioral control, identification (i.e., perceived religiosity), subjective norms, and attitudes

toward HPV vaccination. Additionally, this study examines if the gender and country of the participants moderate the relationships between the TPB concepts, such as religiosity and the attitudes toward sex, sex attitudes and vaccine attitudes, and subjective norms and the intention to be vaccinated.

This study also investigates the role of identification in health seeking behaviors of college students. Past research (Paquin & Keating, 2017; Ries, Hein, Pihu, & Armenta, 2012; Stets & Burke, 2000) found that identity is a salient predictor of behavior when other concepts of the TPB are considered. Thus, this study examines the relevance of religiosity, as an element of identification, and how it influences students' attitudes toward health seeking behaviors. The link between sexual activities and the HPV vaccine makes religiosity a salient concept because most religious groups advocate for abstinence for unmarried people (Singhal & Rogers, 2003). Some past research also found religiosity to be an important factor guiding health choices and mental wellbeing for people going through severe stress (Hill & Pargament, 2003; Pierik, 2017; Thomas, Blumling, & Delaney, 2015). Therefore, this study explores how religiosity might influence students' attitudes toward sex, the HPV vaccine, and their general health seeking behaviors. The next section explores the importance of this study and how it adds to the development of health communication theory and practice.

Significance of the Study

The incidence of cervical cancer has been increasing globally, with developing countries leading in new cases (Nayak et al., 2016). In Kenya, for example, there is a high incidence of cervical cancer that is attributable to low HPV vaccination rates and increased prevalence of unsafe sex practices (Vermandere, Stam, Naanyu, & Michielsen, 2016). Across the USA, HPV infections are increasing among young adults and there is a low uptake of the HPV vaccine

(Markowitz et al., 2014; North & Niccolai, 2016). Therefore, the comparison of the Kenyan students to those in the USA is important because it might assist health communicators in designing effective HPV interventions and formulating policies related to HPV and the HPV vaccine.

This project contributes to the health communication theory and practice in various ways. First, understanding the salient factors that predict college students' HPV vaccination intentions can assist health practitioners in designing effective health campaigns that persuade students to get vaccinated and also encourage their friends to keep current with all the required follow-up doses of the HPV vaccine. Second, with the investigation of the compatibility of religiosity with TPB, this study may extend the application of TPB in predicting the health behaviors of college students. Additionally, since this study examines the relevance of religiosity, the findings of this project can broaden our understanding on how religious perceptions influence health seeking behaviors and possibly, delineate the intersection of religiosity and health as an emerging area for health communication research. Perhaps the greatest contribution of this dissertation is offering insights into the differences in vaccination intentions that exist among students by gender and country of origin. This is especially relevant as the Kenyan government continues to roll out national HPV vaccination programs. The differences in vaccination intention can help to caution against the adoption of a one intervention approach to target a diverse target population.

Conclusion

This chapter provided the context for this dissertation project and offered a broad map of the subsequent chapters. In this first chapter the research problem was presented along with the purpose and significance of the study. Generally, this study aims to consider the understanding of students regarding the HPV vaccine and the factors that may motivate them to get the HPV

vaccine. The findings of this dissertation will enable health communication practitioners to design and implement effective health campaigns that can help to address the continued burden of cervical cancer and other HPV-related infections. The next chapter reviews the extant literature that anchors this project and provides more details about the key concepts of the theoretical framework that guides the study. Chapter 2 also discusses the factors influencing the uptake of the HPV vaccine and presents the research questions of the study.

CHAPTER 2: LITERATURE REVIEW

The high prevalence of HPV among young people is a major public health concern, so understanding how young adults make decisions about the HPV vaccine and their intentions to be vaccinated can inform health practitioners on how to design and implement successful HPV interventions. This chapter reviews the literature on the HPV vaccine, explains the theoretical framework of this study, and presents the research questions of the study. Because this is a comparative study involving students in Kenya and the USA, the literature review considers studies conducted in these two countries. However, because of the dearth of information on HPV available in Kenya, most of the studies are from other countries. Additionally, because the HPV vaccine guards against genital warts and certain types of cancers, the literature review also touches on cancer and policies regarding vaccination in the two countries. In the next section, HPV is defined and an explanation of how HPV is transmitted is provided.

Definition of HPV Terms and Explanation of HPV Transmission

Human Papillomavirus (HPV) refers to more than 150 types of “non-developed, double-stranded DNA viruses in the family *Papillomaviridae*” (Markowitz et al., 2014, p. 2). Each virus is given a number to indicate its HPV type and is named for the warts (Papillomas) it can cause (CDC, 2016). However, most research tends to focus on four types; HPV 6, 11, 16, and 18, which have been linked to some types of cancer and genital warts (Forman, et al., 2012; Mehta, Sharma, & Lee, 2013). HPV prevalence is high among adolescents compared to other members of the population and is mostly transmitted through sexual activities, and other intimate contact such as oral-genital and genital-genital transmission (Erves, Mayo-Gamble, Hull, Duke, & Miller, 2017; Khan et al., 2016; Markowitz et al., 2014; Panatto et al., 2009; WHO, 2017).

The most common types of HPV are HPV16, HPV18, HPV52, HPV31, and HPV58 and are mostly transmitted through sexual interaction (Forman, et al., 2012). According to Markowitz et al. (2014), HPV infection has been linked to anogenital cancers, oropharyngeal cancer, and genital warts in both men and women. CDC (2016) also notes that the risk of infection rises with an increase in lifetime sexual partners, meaning that having multiple sex partners increases the risk of infection. More importantly, the HPV vaccine can help to prevent cervical cancer, which is the second leading cause of cancer-related deaths among women after breast cancer (Mukama et al., 2017; Panatto et al., 2009). Presently, Merck's Gardasil (4-valent) and GlaxoSmithKline's Cervarix (2-valent) are the most common HPV vaccines administered to young adults around the world (Kiatpongsan & Kim, 2014).

HPV vaccination is an important safeguard against the HPV infections because HPV can remain dormant for a long time and the infection may go unnoticed for several years because symptoms are usually not very clear (CDC, 2016; Mehta, Sharma, & Lee, 2013). Currently, the HPV vaccine is recommended for those in the age range of 9 years through 26 years (Markowitz et al., 2014; Mayhew et al., 2014; Mehta et al., 2013). The effectiveness of the HPV vaccine in preventing HPV infections and cancers linked to HPV (American Academy of Pediatrics, 2012; Markowitz et al., 2014) makes vaccination for young people a high priority. The next section explores the links between HPV, genital warts, and cancer and considers the effects associated with these infections.

The Links Between HPV, Genital Warts, and Cancer

Genital warts are characterized by lesions around the genital area and are caused by HPV infections through sex or other intimate contact (Dediol et al., 2009). Unfortunately, condoms are not fully effective in preventing genital warts because HPV can be transmitted through skin

contact with an infected person's genitals, perianal, or pubic area. Most cases of genital warts have been linked to multiple sex partners, unsafe sex, immune weakness due to other infections, and inadequate knowledge of sexually transmitted infections (CDC, 2016; Chelimo, Wouldes, Cameron, & Elwood, 2013; Dediol et al., 2009). Comparing men and women, genital warts tend to be more prevalent among women (Chelimo et al., 2013).

Although most HPV infections clear on their own within two years, HPV infections have been linked to anogenital cancers, oropharyngeal cancer, and genital warts in both men and women (AAP, 2012; Markowitz et al., 2014). For instance, in the USA HPV is linked to 15,000 cancer cases in women and 7,000 cancer cases in men each year, with HPV 16 and HPV 18 being linked to 70% cases of cervical cancer, 87% of anal cancer, 60% of oropharyngeal cancer, and 31% of penile cancer (AAP, 2012). Additionally, HPV 6 and HPV 11 are linked to 90% of genital warts and recurrent respiratory papillomatosis (AAP, 2012). Cervical cancer is preceded by recurrent genital warts that later progress to precancerous cells before becoming cancerous (Chelimo et al., 2013). Fortunately, the HPV vaccine can help to prevent cervical cancer, which worldwide is the second leading cause of cancer-related deaths among women (Chelimo et al., 2013; Panatto et al., 2009). Other studies (Nayak et al., 2016) have found that although cervical cancer is one of the leading causes of death in developing countries, many people have low knowledge about the causes and screening for cervical cancer. Some of the predisposing factors to HPV-related cancers and genital warts in both men and women are a high number of sexual partners (Chelimo et al., 2013). This showcases why it is important for health communicators and public health practitioners alike to design and implement interventions that persuade college students to get the HPV vaccine.

It is important to encourage the public to get the HPV vaccine because HPV infections can lead to loss of self-esteem and social seclusion. For instance, HPV infections, such as genital warts, have been linked to low self-esteem and shame with women being more stigmatized than men (Chelimo et al., 2013; Dediol et al., 2009; Piñeros, Hernández-Suàrez, Orjuela, Vargas, & Pérez, 2013). Piñeros and colleagues also found that genital warts affect the sex lives of those infected and can lead to a general loss of quality of life due to the stigma associated with sexually transmitted infections. Other studies also have found that genital warts cause strain, pain, and discomfort to the infected persons. For example, in a study involving 850 participants with genital warts, Woodhall and colleagues (2011) found that a majority of the participants reported pain and discomfort, and also struggled with anxiety and depression. These effects point to the importance of promoting the uptake of the HPV vaccine as a way of mitigating against the effects associated with HPV infections. The next section discusses some of the factors that influence the success of the HPV vaccine.

The Factors Associated with Acceptance of HPV Vaccination

The rate of HPV vaccination among men is low compared to the rate of HPV vaccination among women (Mehta et al., 2013). Previous research attributes this difference in uptake of the HPV vaccine to four factors including lack of knowledge about the vaccine among men, barriers to accessing healthcare, costs, and concerns about the safety of the vaccine (Khan et al., 2016; Mehta et al., 2013; Tatar, Perez, Naz, Shapiro, & Rosberger, 2017). The uptake of the HPV vaccine is also low among students. For instance, Khan and colleagues (2016) found that students had poor knowledge about HPV and the HPV vaccine, and in fact, some students thought HPV causes HIV. These findings are consistent with a similar study involving Canadian students by Tatar et al (2017) which found that the students had a low level of knowledge about

the HPV vaccine and the HPV infections it can prevent. Therefore, to design effective HPV vaccine campaigns among college students, it is important to consider their knowledge about HPV and the HPV vaccine and tailor campaign messages toward their knowledge.

The lack of information about the HPV vaccine among the lay public is exacerbated by the misinformation associated with the vaccine concerning its safety and effectiveness. Past research (e.g. Cipriano et al., 2018; Masika et al., 2015), for instance, found that parents were hesitant to allow their daughters to get the HPV vaccine due to the risk of infertility, irregular menstrual cycles, inadequate information about the vaccine, and fear of death as a result of complications that might arise from the vaccination. Other studies (e.g. Cipriano et al., 2018; Nan et al., 2016) have echoed some of these findings and argued that many parents object to their daughters getting the HPV vaccine because of the concern that their consent might imply a validation to their children engaging in promiscuous sexual activities. However, Mayhew et al. (2014) found that after HPV vaccination, most young adults do not perceive themselves as invulnerable to other sexually transmitted infections and that HPV vaccination does not lead to an increased propensity of young adults becoming promiscuous.

To overcome the challenge of misinformation associated with the HPV vaccine, concerted efforts are needed to educate young adults about HPV and to encourage them to talk about the HPV vaccine with their healthcare providers (Tatar et al., 2017; Pitts et al., 2009). Additionally, it is important to use well-informed science communication to counter unsubstantiated claims linked to vaccination (Kahan, 2013; Ragin et al., 2009). The problem of misinformation can also be overcome through education. For example, Nan et al. (2016), found that participants who were more educated had the highest likelihood of vaccinating their children. Unfortunately, education about the HPV vaccine remains minimal among adolescent

children and their parents lack persuasive information about the importance of the vaccine (Cipriano et al., 2018). Therefore, HPV infections continue to persist due to the low uptake of the HPV vaccine and little progress has been made in addressing the existing barriers.

Previous studies (e.g., Brabin et al., 2008) have found that HPV vaccine uptake tends to be higher in school-based vaccination programs. Thus, it may be pertinent to encourage policymaking that mandates HPV vaccination in schools as a way of getting more students vaccinated. Acceptance of the HPV vaccine is also influenced by the knowledge level of the public and how the vaccine is promoted to the public (Vermandere et al., 2016). For example, in a study involving 12,259 participants from the USA, United Kingdom, and Australia, Nickel et al. (2017) found that parents' knowledge about HPV was the greatest predictor of the parents' willingness to take their daughters for vaccination and that parental knowledge of vaccination influenced the attitudes toward the HPV vaccine. In the same study, Nickel and colleagues observed that parents with very high knowledge about HPV and those with low knowledge were unlikely to take their daughters for vaccination due to the fear that the vaccines would not be 100% effective against HPV infections. Therefore, it is important for health communication experts to focus their campaigns on raising the knowledge of the public and to boost the confidence of parents about the efficacy of the HPV vaccine. The next two sections consider the prevalence of HPV and the salient factors associated with HPV in Kenya and the USA.

HPV Vaccination in Kenya

National HPV vaccination programs in Kenya started in 2019 (WHO, 2019). Prior to the start of these programs, the government conducted pilot studies about the vaccine in various districts. In one of the districts, the Rift Valley region in Kenya, Vermandere et al. (2015) found that fathers had low knowledge about HPV, cervical cancer, and had difficulties differentiating

between several types of cancers associated with HPV. Nan et al. (2016) also found that female participants with a high level of education had the highest likelihood of vaccinating their children against HPV. Therefore, it is important to consider the education and knowledge levels of a target population when designing and implementing HPV vaccine policies as a way of ensuring the recommended interventions meet their literacy levels and understanding.

The efficacy of the HPV vaccine in preventing various cancers and genital warts make the implementation of HPV vaccination programs a matter of national priority in Kenya because the vaccine can prevent 70% of cancers caused by HPV 16 and 18 (Vermandere et al., 2015). Considering that cervical cancer is the most common and dangerous form of cancer diagnosed among Kenyan women after breast and esophagus cancer, it is important for the government to increase HPV vaccine uptake by enhancing accessibility and awareness of the vaccine by the general public (Nayak et al., 2016; Vermandere et al., 2015). The HPV pilot studies in Kenya identified the main challenges to the uptake of the vaccine as inadequate awareness of the vaccine, inadequate screening services, and limited information about the vaccine among the public (Korir, Okerosi, Ronoh, Mutuma, & Parkin, 2015; Vermandere et al., 2015).

Generally, the HPV vaccine is a vital pillar in cancer prevention and there is a need for governments in developing countries to put more effort into incorporating the HPV vaccination into their public health immunization programs. The problem of HPV is compounded by rising cancer rates, with the least developed countries leading in prevalence and cancer-related deaths (Vermandere et al., 2015). The African region, for instance, missed its millennium development goals and is still lagging behind in the global vaccine action plan (GVAP) that aims to achieve at least 90% national vaccine uptake by 2020 (Mihigo et al., 2017). This is conflated by the fact that developing countries have poor records management of cancer information including

incidence and mortality. For example, in Kenya, there are only two cancer registries, one in Nairobi and the other in Eldoret, so information about cancer incidence in Kenya is very scarce, not well managed, and based on incomplete population cancer registries (Korir et al., 2015). In addition, cancer remains a stigmatized illness and this can affect the health-seeking behaviors of the public. According to Knapp, Marziliano, & Moyer, 2014, cancer-related stigma is influenced by whether the type of cancer is preventable (e.g., lung, breast, skin) and whether its treatment effects are visible to the public (e.g., limb amputation). Other studies have also found a positive correlation between cancer stigma and HIV stigma (Rosser, Njoroge, & Huchko, 2016). Because HPV vaccines can help prevent some cancers, linking cancer prevention to HPV vaccination campaigns might increase its acceptability and adoption by the target population.

The costs associated with immunization programs is one of the considerations for governments when creating and rolling out vaccination programs. Therefore, Kenya, being a developing country, can learn from other countries that have implemented successful HPV vaccination programs and replicate such projects to support its national HPV vaccination drives. This can help reduce the costs of formulating new policies and campaigns because policies and campaigns can originate from one state or country and be replicated in another jurisdictions (Shen, 2014; Walker, 1969). In addition, examining what other countries have done to enhance the success of their HPV programs is important in ensuring that countries avoid the mistakes of other countries and also reduce the burden of having to experiment with new policies and programs. The next section explores HPV vaccination in the USA and why the uptake of HPV has been influenced by various factors.

HPV Vaccination in the United States of America

According to Markowitz et al. (2014), HPV is the most common form of sexually transmitted infection in the USA with 14 million people infected each year. Washington, D.C. and the state of Virginia were the first jurisdictions to enact policies governing the administration of the HPV vaccine. These initial policies covered aspects such as availability of vaccines in schools and exemptions for parents who did not want their children vaccinated (North & Niccolai, 2016). Presently, the vaccination policies in the USA are formulated by government agencies such as CDC (Hessel, 2008) and the Advisory Committee on Immunization Practices (ACIP), which bring together medical and public health experts in formulating recommendations about various vaccines (Skinner, 2017). Most HPV policies in individual states have focused on expanding access to vaccines through insurance coverage and implementation of mandates for vaccination (Roberts, Murphy, Moss, Wheldon, & Psek, 2018). The federal government has also come up with various initiatives to increase the reach of vaccination programs. The Healthy People 2020 project, for example, aims at achieving an 80% vaccination rate among adolescents between 13 and 17 years of age by the year 2020, but so far, no state has achieved this goal (Brabin et al, 2008; Roberts et al., 2018).

North and Niccolai (2016) observed that the HPV vaccination rates in the USA are lower compared to other vaccine-preventable diseases such as meningococcal conjugate, tetanus, and diphtheria. Also, vaccine coverage in the USA is lower compared to other high-income countries, such as England, Australia, Portugal, Scotland, and Denmark, which have achieved more than 70% compliance for the three required doses (North & Niccolai, 2016). North and Niccolai also noted that the initial attempts to make HPV vaccines mandatory for school enrollment were resisted because of the view that school-required vaccines should be reserved

for diseases that can be transmitted easily at school and because of moral beliefs associated with the HPV vaccine.

Although HPV awareness in the USA is high compared to other countries, it is not clear why the uptake of HPV vaccines remains low. In a study involving 12,259 participants in the USA, UK, and Australia, for example, Dodd et al. (2014) found that the USA participants had higher HPV awareness compared to the UK and Australia. However, this did not translate to a high level of knowledge about HPV. In another study involving 2,442 participants from the United Kingdom, Australia, and the USA, the results indicated that participants from the USA had low knowledge about HPV, how it is transmitted, and its effects (Marlow, Zimet, McCaffery, Ostini, Waller, 2013). Dodd et al. also found that the main predictors of HPV testing in the USA were age and high education, while in the UK it was being from an ethnic minority, and in Australia it was being unmarried, having high education, and having a daughter. Therefore, from these findings, it is imperative for health communication practitioners to consider knowledge and awareness when designing and implementing HPV-related campaigns as a way of enhancing the success of programs aimed at boosting HPV testing and vaccination among young adults.

When designing campaigns, there is also a need for health communicators to consider that minorities are often most affected by HPV and do not get vaccinated for HPV. In the USA, Blacks have a high prevalence of HPV and have low knowledge about HPV compared to Caucasians (Dempsey & Koutsky, 2008; Ragin, et al., 2009). Also, compared to Asians and Caucasians, Blacks and Hispanics have an early sex debut, and report more HPV infections, with men who have sex with men (MSM) and women in heterosexual relationships leading in HPV infections (Ragin et al., 2009). Ragin and colleagues (2009) also found that although men were

aware of the HPV vaccine, most of them did not intend to be vaccinated. A similar finding was made by Vorpahl and Yang (2018) who noted that women are more likely to be vaccinated compared to men. Taken together, these findings highlight the need for multifaceted campaigns that aim at raising HPV awareness and increasing access to vaccination among racial minorities, women and MSM. This is important as it will help in bolstering herd immunity if more people in these communities get vaccinated.

In the USA in 2006, Merck's Gardasil was the only vaccine approved by the Food and Drug Administration (FDA) and mostly helps to prevent HPV 16 and 18 infections responsible for 70% of cervical cancer and the two HPV types responsible for 90% of genital warts. In addition, GlaxoSmithKline's Cervarix was approved in 2010 and has also been adopted in more than 100 countries around the world (Schwartz, 2010). Like Gardasil, Cervarix protects against the two leading causes of HPV but lacks effectiveness guarding against genital warts (caused by HPV 6 and 11).

Past studies (e.g. Reiter, McRee, Pepper, & Brewer, 2012) found that policies on HPV vaccination influence the possibility of parents' consenting to their children being vaccinated. Reiter et al. (2012) also found that parents were more likely to have their children vaccinated if the HPV vaccine was administered together with other recommended vaccines. Additionally, previous research indicates that vaccines with broad recommendations record a better receptivity and adoption by the target population (Schwartz, 2010). However, the low rate of HPV vaccination across the USA suggests the need for reconsidering the existing HPV interventions as a way of mandating parents of adolescents and young adults to participate in the vaccination programs. Hessel (2008) argued that the success of immunization programs depends on the public perception of the severity of a disease and the willingness of the public to participate in

the vaccination programs. This is important because the policies surrounding the HPV vaccine are controversial and some special interest groups have rallied against the enactment of policies that require mandatory HPV vaccination as a condition for school enrollment (Schwartz, 2010). For example, Doan and Kirkpatrick (2013) noted that immediately after the introduction of the HPV vaccine, many conservative groups were opposed to its administration because of fears that supporting HPV programs would challenge their advocacy for abstinence-only education. Therefore, it is important that the government and other stakeholders raise the awareness about the effects associated with HPV infections and encourage the public to get the HPV vaccine to guard against these infections.

The controversy surrounding vaccines has led to an increase in vaccine preventable diseases in some states, such as California, because some parents refuse to have their children vaccinated (Gostin, 2018). Therefore, to enhance the understanding of HPV vaccines, some studies (e.g. Barraza & Campos-Outcalt, 2018) have suggested multi-faceted approaches in policymaking that bring together different stakeholders to pass state legislation rather than pressing for federal policies. This is important because states ensure compliance with mandatory vaccines either prior to school enrollment or through vaccine administration in schools (Skinner, 2017). The findings from previous studies (e.g. Bustillos, 2016) suggest that failing to engage key stakeholders can result in the failure of proposed policies because of resistance from the public. For instance, the failure of a state mandated HPV vaccination policy in Texas is a case example of why top-down policies lacking sufficient public participation do not succeed. In this case, the governor bypassed key stakeholders (e.g., Cervical Cancer Strategic Planning Initiative's (CCSPI) members) and issued an executive order making HPV vaccination mandatory in Texas (Bustillos, 2016). The executive order was later overturned by the state

legislature further frustrating the efforts by the CCSPI to create HPV vaccine administration guidelines in the state. This case points to the importance of engaging key stakeholders in policymaking to encourage broader acceptance and social support for health policies. The next section discusses the importance of communication and identification among students in the HPV campaigns.

Communication and Identification Among Students

To enhance the effectiveness of HPV campaigns, it is imperative to communicate effectively. This might involve evaluation of the relevant channels of communication, appropriate framing of messages, consideration of social norms, and targeting college students' social networks in the design and implementation of HPV interventions. This section examines how communication and the need for identification among students may persuade them to get vaccinated.

Communicating HPV Messages

Communication plays a vital role in the design and implementation of HPV messages. However, the low uptake of the HPV vaccine indicates that HPV messages need to be more effective in persuading target audiences to increase their knowledge and change their attitudes and behaviors about HPV and the HPV vaccine. In particular, HPV messages need to address prevailing social norms about sex and HPV, while considering students' need for identification, to persuade them to get vaccinated against HPV. To encourage vaccination among students, this study advocates for a social norms' approach which involves persuading students by providing information about consequences of their sexual behaviors (Brown & Basil, 2010). This is because HPV infections are sexually transmitted (Markowitz et al., 2014). Therefore, this study

emphasizes an approach that educates college students on the risks associated with sexual behaviors, such as having multiple sex partners. One way to do this, for example, would be to focus HPV messages on personal susceptibility to genital warts and the effectiveness of HPV vaccines in preventing such infections. This is informed by the fact that cancers associated with HPV take a long time to develop so young adults may not consider themselves vulnerable to such cancers, but might perceive themselves as susceptible to genital warts (Cooper, Zellner-Lawrence, Mubasher, Banerjee, & Hernandez, 2018; Ragin et al., 2009). Past studies have found that when HPV is framed as an STI, a previously hesitant target audience may become more willing to get vaccinated (Juraskova, et al., 2012; Vorpahl & Yang, 2018). Other research echoes this finding and suggest that students have a higher likelihood of getting vaccinated when HPV messages are framed to show that HPV infections occur through sexual activities with other people (Vorpahl & Yang, 2018). In addition, HPV messages need to target one's social networks because an individual's social ties influence the decision to get vaccinated (Richards, 2016; Vorpahl & Yang, 2018). Thus, the effectiveness of HPV messages may be linked to how well the messages appeal to the target audience's sense of personal susceptibility, and the extent to which information about HPV and HPV vaccination is available and discussed in an individual's social circle.

Additionally, it is also important for health communicators to consider the preferred source of HPV information among students. Previous studies (e.g., Almeida, Tiro, Rodriguez, & Diamant 2012; Piñeros et al., 2013) found that social networks, media, and healthcare providers were the major sources of HPV information and that these sources were related to an increase in knowledge about HPV. Therefore, it is advisable for health communicators to use these channels in their communication about HPV and the HPV vaccine.

Although the HPV vaccine is recommended for both male and female students, most health communication strategies portray young women as the primary candidates for the HPV vaccine (Marlow et al., 2013). This may explain why women have more knowledge and a better understanding about HPV vaccines compared to their male counterparts. Due to the continued focus on women as the main targets for HPV vaccination, little is known about how gender differences influence HPV intent to receive the vaccine (Richards, 2016). It is not very clear for example, what salient factors motivate males or females to get the HPV vaccine. Such information is important because male and female students vary in many aspects of health, such as health-seeking behaviors. In a study involving African American college students, results showed that compared to females, male students were less likely to get HPV information from healthcare providers and pamphlets, but were more likely to pay attention to HPV information on social media platforms like Facebook and Myspace (Bynum, Brandt, Friedman, Annang, & Tanner, 2011). In the same study, Bynum et al. (2011) found that women preferred to get HPV information from their healthcare providers and that men are less aware of HPV and have less perceived severity about HPV infections compared to women. These findings highlight the gender differences in information preference, and possibly, point to identifying as either male or female can influence how one actively searches for and processes information. Therefore, the next section explores how need for felt social-connectedness among students, especially in religious groups, may explain their health-seeking behaviors, and how religiosity may either aid or hinder students from getting the HPV vaccine.

Identification Among Students

Identification refers to the dynamic social process by which we create identities that guide us and influence our perceptions of the world (Scott, Corman, & Cheney, 1998). Although

originally a concept mostly used in organizational communication, identification can help us understand students' health-seeking behaviors and how students rely on people in their social networks when making decisions about their health. Health-promoting behaviors such as diet, exercise, and vaccination, can be considered social behaviors because most people engage in these behaviors alongside others (Yun & Silk, 2011). For example, people often exercise together and vaccinations occurring in schools often involve several students. The likelihood of students engaging in vaccination programs might be encouraged by their desire to identify with their peers. People maintain relationships by adopting attitudes, values, and behaviors of the people they interact with (Brown & Basil, 2010). Therefore, college students' attitudes toward the HPV vaccine might be influenced by the social norms of their colleagues about the HPV vaccine and their desire to identify with friends in their social circles.

As human beings, we identify with other people for diverse reasons. For example, we invest in relationships that can help us achieve our goals (Burke, 1950) and are attracted to people who share similar views as us (Hall & LaFrance, 2012; Pratt, 2001). People act consistent with their identities in order to satisfy their psychological and sociological needs (Paquin & Keating, 2017). Thus, the desire to identify with other people often leads us to engage in similar activities with them and this might explain why students would be willing to get the HPV vaccine if more of their friends approve of and participate in such a behavior.

Identification can occur at the self or at group levels. Self-identity refers to how someone views themselves in relation to other people and the extent to which they are willing to take on new viewpoints as they interact with other people (Stets & Burke, 2000). Other studies (Ries, Hein, Pihu, & Armenta, 2012) defined self-identity as the enduring and salient reflection of oneself. In recent studies, self-identity has emerged as a significant predictor of intention to engage in

behaviors such as physical activities (Ries et al., 2012). Identity is formed through the process of identification, during which an individual categorizes themselves with particular social classifications (Stets & Burke, 2000). The motivation behind self-identity is to reinforce the sense of self. Self-identity is different from group identity because it relates to the “I” identification rather than the “we” identity (Rise, Sheeran, & Hukkelberg, 2010). This study views both the self-identity and group identity as important in explaining vaccination behaviors among students.

Group identification shapes the self-image of the members of a social system and can also influence the awareness of a disease. Additionally, identification can explain health-seeking behaviors in preventive treatment among people in a social system (Harwood & Sparks, 2003; Yun & Silk, 2011). This is because people draw self-image from their prior behaviors and reinforce that image through repetition of a behavior (Harwood & Sparks, 2003). Self-image influences the willingness of individuals to engage in activities such as voting, blood donation, and indulgence in food and alcohol (Yun & Silk, 2011). Past research on the HPV vaccine also indicated that approval from friends influences the decision of students to get vaccinated (Richards, 2016). Other studies also suggested that to maintain social ties, people make choices that do not antagonize the beliefs and values held by those close to them (Kahan, 2013). Therefore, group identification is a pertinent concept in understanding what to consider in interpersonal and social systems when designing and implementing HPV vaccine interventions among college students.

Leach et al (2008) identified five classifications of in-group identification: individual stereotyping, in-group homogeneity, solidarity, satisfaction, and centrality. According to Leach and colleagues, individual self-stereotyping refers to a phenomenon in which members of a

group start to perceive themselves as similar to other members. Thus, individual self-stereotyping helps group members deal emotionally with the failures of their groups. On the other hand, in-group homogeneity is closely related to individual self-stereotyping, but different in the sense that, in in-group homogeneity, members perceive their group as a coherent social entity that is distinct from other groups. In this categorization, members view the entire group as sharing similarities. Satisfaction refers to the overall positive feelings experienced by an individual for being a member of a particular group. This category entails ensuring group members increase the benefits that they accrue from a group so other members can maintain a positive evaluation of their group. Solidarity as an aspect of group identification entails a psychological and behavioral commitment to the in-group. Additionally, centrality of group membership is evidenced by the conscious effort of group members viewing being a member of a group to be a salient feature in their lives. Centrality creates a sense of pride among group members that incentivizes them to guard against real or perceived external threats to in-group harmony and co-existence (all from Leach et al., 2008). Generally, for identification to explain HPV vaccination intentions among students, this study argues that students belong to various religious groups that shape their worldviews and influence their decision making. The next section explains how religious affiliations of students might influence their willingness to get the HPV vaccine.

Perceived Religiosity as an Aspect of Identification

By integrating the various aspects of self-identity and group identity, this study applies identification through the lens of religiosity and spirituality, and view these two concepts as important in explaining students' HPV vaccination intentions. Although spirituality and religion have similarities, the two are conceptualized as different concepts in past literature. For instance,

according to Hill and Pargament (2003), religion is concerned more with the fixed system of ideas or beliefs. Religion refers to the institution and unlike spirituality, religions are defined by their boundaries (Miller & Thorensen, 2003). On the other hand, spirituality refers to the “personal, subjective side of religious experience” (Hill & Pargament, 2003, p. 64). Miller and Thorensen (2003) defined spirituality as that which can be considered as transcendent, sacred, or divine. As such, spirituality is characterized by the continuous reverence for the sacred and expects people to turn to a deity when a need arises (Hill & Pargament, 2003). Closely related to spirituality, religiosity is conceptualized as participation in organized religious practices involving worship of a higher power (Miller & Thoresen, 2003). Therefore, this study investigates how identifying with a religious group affects the propensity of students to get the HPV vaccine. This is important because religions are concerned with both spiritual and non-spiritual issues such as cultural, economic, political and social issues, and these issues influence how people make decisions (Miller & Thoresen, 2003). Additionally, according to Miller and Thorensen, religiosity can be viewed from the individual level, just like spirituality. However, this study views religiosity as an individual and collective identity because it can be practiced by a person alone, for example, when someone communicates with a higher power individually, or can be practiced by a group of people, for example, when people with similar religious views gather to worship together.

Religion and spirituality are relevant concepts in this research because of the link between HPV and sexual activities with multiple partners, something that might contradict what most religions profess to be appropriate moral behavior (Pierik, 2017; Thomas, Blumling, & Delaney, 2015). That is, many religions advocate for abstinence and faithfulness to one’s partner (Singhal & Rogers, 2003). Krakow and colleagues (2015) found that religious participants and

those worried about their reputation were less likely to get the HPV vaccine. Thus, students who identify as highly religiously devout may lack an incentive to get the HPV vaccine because they might view such vaccination as an indicator of their indulgence in promiscuous sexual activities.

The majority of US citizens report a religious affiliation (Miller & Thoresen, 2003). According to Anderson and Connor (2018), more than 75% of the US population is affiliated with some religion such as Christianity (70.6%), non-Christian (5.9%), other world religion (1.5%), and another 22.8% is unaffiliated with any form of religion. In Kenya, more than three quarters of the population is affiliated with a religion, with Pew Research (2010) reporting that 84.8% of Kenyans identify as Christian, 9.7% as Muslim, 5.9% affiliate with some other religion (e.g., Buddhist, Hindu, Jewish, traditional African religion), and only 2.5% of the population is not affiliated with any religion. Also, some US states allow exemptions from vaccinations based on religious beliefs and most of the groups that object to vaccine administration have the backing of a religion (Pierik, 2017). Additionally, some religious groups argue that God has predestined the human fate, and thus, advocate for prayers instead of vaccination against diseases (Pierik, 2017; Thomas, et al., 2015). Therefore, it is important to study how identifying with a religion influences students when making decisions about getting the HPV vaccine. From a health communication perspective, understanding how religiosity influences HPV vaccination can help to effectively framing HPV messages targeting those who identify strongly as religious.

In recent years, there has been a growing interest in the role of spirituality and religion in health. For example, there has been increased interest in how religion and spirituality help patients in making health decisions and coping with illnesses (Hill & Pargament, 2003; Pierik, 2017; Thomas et al., 2015). Some studies (e.g., Pante & Boccaccini, 1997) have argued that religious faith is related to mental wellbeing and high esteem, with people high in religiosity

reporting high esteem. In a study of the role of religiosity in health-seeking behaviors among rural American communities, Thomas and colleagues (2015) found that spirituality provided a mechanism for coping with illness, ability to address an illness, and influenced how people perceived health conditions. Thomas et al. also found that spirituality was central in determining the extent to which healthcare providers and their abilities are perceived as credible by their patients. Both spirituality and religion are connected to a person's reverence for a sacred being and seem to be important in bringing people closer to God and ensuring they develop attachment to their deity who they perceive as caring, powerful, and all knowing (Hill & Pargament, 2003). Although spirituality and religion may be viewed as distinct concepts, for those who are devout to their deity, spirituality and religiosity are considered intertwined concepts (Hill & Pargament, 2003; Krakow et al., 2015).

Thus, the degree of identification of a person with their deity or a religion, influences the likelihood of engaging in a behavior that is consistent with his/her beliefs. However, religiosity and its interaction with health has not received much attention from scholars because of the assumption by some that religiosity as a concept cannot be studied scientifically, and the belief that spirituality should not be studied scientifically (Miller & Thoresen, 2003). Past meta-analytic studies have measured religion and spirituality using the following dimensions: closeness to God, motivating forces, religious support, and, religious and spiritual struggle (Hill & Pargament, 2003). In this study, the focus is on perceived closeness of the students to God, motivating forces, and religious support, and how these dimensions shape their identities and the health choices they make.

This study considers religiosity and spirituality important sources of group identity which might influence students' health decisions, especially whether to participate in HPV vaccination

programs. This is because the need for group identification among students in regard to HPV vaccines' campaigns can help to increase their likelihood of getting vaccinated, and that involving students in HPV vaccines can ameliorate the resistance and stigma associated with the HPV vaccine (Conors, Slotwinski, & Hodges, 2017). However, since the success of any health intervention lies in how well it is buttressed by a theory, the concept of identification, research questions, and other theoretical concepts relevant to this study will be discussed further in the next section.

Theoretical Framework

This study is premised on the Theory of Planned Behavior (TPB). TPB is a psychological model that predicts behavior from intention to behave and perceived behavioral control (Hirth, Batuuka, Gross, Cofie, & Berenson, 2018). Although TPB is a psychological model, it is applicable to communication research because communication can inform behavior as well as be viewed as a behavior (Brann & Sutton, 2009). TPB assumes that individuals are rational decision makers who actively consider the consequences of their choices (Andrews et al., 2010; Gerend & Shepherd, 2012).

According to the TPB, health campaigns can be enhanced by targeting normative and control beliefs that are the core of behavioral attitudes (Zemore & Ajzen, 2013). According to Ajzen (1991), TPB views behavior as a product of behavioral, normative, control beliefs, and available information. Ajzen argued that behavioral beliefs influence attitudes toward behavior, while normative beliefs influence subjective norms. On the other hand, control beliefs are the foundation for behavioral control. Thus, people form an attitude about a certain behavior by linking it to a certain expected outcome (Ajzen, 1991).

According to Gerend and Shepherd (2012), the TPB was developed from the Theory of Reasoned Action (TRA) and has been used to predict behaviors across an array of contexts. The initial key constructs of TRA were attitudes and subjective norms, but later on, Ajzen extended TRA by adding the perceived behavioral control construct (Gerend & Shepherd, 2012). As illustrated in Figure 1 in the next section, intention to behave and perceived behavioral control are the most direct predictors of behavior. In the present study, TPB can help to explain students' vaccination choices, such as the most salient factors they consider in HPV vaccination, and how other students in their social circles influence them when making health decisions.

So far, TPB has been utilized in many health campaigns such as those involving research on cancer, condom usage, addiction to drugs and substances, and eating disorders like obesity and anorexia (Brann & Sutton, 2009; Pickett et al., 2012). Previous studies on the uptake of HPV vaccinations by Hirth et al. (2018) found that the motivators for HPV vaccination were: anticipated regret if one is eventually diagnosed with cancer after not getting vaccinated, reminders about when to make appointments, and making the vaccine available on campus. A similar study by Gerend and Shepherd (2012) found that the key predictors of HPV vaccination were subjective norms, self-efficacy, and vaccine costs. While studying texting and driving, Bazargan-Hejazi et al. (2017) observed that intention predicted the willingness to text while driving and also mediated the perceived behavioral control and willingness to text while driving. Additionally, in research on how students engage in physical activities, Blanchard and colleagues (2007) found that subjective norms were a significant predictor of intention to engage in physical activity in both black and white students. These findings reinforce one of the premises of TPB that intention predicts behavior. The concepts of TPB as well as their relevance to the present study are discussed in the next section.

Concepts of the TPB and Past Applications of TPB

The main concepts of TPB are attitudes, subjective norms, perceived behavioral control, and intention. TPB suggests that an individual's behavioral intentions and behavior are influenced by attitudes, subjective norms, and perceived behavioral control (Hirth et al, 2018). Thus, according to this theory, health communicators should focus their interventions on the three concepts if their efforts are to produce lasting behavioral changes in their target audience. Figure 1 illustrates the original concepts of TPB as conceived by Ajzen (2006). The arrows show the direction of the perceived relationship among concepts and how the indirect and direct concepts of TPB interact to predict intention to perform a required behavior. The required behavior can range from adopting a healthy lifestyle, getting vaccinated or smoking cessation, or some other behavior of interest to a practitioner.

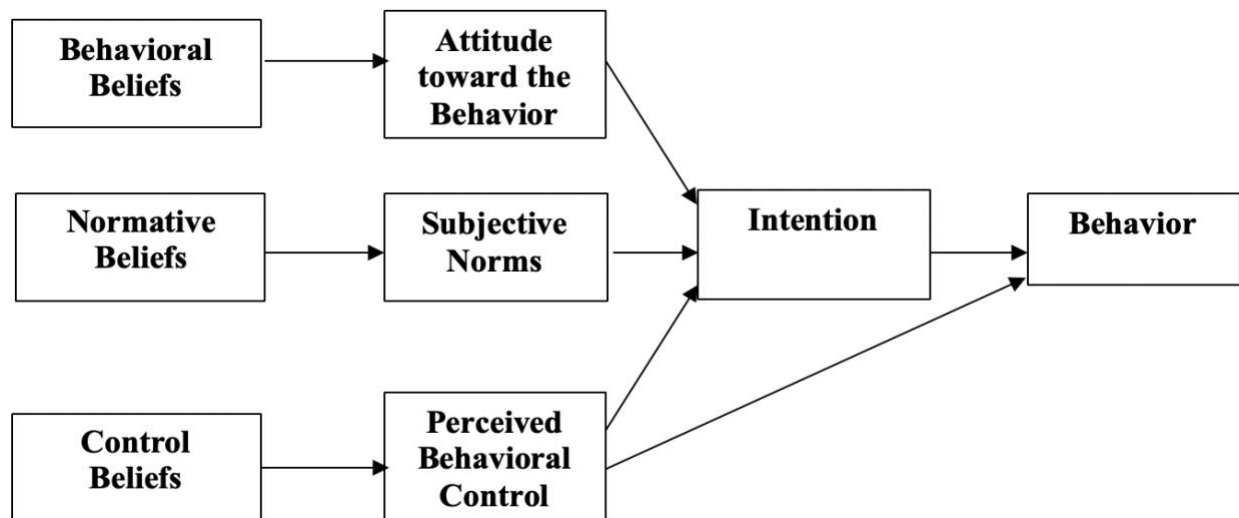


Figure 1: Theory of Planned Behavior (adapted from Ajzen, 2006)

These concepts of TPB are defined and further explored in the following sections.

Perceived behavioral control

Perceived behavioral control (PBC) refers to an individual's perception of the ease or difficulty performing a behavior (Ajzen, 1991, Gerend & Shepherd, 2012; Zeng & Ajzen, 2013). The existence of PBC in the TPB distinguishes it from the Theory of Reasoned Action. PBC varies depending on situations and is guided by past behaviors and perceived difficulties engaging in a recommended behavior (Ajzen, 1991). Ajzen (1991) argued that PBC is influenced by an individual's motivation and confidence in his/her abilities to perform a required behavior. Ajzen also contended that motivational factors are shaped by the available opportunities and resources, and that such factors influence an individual's control over the intended behavior. Thus, if students perceive themselves as able to access the HPV vaccine and anticipate few hurdles in their efforts, they are likely to get vaccinated.

Other studies concerning TPB (e.g. Sheeran, Trafimow, & Armitage, 2003) have found that PBC is a strong predictor of intentions and a person is likely to reject an invitation to engage in a behavior he/she lacks control over. Therefore, according to Sheeran and colleagues (2003), PBC predicts behavior when a person has a realistic evaluation of his/her abilities, but not when he/she has an inaccurate perception of control. Thus, according to TPB, the extent to which an individual view him/herself as capable or incapable of performing a behavior, determines his/her willingness to put more effort into performing a required behavior. Ajzen also argued that PBC is related to perceived self-efficacy, which involves an individual's judgement in dealing with a situation. As PBC increases, so does the likelihood of spending more time performing a behavior (Ajzen, 1991). Thus, if students believe they have access to the HPV vaccine and also perceive the vaccine as effective in safeguarding them against genital warts and HPV-related cancers, they are more likely to get the HPV vaccine. The next section explains the importance of attitude as a concept of TPB.

Attitude

Attitude is defined as a personal evaluation of a behavior based on the perceived positive and negative consequences associated with that behavior (Ajzen, 1991). In the current study, the attitudes of individuals toward HPV vaccines are viewed as shaped by their attitude toward sex-related topics and social norms surrounding such conversations. Attitude toward sex is an important indirect predictor of students' intention to get vaccinated because HPV infections are sexually transmitted. Additionally, the attitudes of the students toward sex might be influenced by their religiosity and prevailing social norms about sex. In particular, this study focuses on the attitudes of college students toward sex with multiple partners and the value they attach to sex. This is important because sex is often considered a taboo topic, especially within conservative families. For example, in Kenya and Tanzania, discussion of sexual topics between teachers and young people is seen as immoral and thus, most people tend to avoid engaging in such discussions (Oluga, Kiragu, Mohamed, & Walli, 2010). Discussions about sex are avoided in most conservative cultures due to the concern that these discussions might be misconstrued as validating promiscuous behavior among young people. Another attitude to be explored in this study is the attitudes of students toward the HPV vaccine. The attitude of students toward the HPV vaccine is seen as a direct predictor of students getting the HPV vaccine. Therefore, if students have a favorable attitude toward the HPV vaccine, they are more likely to get vaccinated but if their attitude is negative, they may not be willing to get vaccinated. However, it is important to note that students' attitudes toward sex and the HPV vaccine may be influenced by their religiosity, knowledge about HPV and the HPV vaccine, prevailing subjective norms, and perceived vulnerability to HPV infections and HPV-related cancers. Thus, the next sections also explore how subjective norms, knowledge, religiosity, and cancer stigma might influence students' intentions to get vaccinated.

Subjective Norms

According to Gerend and Shepherd (2012) subjective norms reflect the social pressure of whether people in one's social circle approve of their members adopting a particular behavior. Closely related to Gerend and Shepherd's research, other studies defined subjective norms as the perceived social pressure to engage in certain behaviors (Ajzen, 1991; Zeng & Ajzen, 2013). People often compare their behaviors with those of others and are, thus, likely to be affected by the actions of people in their social circles compared to those outside their networks (Ho, Liao, & Rosenthal, 2015). Additionally, the prevailing social norms about HPV, the HPV vaccine, and vaccines in general might influence the willingness of students to go for vaccination. Subjective norms about the HPV vaccine is a salient concept of this study because of the link between HPV infections and sexual activities and the societal stigma associated with sexually transmitted infections. In particular, this study focuses on the prevailing norms about the HPV vaccine in the colleges where students study, the extent to which the student community approves of students getting the HPV vaccine, and the available information about HPV on the campuses involved in this study.

Knowledge

Ho and colleagues (2015) argued that within TPB knowledge is an aspect of behavioral control that influences an individual to perform certain tasks. According to TPB, knowledge is considered an indirect predictor of behavior. In the current study, knowledge about HPV and the HPV vaccine are concepts that influence the willingness of students to get the HPV vaccine. This is based on the perspective that knowing how HPV infections occur and how the HPV vaccine can guard against such infections are pertinent in influencing one's intention to get vaccinated. Therefore, one of the overarching goals of this study is to compare the knowledge levels of

Kenyan and USA students, and to examine how knowledge, alongside other concepts of TPB, influence the likelihood of these students getting the HPV vaccine. Understanding the knowledge of students concerning HPV and the HPV vaccine is important in guiding health communicators as they design effective campaigns that match the level of knowledge of the students regarding risks posed by HPV and how the HPV vaccine can help to protect them from related infections. The next section explains how cancer stigma can be an indirect predictor of the intention to get HPV vaccine.

Cancer Stigma

This study includes cancer stigma as an indirect predictor of students' intention to get the HPV vaccine. This is pertinent because of the link of HPV to various types of cancer such as cervical, penile, and oropharyngeal cancer (AAP, 2012; Markowitz et al., 2014; Nayak et al., 2016). Unlike most chronic illnesses, cancer is a stigmatized disease due to the uncertainty associated with mortality and survivability after treatment (Conrad & Barker, 2010; Venetis, Magsamen-Conrad, Checton, & Greene, 2014). Previous studies (Hirth et al., 2018) found that fear about getting HPV-related cancer in the future can motivate people to get the HPV vaccine. Therefore, this study also investigates how the fear of getting a stigmatized disease (i.e., cancer) later in life might influence students' intentions to get vaccinated against HPV. The next section explains the role of behavioral intention as a concept of TPB.

Behavioral Intention

According to TPB, behavioral intention is the most important concept in predicting behavior (Andrews, Silk, & Eneli, 2010; Blanchard et al., 2007). In TPB, behavioral intention is viewed as a combination of the individual's attitudes, subjective norms, and PBC (Ajzen, 1991;

Ho et al., 2015; Zeng & Ajzen, 2013). TPB argues that intentions are the origin of motivations that influence certain behaviors. In addition, intentions are predictive of the extent to which individuals are willing to perform a particular behavior (Ajzen, 1991). TPB also assumes people have agency and discretion to perform certain behaviors. The discretion to perform or not to perform certain behaviors constitutes control over the behavior. According to Ajzen (1991), intentions when combined with perceived behavioral control, can accurately predict a particular behavior. Thus, if students are aware of the risks associated with HPV infections, such as cervical cancer and genital warts, they will be more likely to get the HPV vaccine to protect themselves against these effects. According to Ajzen (1991), motivation and ability interact to influence performance of certain behaviors. Thus, the intention to perform a behavior increases with an increase in an individual's control over the behavior and motivation to act. When behaviors have minimal risks, those behaviors can be predicted accurately by intentions (Ajzen, 1991). Because vaccination is a low risk activity, the likelihood of students getting vaccinated can be predicted by their intentions.

Gerend and Shepherd (2012) argued that when making difficult health decisions, people utilize their social networks for advice and that subjective norms influence health behavior when making uncertain health decisions such as vaccination. This study also anticipates that students will be influenced by the people in their networks when making vaccination decisions and that students form self-identity from their membership in religious groups. Thus, this study examines the fit of religiosity (self-identity) as an indirect concept of the TPB.

Religiosity (Self-identity)

As mentioned previously, this study also investigates how having the self-identity of a religious person may influence the vaccination intentions of students. Self-identity refers to the

enduring self-reflection of how one views him/herself in relation to others (Ries et al., 2012; Stets & Burke, 2000). Although closely related to subjective norms, self-identity is distinct in various ways. For instance, while subjective norms are born out of the social pressure prevailing in a community, self-identity refers to an individual's personal initiative to adopt a behavior in order to connect with their peers and other people in the social circle. Therefore, self-identity assumes that students have agency to form relationships with other people in their communities (i.e., colleges) by doing things that enhance their connectedness and foster group identity. Past meta-analysis studies (Paquin & Keating, 2017; Ries et al, 2012; Rise et al., 2010) found that identity explained additional variance in intentions or behavior when TPB concepts were considered. Rise and colleagues (2010) also found that self-identity enhances the predictive power of the TPB when accounting for behavioral intention and, alongside attitudes, is the strongest predictor of intention to behave in a certain way. The influence of self-identity is due to its overlap with attitude and so is likely to influence behavioral outcome because people act in accordance with their identity for self-validation purposes (Rise et al., 2010).

Other research has found that self-identity has the same effect as attitude on behavioral intention and sometimes exceeds the effect of attitude in predicting the intention to engage in a particular behavior (Paquin & Keating, 2017). For instance, Ries et al. (2012) found that adolescents who see themselves as active people are more likely to engage in exercise than those who do not view themselves as active. However, self-identity on its own does not predict behavior but does so in conjunction with other components of the TPB as an indirect concept (Paquin & Keating, 2017; Ries et al, 2012; Rise et al., 2010). Thus, this study argues that membership of students in social groups, such as religious groups, influences their intentions to engage in HPV vaccination. Stets and Burke (2000) defined a social group as “a set of

individuals who hold a common social identification or view themselves as members of the same social category” (p. 225). For this study, a social group is viewed as the student membership in a religious group. Religiosity is incorporated in this study because of the link of HPV to sexual activities, which is an issue that contradicts the conservative views of many religious groups regarding engagement in sexual activities. Therefore, the students who perceive themselves as religiously devout might be hesitant to get the HPV vaccine due to the fear of being viewed as promiscuous because this violates the abstinence position advocated by many religious groups (Pierik, 2017; Thomas et al., 2015).

From a health perspective, students are more likely to adopt the HPV vaccination if their religious groups are accepting of such behaviors but are less likely to go for vaccination if people in their religious group do not approve of such behavior. Additionally, highly devout students might not see themselves as vulnerable to getting HPV because they might view themselves as adhering to the “abstinence until marriage” position advocated for by many religions. Thus, these students might lack the incentive to get vaccinated. In this study, the focus will be on how self-identity, as accentuated through perceived religiosity, influences attitudes towards HPV vaccination and attitudes toward sex.

Although this study looks at how TPB can help to predict students’ vaccination intentions, it is also important to note that human behavior is complex and might be affected by other factors. For example, it is easy for a target audience to adopt an advocated behavior if they perceive it as less risky and easy to model. HPV vaccination is a preventative measure; hence it is likely that the participants will perceive it as a less risky behavior that is easy to adopt (Nan et al., 2016). The extent of their adoption will also be influenced by their need for identification

with other students which might either motivate or disincentivize them to get the HPV vaccination.

Direct and Indirect Predictors of Students' Vaccination Intention

The TPB includes both indirect and direct predictors of behavior. In this study, the indirect predictors of students' intention to get vaccinated are: knowledge about HPV; knowledge about the HPV vaccine; cancer stigma; attitude toward sex; and identification (i.e., perceived religiosity). The direct predictors of intention to get vaccinated are conceptualized as: attitude towards HPV vaccination; subjective norms about HPV vaccination; and perceived behavioral control of the students in regard to accessing the HPV vaccine and the healthcare providers who can give them the vaccine. By combining the various indirect and direct concepts of TPB, this study suggests a model of intention to get the HPV vaccine (Figure 2). The model indicates the salient factors in predicting students' intention to adopt the HPV vaccine. The relationship between the indirect and direct predictors of intention are explored further through the research questions proposed in the next section.

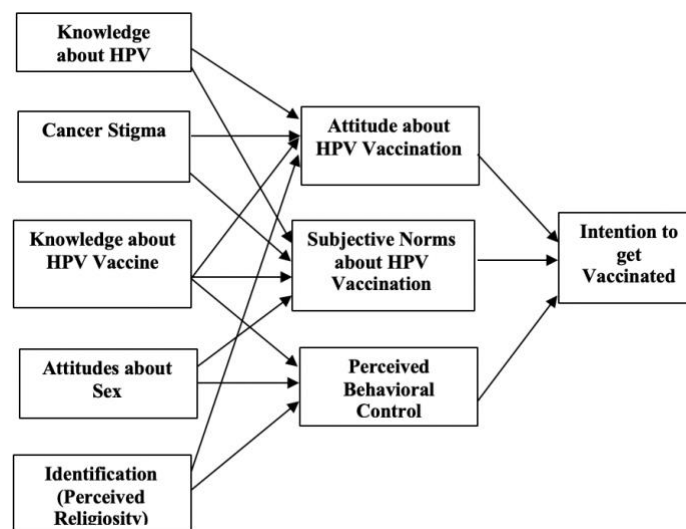


Figure 2: Suggested model of intention to adopt the HPV vaccine

Research Questions of The Study

This dissertation used a mixed methods approach to study the role of identification on health seeking behaviors. Since past studies (Paquin & Keating, 2017; Ries et al, 2012; Rise et al., 2010) indicate that identity influences health seeking behaviors, this study uses the following qualitative research questions to understand the role of identification in health behaviors, the influence of religion on the attitudes toward sex, and how students maintain their identity:

RQ1: How does the need to identify with fellow students influence students' health seeking behaviors?

RQ2: How does religiosity influence students' attitudes toward sex?

RQ3: How do students who identify as Christian regain their religious identity after engaging in sexual activities?

Ragin and colleagues (2009) found that although men were aware of the HPV vaccine, most of them did not intend to get vaccinated. Other studies have found that women are more likely to get vaccinated compared to their male counterparts (Vorpahl & Yang, 2018). This indicates that gender is an important consideration in HPV vaccination and, therefore, the research questions explores the effect of gender and country on the concepts identified in the model illustrated in Figure 2 through the following research question:

RQ4: Do differences exist in the perceptions of vaccine attitudes, subjective norms, perceived behavioral control, and vaccine intention among the students across country and gender?

Since past studies with participants from the UK, Australia, and the USA indicated that participants from the USA had low knowledge about HPV, how it is transmitted, and its effects (Marlow, et al., 2013), the perceived levels of knowledge about HPV infections and the HPV vaccine need to be assessed. Additionally, Dodd and colleagues (2014) found that the main predictors for HPV testing were age, gender, and education. Therefore, this study considers the

influence of knowledge on students' intention to get vaccinated through the following research question:

RQ5: Are there any differences in the level of knowledge about HPV and HPV vaccine among students by country and gender?

Previous studies have linked HPV to various types of cancer, such as cervical cancer, oropharyngeal cancer, and penile cancer (AAP, 2012; Panatto et al., 2009). The link of HPV to cancer makes it a stigmatized disease, especially because cancer is viewed as a traumatizing and oppressive disease (Conrad & Barker, 2010; Venetis et al., 2014). Therefore, to consider the relationship between perceived stigma associated with cancer and other concepts in the suggested model, this study addresses the following research question:

RQ6: Are there differences across gender and country among students towards the stigma associated with cancer, religiosity, and attitudes towards sex?

To examine the best predictors of vaccination intention among college students in Kenya and the USA, this dissertation also poses the following research questions.

RQ7: What are the predictors of intention to get vaccinated among male and female students in Kenya?

RQ8: What are the predictors of intention to get vaccinated among male and female students in the USA?

TPB assumes that people's behaviors are shaped by the prevailing subjective norms about certain behaviors (Zemore & Ajzen, 2013). Past studies (e.g. Paquin & Keating, 2017; Ries et al, 2012; Rise et al., 2010) have also established that identity explains the additional variance in intentions or behavior when TPB concepts are considered. Therefore, to examine the influence of religiosity, this study poses the following research question:

RQ9: Will the student's country (USA or Kenya) moderate the relationship between religiosity and attitudes toward sex?

As a follow up to RQ₆, this study also explores the influence of country of the participant on the sex attitudes, vaccine attitudes, subjective norms, and intention of students to get vaccinated through the following research questions:

RQ₁₀: Does the student's country moderate the relationship between sex attitudes and attitudes toward the HPV vaccine?

RQ₁₁: Does the student's country (U.S.A or Kenya) moderate the relationship between subjective norms about HPV vaccination and intention to be vaccinated?

Conclusion

In this chapter, the extant literature concerning HPV and the HPV vaccine was explored. The concepts of the TPB that form the basis for the suggested theoretical model for this study were also explained. Overall, the literature review identifies HPV as a serious public health concern due to its high prevalence among young adults. Additionally, the literature review argued for HPV vaccination as a safeguard against HPV-related infections. Therefore, the research questions presented in this chapter explored the salient factors that may predict the vaccination intentions of students studying in Kenya and the USA. The next chapter discusses the methodology including the metatheoretical assumptions of this study, the study design, participant recruitment procedures, the data collection procedures, and how data were analyzed. The chapter also explains the demographic characteristics of the participants and the choices that were made to enhance the validity of the study.

CHAPTER 3: METHODOLOGY

This chapter presents the metatheoretical assumptions and the methodology for this study including the study design, the study procedures, data collection, measures, and the data analysis techniques. This chapter also describes the demographic characteristics of the participants and the procedure that was followed in recruiting participants.

Metatheoretical Assumptions of the Study

This dissertation project is situated at the intersection of the metatheoretical assumptions of the social constructionist and post-positivist paradigms. The eclectic nature of the research questions generated by this project necessitate a mixed methods approach that is explained in the following sections.

Post-Positivism

Post-positivism is anchored on the core tenets of falsifiability, confirmation, generalizability of the study findings, and theory development (Popper, 1998). Falsification entails testing a theory to refute its predictions (Popper, 1998). Popper defined confirmation as the process by which a theory is tried to assess whether its concepts are consistent with its claims. To achieve confirmation and falsification, post-positivism relies on explication, which according to Chaffee (1991), is the process of making theoretical concepts, connections, and meanings explicit as a way of enhancing validity in the research process. Chaffee described validity as the relationship between conceptual and operational definitions. Thus, post-positivism is guided by explication in its pursuit of truth and objectivity in research.

In post-positivism, objectivity is assumed to help avoid researcher biases while measuring the concepts of interest during the research process (Douglas, 2014). Another assumption of post-positivism is its emphasis on prediction (Ruse, 1982). Post-positivism also embraces tentativeness. In this paradigm, knowledge about communication theory is considered to be the purview of the scientific community whose members test its validity and currency. Theorizing is emphasized in post-positivism (Phillips, 2000).

This study reflects post-positivist assumptions in that some of the research questions address predicting behavior and require quantitative analysis techniques. For example, data for this study was collected using surveys and the data were analyzed using descriptive statistics, correlations, regression, and statistical modelling techniques. Using these statistical processes fostered objectivity and revealed relationships among the two samples regarding various concepts of interest. The next section explains the elements of social constructionism that guided this project.

Social Constructionism

Social constructionism is concerned with the processes that people use to explain their world; either the past, present, or future (Gergen, 1985). In social constructionism, the view of the world is dependent on the experiences of an individual. Unlike in post-positivism where emphasis is on empirical testing, according to Gergen, in social constructionism, knowledge is not based on testing, rather, knowledge is socially constructed through human relations.

From a social constructionist perspective, the way the world is understood is historically situated in interactions, and so the process is not dependent on rules of nature, but relationships among people (Gergen, 1985; Stroebe & Kruglanski, 1989). Thus, the concern is how language is negotiated and its implications for other social acts. Blumer (1966) defined social acts as the

basics of the society that occur when interactants fit their actions together by deciding how to interpret and define each other's acts. One way in which social constructionism is present in this study is in the qualitative examination of how identification among students might influence their health seeking behaviors. The concept of identification is considered using in-depth interviews that sought to understand how, for example, the desire of students to maintain relationships with people in their social networks influenced the health decisions they make, and their propensity for getting the HPV vaccine. The next sections describe the study setting, characteristics of the prospective samples, and the data collection process.

Participant Recruitment

The required application materials were submitted to the Institutional Review Board (IRB) at Purdue University and the Graduate Research Office at Moi University in March 2019, and since the study was categorized as exempt, consent forms were not required. However, each participant was given an information sheet that explained their expectations and rights as participants (Appendix C and Appendix D).

This study was conducted using undergraduate students at the two universities; one in Kenya and the other in the Midwestern USA. The choice of university students was made for various reasons. First, this is the population at the greatest risk for HPV infections and in the age range recommended for vaccination (i.e., 7 to 26 years; Nan et al., 2016). Additionally, the choice of the two universities was also based on convenience due to a prior relationship with the researcher who studied at these universities for undergraduate studies and graduate studies respectively.

The recruitment of participants for Kenya and the USA varied for the qualitative and quantitative portions of this study. Specifically, the participants for the interviews in Kenya were

recruited using snowball sampling, in which the participants known to the researcher passed on the knowledge of the research to other people who met the sampling criterion (Lindlof & Taylor, 2011). The students from Kenya who participated in an interview or survey were each given an airtime calling card as an incentive (\$ 0.20).

The participants for the interviews and surveys in the USA were recruited through convenience sampling using the online research pool (SONA). Students who participated in either the survey or an interview were awarded extra credit.

Since one of the key concepts being examined was how religiosity, as an aspect of identification, influences the decisions that students make, one of the selection criteria was that the student had to consider him/herself religious. Students who identified themselves as non-religious, were excluded from the study. This exclusion criterion was also informed by the focus of this study being on HPV, which is a sexually transmitted and many religions forbid premarital sex (Singhal & Rogers, 2003). The next section details the demographic characteristics of the participants.

Participants

The demographic characteristics of the participants in this dissertation project are presented by starting with the participants in the qualitative study followed by the quantitative study.

Demographics of Participants in the Qualitative Study

The interviews were conducted with 43 participants, who were undergraduate students who were Christian and described themselves as active in their faith. More specifically, 22 Kenyan students participated in an interview, of which seven were men and 15 were women.

Twenty-one Midwestern university students participated in an interview, of which six were men and 15 were women. The age of the participants from both countries ranged from 20 to 29 years. Participants identified as regular congregants in churches such as, Anglican Church of Kenya (ACK), Baptist, Catholic, Faith Church, Full Gospel, Interdenominational churches, Lutheran, Methodist, and Seventh Day Adventists. The next section describes the demographic characteristics of the participants who took part in the quantitative study.

Demographics of Participants in the Quantitative Study

Demographics of the Kenyan Sample: In total, the Kenyan sample included 511 students of whom 312 identified as male, 186 identified as female, 6 identified as transgender, and 4 preferred not to disclose their gender. Regarding sexual orientation, 200 participants identified as heterosexual, 60 as homosexual, 34 as bisexual, and 182 did not indicate their sexual orientation. In terms of education level, 97 of the participants were in their first year, 119 were in their second year, 214 were in their third year, 67 were in their fourth year, and 10 were post-graduate students.

Demographics of the USA Sample: In total, the USA sample included 522 students of whom 187 were male, 332 were female, and 3 identified as transgender. Regarding sexual orientation, 447 participants identified as heterosexual, 23 were homosexual, 35 identified as bisexual, and 16 participants did not indicate their sexual orientation. In terms of education level, 155 were first year, 97 were sophomores, 142 were juniors, 127 were seniors, and one student was in graduate school.

Combining the Kenyan and the USA students, the total sample had 1,045 participants with an average age of 23.35 years. Table 1 summarizes the demographic characteristics of the participants involved in the quantitative study.

Table 1: Demographic Characteristics for the Kenyan and USA Samples

<i>Characteristic</i>	<i>Kenyan Sample</i>		<i>USA Sample</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Gender	511		522	
Male	312	60.9	187	35.8
Female	186	36.3	332	63.6
Transgender	6	1.2	3	.6
Prefer not to disclose	4	.8		
Sexual orientation			521	
Heterosexual	200	39.1	447	85.8
Homosexual	60	11.7	23	4.4
Bisexual	34	6.6	35	6.7
Prefer not to disclose	182	35.5	16	3.1
Education	508			
First years	98	19.1	155	29.7
Second years	119	23.2	97	18.6
Third years	214	41.8	142	27.2
Fourth years	67	13.1	127	24.3
Post-graduate	10	2.0	1	.2
Marital status	505		522	
Married	35	6.8	4	.8
Single	409	79.9	482	92.3
Divorced	38	7.4	1	.2
Domestic partnership	22	4.3	35	6.7
Religious affiliation	500		477	
Evangelical protestant	202	39.5	86	18.0
Catholic	157	30.7	130	27.3
Hindu	2	.4	19	4.0
Jewish	13	2.5	22	4.6
Muslim	26	5.1	10	2.1
Atheist	6	1.2	6	1.3
Mormon	2	.4	54	11.3
Agnostic	6	1.2	1	.2
Orthodox Christian	25	4.9	46	9.6
Jehovah's witness	3	.6	55	11.5
Non-denomination	-	-	21	4.4
Tao	-	-	1	.2
Daoism	-	-	1	.2
Quaker	-	-	1	.2
Rastafarian			1	.2
Other	58	11.3	21	4.4
Racial Background			519	
American Indian	-	-	2	.4
Asian	-	-	140	27.0
African American	-	-	24	4.6
Hispanic or Latino	-	-	25	4.8
Alaskan Native	-	-	1	.2
Caucasian White	-	-	326	62.8
Native Hawaiian or any other Pacific Islander	-	-	1	.2

Table 1 continued

Immigration Status				
Citizen	-	-	401	76.8
Permanent Resident	-	-	28	5.4
International Student	-	-	90	17.2
Undocumented (DACA)	-	-	3	.6

To enhance the validity of the study, international students were excluded from the final analysis to ensure the results reflected as close as possible the views of the USA students and those of the Kenyan students. However, the participants in the USA who identified as permanent residents and undocumented were included in the analysis because their experiences were perceived to be similar to those of the USA students. The processes followed during data collection are detailed in the next section.

Data Collection

Upon approval by the Institutional Research Board (IRB), the data for this dissertation were collected using quantitative and qualitative research techniques. Specifically, a closed-ended survey (Appendix A) and a semi-structured interview protocol (Appendix B) were utilized to collect data. Surveys were appropriate because they are easy to administer and are also convenient in studies involving a large sample (Keyton, 2014; Lindlof & Taylor, 2011; Rubin & Rubin, 2012). Due to the unique technological differences between the two universities where the data were collected, there were some variations in how the surveys were administered. For example, the Kenyan students were given a printed survey and asked to return it during the next class session. This provided convenient access to the survey in a country where poor internet connectivity and a lack of an online research pool posed challenges. For the students at the university in the USA, the survey was posted to an online research pool (i.e., SONA).

In addition to the survey, students were invited to participate in interviews examining how religiosity and their desire for identification with other students influence their health seeking behaviors. The respondents were also asked about their attitudes toward sex, and how they resolved dissonance if the identity of a “religious person” was compromised by engaging in premarital sex activities. The respondents were also asked how being religious affected their attitudes toward sex. Generally, the overarching goal of these interviews was to explore how identification at personal and collective levels influenced students’ health seeking behaviors. Data from the interviews addressed RQ1, RQ2, and RQ3.

The semi-structured interviews were used because they allow for flexibility in the study of implicit beliefs and attitudes (Keyton, 2014; Lindlof & Taylor, 2011; Rubin & Rubin, 2012). Additionally, interviews allow for flexibility and enable a researcher to guide the direction an interview takes and adjust to the emerging needs or comments of an interviewee (Rubin & Rubin, 2012). As such, the interviews varied from one respondent to another depending on their religious beliefs and their level of knowledge regarding HPV and the HPV vaccine. The interviews lasted approximately 25 to 40 minutes and were audio-recorded to aid accuracy during transcription. Transcription of all the interviews produced 207 single-spaced pages. To protect the confidentiality of the participants, all identifying information from the transcriptions was removed and the participants were assigned pseudonyms. The next section explains the measures used to address the relationships between the various concepts of interest in this study.

Measures

This section explains how pertinent variables, such as demographics of the participants, and the TPB concepts in the suggested model were measured.

Demographic Measures

The demographic characteristics of the participants were measured using short questions about their age, gender, racial ethnicity, vaccination history, major, and year in school. Before completing the survey, students were asked to indicate if they were at least 18 years of age, which is the legal age of sexual consent in Kenya. Although the age of consent in the state where the Midwest university is located is 16 years, for a fair comparison of the two samples, all participants were required to be at least 18 years of age to participate in the study.

The key concepts in the model were assessed using adapted scales. In the following sections, details are provided about the theoretical concepts forming the basis for this study and the measures that were used to address those concepts.

Knowledge About HPV and the HPV Vaccine

These two concepts were measured using scales developed by Perez, Tatar, Ostini, et al. (2016). The HPV knowledge scale used in this study had 23 items, and the HPV vaccine knowledge scale had 11 items. Participants were asked to respond to the statement for each scale item with either true, false, or I don't know. The items for these two scales are indicated in Appendix A. The two scales had statements about how HPV is transmitted and how the HPV vaccine can help to prevent HPV infections. During data analysis, the statements that the participants scored correctly were coded as 1 and the rest (incorrect and false statements) were coded as 0. In this study, the HPV knowledge scale had a reliability (α) of .873 and the knowledge about HPV vaccine scale had a reliability (α) of .745. Since HPV is linked to sexual activities, the next section explains how attitudes toward sex were measured.

Attitudes Toward Sex

The attitudes of students toward sex were measured using the permissiveness subscale of the brief sexual attitudes scale developed by Hendrick, Hendrick, and Reich (2010). This scale assessed the attitudes of students toward sex using 10 statements asking participants about their perceptions about sex. Some of the statements on this scale were: casual sex is okay; I do not need to be committed to a person to have sex with him/ her; and it is okay to have ongoing sexual relationships with more than one person at a time. The scale had response options ranging from strongly disagree (1) to strongly agree (5). In this study, the items had a reliability of (α) .870.

One of the overarching goals of this dissertation was to examine how the need for identification influences health seeking behaviors among college students. Thus, the next section explains how religiosity, as an aspect of identification, was measured in this study.

Identification (Religiosity)

Religiosity was proposed as an additional concept of the TPB in the suggested model and was addressed using 16 items; 10 items adapted from a scale developed by Pante and Boccaccini (1997), and 6 items adapted from the identification scale developed by Mael and Ashforth (1992). The scale by Pante and Boccaccini had a Cronbach's alpha of .95. The two scales were combined into a one religiosity Likert scale with the response options ranging from strongly disagree (1) to strongly agree (5). In this study, the religiosity scale had a reliability of (α) .95. Some statements in the scale were: My religious faith is extremely important to me; I pray daily; I look to my faith as a source of inspiration; I look to my faith as providing meaning and purpose in my life; I consider myself active in my faith; when someone criticizes my religion, it feels like a personal insult; I am very interested in what others think about my

religion; and when I talk about my religion, I usually say ‘we’ rather than ‘they.’ The next section explains how the stigma associated with cancer was measured.

Cancer Stigma

The stigma associated with cancer as an indirect predictor of students’ intention to get the HPV vaccine and was assessed using the cancer worry scale adapted from Dijkstra and Brosschot’s (2003) worry scale about physical health effects of smoking. The items on the cancer worry scale focused on the fear associated with getting cancer. The original cancer worry scale has the following response options: not at all (1) to very much (7). However, for uniformity in the current study, the response options ranged from strongly disagree (1) to strongly agree (5). Some of the sample statements for this scale were: I am afraid of the physical consequences of cancer; I worry about my health because of the fear of getting cancer; I feel anxiety when I think of the possible consequences of cancer; and I fear about the physical consequences of cancer. The cancer worry subscale had a reliability of (α) .84. The next section explains how the attitude toward HPV vaccine, perceived behavioral control, and subjective norms were measured.

Concepts of TPB

The concepts of the TPB were measured using items adapted from The Carolina HPV Immunization Attitudes and Beliefs Scale (CHIAS) developed by McRee, Brewer, Reiter, Gottlieb, and Smith (2010). The original scale had the following subscales: harms subscale with six items relating to potential harms from the vaccine; barriers subscale with five items about perceived hindrances to HPV vaccination such as costs and difficulties accessing a healthcare provider; effectiveness subscale with two items assessing perceived effectiveness of the HPV vaccine; and the uncertainty subscale containing three items that examine the availability of

information about the HPV vaccine and general community norms about vaccines. The items in these subscales were adapted and modified to fit the focus of the current study.

Attitudes Toward HPV Vaccine

This concept was measured using five modified items from the effectiveness subscale and harms subscale of the CHIAS. The subscale had a reliability of $(\alpha) .67$ to $(\alpha).70$ across the four subsets (i.e., Kenyan females, Kenyan males, USA females, USA males) under consideration. The response options ranged from strongly disagree (1) to strongly agree (5). The vaccine attitudes scale had items assessing the participants' attitudes toward the effectiveness of the HPV vaccine to cure genital warts, safety, and capability of causing harm. Some examples of the statements on this scale included: the HPV vaccine might cause lasting health problems; the HPV vaccine is being pushed to make money for drug companies; and I think the HPV vaccine is unsafe. The five items used to assess the vaccine attitudes were reverse coded for credibility (Appendix A). Closely related to the attitudes toward the HPV vaccine, the following section explains how the subjective norms about the HPV vaccine were measured.

Subjective Norms

Subjective norms about the HPV vaccine reflect the social pressure stemming from the approval or lack of approval for the HPV vaccine from people one considers important. This subscale had three statements asking participants if other students or family members approved of them getting the HPV vaccine. The items used to assess subjective norms included the following statements: students on my campus approve of me getting the HPV vaccine; my family approves of me getting the HPV vaccine; and other students on my campus are getting the HPV

vaccine. The scale had a reliability of (α) .76. The measures used to assess perceived behavioral control are explained in the next section.

Perceived Behavioral Control (PBC)

PBC was assessed using three (3) items. The items on this subscale addressed the perceived barriers that the participants might experience when searching for physicians who administer the HPV vaccine, and the participants' ability to cover the expenses associated with the HPV vaccine. The items on this subscale had a reliability of (α) .74 and the response options ranged from strongly disagree (1) to strongly agree (5). Example items on this subscale included: it would be very hard to find a physician or clinic where I can get the HPV vaccine with ease; it would be very hard to find a physician or clinic where I don't have to wait for long for an appointment to get the HPV vaccine; and I am concerned that the HPV vaccine costs more than I can pay. Closely related to PBC, the next section explains how intention was measured.

HPV Vaccine Intention

Intention was measured using four items from the TPB questionnaire developed by Ajzen (1991). The items asked participants about their willingness to get vaccinated and if they would recommend the vaccine to their friends. Specifically, the items testing intention asked the participants if in the next 12 months they intended to get vaccinated against HPV; if in the next 12 months they would recommend HPV vaccination to other students on their campus; if in the next 12 months they would encourage other students to get vaccinated; and if in the next 12 months they would get vaccinated if they were still in the HPV vaccine age bracket. The intention subscale had a reliability of (α) .84. The next section explains the steps that were taken to enhance the validity of the study.

Validity

Chafee (1991) defined validity in research as the process of creating a clear link between conceptual and operational definitions. Thus, to enhance the validity of this study the following decisions were made: All the scales were pilot tested with five Kenyan graduate students in a large Midwestern university prior to deployment. In particular, the pilot study tested the face validity of the scales and interview schedule with the goal of improving the wording and structure of the scale items. Additionally, the use of a mixed methods approach enhanced the rigor of the data collection process leading to richer data. The items with low loadings were also dropped from the analysis thus enhancing the reliability of the scales that were used. These choices helped to ensure that the validity and reliability of the study (for the quantitative study) were not compromised. The next section explains how the data were analyzed.

Data Analysis

In this section, the techniques used to analyze the qualitative and quantitative data are explained.

Qualitative Data Analysis

The qualitative data from the interviews were analyzed using thematic analysis. Braun and Clarke (2006) defined thematic analysis “as a way of analyzing and reporting patterns within data” (p. 79). The thematic analysis technique was utilized because it helps to bring out the explicit nature of themes under study, and the method also allows for flexibility in the analysis process (Braun & Clarke, 2006; Rubin & Rubin, 2012). Thus, the thematic analysis approach helped to address RQ1, RQ2, and RQ3.

To ensure clear organization of data, the transcript of each interview was saved as a separate file for coding purposes (Haas & Mattson, 2015). After transcription, the interviews were coded to establish concepts, examples, and themes that addressed the research questions. The coding process involved the following steps; reading through the transcripts for familiarization with the content, separating the qualitative material into idea units, and establishing the categories into which the idea units could be classified (Haas & Mattson, 2015; Rubin & Rubin, 2012). In this study, the units of analysis were words, phrases, and emerging patterns that addressed the research questions (Lincoln & Guba, 1985; Lindlof & Taylor, 2011). The categories were then developed into final overarching themes depending on the similarities of content in the categories (Lindlof & Taylor, 2011; Rubin & Rubin, 2012; Saldaña, 2016). Table 2 in Chapter 4 summarizes the themes that emerged through this analysis and also provides some examples of the comments made by the participants. The next section explains the steps that were followed to analyze the quantitative data.

Quantitative Data Analysis

The data from the survey were analyzed using SPSS. In particular, SPSS was used to conduct various analyses, such as descriptive analysis, independent samples t tests, correlation analysis, and multiple linear regressions. Specifically, RQ4, RQ5, RQ6, and RQ7 were addressed using a series of two-way Multiple Analysis of Variance (MANOVA) with the independent variables being country and gender. The dependent variables for RQ4 were vaccine attitudes, subjective norms, perceived behavioral control, and intention. For RQ5, the dependent variables were HPV knowledge and knowledge about the HPV vaccine, while the dependent variable for RQ6 was worry. Additionally, multiple linear regression analyses were conducted to investigate the best predictors for vaccine intentions among male and female participants in Kenya and the

USA (i.e., RQ7 and RQ8). A moderation analysis was also conducted using Hayes' (2018) PROCESS macro for SPSS, version 3.3, Model 1 to address RQ9, RQ10, and RQ11. In the three research questions (RQ9, RQ10, and RQ11), the moderators were gender and country of the participant. The results from the quantitative data analysis are presented in the Chapter 5.

Conclusion

This chapter outlined the metatheoretical assumptions underlying this dissertation, the methodology used to address the research questions, and the choices that were made to enhance the validity and reliability of the study. The demographic characteristics of the participants, the study setting, and the procedures used to recruit participants were also discussed. The results of this mixed methods project are presented in the next chapter.

CHAPTER 4: RESULTS OF QUALITATIVE ANALYSIS

The aim of the qualitative study was to understand the importance of identification and religiosity among students in Kenya and the USA. The qualitative data were collected through semi-structured interviews 25 to 40 minutes long with students. Specifically, the interviews focused on the key elements of the model (Figure 2) suggested in Chapter 2, such as the influence of identification on the health seeking behaviors of students, how religiosity influenced the students' attitudes toward sex, and how students coped with threats to their identity because of engaging in premarital sex.

This chapter presents the qualitative findings of the study, which address RQ1, RQ2, and RQ3. In particular, the chapter provides the themes that emerged from the interviews and connects them with the respective research questions. The next section begins by describing how the themes emerged.

Key Themes from the Interviews

The themes that emerged from the interviews were classified depending on how they aligned with the research questions. There were three key themes from the interviews: identification and health, religiosity and sex, and identity management. These themes highlighted how identification influenced students' health seeking behaviors, ways in which religiousness influenced students' views about sex, and how students who indulged in sex dealt with the dissonance of being religious, while continuing to actively engage in sex. The participants were assigned pseudonyms to protect their identity.

RQ1: How does the need to identify with fellow students influence students' health seeking behaviors?

Identification and Health

This theme addresses the first research question, which asked how the need to identify with fellow students influences the students' health seeking behaviors. The content in this theme suggested that the students' health seeking behaviors were influenced by the desire to identify with fellow students and maintain existing friendships with their peers. The concepts in this theme included: *cancer screening, HIV testing, recommendations, social pressure, eating habits, use of contraceptives, vaccination, coping with distress, safety for friends, and one's body as the temple of God*. The participants suggested that people in their social circles influenced their health decisions such as screening for breast and cervical cancers in women, seeking voluntary counselling and testing (VCT) for HIV, and their propensity for using contraceptives and condoms during sex. These themes are discussed in the following sections.

Cancer screening. Some participants reported going for cancer screening after being advised by their friends to do so. In the comment below, Doreen explains how her friends advised her to go for cervical cancer screening out of concern that her profuse menstrual bleeding could be indicative of an underlying condition.

Doreen [Kenya]: Yes, I remember in January this year there was a certain cancer screening. People were walking around being screened for cancer on campus. So, my friend told me I'm not saying that you could be suffering from it [cancer] but I think your cramps are excessive [and] you need to go and get screened. So, I went for the screening.

This comment by Doreen highlights the concern students had for their friends. This concern motivated them to look out for one another and offer advice that could help their friends to go for treatment.

Vaccination. In other instances, the students reported influencing each other to go for shots. In the following example, Bernice explains how she influenced her friends to go for shots together.

Bernice [USA]: I hate shots. So I always bring my friends with me so I don't have to do it myself because I don't like getting shots by myself and I don't know how often you do like shots.

This comment reveals that the social network of a student can motivate him/her to go for shots. Since the study focusses on the HPV vaccine, this is an important finding as it shows that students would be more willing to go for the shots if their friends were also going for the vaccine. This tendency to be influenced by friends was also observed in the comments about HIV/AIDS testing among Kenyan students that is presented next.

HIV/AIDS screening. The findings also suggested that students in Kenya influenced each other to go for HIV/AIDS testing and screening for other diseases when someone had persistent symptoms. Usually, HIV/AIDS screening is conducted in a Voluntary Counselling and Testing (VCT) center where one is first counselled about HIV/AIDS and how they can deal with it if their test is positive.

Kyle [Kenya]: It [friends' influence] may be like going to be tested for the HIV or other illnesses. So sometimes maybe I have some illness and my friends push me to get tested. Maybe I have flu and because of the pressure I decide to go to make sure am okay.

This comment by Kyle shows that friends in students' social circles influenced them to get tested for HIV/AIDS and to seek treatment if they became ill. HIV/AIDS, like HPV, is sexually transmitted and students' ability to influence each other to go for testing lends evidence to the importance of identification with others and its influence in health seeking behaviors. The next theme emphasizes how students relied on identification for emotional support when ailing.

Emotional support. The respondents also revealed that they perceived identification was important in times of coping with chronic illnesses such as cancer. The following comment by Cathy highlights the importance of religiousness in situations when a prognosis of a disease seems poor.

Cathy [USA]: I do know that presumptively if I were to get cancer and they said there is no treatment or something then I would rely on God for the decision on my illness or decision on my sickness and I would see more of the medical solutions as tools that can help me.

This comment by Cathy reveals some of the views of religious people concerning the importance of faith in issues of transcendence when scientific interventions may not provide solutions to an illness. This comment evidences how identifying with a higher being can offer someone emotional support in times of illness. Similarly, felt connectedness among students was a source of emotional support when a friend was sick. The following comment showcases this.

Becky [USA]: And just like if I'm not feeling well like they [friends] will usually help me out and you know bring me food and just like hang out with me when I'm sick.

The comment by Becky shows how having a functional network of friends can help students when they are sick. The emergence of this theme from the interviews, for instance, shows that friends looked out for one another and offered support especially when someone became ill.

The interviews also revealed that students looked to each other for answers to questions that they had. The comment by Allegra below shows how friends were resourceful and supportive when a peer had questions.

Allegra [USA]: Like if I ask them a question about something, they will tell me. Like it's that type of open honest conversation because like I know that they want to be there for me, and I want to be there for them.

This comment shows that students sustained friendships by being open with one another and being there for each other. Allegra seems confident that her friends are there for her and so she would also want to be there for them when they need her. This reinforces the importance of identification among students and shows how it was an important source of support to students. This is closely related to the theme on friends ensuring safety for their peers that is explained next.

Ensuring safety for friends. In other instances, students reported that they took measures to ensure the safety of friends whom they perceived to be engaged in risky behavior. In the following excerpt, Bobby explains how he drove his drunk friends home out of concern that it would not be safe for them to drive when intoxicated.

Bobby [USA]: Yeah so like I did end up at a party a few weeks ago. But like everyone was drinking and I could have very easily drunk because like I didn't want to be like a buzzkill or whatever. Yeah and these group of friends were not within the religious groups like they were all like getting trashed and they were all super drunk. And instead, I was like well maybe, I could do good with this. And so, I decided instead I could just drive them all home. So, I ended up driving. I had like three or four trips to make. So, I just kept carpooling people in my car and taking them back. So, I think that just like trying to figure out what could I do in this situation instead of what the normal thing to do would be. It would've been normal to drink. Instead I was like, well I can do good in this moment and I feel like that was like God [guiding me] yeah

This comment reveals the role that felt connectedness among friends had in safeguarding the wellbeing of friends. Toward the end of the excerpt, Bobby reveals that his actions were inspired by his religiosity because he felt guided by God to ensure the safety of his friends. This nuance reveals that identification among students occurred both at the interpersonal level and the macro level, in which students acted in ways that enhanced their relationship with their friends and with God. The next theme indicates how friends advised those in need where to seek treatment based on their previous experience with various physicians.

Recommendations. Referrals from students to their peers were based on the recommender's past experience with healthcare providers. If the past experience was positive, the students would recommend to their friends that they go for treatment to that healthcare provider. The following comment serves as an example of the comments made by some participants.

Mo [Kenya]: They told me I went to this physician and the services were good or not good. They also told me that this hospital is better than that, and then they told me it's up to you to make the decision.

The comment by Mo shows how friends influenced where their friends sought treatment by offering advice on which healthcare provider to visit. Usually, that advice was based on previous interactions with a healthcare provider, and evidence how having a positive identification with a physician can increase satisfaction of a patient and increase the likelihood of more referrals.

Besides recommending where a friend could get treatment, the students in one's network also broadened the worldview regarding health choices and offered advice to each other. The following comments illustrate this.

Adi [USA]: They open up my perspective on how I see things. Which is really cool. And I especially like from health like decisions and stuff and I can also see when they might be doing something that could be like damaging to them like some of them will just stay up all night almost every night with no sleep at all, and am like what are you doing?

Alejandra [USA]: I mean if I see someone doing something that might like impact their health in a negative way I might like kindly just talk to them about it and talk about like oh why are you deciding to go down this path when there's like other paths too just like non-intrusive. Just trying to help them.

These comments show how friends expressed concern for each other by offering advice if one was involved in potentially risky habits such as lack of sleep. Additionally, Adi suggested that she broadened her perspective on health issues through her interactions with her friends. Closely related to Adi's comments, Alejandra suggested that she would be willing to advise a

friend if she ever saw them make a poor choice. These findings show that the identification among students is not only important for social reasons but also for health purposes. Students also revealed that their friends influenced their choice of diet as explained next.

Choice of diet. The participants revealed that their friends' input influenced the food they ate. They did this by talking about some foods and the health benefits as well as the effects of not eating such foods. The following comments show how students influenced the eating habits of their friends.

Lily [Kenya]: They [friends] influence a lot especially the food I eat. You will find some of my friends telling me by the way Lily when you try this type of food it brings these benefits, and when you stop eating it, you start experiencing this [health effect].

Maddie [USA]: In particular I know that we'll talk about making sure you get all your meals. Making sure that you're looking out for them and making sure they like eating healthy in general, like eating right. And trying to be healthy even though like I know college is really stressful.

These comments show how friends influenced each other and ensured that their peers stayed healthy by eating the right diet. Besides explicitly advising their friends on the kind of food to eat, students implicitly influenced the choice of food by observing what their friends ate. The following comment illustrates how going out for meals with her roommates influenced her eating habits.

Becky [USA]: But you know if we go out for food or whatever, one of my friends like one of my roommates she is vegetarian and gluten free and dairy free. So she eats lots of like super healthy foods because she can't have a whole lot of processed foods. And my other roommate she's like never home so she never cooks anything, so she usually does like microwave meals. And so I like the two extremes. I would say of my roommates. So I try and be in the middle of it because they're both too extreme for me. So I would say that they have a relatively big impact on my life just because I spend a lot of time with my friends here.

This comment shows how being close to other peers may influence the eating habits of students. In this example, Becky compares her eating habits with that of her friends and deciding what is best for her. The element of comparison shows how students might engage in a behavior by comparing themselves with others and weighing the benefits of such a behavior. The next theme refers to how students influenced each other in choosing contraceptives.

Choice of contraceptive. Students also influenced their friends on the choice of contraceptives to prevent pregnancy and use of condoms to guard against sexually transmitted diseases. The following excerpts show some of the comments that were made by the participants in regard to use of contraceptives and condoms.

Doreen [Kenya]: My friends influence me especially on contraception. We talk about contraceptives a lot. Yeah. So, I would say from the advice from the stories I know about what [contraceptive] to use.

Becky [USA]: I wasn't originally on birth control my freshman year and then like all my friends were on it like you know [they were] you should probably go for it. And I had I hadn't really thought of it before. So, I talked to my doctor and I was like I mean I might as well start it. So I would say that they were pretty big influence on that too. You know it's not the feeling of being left out per say but I feel like they're having a positive experience with you know a certain birth control or a different thing. And so you know I didn't have that so I was like ok well, I will try it out and then if I that same experience then it'll be good for me too.

These comments show how friends influenced each other when deciding to start using contraceptives and choosing the type of contraceptive based on what their friends were using. These two comments indicate how the social norms of a group toward a health issue can influence the behavior of members of that group. Usually, members would engage in behaviors that their friends approve of and those that can enhance the group as a whole. In particular, the comment by Becky evidences how her friends

influenced her to decide on using contraceptives. This was driven by the need to identify with her friends and the desire to have similar satisfaction from contraceptives that her friends were getting. These comments resonate with the next comment, which indicates how friends influenced each other into practicing safer sex and ensuring safety of their peers in general.

Eva [Kenya]: Yeah, they [friends] influence me. Most of my close friends ensure that I am not into unsafe sex. They make sure that any time I meet with this guy we do it [sex] safely, we practice it safely and they give me ideas on what to use and the best way to prevent the STIs.

The influence of students to practice safer sex is something worth noting, especially because of the high prevalence of sexually transmitted infections, such as HPV and HIV/AIDS among young people both in Kenya and the USA. Thus, this finding shows that students wanted to safeguard the health of their friends by encouraging them to practice safer sex.

In other instances, the need to maintain an effective identification with God motivated students not to do things that would violate their religious values and beliefs. This is considered in the next section.

Body as the temple of God. The findings established that participants felt obliged to take care of themselves because they perceived their bodies as temples of God deserving better treatment. This is illustrated in the comment below.

Kyle [Kenyan]: You know first of all when you you're guided by the spirit of God you usually know that your body is the temple of the Holy Spirit. So, you carry yourself in a way to show that yes, I know what I'm carrying in my body. So, you find that a lot of decisions that you make they are to your advantage.

This comment shows how identifying as a religious person influenced the decision making of students because they perceived their choices to be intertwined with their religious identities. This theme overlapped with how viewing one's body as the temple of God enabled the

respondents to make health choices. The following comment further depicts how religiosity encouraged participants to take care of their health.

Cathy [American]: So I gained an unhealthy amount of weight last semester and I was very much overweight and then I tried to lose weight and I think that at that point it was because I wanted to be a good steward of what God had provided me with as resources to feed me. And at that point food had become like a temptation like gluttony was a problem. And so technically if you cannot even resist the temptation of food, then there are so many other things in this world that you cannot resist.

These comments highlight the influence of religiousness in health seeking behaviors especially among devout students. In the two examples, the students seem to be driven by their religious beliefs to make good health decisions so as to continue enjoying positive identification with God. Thus, according to them, they do not just make choices, but they have to consider the positive and negative effects of their choices because their bodies are the temples of God. The importance of religiosity on health choices is similar to the attitudes of students toward sex as discussed in the next section.

RQ2: How does religiosity influence students' attitudes toward sex?

Closely related to how identifying with someone's social ties and a divine being influenced health decisions, how devout or less devout the students were influenced their views about sex and their sexual behavior.

Religiosity and Sex

Generally, participants who were more devout viewed sex as something that is sacred and created by God, but which had certain requirements as to when sexual behavior should take place. However, some Christians reported engaging in sex. These are the concepts that made up

this theme: *abstinence, sex as a sacred activity, sex as fornication, sex as a way of serving a sex partner, and premarital sex as okay.*

Abstinence. The theme of abstinence reflected interview content from participants that suggested people should abstain from sexual behavior until they get married. In addition, most participants who professed abstinence also viewed premarital sex as fornication. However, some respondents reported having engaged in premarital sex due to peer pressure and “temptations.”

The following comments illustrate this theme.

Mwangi [Kenyan]: Our faith tells us to be chaste until marriage, but sometimes we find ourselves falling. We do not do according to that belief because you have been in this relationship for a while and you trust this person so much more. At first it affected me because I was told to keep myself chaste until marriage but here you have your friends telling you this thing is common to them and they have done it, why not you?

Daniel [USA]: I think people should practice abstinence because that's what the Bible says and is what Christ says you should. Wait till wedlock.

These comments depict one of the most prevalent themes from the participants. Most of the participants, especially those who identified as more religiously devout, admitted that premarital sex was prohibited by their religions. The next two excerpts provide additional evidence from participants who expressed a staunch desire to observe chastity because that is what their religion demands.

Sex as sacred. Besides advocating for abstinence until sex, some participants reported viewing sex as sacred. As a result, these participants advocated for abstinence out of the belief that sex is revered because God created it and therefore, should only be done the right. The comments below showcase this:

Mackenzie [American]: They say sex is something which is like blessed because God manifested it. So, even after creating it and manifesting it he made it appropriate to a certain group of people. And that group is the married couples.

Lydia [USA]: The word says that you should be saving your body and like preserving your temple and the whole waiting until the sacred bond is there and all that good stuff. So, I feel like if I get into that moment [of pressure to have sex] I think that it [my faith] would stop me doing that [having sex].

These comments show the strong position held by the more religiously devout participants due to their desire to please God by upholding the teachings of their faith. These positions were inspired by the desire to maintain an effective relationship with God because according to the participants, engaging in sex would violate this relationship. Thus, the participants feared engaging in sex would potentially change the plans that God had for them. These participants therefore viewed sex as fornication which Christians should avoid by abstaining until marriage.

Premarital sex as fornication. Besides viewing sex as sacred, some participants reported viewing sex before marriage as a fornication. Therefore, because premarital sex was wrong, it could lead to abortion in case of unwanted pregnancy or even lead to an ungodly offspring. The comment below by Masinde exemplifies this:

Masinde [Kenyan]: My faith tells me that sex before marriage is fornication and is wrong. God wants a Godly offspring, and this comes after marriage. Sex before marriage can lead to abortion which is murder. Fornication is wrong and adulterers will not see God. I desire to go to eternal life my brother.

This comment by Masinde shows how piety influenced the views of participants about sex as something that was created by God for procreation and therefore should be revered. Masinde also brings out the theme of the eternity, which those who do what is right, especially by avoiding illicit sex would ultimately enjoy. Related to the above comment, some participants reported avoiding sexual activities because they wanted to be role models to other people. The following comment illustrates this.

Allegra [USA]: So besides just like wanting to be a good role model, I feel like the good things that I do like come from what I think Jesus requires of me. And so, I will not do something if I think that it will contradict what my plan is for this life. Like I just kind of

been like vaguely complacent about it but I feel like it does play a role because if I were to ever get into that type of a situation [sex] I would probably say like, would this be something that God would look down on it and be, what are you doing?

This comment by Allegra indicates that because she is a devout Christian, she would not engage in activities such as sex, which would jeopardize her relationship with God. Thus, her motivation was not just about abstinence but also because of her desire to please God by not doing something that would be displeasing to God.

Unlike the above themes which show that the participants viewed premarital sex as wrong, the next themes show that some Christians also engaged in sex with their romantic partners, especially if they believed that their relationships would lead to marriage in future. Thus, these themes had content which depicted sex as a way of serving each other, as a form of identity, and as something that religious people can still engage in alongside their faith.

Sex as a way of serving each other. Some students reported engaging in sex with their partners as a way of showing love to each other and planning for the future as married couples.

The comments by Harriet and Becky below show this:

Harriet [USA]: But even with my boyfriend like we were serious before we even started doing intercourse and stuff and it wasn't just like on a whim because we just felt like we wanted to. It wasn't like oh let's have sex it was like a way to show love if that makes sense.

Becky [USA]: I would say like when I'm in mass sometimes I feel like I probably shouldn't do it. So, a little bit but for the most part it's like I want to get married in the Catholic Church and like my boyfriend and I are planning on living together after college before we get married. And I know that it's not like super cool.

These comments were common among the participants who reported engaging in sex so long as they were in committed relationships that would lead to marriage in the future. Such participants viewed sex more favorably provided it was by mutual consent among the partners and was a way to express love to each other. Thus, it was not against their religious identity but

instead was an example of the things that people in romantic relationships should do to show love.

In other instances, the participants also reported viewing sex as an activity that can be accommodated in their faith. Thus, some students suggested they could still practice their Christian faith and still engage in sex without violating their identification with God. This is evidence in the themes below.

Premarital sex as okay. Other participants suggested that it was okay to be involved in romantic relationships but to make sure they also involved God in those relationships. Although this is closely related to abstinence, it is slightly different because it suggests a duality, in which participants wanted to maintain a romantic relationship while making sure the relationship was pleasing to God. The following comment provides an example.

Elisha [USA]: So, I know growing up my youth pastor always told me that it's okay to be sexual and be in a sex relationship but to make sure that God is in between that. So, to make sure that you also have relationship with God and you're not going against what God wants for you and what God's plan for you is. But as long as you're following all that then it's perfect to have a sexual relationship.

This comment introduces another way of perceiving the influence of religiosity on romantic relationships. It suggests that it is possible to be sexually active and still uphold religious beliefs. This validates sexual acts among religious persons and contradicts the abstinence approach most often advocated for by the Christian faith. However, this finding is not surprising because some participants admitted that at times, they engaged in sexual activities that violated their religious identities. The following comment is indicative of other comments that reflected the views of some students concerning sex.

Becky [USA]: I'm pretty open like I've done a lot of interesting stuff in my sex life and I would definitely like to go into detail. And I think my friends like my two roommates are thirsty broke opens like I know everything about their sex life. Two of them are in a

relationship and then the other one isn't. So yeah, I would say that you know it's a normal dinner conversation which I think can be strange amongst other people but for us it's normal.

This comment shows that for Becky and her friends, sex was a normal activity that they often engaged in and talked about. Becky identified as Christian, but she still engaged in sexual activities even though her faith teaches against sex before marriage. Additionally, Becky and her friends enjoyed talking about what they had done sexually. This introduces another theme, in that to this group of friends, sex seemed to be a stronger aspect of their identities. Thus, the next section explains how religious participants maintained their identities and how they restored these identities when they violated them.

RQ3: How do students who identify as Christian regain their religious identity after engaging in sexual activities?

Identity management was a common theme among participants who revealed that at times they were tempted to engage in sexual activities even though their religion taught against premarital sex. The concepts within this theme of identity maintenance are further explained in the following sections.

Identity Maintenance

After “falling” because of engaging in sexual activities, participants revealed that they took various steps such as *seeking forgiveness*, *normalizing*, and *minimizing* their actions to regain their religious identities. This theme included content that illustrated how participants dealt with the cognitive dissonance of being religious people who engaged in sex.

Seeking forgiveness. Most participants who engaged in sex reported seeking forgiveness from God because they perceived that their actions violated expectations of their religion. The following excerpts illustrate this theme.

Doyle [Kenya]: It reached a point where I told myself [that] I've gone through these relationships and I am not finding the right person. And they say that even though I have fallen, [it does not matter] how far I have fallen, God is still closer to us and forgives us.

This comment is similar to other comments by participants who reported confessing their sexual activity to a priest as a way of reconciling with God.

Harriet [USA]: As a Catholic, I feel like just talking through it with the priest especially in confessions and stuff [is enough].

Becky [USA]: So, there's a little dissonance but I am still doing everything else [in church]. So, I mean there's some guilt a little bit. I am going to do a confession and you know it's kind of like a clean slate.

These comments show that these students believed that although premarital sex was contrary to their religious beliefs, seeking forgiveness from God was important in restoring their relationship with God. This is one of the most mentioned strategies for dealing with guilt after engaging in sexual acts. However, although some participants reported not feeling guilt after engaging in sex, they also sought forgiveness for engaging in premarital sex.

Florence [Kenya]: To be sincere I never felt guilty because I always do it then go to church and repent.

Some respondents who viewed sexual activities as important to them reported creating a “new normal” that allowed them to continue engaging in sex while being religious. This strategy is explained in the next section.

Normalizing. Although seeking forgiveness by repenting sins was the most common

strategy used by those who identified as devout Christians, the less religious mostly normalized their sexual acts so long as it was out of mutual consent with their partners. The following comments by participants illustrate this theme.

Pauline [Kenya]: No, I don't feel guilty [after sex]. It is my body and it is out of mutual understanding and if what I'm doing does not affect other people negatively then I don't see any fault doing it.

For this student, engaging in sexual activities did not violate her identity as a religious person if the sex activity was out of mutual understanding. This is similar to the following comments that suggested that even though they engaged in sex, God still loved them and that all people sin and make mistakes. This was a way of normalizing their sexual activity by considering it consistent with their religion in that they believe God is loving and forgiving. This is illustrated in the following comments.

Margaret [USA]: And like I mean we all make mistakes and we're all sinners and you know. I think God loves me even though I have sex, so you know I am able to help out in other ways [in church]. So, a little bit of dissonance but it's not like it is not going to deter me from going to church and it's like I'm not gay.

Beryl [USA]: I mean the way that I look at it is I know that God and Jesus are gonna love me no matter what. And having sex before marriage is pretty common.

According to Margaret, her sexual activities caused minimal dissonance and did not violate her religious identity because these activities are perceived as any other mistake that may occur. Thus, for her these activities did not violate her relationship with God as long as she remained active in church. This was related to the view by Beryl who expressed confidence that God would still love her no matter what she did. The following comment reveals other ways that people normalized their sexual activities.

Elisha [USA]: Yeah, they [my friends] also engage in sexual acts. And so, I think that kind of also gives me confidence that not to feel that guilt because a lot of people do engage in those acts and still also have a good relationship with Christ in the yard. And so that helps me.

This comment of shows that sex among religious people was viewed as a normal behavior because other religious people were engaging in it. Thus, this enabled students not to feel guilty if they engaged in sexual activities. The next section explains how students used questioning as a strategy of sustaining their identity.

Questioning. Some participants had more radical views that questioned the importance of abstinence as a biblical virtue. These participants relied on an interpretation of the Bible in relation to the progress that the society has made over the years. The following comments show a more progressive view that was common among students at the university in the USA.

Joanna [USA]: I know the Bible does say like not to have premarital sex, but I think there are different ways to look at the Bible. You can look at it like directly or you can look at how the Bible is kind of evolving over time as we [have] progressed as a society. And so there's definitely a thought in my mind about religion when it comes to sex relationships but I don't think [that] as long as I make sure that I still have relationship with God and I'm making sure that God's plan for me is not being interfered with, as long as I want to have this relationship I think that's probably ok. So, I also have a sexual relationship and a relationship with God.

Purity [Kenya]: I mean technically the Bible was obviously written in a different time. Sometimes it is up to interpretation to what you think. Like because the Bible says like women should be silent in church, right? Like you should be completely submissive to your husband or whatever. Like its 2019. It's not that age anymore. So I think it's kind of just like using your best judgment as to what you know is right compared to what it might say. So, I think that that's something for sure.

These comments show the questioning that was common as to whether some of the requirements in the Bible, which was written a long time ago, were still relevant in modern society. It represents a duality among college students wanting to practice their religion, while at the same time, engaging in sex. Besides normalizing, some participants changed their perceptions of sex, and instead of seeing it as hindrance in their relationship with God, they viewed sex as a less severe sin. This theme of minimizing is explained in the next section.

Minimizing. Closely related to normalizing, some participants reported that they considered sex as a less severe sin. Thus, they reported minimizing the impact of engaging in sexual activities because there were other more serious sins that people commit. The following statements by participants illustrate this theme.

Harriet [USA]: Understanding like yes, it's [sex] not the best thing but also like you could be doing worse things and it [sex] wasn't a way of personal pleasure, it was a way of showing your love for one another makes it better.

Dennis [Kenya]: You know in the long run I think that's a pretty minimal sin compared to other things. I don't think of it as huge dissonance just for me personally because I am still like really active with the church like a lot of kids my age don't go to church at all or you know they just don't like still want to do all the other things that we have to do [in church].

These comments show some of the ways in which students minimized the dissonance of engaging in sexual activities by viewing sex as less sinful than other things that they could do. Besides normalizing and minimizing, some respondents reported engaging in alternative activities that enabled them to bond with their partners without engaging in “actual sex.” Comment within this theme were labeled alternate intimacy, which is described next:

Alternate intimacy. Other respondents reported engaging in alternative forms of intimacy that did not involve intercourse, such as cuddling and oral sex. The following comments illustrate this theme.

Bianca [Kenya]: There are many ways you can get intimate with someone without sex, through communication. You know you doing your hobbies together and all that.

Rashida [Kenya]: We do blow jobs and cuddling.

Although not many participants expressed these views, this theme represents an interesting way of protecting one's religious image while still pursuing pleasure from a relationship with a romantic partner. However, it is debatable if some of the activities such as oral sex are alternatives to penetration, or are sexual activities. The following section explains

how some participants avoided engaging in any form of sex as a way of maintaining their religious identity.

Avoiding. Some participants revealed that they avoided sexual activities altogether because they did not want to carry the burden that came with engaging in such activities.

Allegra [USA]: But I just I kind of always had a thought in the back of my head like I wouldn't want to do this because of all the bad things I could come from it because like getting too attached and like commitment and it's like stress will just stop.

Jen [USA]: Like you know even though this is hard [abstaining] and it [sex] it's like a fine addiction or something and so like you know what you're doing is wrong. And it might be really hard to quit but I think that in the long run it depends on how strong your will is. And you know that God will help you along the way because it will be hard

These comments indicate that some participants avoided sexual activities because of the perceived effects of such activities such as getting emotionally attached to other people in ways that might be difficult to quit. In other cases, students reported ending relationships if they were perceived as inappropriate. This is discussed below.

Ending relationships. Some participants reported ending the relationship if they were overwhelmed by guilt and wanted to start abstaining from sexual activity. This strategy is exemplified in the following comment:

Anna [Kenya]: While in other relationships where I had sex, deep down I knew this is not the right thing to do. So, I guess it made me to make moves to get out of this relationship.

This type of comment was less common among participants, but it highlights the extent to which religious students can go to restore their image as a religious person and also continue identifying with God.

Generally, religiosity emerged as an important factor influencing the health seeking behavior of college students and a major factor influencing how they related to other people. For

instance, religiosity seemed to influence participants' attitudes toward sex and their reaction if they ever engaged in sex. Table 2 below summarizes the categories, themes, and example comments that emerged in this study.

Table 2: Themes, Categories, and Example of Participants' Comments

Themes	Categories	Example comments from participants
Identification and health	Cancer Screening	Yes, I remember January this year there was a certain cancer screening. People were walking around being screened for cancer. So, my friend told me I'm not saying that you could be suffering from it but I think this your clamps are excessive you need to go and get screened. So I went.
	HIV testing	It may be like going to be tested for the HIV or other diseases. So sometimes maybe I have some illness and my friends push me to get tested. And maybe I have flue and because of the pressure I decide to go to make sure am okay.
	Referrals/ Recommendations	They told me I went to this and the services were good or not good. They also told me that this hospital is better than that, and then they told me it's up to you to make the decision.
	Social pressure	Peer pressure. They need to identify with other people. There is that urge. Like when I was in second year, I did not have any girlfriend, but you also feel the urge to be like other people. So, I mean definitely there is an influence on our friends you kind of want to fit in. And so there is I think there's a balance between trying to fit in and also not trying to put yourself at risk to make an unsafe decision whether that's sexual or like alcohol or drugs or anything like that.
	Eating habits	They influence a lot. Especially the food I eat. You'll find some of my friends telling me by the way Liz when you try these types of food It brings these benefits, and when you stop eating these foods you stop experiences experiencing this.
	Use of contraceptives	My friends influence me especially on contraception. We talk about contraceptives a lot. Yeah. So, I'd say from the advice from the stories I know about what to use. Yeah, they influence me. Most of my close friends ensure that I am not into unsafe sex. They make sure that any time I meet with this guy we do it safely, we practice it safely and they give me ideas on what to use and the best way to prevent the STIs.

Table 2 continued

	Emotional support	I do know that presumptively if I were to get cancer and they said there is no treatment or something then I would rely on God for the decision on my illness or decision on my sickness and I would see more of the medical solutions as tools that can help me.
	Body as temple of God	Yes, a lot. You know first when you you're guided by the Spirit of God you usually know that my body is the temple of the Holy Spirit. So you carry yourself in a way to show that yes I know what I'm carrying in my body. So, you find that a lot of decisions that you make they are to your advantage.
	Ensuring safety for friends	Yeah and these group of friends were not within the religious groups like they were all like getting trashed and they were all super drunk. And instead, I was like well maybe, I could do good with this. And so, I decided instead I could just drive them all home.
Religiosity and sex	Abstinence	Our faith tells us to be chaste until marriage, but sometimes we find ourselves falling. Sex before marriage is wrong. I'm going to go into not my life perspective now because I am a saved Christian, they should just abstain because it is good for them and it is what God wants for them
	Peer pressure	I think is difficult because there is a lot of peer pressure. I have observed this from my siblings.
	Sex as sacred	People in my faith say sex is holy. But to expand on it they say sex is holy only when married. But because we are in a situation where you cannot discourage it fully, they have to advise us on the safest ways of doing it. They say sex is something which is like it's blessed because God manifested it. Okay. So, but even after creating that and manifesting it he made it appropriate to a certain group of people. And that group is the married group.
	Sex as fornication	My faith tells me that sex before marriage is fornication and is wrong. God wants a Godly offspring, and this comes after marriage.
	Faithfulness	As a Christian, there are things I cannot do like having more than one boyfriend at a go and dating married men. Something like that. We have we always have some meetings where we talk about our sexual life. Sometimes we get preached to be faithful with one person.
	Medium for transferring spirits	And then we are usually told that when you have sex with someone you can transfer spirits with that person.

Table 2 continued

Identity maintenance	Repentance and forgiveness	I pray for forgiveness from God To be sincere I never felt guilty because you will always do it then go to church and repent. I consoled myself with this- it reached a point where I told myself I've gone through these relationships and I am not finding the right person. And they say that even though I have fallen, how far you have fallen, God is still closer to us. We're told that God is great. He's great and has the strength of understanding yeah. In addition, he created us and he knows all our weaknesses. Sure. Therefore, at the end of the day when you repent the Bible clearly says that if you repent and you're willing to change. Yeah. Then you obtain mercy.
	Normalization	No, I don't feel guilty. It is my body and it is out of mutual understanding and I don't think if what I'm doing does not affect other people negatively then I don't see any wrongdoing it.
	Minimizing	Understanding like yes, it's not the best thing but also like you could be doing worse things and it [sex] wasn't a way of personal pleasure, it was a way of showing your love for one another makes it better.
	Alternate forms of sex	There are a lot of ways you can you can get intimate with someone without sex, through communication. You know you doing your hobbies and all that. We do blow jobs and cuddling.
	Avoiding	But I just I kind of always had a thought in the back of my head like I wouldn't want to do this because of all the bad things I could come from it because like getting too attached and like commitment and it's like stress will just stop.
	Ending relationship	While in other relationships where I had sex, deep down I knew this is not the right thing to do. So, I guess it made me to make moves to get out of this relationship.

Conclusion

The findings from the interviews show that identification influences the health seeking behaviors and the choices that religious students make in their daily lives. For example, the findings suggest that most of the participants' attitudes toward sex were influenced by their religious beliefs and this in turn determined the steps they took to maintain their religious

identities. This suggests the importance of religiosity and how it influences identity formation and maintenance. The next section presents the results from the surveys. The practical and theoretical implications of all findings will be explored in Chapter 6.

CHAPTER 5: RESULTS OF QUANTITATIVE ANALYSIS

This chapter presents the quantitative results of the data that were collected using closed-ended surveys. The results are presented following the order of the research questions.

RQ4: Do differences exist in the perceptions of vaccine attitudes, subjective norms, perceived behavioral control, and vaccine intention among students across country and gender?

To address this RQ, an initial correlation analysis with all the concepts above (i.e., vaccine attitudes, subjective norms, perceived behavioral control, vaccine intention) and country and gender was conducted followed by a two-way MANOVA. The correlation matrix in Table 3 summarizes the results of the correlation analysis.

Table 3: Correlation Matrix of Key TPB Variables, Gender, and Country

Variable	1	2	3	4	5	6
1. Intention	-					
2. Vaccine attitude	.273**	-				
3. Subjective norms	.384**	.210**	-			
4. PBC	-0.026	-.258**	-.290**	-		
5. Gender	-0.009	0.003	.170**	-.093**	-	
6. Country	0.064	0.060	.583**	-.380**	.289**	-

. Correlation is significant at the $p < .01$ level (2-tailed). **Coding: Gender (1 = Male, 2 = Female), Country (1 = Kenya, 2 = USA)

A two-way MANOVA was conducted to investigate differences with gender and country as the independent variables and the vaccine attitudes, subjective norms, perceived behavioral control, and vaccination intention as the dependent variables. The multivariate main effects showed no significant differences for gender; Wilks $\Lambda = 1.00$, $F(3,881) = .110$, $p > .05$, $\eta^2 = .000$,

but the results revealed a significant main effect for country Wilks $\Lambda = .616$, $F(3, 881) = 183.082$, ($p < .01$), $\eta^2 = .384$. However, the interaction between gender and country of the participants was not significant ($p > .05$).

The univariate analysis revealed that the participants of the two countries had small significant differences in their subjective norms about HPV vaccination $F(1, 883) = 429.86$, $p < .001$, $\eta^2 = .327$, and perceived behavioral control $F(1, 883) = 140.67$, $p < .001$, $\eta^2 = .137$. Table 4 shows the results from the univariate analysis.

Table 4: Univariate Analysis of Intention to be Vaccinated, Attitudes toward the Vaccine, Subjective Norms, and PBC by Country

<i>Dependent Variable</i>	<i>df</i>	<i>df error</i>	<i>Mean Square</i>	<i>F</i>	<i>p</i>	<i>η^2</i>
Intention	1	883	3.305	3.831	.051	.004
Vaccine attitude	1	883	2.075	2.696	.101	.003
Subjective norms	1	883	242.102	429.859	.000*	.327
PBC	1	883	88.166	140.666	.000*	.137

*Significant at $p < .05$

Closely related to the first research question, this dissertation also explored if there were any differences in the participants' HPV knowledge and knowledge about the HPV vaccine. The results from this analysis are provided in the next section.

RQ5: Are there any differences in the level of knowledge about HPV and the HPV vaccine among students by country and gender?

To address this research question, an initial correlation analysis was conducted with the following variables: HPV knowledge, knowledge about the HPV Vaccine, country and gender. The correlation analysis was followed by a two-way MANOVA. The correlation analysis revealed that HPV knowledge was correlated with knowledge about the HPV vaccine and

country, but not with gender. The matrix also revealed that knowledge about the HPV vaccine was correlated with both gender and country. Table 5 summarizes the results from the correlation analysis.

Table 5: Correlation Matrix of HPV Knowledge, HPV Vaccine Knowledge, Gender, and Country

Variable	1	2	3	4
1. HPV Knowledge	-			
2. Vaccine Knowledge	0.695**	-		
3. Gender	0.060	0.140**	-	
4. Country	0.238**	0.323**	0.289**	-

**Correlation is significant at the $p > .01$ level (2-tailed)

Coding: Gender (1= Male, 2= Female), Country (1= Kenya, 2= USA)

To investigate if there were any differences by gender and country concerning knowledge about HPV and the HPV vaccine, a two-way MANOVA was conducted with gender and country as the independent variables and the knowledge about HPV and the HPV vaccine as dependent variables. The multivariate analysis revealed minimal differences for gender Wilks $\Lambda = .992$, $F(2, 922) = 3.705$, $p < .05$, $\eta^2 = .008$, and the country of the participant Wilks $\lambda = .915$, $F(2, 922) = 42.88$, $p < .001$, $\eta^2 = .085$. The interaction term for the main effect between gender and country of the participants was also significant Wilks $\Lambda = .978$, $F(2, 922) = 10.27$, ($p < .001$), $\eta^2 = .022$. The results revealed that male ($M = .4429$, $SD = .2591$) and female participants in the USA ($M = .4829$, $SD = .2234$) had a slightly greater knowledge about HPV compared to males ($M = .3742$, $SD = .2312$) and female participants in Kenya ($M = .4829$, $SD = .2234$). As a whole, women in both Kenya and the USA had greater knowledge about HPV compared to women in their respective countries.

Regarding the HPV vaccine, the results revealed that males ($M = .35457$, $SD = .25485$) and females in the USA ($M = .45496$, $SD = .2383$) had slightly greater knowledge about the HPV

vaccine compared to males ($M = .27695$, $SD = .2213$) and females in Kenya ($M = .2301$, $SD = .23278$). Overall, females in both Kenya and the USA had greater knowledge about the HPV vaccine compared to males in their respective countries.

The univariate analysis between subjects revealed no significant gender differences in the HPV knowledge of the participants $F(1, 923) = .000$, $p = .993$, $\eta^2 = .000$. However, there were small significant differences in the vaccine knowledge of the participants by gender $F(1, 923) = 4.055$, $p < .05$, $\eta^2 = .004$. There were also significant differences in the HPV knowledge by country of the participants $F(1, 923) = 46.136$, $p < .001$, $\eta^2 = .048$, and significant differences by country in the knowledge about the HPV vaccine $F(1, 923) = 85.299$, $p < .001$, $\eta^2 = .085$. Additionally, the interaction effect of gender and country was also significant for both HPV knowledge $F(1, 923) = 6.231$, $p = .013$, $\eta^2 = .007$, and knowledge about the HPV vaccine $F(1, 923) = 20.048$, $p < .001$, $\eta^2 = .021$.

Overall, the male and female participants in the USA outscored males and female participants from Kenya on both knowledge about HPV and knowledge about the HPV vaccine. There were minimal differences between males in the USA and males in Kenya, but USA females had greater knowledge about HPV and the HPV vaccine compared to the Kenyan females. The clustered bar graphs in Figures 3 and 4 show the differences by gender and country for the HPV vaccine.

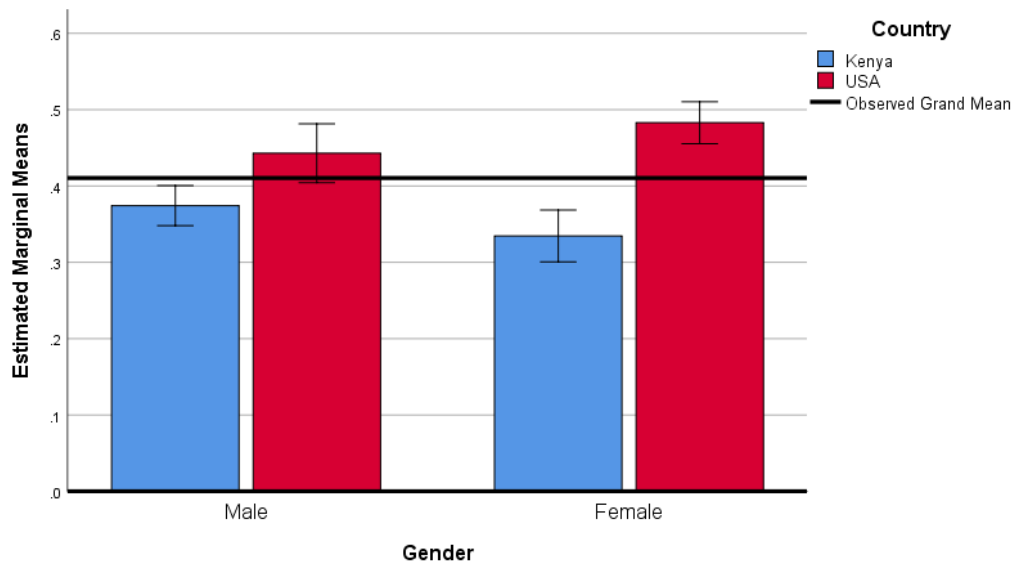


Figure 3: HPV Knowledge by Gender and Country

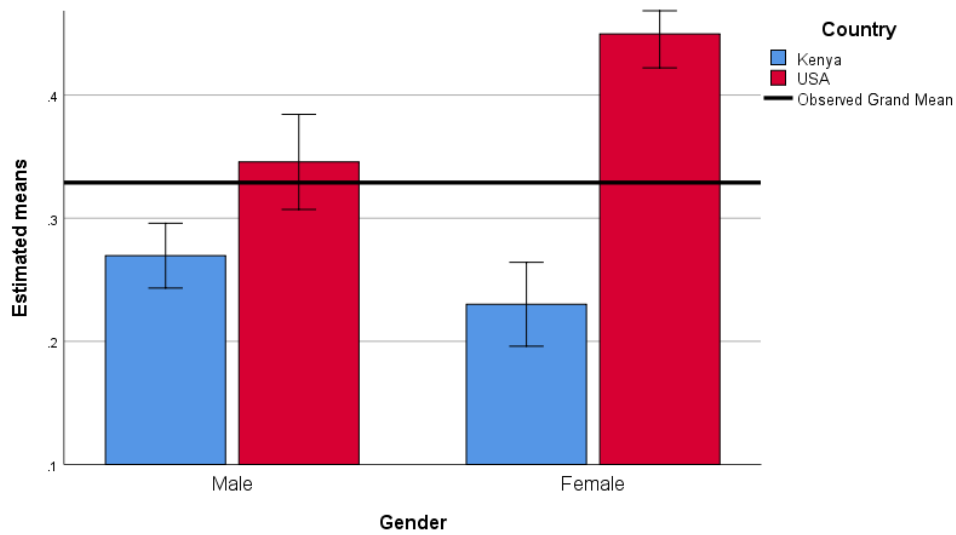


Figure 4: HPV Vaccine Knowledge by Gender and Country

In the next section the differences by gender and country regarding cancer worry, religiosity, and attitudes toward sex are reported. These concepts are part of the theoretical model (Figure 2) presented in Chapter 2.

RQ6: Are there differences across gender and country among students towards the stigma associated with cancer, religiosity, and attitudes towards sex?

To address this RQ, a correlation analysis was first conducted with the three variables; cancer worry, religiosity, and attitudes toward sex replacing missing cases pairwise. The analyses revealed a moderate correlation among various variables such as sex attitudes and religiosity, and country and religiosity. These variables were compared because previous literature identifies that they influence each other. For example, religiosity has been found to influence participants' attitudes toward sex and help them to cope with the challenges of chronic illnesses such as cancer (Hill & Pargament, 2003; Pierik, 2017; Thomas et al., 2015). Table 6 summarizes the results from the correlation analysis.

Table 6: Correlation Matrix of Cancer Worry, Religiosity, Sex Attitudes, Gender, and Country

<i>Variable</i>	1	2	3	4	5
1 Cancer worry	-				
2 Religiosity	-.025	-			
3 Sex attitudes	.112**	-.409**	-		
4 Gender (M= 1, F= 2)	.062	-.036	-.119**	-	
5 Country (K=1, U= 2)	.096**	-.428**	.227**	.289**	-

**Correlation is significant at the $p < .01$ level (2-tailed)

In addition, a two-way MANOVA was conducted with gender and country as the independent variables and sex attitudes, religiosity, and cancer worry as the dependent variables. The multivariate analysis revealed significant differences for gender Wilks $\Lambda = .957$, $F(3, 890) = 13.435$, $p < .001$, $\eta^2 = .043$ and the country of the participants Wilks $\Lambda = .799$, $F(3, 890) = 74.526$, $p < .001$, $\eta^2 = .201$. However, the interaction term for the main effect between gender and country of the participants was not significant Wilks $\Lambda = .994$, $F(3, 890) = 1.700$, $p = .165$, $\eta^2 = .006$.

The univariate analysis between subjects revealed small significant gender differences in sex attitudes $F(1, 892) = 36.379$, $p < .001$, $\eta^2 = .039$, and religiosity $F(1, 892) = 8.359$, $p < .05$, $\eta^2 = .009$. However, there were no significant gender differences in cancer worry $F(1, 892) = 1.387$, $p = .239$. Generally, males in both Kenya and the USA had more favorable attitudes toward sex compared to female participants in the two countries. However, the females in Kenya and the USA had higher religiosity compared to men in Kenya and USA. This may suggest that women are more religious compared to men in both countries, but men have more favorable attitudes toward sex. Table 7 shows the univariate test results for between subjects.

Table 7: Between-Subjects' Effects by Gender and Country

<i>Source</i>	<i>Dependent Variable</i>	<i>df</i>	<i>df error</i>	<i>Mean Square</i>	<i>F</i>	<i>p</i>	<i>η²</i>
Gender	Sex Attitudes	1	892	25.014	36.379	.000	.039
	Religiosity	1	892	5.963	8.359	.004	.009
	Cancer worry	1	892	1.273	1.387	.239	.002
Country	Sex Attitudes	1	892	47.899	69.662	.000	.072
	Religiosity	1	892	147.829	207.249	.000	.189
	Cancer worry	1	892	4.662	5.081	.024	.006

The univariate analysis also revealed small differences between country and sex attitudes $F(1, 892) = 69.662$, $p < .001$, $\eta^2 = .072$, religiosity $F(1, 892) = 207.249$, $p < .05$, $\eta^2 = .189$, and cancer worry $F(1, 892) = 5.081$, $p < .024$, $\eta^2 = .006$. These results indicate that male participants in Kenya ($M = 2.53$, $SD = .821$) and the USA ($M = 2.91$, $SD = .802$) had more positive attitudes toward sex compared to female participants from Kenya ($M = 2.08$, $SD = .728$) and the USA ($M = 2.66$, $SD = .907$) but participants from Kenya had a higher religiosity score compared to those in the USA. As a whole, women in both Kenya ($M = 4.04$, $SD = .583$) and the USA ($M = 3.15$, $SD = .999$) had greater religiosity than male participants in Kenya ($M = 3.82$, $SD = .723$) and the USA ($M = 3.02$, $SD = .996$). Additionally, male participants from Kenya ($M = 3.50$, $SD = 1.042$) and the

USA ($M= 3.54$, $SD= .883$) had greater cancer worry compared to females from Kenya ($M= 3.47$, $SD= 1.031$) and the USA ($M= 3.73$, $SD= .853$). These findings are important for health communicators as they indicate that when targeting the two groups, manipulating sex attitudes and religiosity might realize desired outcomes.

After investigating the differences between the two groups by gender and country, this dissertation explored the best predictors of vaccine uptake among the participants of the two countries. This was informed by the realization that the two groups had some differences in their scores for various concepts of interest. The predictors of vaccine uptake for each group are presented in the next section.

RQ7: What are the predictors of vaccine intention among Kenyan students?

To address this RQ and establish the most pertinent predictors of intention to get vaccinated among the Kenyan participants, the data from the sample was divided by gender (i.e., male, female) and a set of correlation and regression analyses were performed. The results are presented in the following sections.

Predictors of HPV Vaccine Intention for Kenyan Males

To examine what variable best predict the intention to get vaccinated among Kenyan males, a correlation analysis was conducted with the key concepts identified in the model. Table 8 summarizes the relationships among the variables.

Table 8: Correlation Matrix of Predictors of HPV Vaccine Intention for Kenyan Males

Variables	1	2	3	4	5	6	7	8	9
1. Intention	-								
2. PBC	.176**	-							
3. Vaccine attitudes	.053	-.084	-						
4. Subjective norms	.297**	.031	-.029	-					
5. Sex attitudes	.016	.115*	-.115*	.041	-				
6. HPV knowledge	.136*	-.072	.197**	-.102	.014	-			
7. Vaccine knowledge	.154**	-.058	.151**	-.132*	-.035	.634**	-		
8. Cancer worry	.284**	.253**	.061	.156**	.172**	.221**	.168**	-	
9. Religiosity	.036	.114	.094	-.018	-.244**	.086	.143*	.152**	-

*Correlation is significant at the $p < .05$ level (2-tailed)

**Correlation is significant at the $p < .01$ level (2-tailed)

Following the correlation analysis, a multiple linear regression was conducted with intention as the dependent variable and HPV knowledge, vaccine knowledge, vaccine attitudes, sex attitudes, perceived behavioral control, subjective norms, cancer worry, and religiosity as the independent variables. The results of the regression analysis revealed that the overall model was significant and predicted intention ($R^2 = .157$), $F(8, 279) = 7.673$, $p < .01$. The strongest predictors of intention among the Kenyan males were subjective norms, cancer worry, perceived behavioral control, and HPV vaccine knowledge. Table 9 shows the results of the multiple linear regression.

Table 9: Multiple Linear Regression of Predictors of Vaccine Intention among Kenyan Males

<i>Variable</i>	<i>Model B</i>	<i>SE B</i>	<i>B</i>	<i>t</i>	<i>p</i>	<i>95% CI</i>
(Constant)	1.350	.490		2.754	.006	[.385, 2.314]
PBC	.139	.059	.136	2.376	.018*	[.024, .255]
Vaccine attitudes	.027	.074	.021	.371	.711	[-.117, .172]
Subjective norms	.326	.064	.281	5.052	.000*	[.199, .452]
Sex attitudes	-.053	.068	-.046	-.783	.434	[-.187, .080]
HPV knowledge	.229	.301	.053	.762	.447	[-.363, .821]
Vaccine knowledge	.607	.305	.137	1.993	.047*	[.007, 1.206]
Cancer worry	.161	.055	.177	2.910	.004*	[.052, .270]
Religiosity	-.054	.078	-.041	-.697	.486	[-.208, .099]
<i>R</i> ²	.180					
<i>F</i> (8, 276)	7.673				.000*	

*Significant at $p < .05$

The next section explains the results from the Kenyan females and identifies the key predictors of their intention to be vaccinated against HPV.

Predictors of HPV Vaccine Intention for Kenyan Females

To examine the best predictors of vaccine intention among Kenyan females, first a correlation analysis was conducted with the following variables: intention, HPV knowledge, vaccine knowledge, sex attitudes, subjective norms, cancer worry, PBC, vaccine attitudes, and religiosity. Table 10 shows the correlation results.

Table 10: Correlation Matrix of Predictors of Vaccine Intention among Kenyan Females

Variable	1	2	3	4	5	6	7	8	9
1. Intention	-								
2. PBC	.082	-							
3. Subjective norms	.378**	.045	-						
4. Vaccine attitudes	.034	-.256**	-.156*	-					
5. Sex attitudes	.097	.081	.055	-.184*	-				
6. Cancer worry	.315**	.216**	.014	.169*	-.038	-			
7. HPV knowledge	.219**	-.032	.009	.228**	-.167*	.267**	-		
8. Vaccine knowledge	.047	-.188*	-.152*	.277**	-.021	.128	.588**	-	
9. Religiosity	.057	-.030	-.007	-.074	-.108	.033	.101	.070	-

**Correlation is significant at the $p < .01$ level (2-tailed)

*Correlation is significant at the $p < .05$ level (2-tailed)

After the correlation analysis, a multiple linear regression was conducted to assess the most salient predictors of intention to get vaccinated among Kenyan females. The dependent variable was the intention to get the HPV vaccine with the other variables being the independent variables (i.e., HPV knowledge, vaccine knowledge, religiosity, perceived behavioral control, sex attitudes, subjective norms, cancer worry, and vaccine attitudes). The results revealed that the overall model was significant and predicated the intention to get vaccinated ($R^2 = .240$), $F(8, 166) = 7.866$, $p < .01$. For Kenyan females, subjective norms, cancer worry, and HPV knowledge emerged as the strongest predictors of intention to be vaccinated. Table 11 summarizes these results.

Table 11: Multiple Linear Regression of Predictors of Vaccine Intention for Kenyan Females

<i>Variable</i>	<i>Model B</i>	<i>SE B</i>	<i>B</i>	<i>t</i>	<i>p</i>	<i>95% CI</i>
(Constant)	-.033	.757		-.044	.965	[-1.529, 1.462]
PBC	.011	.081	.010	.140	.889	[-.149, .172]
Subjective norms	.419	.078	.366	5.370	.000*	[.265, .572]
Vaccine attitudes	.064	.097	.049	.661	.509	[-.128, .257]
Sex attitudes	.169	.093	.125	1.817	.071	[-.015, .353]
Cancer worry	.246	.068	.259	3.612	.000*	[.111, .380]
HPV knowledge	.800	.388	.178	2.063	.041*	[.034, 1.566]
Vaccine knowledge	-.208	.372	-.048	-.559	.577	[-.941, .526]
Religiosity	.091	.112	.054	.806	.422	[-.131, .313]
R ²	.240					
F(8, 166)	7.866				.000*	

*Significant at $p < .05$

Taken together, it is clear that Kenyan students converged on certain predictors of vaccine intention but differed on others. For instance, both male and female participants had subjective norms and cancer worry as key predictors of intention to get vaccinated. However, perceived behavioral control and vaccine knowledge emerged as key predictors of intention among male participants, while for females the HPV knowledge was a key predictor of intention to get vaccinated.

The next section explores the salient variable that predict vaccination intention among students in the USA. For comparison purposes, the same variables used for the Kenyan sample were used in the analyses for students at the Midwestern USA university.

RQ8: What are the predictors of intention to get vaccinated among male and female students in the USA?

To investigate the key predictors of HPV vaccine intention among students in the USA, the data from the USA sample was divided by gender into male and female subsets and analyzed

separately. This was informed by the multivariate analyses that revealed males and females in Kenya varied in their perceptions of various concepts of interest.

Predictors of HPV Vaccine Intention for USA Males

First, a correlation analysis was conducted followed by a multiple linear regression. Generally, the correlation analysis revealed that most variables were correlated with each other. For example, HPV knowledge and knowledge about the HPV vaccine were highly correlated ($r=.765$), followed by subjective norms and intention ($r=.565$). However, attitudes toward sex were not correlated with any other variable under consideration. The rest of the items had weak correlations, all of which is summarized in Table 12.

Table 12: Correlation Matrix of Predictors of Vaccine Intention for USA Males

Variable	1	2	3	4	5	6	7	8	9
1. Intention	-								
2. PBC	-.325**	-							
3. Subjective norms	.565**	-.350**	-						
4. Vaccine attitudes	.388**	-.342**	.455**	-					
5. Sex attitudes	.156	.025	.191*	-.076	-				
6. Cancer worry	.246**	.001	.143	.190*	.029	-			
7. HPV knowledge	.153	-.243**	.155	.366**	-.094	.079	-		
8. Vaccine knowledge	.116	-.270**	.115	.276**	-.077	-.027	.765**	-	
9. Religiosity	-.100	-.038	-.222**	-.152	-.333**	-.163*	-.073	-.087	-

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

After the correlation analysis, a multiple linear regression was conducted with intention as the dependent variable and the other variables in the correlation model as the independent variables. The multiple linear regression revealed that the overall model was significant ($R^2=.355$, $F(8, 138) = 10.970$, $p < .01$). The regression analysis also revealed that only subjective

norms and cancer worry were significant predictors of intention among male participants studying in the Midwest university. The results from the multiple linear regression are presented in table 13 below.

Table 13: Multiple Linear Regression of Predictors of Intention for USA Males

Variable	B	SE B	B	t	p	95% CI
(Constant)	-.158	.704		-.224	.823	[-1.549, 1.234]
PBC	-.159	.097	-.124	-1.645	.102	[-.350, .032]
Subjective norms	.615	.114	.432	5.368	.000*	[.388, .841]
Vaccine attitudes	.113	.071	.133	1.606	.111	[-.026, .253]
Sex attitudes	.116	.079	.108	1.483	.140	[-.039, .272]
Cancer worry	.167	.068	.170	2.452	.015*	[.032, .301]
HPV knowledge	-.018	.362	-.005	-.049	.961	[-.733, .698]
Vaccine knowledge	.070	.371	.020	.190	.850	[-.664, .805]
Religiosity	.066	.063	.077	1.039	.301	[-.059, .191]
R ₂	.353					
F(8, 138)	10.970				.000*	

*Significant at $p < .05$

The next section explores the salient concepts that predict the intention of vaccination among females at the Midwest University.

Predictors of HPV Vaccine Intention among USA Females

Similar to the analysis conducted to assess the salient predictors for males, first a correlation analysis with the following variables: HPV knowledge, vaccine knowledge, vaccine attitudes, sex attitudes, subjective norms, PBC, cancer worry, and religiosity was conducted followed by a multiple linear regression. The correlation analysis revealed that HPV vaccine knowledge and knowledge about HPV ($r = .710$), subjective norms and intention ($r = .594$), and vaccine attitudes and intention ($r = .518$) were highly correlated. The correlation matrix in Table 14 shows the results from the analysis.

Table 14: Correlation Matrix of Predictors of Intention for USA Females

Variable	1	2	3	4	5	6	7	8	9
Intention	-								
PBC	-.197**	-							
Subjective norms	.594**	-.291**	-						
Vaccine attitudes	.518**	-.317**	.575**	-					
Sex attitudes	.239**	-.095	.181**	.207**	-				
Cancer worry	.217**	.047	.158**	.106	.138*	-			
HPV knowledge	.273**	-.236**	.240**	.365**	.050	.070	-		
Vaccine knowledge	.319**	-.287**	.299**	.426**	.078	.128*	.710**	-	
Religiosity	-.138*	.102	-.137*	-.146*	-.498**	-.019	-.087	-.126*	-

**Correlation is significant at the $p < .01$ level (2-tailed)

*Correlation is significant at the $p < .05$ level (2-tailed)

After the correlation analysis, a multiple linear regression was conducted with intention as the dependent variable and the other variables (i.e., vaccine attitudes, PBC, HPV knowledge, knowledge about the HPV vaccine, subjective norms, sex attitudes, cancer worry, religiosity) as the independent variables. The results revealed that the model was significant and predicted intention to get vaccinated ($R^2 = .414$), $F(8, 276) = 26.067$, $p < .01$).

The strongest predictors of intention among USA females were subjective norms ($t = 7.33$), attitudes toward the HPV vaccine, cancer worry, and sex attitudes. Unlike USA males, whose main predictors of intention were subjective norms and cancer worry, USA females seem to have more predictors that health communication experts can focus on to ensure success in the campaigns. Table 15 summarizes the results from the multiple linear regression analysis.

Table 15: Multiple Linear Regression of Predictors of Intention for USA Females

Variable	B	SE B	B	t	p	95% CI
(Constant)	-.508	.422		-1.204	.230	[-1.339, .323]
PBC	.032	.071	.022	.454	.650	[-.107, .172]
Subjective Norms	.560	.076	.416	7.331	.000*	[.410, .711]
Vaccine attitudes	.190	.054	.213	3.552	.000*	[.085, .296]
Sex attitudes	.107	.053	.108	2.015	.045*	[.002, .212]
Cancer worry	.108	.049	.103	2.194	.029*	[.011, .206]
HPV knowledge	.205	.261	.051	.787	.432	[-.308, .718]
Vaccine knowledge	.203	.255	.054	.796	.426	[-.299, .705]
Religiosity	.013	.047	.015	.279	.780	[-.080, .107]
R ²	.414					
F (8, 276)	26.067				.000*	

*Significant at $p < .05$

Comparing the two groups, it is clear that students from Kenya and those from the USA had different predictors of intention to be vaccinated. The next section continues to explore the differences between the two groups and if the country of the participants moderated these relationships.

RQ9: Will the student's country (USA or Kenya) moderate the relationship between religiosity and attitudes toward sex?

To address this research question, a moderation analysis was conducted using Hayes' (2018) PROCESS macro for SPSS, version 3.3, Model 1 with the country as the moderator, attitudes toward sex as the dependent variable, and religiosity as the independent variable. A significant result was discovered with the overall model explaining a slight variance in attitudes toward the HPV vaccination by country: $R = .4154$, $R^2 = .1725$, $F(3, 908) = 63.113$, $p < .001$ (Table 16). However, the interaction term between the two countries was not significant, but the country moderated the relationship between religiosity and attitudes toward the HPV vaccination. These results are summarized in Table 16 and Table 17.

Table 16: Relationship between Religiosity and Attitudes toward Sex by Country

<i>Variable</i>	<i>Coefficient</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Constant	2.5197	.0293	85.9548	.000*	[2.4621, 2.5772]
Religiosity	-.3357	.0334	-10.0552	.000*	[-.4013, -.2702]
Country	.1123	.0585	1.9180	.0554	[-.0026, .2272]
Interaction	-.1094	.0656	-1.6691	.0954	[-.2381, .0192]

*Significant at $p < .05$

Table 17: Moderation Analysis of Conditional Effects of Religiosity on Attitudes toward Sex

<i>Country</i>	<i>Effect</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Kenya	-.2839	.0534	-5.3138	.000*	[-.3888, .1790]
USA	-.3933	.0380	-10.3488	.000*	[-.4679, -.3187]

*Significant at $p < .05$

As indicated in Tables 16 and 17, religiosity had a greater influence on attitudes toward the HPV vaccine among Kenyan students compared to USA students. However, it is important to note the effect on the two samples was very small. Figure 5 shows the slope of the relationship between sex attitudes and religiosity. It is clear that students who identified as religious had negative attitudes toward sex. However, the difference between the Kenyan and USA students was small.

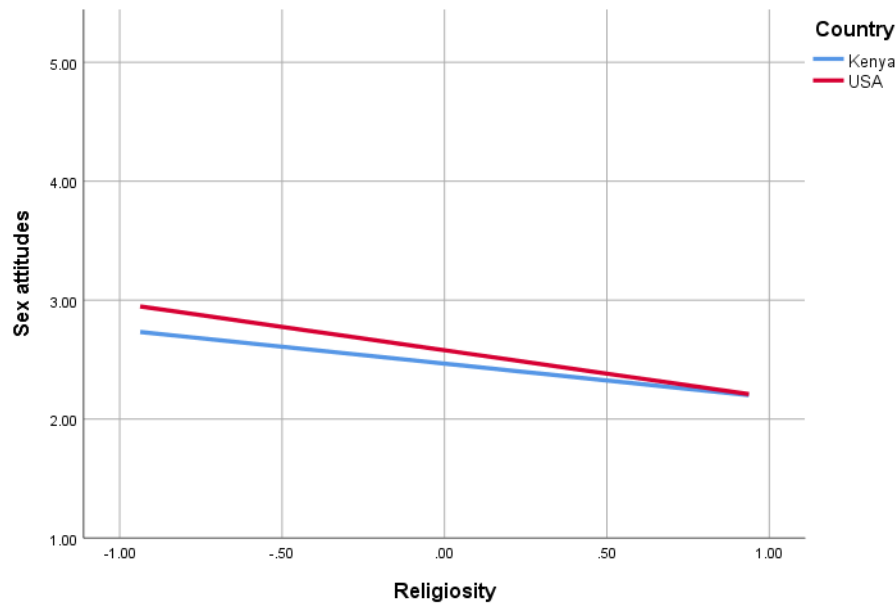


Figure 5: Relationship between Religiosity and Attitudes toward Sex by Country

The next section considers the role of country of the student in the relationship between vaccine attitudes and attitudes toward sex.

RQ10: Does the student's country moderate the relationship between sex attitudes and attitudes toward HPV vaccine?

To address this research question, a moderation analysis was conducted using Hayes' (2018) PROCESS macro for SPSS, version 3.3, Model 1. The dependent variable was vaccine attitudes and the attitudes toward sex were the independent variable. The results revealed that the country of the student did not moderate the relationship between the attitudes toward sex and the attitudes toward the HPV vaccine. However, the overall model explained a slight variance in the attitudes toward the HPV vaccine: $R = .1338$, $R^2 = .0179$, $F(3, 907) = 5.5078$, $p < .001$. The interaction term between the two countries was also significant ($< .001$). The results of the moderation analysis are presented in Table 18.

Table 18: Relationship between Attitudes toward Sex and Vaccine Attitudes by Country

Variable	<i>Coefficient</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Constant	3.4954	.0298	117.484	.000	[3.4370, 3.5538]
Sex attitudes	.0003	.0344	.0074	.9941	[-.0673, .0678]
Country	.0998	.0596	1.6748	.0943	[-.0171, .2167]
Interaction	.2489	.0686	3.6281	.0003	[.1143, .3835]

As can be seen from the conditional effects in Table 19, sex attitudes had a positive effect on the attitudes of students toward the vaccine in both countries. However, sex attitudes had a slightly higher effect on students studying at the Midwest university compared to those at the Kenyan university.

Table 19: Moderation Analysis of Effects of Attitudes toward Sex on Vaccine Attitudes by Country

Country	<i>Effect</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Kenya	- .1178	.0492	-2.3939	.0169	[-.2143, -.0212]
USA	-.1311	.0478	2.7424	.0062	[.0373, .2250]

Figure 6 shows the relationship slopes of attitudes toward sex and vaccine attitudes. Generally, there was a slight difference between the two samples in terms of how their sex attitudes influenced their vaccine attitudes.

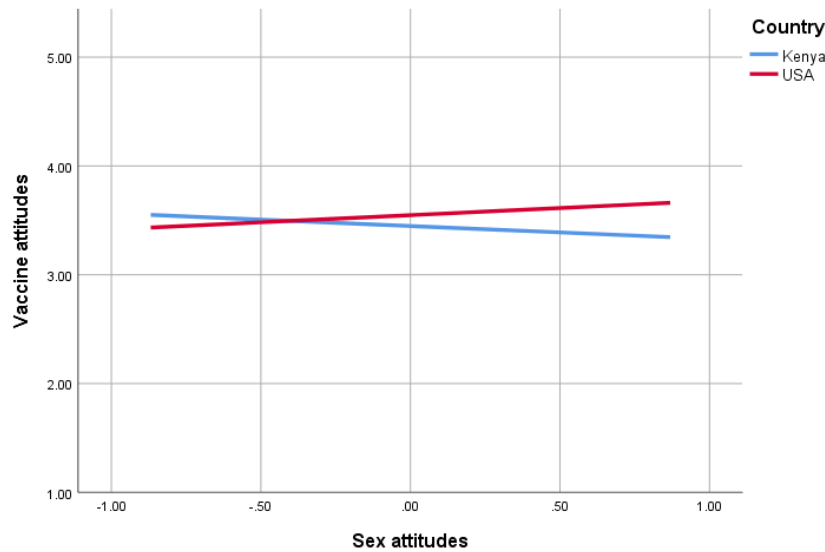


Figure 6: Relationship between Attitudes toward Sex and Vaccine Attitudes by Country

The relationship illustrated in Figure 6 above shows that the attitudes toward sex among the students had an effect on the attitudes toward vaccine with this effect being higher among students at the Midwest University compared to those at the Kenyan university. However, it is important to note that the mean differences between the two samples is barely significant. The next section continues to consider the influence of country by exploring if country moderated the relationship between subjective norms and intention to be vaccinated.

RQ11: Does the student's country (USA or Kenya) moderate the relationship between subject norms about HPV vaccination and intention to be vaccinated?

To address this research question, a moderation analysis was conducted using Hayes' (2018) PROCESS macro for SPSS, version 3.3, Model 1. The dependent variable was the intention to get vaccinated and the independent variable was the subjective norms about the vaccine. The regression model was significant, and the results revealed that the country of the student moderated the relationship between subjective norms about HPV vaccination and the

intention to get vaccinated in the two samples. The overall model explained a significant amount of variance in the intention of the students to get vaccinated: $R = .4623$, $R^2 = .2137$, $F(3, 900) = 81.554$, $p < .001$. The interaction term between the two countries was also significant ($p < .001$). Table 20 shows the relationship between attitudes toward HPV vaccination and intention to get vaccinated by country.

Table 20: Relationship between Attitudes toward HPV Vaccination and Intention to be Vaccinated by Country

<i>Variable</i>	<i>Coefficient</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Constant	3.0990	.0343	90.3067	.000	[3.0317, 3.1664]
Subjective norms	.5796	.0377	15.3870	.000	[.0933, .2470]
Country	-.5272	.0691	-7.6322	.000	[-.6627, -.3916]
Interaction	.4273	.0763	5.6038	.000	[.2777, .5770]

The country of the participant had a greater effect on the sample from the USA compared to the sample from Kenya as shown in Table 21.

Table 21: Conditional Effects of Attitudes toward HPV Vaccination and Intention to be Vaccinated by Country

<i>Country</i>	<i>Effect</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
KE	.3754	.0453	8.2850	.000	[.2864, .4643]
USA	.8027	.0613	13.0866	.000	[.6823, .9231]

As Table 21 indicates, there was a stronger relationship between subjective norms about the HPV vaccine and intention to be vaccinated among the US students compared to the Kenyan students. This is consistent with the multiple linear analysis for each subset of the sample. Figure 7 shows this relationship among participants from the two countries.

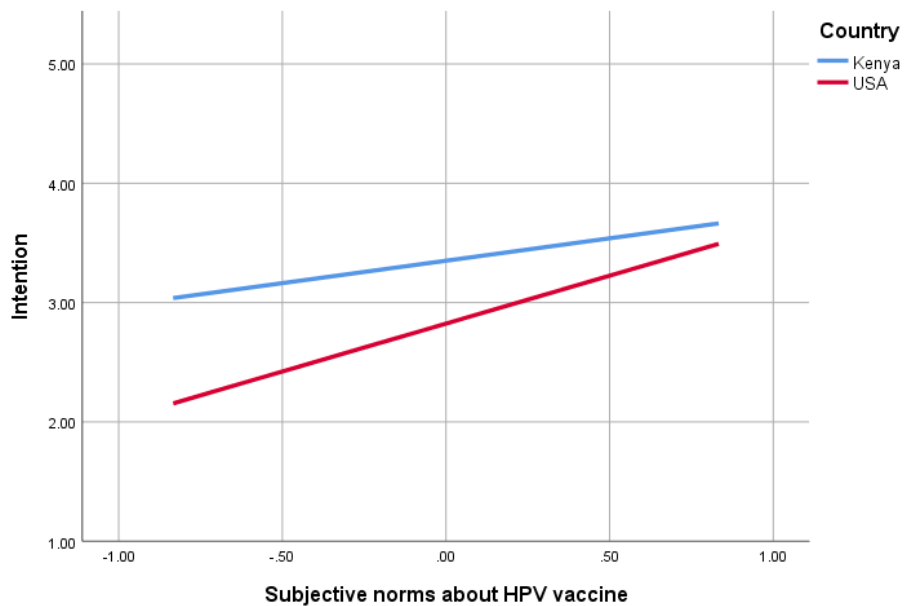


Figure 7: Relationship between Subjective Norms and Vaccine Intention by Country

In both Kenya and the USA, subjective norms seemed to be important in predicting the students' intention to get vaccinated. This suggests the need to focus on increasing the subjective norms that people have about HPV vaccination as a way of increasing their likelihood of getting vaccinated. The relationships reported in this results chapter are further explored in Chapter 6.

Conclusion

The results presented in this chapter offer interesting insights into how students studying at a Midwestern USA university and those at a Kenyan university differ in their perceptions associated with vaccination. For instance, the results revealed that although the two groups had some convergence in certain areas, their health seeking preferences also differed in unique ways. In particular, the male and female participants had different levels of knowledge about HPV and the HPV vaccine, participants in Kenya and the USA varied in their sex and vaccine attitudes,

and both groups had different predictors in their vaccination intentions. In some instances, the country also seemed to moderate the relationship between various variables, such as subjective norms and the intention to get vaccinated. This might justify the need for a multi-strategy approach in targeting vaccine behaviors in the two countries. The practical and theoretical implications of the qualitative and quantitative results are further discussed in the next chapter.

CHAPTER 6: DISCUSSION

This chapter synthesizes the results presented in Chapter 4 and 5 and discusses the theoretical and practical implications of the results for health communication and policymaking. The chapter also offers suggestions for future research and considers the strengths and weaknesses of the study. Discussion of the qualitative analysis is presented first followed by discussion of the quantitative results.

Qualitative Analysis

One of the goals of this dissertation was to investigate the relevance of identification as a factor influencing health seeking behaviors. The qualitative findings revealed that identification was a salient factor influencing students' health-seeking behaviors. In particular, the results indicated that the need for identification among students influenced their eating habits, motivated them to refer their friends to healthcare providers whom they perceived as caring, and also inspired students to encourage their peers to seek care when they were ill. The findings also suggested that religiosity influenced the attitudes of the participants toward sex with most students responding that sex should be preserved for married people.

Overall, the qualitative findings indicated that religiosity can assist in explaining how students seek treatment, how they view sex, and how they influence each other in making health-related choices. The findings, for example, indicated that feelings of connectedness among students influenced the choices they make in an effort to maintain functional ties with peers in their networks. As evidence, students revealed that they went for vaccination in groups and influenced their friends in choosing diet.

Identification with a higher being emerged as an important aspect of the religious lives of students. Thus, engaging in premarital sex often resulted in cognitive dissonance because students felt that this activity weakened their relationship with God. To restore a relationship with God, students sought forgiveness from God, normalized, or even minimized their actions so their actions would not compromise their identity as a religious person. In some cases, the students also reported ending relationships that they perceived as hindering their relationship with God. Identification in general, and religiosity in particular, emerged as salient concepts that can explain health seeking behaviors among students. Students' influence on each other to engage in certain health behaviors shows the pertinence of identification and points to the need of healthcare practitioners to consider the social ties among young adults when undertaking health campaigns, particularly campaigns to encourage HPV vaccination. The next section reiterates the quantitative results and suggests emerging trends for health communication research and practice.

Quantitative Analysis

Overall, the results of the quantitative analysis suggest that Kenyan and USA students converged on certain health trends but differed in others. For example, the students at the Kenyan university indicated a low understanding of HPV and the HPV vaccine compared to students at the Midwestern university. More specifically, male and female students in the USA scored higher than males and female students from Kenya on both knowledge about HPV and knowledge about the HPV vaccine. On the whole, there were a few areas where the country the student is from moderated various relationships of interest. For instance, the country of origin moderated the relationships between subjective norms and intentions, and attitudes toward sex and the HPV vaccine. These findings suggest that when designing an intervention involving

these two groups, there is need to consider various factors relevant to country of origin such as the culture of the target population, their knowledge of HPV and the HPV vaccine and prevailing norms about the HPV vaccine. This is especially important for the Kenyan students because Sub-Saharan Africa continues to lead in HPV infections and cervical cancer (Kiatpongsan & Kim, 2014).

The quantitative analysis also revealed a small interaction effect between gender and country of the student on subjective norms about HPV vaccination, with students from the USA having a stronger relationship between subjective norms and intention to get vaccinated compared to students from Kenya. The results also indicated that the gender of the student influenced their attitudes toward sex. Generally, males had more favorable attitudes toward sex compared to females. However, females depicted higher religiosity compared to males. In general, the male and female participants in the USA had more positive attitudes toward sex compared to those from Kenya but participants from Kenya had a higher religiosity score compared to those in the USA. As a whole, females in both Kenya and the USA scored higher on religiosity than male participants from the two countries.

Additionally, the quantitative analysis also revealed that subjective norms, cancer worry, and HPV knowledge were the strongest predictors of vaccination intentions among Kenyan females. In comparison, the strongest predictors of intention among USA females were subjective norms, attitudes toward the HPV vaccine, cancer worry, and attitudes toward sex. This highlights that even among those of the same gender in a population, the motivations for vaccination intentions differ. The same trend regarding gender was observed among male participants in Kenya and the USA. For example, the strongest predictors of vaccination intentions among Kenyan males were subjective norms, cancer worry, perceived behavioral

control, and HPV vaccine knowledge. In contrast, only subjective norms and cancer worry predicted the intention to be vaccinated among male students studying at the Midwestern university. These differences in vaccination intentions suggest the need to treat each target population as unique when designing and implementing health interventions. This will be discussed further in the sections on the practical and theoretical implications of the study.

Somewhat surprisingly, the quantitative results indicated that there were minimal significant differences by country regarding how religiosity influenced the views of the participants toward sex. Additionally, religiosity did not emerge as a significant direct predictor of attitudes toward the HPV vaccine and the intention to get vaccinated. This contradicts past research findings that religion influences health choices, especially among patients with chronic illnesses (Hill & Pargament, 2003; Pierik, 2017; Thomas et al., 2015). However, although religiosity did not directly predict the intention to get vaccinated, it was correlated with other variables that predicted intention such as sex attitudes, vaccine attitudes, subjective norms, and perceived behavioral control.

In summary, the qualitative and quantitative results revealed that differences exist among university students in Kenya and in the USA and that the major predictors of vaccination intention among the students of the two countries vary by gender. The theoretical and practical implications of these results are discussed in the next section.

Theoretical Implications

The results of this study offer interesting theoretical implications worth considering. First, the results showcase the relevance of the Theory of Planned Behavior in predicting and explaining health seeking behaviors among students (Blanchard et al., 2007; Gerend & Shepherd, 2012; Hirth et al., 2018). For example, various concepts of the TPB, such as attitudes

toward the vaccine, subjective norms, and perceived behavioral control emerged as salient predictors of the intention of students to get the HPV vaccine. The finding that TPB concepts predict the intention to act is important because the validity of TPB has been criticized by some scholars for ignoring the role of some variables, such as emotions and demographic characteristics of participants in predicting the intention to act (Sniehotta, Presseau, & Araújo-Soares, 2014). Therefore, this study finds the theory of planned behavior to have utility in communication research.

The TPB, as conceptualized by Ajzen, emphasizes the importance of attitudes, subjective norms, and perceived behavioral control in predicting intention to perform a particular behavior (Ajzen, 1991; Hirth et al, 2018). However, the results of this dissertation indicate that the indirect predictors, such as cancer worry, can also directly predict the intention to get vaccinated. In this study for instance, cancer worry had a higher predictive power of intention compared to direct concepts such as PBC. This might indicate the need for more research on TPB with the aim of revising the more traditional approach taken by TPB.

The quantitative results revealed that religiosity was correlated with sex attitudes, cancer worry, and knowledge about the HPV vaccine. Although religiosity did not directly predict the intention of the participants to get vaccinated, it had an influence on attitudes toward sex, with more religious people having a negative attitude toward sex. This was consistent with the qualitative findings that indicated participants viewed sex as only appropriate among people who are married. This finding is also consistent with past research on religiosity and health. Thomas and colleagues (2015), for example, found that spirituality is an important factor in making health decisions. This was well supported by some comments from participants who revealed they perceived their bodies as temples of God, and so this motivated them to take good care of

themselves. Consistent with this finding, identification emerged as a major aspect influencing how students made choices concerning their health and influenced the choices of their friends. This highlights the importance of religiosity and identification in understanding health seeking behaviors. These findings imply that although religiosity does not directly predict the intention to get vaccinated, it might do so indirectly, and therefore may be included in the TPB model as an indirect concept. However, more research is needed to confirm including this concept within the theory.

Additionally, it is instructive to note that the statements used to assess the subjective norms about the HPV vaccine reflect the concept of self-identification. For instance, the items on the subjective norms' subscale asked participants if their friends and family members approved of them getting the HPV vaccine, and if people on their campus were getting the HPV vaccine. Thus, identification with other students and family members was an important motivation for seeking vaccination. This is consistent with previous research that found that felt connectedness in a social group often influences vaccination intention of the target population (Brown & Basil, 2010; Yun & Silk, 2011). The implications of the results of this project for health communication practice are discussed in the next section.

Implications for Health Communication Practice

The results of this dissertation offer insights that contribute to health communication practice in various ways. For instance, the results highlight the most salient predictors of vaccination intentions among college students that health communicators can focus on when designing and implementing HPV vaccination campaigns targeting students in Kenya and the USA. For example, the results indicate that across male and female participants, subjective norms and cancer worry strongly predicted the intention to get vaccinated. Thus, when designing

campaigns targeting these groups it would be important to consider the prevailing norms about the HPV vaccine and find ways of targeting those norms. This can be achieved by linking the HPV vaccine to the social benefits it can offer members of a social group, especially in preventing HPV infections such as genital warts and various types of cancer. This is important because the subjective norms about HPV might be influenced by the prevailing culture of the target population. Culture is often a salient factor in health because it offers a context through which health issues can be discussed and better understood (Airhihenbuwa & Webster, 2012). Past research (e.g. Airhihenbuwa & Webster, 2012; Tindall & Vardeman-Winter, 2011) has argued that replicating health interventions developed from outside a culture can fail, especially if the interventions assume a universal, uniform approach to learning. The culture of students in Kenya is different from that of students in the USA. Therefore, these groups might have divergent norms concerning the HPV vaccine that should be taken into consideration when implementing an intervention aimed at increasing uptake of the HPV vaccine.

Consistent with the arguments made by Harwood and Sparks (2003), the qualitative findings show that students rely on peers in their social networks to make health choices. This can be due to the pressure to continue identifying with other members of their social groups because group membership gives people a sense of belonging and influences how people view the world (Hall & LaFrance, 2012; Scott et al., 1998; Tajfel, 1979; Tajfel & Turner, 1986). Previous research on vaccines, for instance, indicates that approval from friends increases the chances of students getting an HPV vaccination (Richards, 2016). Additionally, reliance on approval from friends and family members as a motivation to get vaccinated might be a result of the need to maintain social ties, because people tend to make choices that do not violate the beliefs and values held by those close to them (Kahan, 2013). Thus, students may be more likely

to get the HPV vaccine if other students are getting the vaccine, and if their families are supportive of such efforts.

In addition, perceived behavioral control and knowledge about the HPV vaccine were important predictors of vaccination intention among the Kenyan males. This highlights the need to focus on perceived self-efficacy and self-control of Kenyan males regarding the HPV vaccine. This is an interesting finding considering that national HPV vaccination started in 2019 and the exercise has solely targeted girls (WHO, 2019). Thus, many men may not be aware that they can benefit from the HPV vaccine or even know where to get the vaccine. Therefore, a campaign aimed at enhancing the behavioral control of males can first target increasing their knowledge about the importance of the HPV vaccine, and then explain the infections/illnesses it prevents. Such a campaign would be important because previous studies indicate that men tend to be less knowledgeable than women about the HPV vaccine and they have a lower HPV vaccination rate than women (Mehta et al., 2013).

Cancer remains a stigmatized and dreaded illness and the fear associated with getting cancer hinders health seeking behaviors among the public (Conrad & Barker, 2010; Venetis et al., 2014). This might explain why cancer worry was a key predictor of the intention to get vaccinated among college students in both Kenya and the USA. This finding may suggest that students in both countries fear getting cancer because it is a stigmatized illness. Therefore, the students may be willing to get vaccinated to guard against the risk of getting cancer. This is consistent with research by Dijkstra and Brosschot (2003), who found that worry can keep a target audience attentive to the threat posed by their risky behaviors. These researchers found that worrying about the risks posed by smoking motivated smokers to quit smoking. Thus, linking HPV infections with various types of cancer might increase the likelihood of students

getting vaccinated. Additionally, encouraging openness in sharing health information related to cancer and encouraging the public to view cancer as a disease that can be prevented may help ameliorate the stigma associated with cancer (Venetis et al., 2014). Other studies (e.g. Juraskova, et al., 2012; Vorpahl & Yang, 2018) found that framing HPV as an STI motivates a vaccination-averse target population to get vaccinated. Therefore, tailoring health campaigns in ways that depict HPV infections as predisposing factors to cancer later in life may motivate target audiences to get the HPV vaccine.

The results also revealed that the students in the USA had more favorable attitudes toward sex compared to the students in Kenya. The male students in both countries also had more positive attitudes toward sex compared to the female students. Most of the items assessing the attitudes toward sex asked questions about their views about sex and their sexual preferences. For example, some of the items asked participants if it was okay to have casual sex, if it was okay to have sex with multiple partners, and if it was okay to have sex even if they are not committed to a sexual partner. Thus, the finding that students had relatively positive attitudes toward these statements suggest a need to encourage safer sex practices among college students as a way of curbing HPV infections because the risk of HPV infections and HPV-related cancers increase when people have multiple sex partners (CDC, 2016; Chelimo et al., 2013). Encouraging safer sex practices is also important because college students, especially males, have poor knowledge and awareness about HPV and the HPV vaccine (Pitts et al., 2009). One way of doing this would be to encourage students in the vaccine age range (i.e., 9 to 26 years) to go for vaccination and to consistently practice safer sex. It is particularly important for health communication practitioners to target sexual attitudes of students in Kenya during HPV vaccination campaigns because discussion of sex-related topics in Kenya is a taboo, especially

when young adolescents are involved (Oluga et al., 2010). Relatedly, adolescents and young adults are the target groups that are at the highest risk of HPV infections (Panatto et al., 2009; Satterwhite et al., 2013).

Among the Kenyan females, HPV knowledge was an important predictor, while USA females had more additional predictors such as vaccine attitudes and attitudes toward sex. This might suggest that to increase the vaccine intention of Kenyan women, besides targeting the subjective norms, health campaigns must also aim at boosting their understanding of HPV and the HPV vaccine. This would also be important because past research (e.g. Khan et al., 2016; Tatar et al., 2017) has indicated that students have low knowledge about HPV and the HPV vaccine. Previous studies (e.g. Korir et al., 2015; Vermandere et al., 2015) found that the major impediments to the uptake of the HPV vaccine in Kenya are inadequate awareness and low knowledge levels about HPV and HPV vaccines. To increase the uptake of the HPV vaccine among females in the USA, an effective health communication intervention would be one that, in addition to focusing on cancer worry and subjective norms, also targets their attitudes toward the HPV vaccine and their attitudes toward sex. Overall, boosting the knowledge of women in particular can help address misinformation associated with the HPV vaccine. In Kenya for example, the doctors affiliated with the Catholic Church expressed reservations about the vaccine due to their concerns that the vaccine might encourage promiscuity among young adults (Njanja, 2019). Misinformation about the HPV vaccine has been a major obstacle to the success of health interventions aimed at increasing the uptake of the vaccine. For instance, some of this misinformation alleges that the HPV vaccine might cause infertility among girls or even cause deaths (e.g. Cipriano et al., 2018; Masika et al., 2015) and might also be misconstrued as a validation of deviant sexual behaviors among young adults (e.g. Cipriano et al., 2018; Nan et al.,

2016). Even so, promoting uptake of the HPV vaccine among female students is valuable and would go a long way in preventing cervical cancer, which remains one of the leading causes of mortality among women (Nayak et al., 2016; Panatto et al., 2009). The results of this dissertation also offer suggestions to policy makers that are discussed in the next section.

Implications for Policy

Besides having implications for health communication theory and practice, the results of this dissertation can guide policymaking in the administration of HPV vaccine in both Kenya and the USA. This is important because effective policies can help safeguard the public from misinformation associated with the vaccine and the infections associated with HPV (North & Niccolai, 2016). In the USA, past studies (Dempsey & Koutsky, 2008; Ragin, et al., 2009) indicated that minorities such as Blacks and Asians have a high prevalence of HPV and have low knowledge about HPV compared to Caucasians. Therefore, there is need to formulate policies that address these discrepancies and increase the accessibility of the HPV vaccine by ethnic minorities residing in the USA.

Policies should support interventions that increase knowledge about HPV and the HPV vaccine and address the stigma associated with cancer. Such policies would be important in both Kenya and the USA because the findings of this study indicate that cancer worry is a salient predictor of HPV vaccination. In addition, HPV infections have been linked to various types of cancers (Forman, et al., 2012; Mehta et al., 2013). Thus, the Kenyan and USA governments should enact policies that encourage social support interventions about HPV and address the link between HPV and cancer.

Policy guidelines are particularly important for Kenya which started its national HPV vaccination program in 2019 (WHO, 2019). When creating policies concerning HPV

vaccination, the Kenyan government can learn from the USA, which has been administering HPV vaccines for a relatively long time. However, since the results of this study indicate that the Kenyan and USA students have different predictors of vaccine intentions, the creation of HPV policies would need to be attentive to the existing cultural context in Kenya. The process of policy diffusion from one country to another, with attention to cultural variations, involves the receiving country starting from a base of knowledge when designing policies (Shen, 2014; Walker, 1969). To date, the HPV vaccination program in Kenya has only targeted females (WHO, 2019) because of the link between HPV infections and cervical cancer. However, the HPV vaccine can also benefit males because it can help to prevent the risk of genital warts, and penile and anal cancers (CDC, 2016; Mehta et al., 2013). Kenya needs to enact policies that enable the access of both genders to the HPV vaccine, such as school-based programs that have proven effective in other countries (Brabin et al., 2008). This is particularly important because the results of this project suggest that perceived behavioral control is an important predictor of vaccine intention among Kenyan males. Additionally, the Kenyan government can establish policies that support the administration of the HPV vaccine alongside other vaccines (e.g. Reiter et al., 2012). This would go a long way in encouraging the uptake of the HPV vaccine in young adults.

The next section considers possible directions for future research that will extend the current study and expand our understanding on how HPV and the HPV vaccine can be more effectively addressed.

Directions for Future Research

The qualitative and quantitative findings of this study point to many possible areas for future research. First, because the findings indicate that Kenyan students had low knowledge

about HPV and the HPV vaccine compared to their counterparts in the USA, one possibility would be to design and implement an education intervention aimed at boosting the knowledge and awareness of Kenyans about HPV and the HPV vaccine. Such an intervention would help to address the knowledge gaps about HPV and the HPV vaccine in the short term. In the long term, equipping students with knowledge about HPV and the importance of the HPV vaccine might increase their intention to get vaccinated.

Contrary to the arguments made by other studies (e.g. Hill & Pargament, 2003; Thomas & colleagues, 2015) that religiosity is an important factor in making health decisions, the findings did not directly support this argument. Specifically, religiosity did not emerge as a direct predictor of the intentions of students to get an HPV vaccination. Therefore, another possibility for future research would be to further explore the role of religiosity in vaccination and other health behaviors. This would help to establish if religiosity is a relevant indirect predictor of intention in less risky health behaviors.

Additionally, the focus of the present study was on the student population, therefore, another possibility for future research would be to explore if religiosity influences health seeking behaviors in non-student populations. This may shed more light into how religiosity can be utilized in health campaigns to shape the attitudes of a target population.

Being a mixed method study, another possible route for future research would be to conduct another study using an experimental design to assess the applicability of religiosity to health situations. This would allow for more systematic manipulation and control of various variables in ways that might shed more light on the vaccination patterns and health seeking behaviors of college students.

The results of this study only focused on the vaccination intentions of students rather than the actual vaccination behaviors. Therefore, another possible route for future research would be to extend the current study to examine if the predictors of intention identified in this study also lead to vaccination behavior. The strengths and limitations of the study are explained in the next section.

Strengths and Limitations of the Study

Although this dissertation provides many important insights, strengths and limitations of this project must also be identified. First the use of both qualitative and quantitative approaches strengthened the design of the study and enhanced the quality of the data that were collected. Specifically, the qualitative data revealed the importance of religiosity and identification in an effective manner that strengthened the quantitative approach, which did not reveal the direct contribution of religiosity to the vaccination intentions of students.

The current study takes a comparative approach that juxtaposes the perspectives of students in Kenya and students in the USA. This helped to offer insights into how diversity in terms of culture may influence the way university students make health choices. Specifically, the results of this study highlight the most salient predictors of vaccine intention among students in the two countries that health communicators can consider in order to achieve success in HPV vaccination campaigns.

This study utilized a large sample of university students which increased confidence in the generalizability of the results to the population. The large sample also enhanced the reliability of the scales by minimizing biases that are common with smaller samples.

Some of the weaknesses of this study are inherent in its design. For instance, this study relied on self-reports by the participants. Therefore, it would be important to treat these findings

with caution as it is possible that the participants forgot or even misrepresented their perceptions about their health seeking behaviors. The attitudes toward the HPV vaccine scale that was used had low reliability which might have interfered with the reliability of the study. Taken together, the findings of this study offer insights that might inform interventions and policy formulation concerning HPV and the HPV vaccine.

Conclusion

Health communication is a complex phenomenon that continues to intrigue many researchers and practitioners. The findings of this study can help us understand how health communicators can design effective HPV campaigns targeting college students. For instance, the findings of this study show that identification is an important factor that influences health seeking behaviors and the choices that students make relative to HPV. It was clear that most of the participants' attitudes toward sex were influenced by their religious beliefs, and this in turn determined the steps they took to maintain their religious identity. Collectively, the results of this dissertation reveal the need for health communicators to appreciate that the health seeking behaviors of college students are influenced by a confluence of factors. Such an appreciation is important in order to avoid the temptations of adopting a one health intervention fits all approach when designing vaccination programs. As argued throughout this dissertation, HPV is the most common sexually transmitted infection. The HPV vaccine can help to prevent the risk of cervical cancer and genital warts, yet over the years the uptake of the vaccine has been low. Therefore, it is important that health communication experts use tailored, culturally appropriate strategies in addressing HPV and the HPV vaccination.

APPENDIX A. SURVEY

This confidential survey asks about your knowledge and attitudes regarding human papillomavirus (HPV), the HPV vaccine, and cancer. Your participation is voluntary. The survey should take about 15 to 20 minutes to complete. If you have questions about this survey, please contact:

Robert Nyaga
rnyaga@purdue.edu

1. Please indicate your gender:
☐ Male ☐ Female ☐ Transgendered ☐ Prefer not to disclose ☐
2. In what year were you born?
3. What is your current level of education?
☐ First year ☐ Second year ☐ Third year ☐ Fourth year ☐ Post graduate student
4. What is your sexual orientation?
☐ Heterosexual ☐ Homosexual ☐ Bisexual ☐ Prefer not to disclose
5. What is your marital status?
☐ Married ☐ Single ☐ Divorced ☐ In a domestic partnership
6. Over the past 12 months, how many sexual partners have you had?
☐ Only one ☐ More than one ☐ None
7. How likely would you be to use protection during sex?
☐ Very unlikely ☐ Somewhat unlikely ☐ Neither likely nor unlikely ☐ Somewhat likely ☐ Very likely
8. Have you been vaccinated against HPV?
☐ Yes ☐ No ☐ I Don't Know
9. To what extent are you religious?
☐ Extremely religious ☐ Moderately religious ☐ Somewhat religious ☐ Not religious at all
10. Please select the religion that best describes your religious affiliation.
☐ Evangelical protestant ☐ Catholic ☐ Hindu ☐ Jewish ☐ Muslim ☐ Atheist ☐ Mormon ☐ Buddhist ☐ Agnostic ☐ Orthodox Christian ☐ Jehovah's Witness ☐ Other
11. For how many years have you affiliated as such?
☐ Less than 1 year ☐ For About 1 year ☐ 2 years ☐ 3 years ☐ More than 3 years
12. Where do you mostly get your health information from? (check all that apply)
☐ Social media ☐ Television ☐ Radio ☐ Friends ☐ Internet ☐ Family members ☐ Physician ☐ Teacher

A. BRIEF SEXUAL ATTITUDES SCALE

Please answer the following questions about your views about sex as honestly as possible. There are no right or wrong answers.

Attitude Items	Strongly Agree	Moderately Agree	Neutral	Moderately Disagree	Strongly Disagree
1. I do not need to be committed to a person to have sex with him/her.					
2. Casual sex is acceptable					
3. I would like to have sex with many partners.					
4. One-night stands are sometimes enjoyable.					
5. It is okay to have ongoing sexual relationships with more than one person at a time.					
6. Sex as a simple exchange of favors is okay if both people agree to it.					
7. The best sex is with no strings attached.					
8. Life would have fewer problems if people could have sex more freely.					
9. It is possible to enjoy sex with a person and not like that person very much.					
10. It is okay for sex to be just good physical release.					

B. HPV KNOWLEDGE SCALE

Please answer the following questions below about your HPV Knowledge as honestly as possible.

Knowledge Items	False	I Don't Know	True
1. HPV can be passed on during sexual intercourse.			
2. Having many sexual partners increases the risk of getting HPV.			
3. HPV can cause cervical cancer.			
4. Men cannot get HPV.			
5. Using condoms reduces the chances of HPV transmission.			
6. A person could have HPV for many years without knowing it.			
7. HPV is very rare.			
8. HPV always has visible signs or symptoms.			
9. A person with no symptoms cannot transmit the HPV infection.			
10. HPV can cause HIV/AIDS.			
11. HPV can be transmitted through anal sex.			
12. Having sex at an early age increases the risk of getting HPV.			
13. HPV can be transmitted through genital skin-to-skin contact.			
14. HPV can cause genital warts.			
15. HPV can be transmitted through oral sex.			
16. HPV can be cured with antibiotics.			
17. There are many types of HPV.			
18. HPV can cause cancer of the penis.			
19. HPV can cause oral cancer.			
20. HPV can cause anal cancer.			
21. HPV is a bacterial infection.			
22. HPV infections always lead to health problems.			
23. Most sexually active people will get HPV at some point in their lives.			

C. HPV VACCINE SCALE

Please answer the following questions about HPV vaccine using the scale below as honestly as possible.

	False	I Don't Know	True
1. Girls who have had the HPV vaccine do not need a Pap test when they are older.			
2. HPV vaccines offer protection against all sexually transmitted infections.			
3. The HPV vaccine is approved and recommended for females aged 9-45 years.			
4. *Someone who has had the HPV vaccine cannot develop cervical cancer.			
5. You can cure HPV by getting the HPV vaccine.			
6. The HPV vaccine is approved and recommended for males aged 9-26 years			
7. HPV vaccines offer protection against most cervical cancers.			
8. HPV vaccines are most effective if given to people who have never had sex.			
9. The HPV vaccine requires at least 2 doses.			
10. The HPV vaccine protects you from every type of HPV.			
11. One of the HPV vaccines offers protection against genital wart.			

*Dropped from analysis due to poor loading

D. CANCER STIGMA SCALE

Please answer the following questions about cancer stigma using the scale below. Indicate the level of agreement (or disagreement) with each statement.

Cancer Awkwardness	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. *I would feel at ease around someone with cancer.					
2. *I would feel comfortable around someone with cancer.					
3. *I would find it difficult being around someone with cancer.					
4. *I would find it hard to talk with someone with cancer.					
5. *I would feel embarrassed discussing cancer with someone who had it.					
Cancer Severity					
6. Once you have had cancer you are never normal again.					
7. Having cancer usually ruins a person's career.					
8. Getting cancer means having to mentally prepare oneself for death.					
9. Cancer usually ruins close personal relationships.					
10. Cancer devastates the lives of those it touches.					
Cancer Avoidance					
11. If a colleague had cancer, I would try to avoid that person.					
12. I would distance myself physically from someone with cancer.					
13. I would feel irritated by someone with cancer.					
14. I would feel angered by someone with cancer.					
15. I would try to avoid a person with cancer.					
16. A person with cancer is liable for their condition.					
Personal Responsibility					
17. A person with cancer is accountable for their condition.					
18. If a person has cancer, it is probably their fault.					
19. A person with cancer is to blame for their condition.					

Cancer Worry	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
20. I am afraid of the physical consequences of cancer					
21. I worry about my health because of the fear of getting cancer					
22. I feel anxiety when I think of the possible consequences of cancer					
23. I fear about the physical consequences of cancer					

*Dropped from analysis due to poor loading.

E. Identification (Religiosity) Among Students

Please answer the following questions about your religious faith using the scale below. Indicate the level of agreement (or disagreement) with each statement. **There are no right or wrong answers.**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. My religious faith is extremely important to me.					
2. I pray daily.					
3. I look to my faith as a source of inspiration.					
4. I look to my faith as providing meaning and purpose in my life.					
5. I consider myself active in my faith or church/mosque.					
6. My faith is an important part of who I am as a person.					
7. My relationship with God is extremely important to me.					
8. I enjoy being around others who share my faith.					
9. I look to my faith as a source of comfort.					
10. My faith impacts many of my decisions.					
11. When someone criticizes my religion, it feels like a personal insult.					
12. I am very interested in what others think about my religion.					
13. When I talk about my religion, I usually say 'we' rather than 'they'.					
14. My religion's successes are my successes.					
15. When someone praises my religion, it feels like a personal compliment.					
16. If a story in the media criticized my religion, I would feel embarrassed.					

F. The Carolina HPV Immunization Attitudes and Beliefs Scale (CHIAS)

Please respond to the following statements as honestly as possible. There are no right or wrong answers.

Attitudes Toward HPV Vaccine	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. *The HPV vaccine might cause short-term problems, like fever or discomfort.					
2. The HPV vaccine is being pushed to make money for drug companies (R).					
3. The HPV vaccine might cause lasting health problems (R).					
4. If a teenage girl gets the HPV vaccine, she may be more likely to have sex(R).					
5. I think the HPV vaccine is unsafe (R).					
6. I am too old to get a vaccine for a sexually transmitted infection like HPV (R).					
7. *The HPV vaccine is effective in preventing genital warts.					
8. *The HPV vaccine is effective in preventing cervical cancer.					

Perceived Behavioral Control

9. *It would be hard to find a provider or clinic where you can afford the HPV vaccine.
10. *It would be hard to find a provider or clinic that is easy to get the HPV vaccine.
11. It would be hard to find a provider or clinic that has the HPV vaccine available
12. It would be hard to find a provider or clinic where you don't have to wait long to get an appointment to get the HPV vaccine.
13. I am concerned that the HPV vaccine costs more than I can pay.

Subjective Norms

14. *Students on my campus have enough information about the HPV vaccine to decide whether to get vaccinated
15. Students on my campus approve of me getting HPV vaccine

16. My family approves of me getting vaccine
17. Other students on my campus are getting the HPV vaccine.

Intention	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18. In the next 1 year, I intend to get vaccinated against HPV vaccine					
19. In the next 1 year, I will recommend HPV vaccination to other students in my campus					
20. In the next 1 year, I will encourage other students to get vaccinated					
21. If I was still in the HPV vaccine age, I would get vaccinated against HPV					

*- Dropped from analysis due to poor loadings
(R)- Reverse coded items

APPENDIX B. INTERVIEW SCHEDULE

My name is Robert and I will be taking you through the interview today. It is about your health seeking behavior, your information will be treated with utmost confidentiality, so be as honest as possible. I will record your voice for transcription purposes, but will destroy the recording after transcribing.

1. So, for a start, would you please tell me more about yourself?
2. What is your age?
3. What do you study and what year in school are you?
4. In the past 3 three years, how would you describe your health seeking behavior?
5. Have you been to the hospital and if so, for what reasons?
6. Have you been in any relationship in the past 5 years?
7. Where do you mostly get your health information from?
8. In reference to safe sex, how would you describe your sex life?
9. What are your views about the importance of safe sex among students?
10. How do your friends influence your health decisions?
11. Does the need to identify with fellow students influence how you make your health decisions?
12. What kind of health information do you share with your friends?
13. In what ways do your friends influence your health choices?
14. How would you describe your religious beliefs?
15. How do your religious beliefs influence the daily decisions that you make?
16. Do your religious beliefs influence your health seeking behavior?
17. How do you reconcile the dissonance of the choices you make and the beliefs that your faith advocate for?
18. In what ways do you influence your friends when it comes to health seeking decisions?
19. Anything else that you feel I left out and you would like to add?
20. Thank you very much for your time, do you have any questions for me?

APPENDIX C. RESEARCH PARTICIPANT INFORMATION SHEET FOR KENYAN SAMPLE

Please take time to review this information carefully. This is a research study. Your participation in this study is voluntary which means that you may choose not to participate at any time without penalty or loss of benefits to which you are otherwise entitled. You may ask questions to the researchers about the study whenever you would like.

- **What is the purpose of this study?**

The purpose of this study is to learn more about student perceptions of the human papillomavirus (HPV) and the HPV vaccine.

The study should take 15 to 30 minutes to complete.

Students are often at risk for HPV and are encouraged to get the vaccine, therefore, we are interested in your perceptions of HPV and HPV vaccination.

We hope to recruit approximately 2, 000 students to participate in this study.

- **What will I do if I choose to be in this study?**

Should you accept to participate in this study, you will be required to participate in an interview and/or fill in a paper questionnaire with statements assessing your attitudes and knowledge concerning HPV and HPV vaccines.

- **How long will I be in the study?**

Your participation should take no longer than 15 to 30 minutes. Upon completion of the survey or interview, your participation in the study is complete.

- **What are the possible risks or discomforts?**

There are no risks in this study beyond the minimal risks experienced in your daily life or during the performance of routine physical or psychological exams or tests.

Breach of confidentiality is always a risk with data, but we will take precautions to minimize this risk as described in the confidentiality section.

- **Are there any potential benefits?**

There are no anticipated direct benefits to participants.

- **Will I receive payment or other incentive?**

You will receive airtime calling cards worth \$.50 upon completion of this study.

To facilitate your payment for research participation, you will be required to sign a log upon completion of the study.

- **Are there costs to me for participation?**

There are no anticipated costs to participate in this research

- **Will information about me and my participation be kept confidential?**

The project's research records may be reviewed by the study sponsor/funding agency, US DHHS Office for Human Research Protections, and by departments at Purdue University responsible for regulatory and research oversight.

This study is funded by the College of Liberal Arts, and the Brian Lamb School of Communication, Purdue University.

Data will be stored with no identifying details of the participants in a safe computer in Beering Hall 2274-H.

Data will only be stored for approximately 3 months to help with analysis and only the Principal investigators and Co-investigators will have access to it.

- **What are my rights if I take part in this study?**

You do not have to participate in this research project. If you agree to participate, you may withdraw your participation at any time without penalty if you feel uncomfortable with the questions/statements of the researcher.

Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or severing your relationship with Purdue University or the researchers.

To opt out of participation or withdraw your consent please notify a member of the research team. The names and contact information for the investigators are listed below. You may withdraw consent at any time by contacting

[Dr. Marifran Mattson at mmattson@purdue.edu /7654947596] as the first point of contact.

You may also contact [Robert Nyaga at rnyaga@purdue.edu].

- **Who can I contact if I have questions about the study?**

If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact (Dr Marifran Mattson at mmattson@purdue.edu /7654947596 or Robert Nyaga at rnyaga@purdue.edu).

APPENDIX D. RESEARCH PARTICIPANT INFORMATION SHEET FOR USA SAMPLE

Please take time to review this information carefully. This is a research study. Your participation in this study is voluntary which means that you may choose not to participate at any time without penalty or loss of benefits to which you are otherwise entitled. You may ask questions to the researchers about the study whenever you would like.

- **What is the purpose of this study?**

The purpose of this study is to learn more about student perceptions of the human papillomavirus (HPV) and the HPV vaccine.

The study should take 15 to 30 minutes to complete.

Students are often at risk for HPV and are encouraged to get the vaccine, therefore, we are interested in your perceptions of HPV and HPV vaccination.

We hope to recruit approximately 2,000 students to participate in this study.

- **What will I do if I choose to be in this study?**

Should you accept to take part in this study, you will be required to participate in an interview and/or fill in an online survey on SONA with statements assessing your attitudes and knowledge concerning HPV and HPV vaccines.

To access the survey questions, you will be required to login into SONA with your Purdue Career account.

- **How long will I be in the study?**

Your participation should take no longer than 15 to 30 minutes. Upon completion of the survey or interview, your participation in the study is complete.

- **What are the possible risks or discomforts?**

There are no risks in this study beyond the minimal risks experienced in your daily life or during the performance of routine physical or psychological exams or tests.

Breach of confidentiality is always a risk with data, but we will take precautions to minimize this risk as described in the confidentiality section.

- **Are there any potential benefits?**

There are no anticipated direct benefits to participants.

- **Will I receive payment or other incentive?**

You will receive an extra credit upon completion of this study.

To facilitate the award of the extra credit for your research participation, you will be required to forward the code generated by SONA after completing the study to your course instructor.

- **Are there costs to me for participation?**

There are no anticipated costs to participate in this research

- **Will information about me and my participation be kept confidential?**

The project's research records may be reviewed by the study sponsor/funding agency, US DHHS Office for Human Research Protections, and by departments at Purdue University responsible for regulatory and research oversight.

This study is funded by the College of Liberal Arts, and the Brian Lamb School of Communication, Purdue University.

Data will be stored with no identifying details of the participants in a safe computer in Beering Hall 2274-H. Data will only be stored for approximately 3 months to help with analysis and only the Principal investigators and Co-investigators will have access to it.

- **What are my rights if I take part in this study?**

You do not have to participate in this research project. If you agree to participate, you may withdraw your participation at any time without penalty if you feel uncomfortable with the questions/statements of the researcher.

Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or severing your relationship with Purdue University or the researchers.

To opt out of participation or withdraw your consent please notify a member of the research team. The names and contact information for the investigators are listed below. You may withdraw consent at any time by contacting [Dr. Marifran Mattson at mmattson@purdue.edu /7654947596] as the first point of contact. You may also contact [Robert Nyaga at rnyaga@purdue.edu].

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If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact (Dr. Marifran Mattson at mmattson@purdue.edu /7654947596 or Robert Nyaga at rnyaga@purdue.edu).

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