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The Effects of a HPV Educational Intervention Aimed at Collegiate Males on Knowledge, Vaccine Intention, and Uptake

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THE EFFECTS OF A HPV EDUCATIONAL INTERVENTION AIMED AT COLLEGIATE MALES ON KNOWLEDGE, VACCINE INTENTION, AND UPTAKE

by

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DEDICATION

I would like to dedicate this project to my mom and husband. Mom, you have taught me to always follow your dreams. Nick, you have been my rock throughout this entire process. With your love, support and encouragement, I have been able to fulfill my dreams. There have been many sacrifices throughout this entire project, however you both have been cheering me on until the very end. I also would like to dedicate this project to my amazing family and friends.

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ABSTRACT

Human Papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the United States (US). In 2013, approximately 6% of 19 to 26-year-old males had received at least one dose of the HPV vaccine (Richman, Maddy, Torres, & Goldberg, 2016). Currently there is no known cure for HPV, however a prophylactic vaccination provides an efficacious method for protection against HPV related diseases. The purpose of the evidence-based project was to provide a HPV educational intervention to collegiate males and examine the effects of HPV knowledge, intention to vaccinate, and receipt of vaccination. The Health Belief Model was selected to provide the theoretical framework and guidance for this project. The Stetler Model was used as the basis for the implementation of the project. The project took place at a Midwestern private university and utilized a longitudinal pre-test and post-test design. Fraternity members were followed to assess the impact of the HPV educational intervention. The intervention consisted of a slide show presentation guided by the CDC, group discussion, and CDC based informational take-home material. HPV and HPV related Knowledge, Attitudes, and Behaviors Questionnaire was administered pre-intervention and one month post-intervention to measure HPV knowledge, intent to receive the HPV vaccine, and receipt of the HPV vaccine. Data was analyzed using SPSS 24.0. Knowledge was assessed using a paired samples *t*- test with significance determined as $p < .05$. Statistical analyses revealed a significant increase in knowledge scores from pre-test to post-test ($t(84)=--5.76$, $p < 0.001$). Intent to vaccinate and uptake were analyzed with descriptive statistics. Of the 155 post-test participants, 35 (17.1%) participants responded that they intended to receive the HPV vaccine. Of the 106 participants that had not been vaccinated against HPV, 38 (19.4%) had received the first dose of the HPV vaccine. Overall, results of this EBP demonstrated that a HPV educational intervention increased knowledge and vaccine uptake in collegiate males.

Keywords: colleg*, male, adult, knowledge, educat*, intervention, HPV, papillomavirus, vaccine*, immune*, and intent*

CHAPTER 1

INTRODUCTION

Background

Human papillomavirus (HPV) is one of the most common sexually transmitted infections (STIs) in the United States (US). According to the Center for Disease Control (CDC) (2015c), each year over 9,000 males are infected with HPV. There are about 80 million males and females infected with HPV and 14 million newly infected each year (CDC, 2013). In the U.S., there is an estimated 4.6 million new STIs occurring among 15-24 year olds, with HPV being the most common (Patel, Zochowski, Peterman, Dempsey, & Ernst, 2012). The HPV infection is the most common cause of cervical cancers. HPV has been linked to cause 75% of vaginal cancer, 69% of vulvar cancer, 63% of penile cancer, 91% of anal cancer, and 72% of oropharyngeal cancer as well as genital warts (CDC, 2015b; CDC, 2015d). There are over 40 HPV types that can infect genital areas of both males and females. The HPV vaccine can prevent infection from the most common types of HPV.

HPV is transmitted through intimate skin-to-skin contact, such as vaginal, anal, or oral intercourse with someone who has the HPV virus. Any sexually active individual is at risk for contracting HPV. HPV is so common almost all sexually active individuals will have HPV at some point in their life (CDC, 2015a). An infected individual can have no signs and symptoms, but pass it on to another individual through intimate contact.

HPV causes significant economic burden in the US. In one year, the US spent 15.6 billion dollars towards direct medical cost on STIs. Of that 15.6 billion dollars, 1.7 billion was a result of medical cost from the Human Papillomavirus (HPV) (Owesu-Edusei et al., 2013). Furthermore, HPV is even more costly as it is one of the most common STIs in the US and results in the ongoing economic strain of treating HPV-related diseases, such as cancers and genital warts. This shocking financial consequence of HPV adds to the importance of

implementing measures aimed at increasing HPV knowledge and HPV vaccine receipt in the US.

In 2006, the Food and Drug Administration (FDA) approved the Gardasil quadrivalent vaccine for females only, which targets the oncogenic HPV types 16 and 18 and the genital warts associated HPV type 6 and 11 (Patel et al., 2012). In 2009, the FDA approved Gardasil for males ages 9 to 26, which targets HPV types 6, 11, 16, and 18 (U.S. Food and Drug Administration [FDA], 2015). The HPV vaccine is given in 3 shots over 6 months. In 2014, the FDA approved Gardasil 9 for both males and females, which is used in the prevention of HPV types: 6, 11, 16, 18, 31, 33, 45, 52, and 58 (Merck & Co, Inc., 2016). Gardasil 9 aids in the prevention of cervical cancer, vulvar cancer, vaginal cancer, and anal cancer, as well as precancerous lesions and genital warts. Each year, 27,000 people are diagnosed with cancer caused by HPV, such as anal and penile cancer (AAP, 2016).

Recommendations are to begin vaccinating both boys and girls at 11-12 years of age. The CDC (2015b) recommends young women receive the HPV vaccine through age 26, and young men receive the HPV vaccine through age 21. However, males that have sex with other males or males with a compromised immune system, such as HIV, are recommended to receive the HPV vaccine through age 26. Ideally, it is recommended that the vaccine series begin prior to their first sexual encounter and potential exposure to HPV, although individuals are recommended to receive the HPV vaccine after having sexual contact (Krawzcyk et al., 2012).

Statement of the Problem

It is estimated that each year more than 9,000 males are affected by cancers caused by HPV (CDC, 2015c). HPV can cause anal cancer, oropharyngeal cancer, and penile cancer in males. It is predicted that the annual number of anal cancer and oropharyngeal cancer cases caused by HPV in males will surpass the annual number of cervical cancer cases in females by 2020 (CDC, 2015c). Although there is no cure for HPV, prophylactic vaccines provide an

effective method for protecting against HPV related diseases. Routine HPV vaccination may have potential to reduce the burden of HPV related diseases in the US.

Data from the literature

Numerous studies in this review of literature identified barriers to vaccination among men ages 18-26 years (Dillard and Spears, 2010; Fontenot, Fantasia, Charyk, & Sutherland, 2014; Hopfer, 2012; Krawczyk et al., 2012; Mehta, Sharma, & Lee, 2013; and Patel, Zochowski, Peterman, Dempsey, & Ernst, 2012). Some barriers include: cost, safety of vaccine, lack of knowledge, and perceived low susceptibility to HPV related disease. An educational intervention aimed at increasing HPV knowledge, intent to vaccinate, and receipt of vaccination have been effective among college students (Hopfer, 2011; Krawzcyk et al., 2012; Mehta et al., 2013; Richman, Maddy, Torres, & Goldberg, 2016; Warren, 2010). Educational HPV and HPV vaccine interventions aimed at young college adult students may aid in improving overall health outcomes in the US.

Data from the agency

This EBP project was implemented within a college mandatory fraternity meeting. The fraternity meeting on campus was the ideal clinical agency as the population within the meeting included young adult college males ages 18-26. This setting was established in an effort to reach men of this age group because the percentage of young men receiving the HPV vaccine in the US has been low. In 2013, approximately 6% of 19 to 26-year-old males had received at least one dose of the HPV vaccine (Richman, Maddy, Torres, & Goldberg, 2016). The HPV vaccine is a three-dose series given over six months. In addition to this extremely low receipt of the HPV vaccine, it is also concerning that 48% of young adults have low intention to receive the vaccine (Krawczyk et al, 2012).

Purpose of the Evidence-Based Practice Project

The purpose of this EBP project is to increase HPV knowledge, intent to vaccinate, and receipt of vaccination by implementing an educational intervention with college males.

Increasing HPV knowledge and addressing specific barriers related to this population would accomplish the goal of this project. Multiple previous educational interventions have resulted in an increase in HPV knowledge and receipt of vaccination among young adults. In an attempt to provide primary prevention education among this population, the EBP project was implemented at a private Midwestern Lutheran university. Several college males were reached by implementing the intervention at the Grand Chapter meeting for sophomore, junior, and senior fraternity members. The Grand Chapter meeting is a mandatory meeting that takes place at the beginning of the school year and provides an opportunity for all fraternity members to come together. After the initial Grand Chapter meeting, the fraternities then meet separately as individual chapters throughout the school year. This population is of interest, as visits to primary care physicians may decrease or stop occurring and sexual promiscuity may increase.

Identifying compelling clinical questions

The purpose of this EBP project was assessed by identifying the clinical question: In young adult males, how does an educational intervention, compared to the standard of care, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over one-month time period? Evaluation of literature focused on educational intervention aimed at increasing HPV knowledge, intent to vaccinate, and receipt of vaccination, specifically college males.

PICOT format. The PICOT question helps hone in on the clinical questions and increases the likelihood of finding answers. The PICOT format stands for: (P) population of interest, (I) the intervention of interest, (C) the comparison of interest, (O) the outcome of interest, and (T) the time it takes for the intervention to achieve the outcome (Fineout-Overholt & Stillwell, 2011). A brief description of each component will be next:

(P) –The population of interest for this EBP project was young college males, ages 18-26. A convenience sample of fraternity members attending the fraternity grand chapter meeting was utilized for this project. The population consisted of sophomore, juniors,

and senior fraternity members. Freshman were excluded from this study as freshman are not able to join until the spring semester.

(I)- The intervention consists of 5-10-minute HPV educational PowerPoint® presentation followed by an open discussion and a question/answer session. The presentation was developed from knowledge gained through analysis of the relevant literature and information from the CDC website. An educational handout was provided to all participants. The handout was developed and adapted from the CDC website.

(C)- The comparison of interest was current HPV education, which does not involve any formal educational intervention about HPV. Comparison data was assessed through a pre-test/post-test evaluation for HPV knowledge, intent to vaccinate and receipt of vaccination.

(O)- The measured outcomes were HPV knowledge, intent to vaccinate, and receipt of vaccination as measured by analysis of the HPV and HPV related Knowledge, Attitudes, and Behaviors Questionnaire.

(T)- The intervention took approximately one-month to complete. The data was collected prior to the intervention and approximately one-month after the intervention. Data was analyzed to evaluate if an increase in HPV knowledge, intent to vaccinate, or receipt of vaccination occurred.

Significance of the EBP Project

HPV is known to cause various types of cancers and genital warts among young adult males. About 9,300 males are affected by cancer caused by HPV and 160,000 males are diagnosed with genital warts due to HPV (CDC, 2015f). College males may be faced with opportunities to participate in risk-taking behaviors, including sexual activity. Implementing an intervention through the Greek life on a university campus provides an opportunity to provide education and an open discussion regarding preventative measures to improve overall health.

Although there is no cure for the HPV infection, the prophylactic HPV vaccine provides an effective method for protection against HPV related diseases. It is recommended to receive the vaccine prior to the individual's first sexual contact, however receiving the vaccine after is beneficial and recommended (CDC, 2015f). One of the major barriers to HPV vaccine receipt is HPV knowledge (Hopfer, 2012; Mehta et al., 2013). This EBP project aims to increase HPV knowledge, intent to vaccinate, and receipt of vaccination among college males. The significance of this project long-term would be to increase HPV knowledge and awareness, increase receipt of vaccination, and decrease HPV related diseases in an effort to improve the overall health outcomes of the campus community.

CHAPTER 2

THEORETICAL FRAMEWORK, EBP MODEL, AND REVIEW OF LITERATURE

Theoretical Framework

In order to implement this EBP project, the Health Belief Model (HBM) was selected as the guiding theoretical framework. Furthermore, the foundation of this project was structured by the Stetler Model, which was utilized to implement change. Both the HBM and the Stetler Model are essential for implementing evidence-based practice and answering the PICOT questions: In college males ages 18-26, how does an HPV educational intervention, compared with current practice, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over a one-month period? Chapter 2 will contain information about the HBM, the Stetler Model used to implement the change, and a review of current literature.

Overview of Theoretical Framework

The Health Belief Model. The HBM was developed in the 1950s by a group of social psychologists in the U.S. Public Health Service. The psychologists were Irwin Rosenstock, Godfrey Hochbaum, and Stephen Kegel. It is a psychology-based theory, which was first used to explain the failure of people to participate in programs to prevent and detect disease. The HBM consists of six unique concepts used to explain an individual's health motivation for participating in disease prevention and health promotion programs. The six concepts of the HBM include: (a) perceived susceptibility, (b) perceived severity (seriousness), (c) perceived benefits, (d) perceived barriers, (e) cues to action, and (f) self-efficacy. Perceived susceptibility is an individual's assessment of his or her risk for getting the disease, while perceived severity (seriousness) is an individual's judgement of the severity of the disease. Perceived benefits are the beliefs that taking action would reduce the risk or seriousness of disease, and these are the perceived barriers, which are the potential obstacles that could prevent a person from completing the recommended behavior. Such barriers may include cost, time, and fear. Cues to

action are the factors that will start a person on the way to changing his or her behavior and taking action. Finally, self-efficacy is a person's belief in their ability to carry out the behavior to produce the desired outcome (Champion & Skinner, 2008). The six concepts of the HBM can be utilized as framework for the implementation of an evidence-based intervention, which includes determining an individual's intent to receive the HPV vaccination. The EBP project will try to overcome barriers to receipt of the HPV vaccine among college males, which will help to improve overall health outcomes.

Application of the HBM. The HBM is often utilized to highlight why individuals make certain choices about their health. Thus, the HBM has been applied to numerous areas of study, such as vaccination uptake, mother to child HIV transmission, and nutritional behavior related to osteoporosis (Donadiki et al., 2014; Ghaffari, Tavassoli, Esmailzadeh, & Hassanzadeh, 2012; Odeny et al., 2014). The HBM framework has been effective in increasing HPV knowledge and intent to vaccinate in many studies that assess HPV knowledge and intent to vaccinate (Krawzcyk et al., 2012; Mehta, 2013).

The six concepts of the HBM were applied to this EBP project. Perceived susceptibility was addressed by discussing college males' beliefs in the risk for developing HPV-related disease. Information was provided about the epidemiology of HPV and the incidence among males ages 18-26 within the United States (US). Perceived severity was addressed through the HPV educational intervention, which included a PowerPoint® presentation and discussion about the serious consequences of HPV-related diseases. The purpose of the educational intervention was to increase HPV knowledge about risk factors and preventions, as well as the benefits of receiving the HPV vaccine. Perceived barriers were identified throughout the literature and then incorporated into the educational intervention. These barriers included cost, time, concerns about vaccine safety, lack of knowledge about HPV-related diseases, and the vaccine as well as fear of immunizations. Cues to action were addressed by providing the participants with handouts about the HPV vaccination and information about obtaining the vaccine from the

student health center. Self-efficacy was incorporated by providing guidance and reinforcing the ability to perform healthy behaviors.

Strengths and limitations of the HBM. The strengths of the HBM are its wide applicability to various health concerns and preventative diseases among all individuals. The model has been applied to studies involving immunizations and human immunodeficiency virus (HIV) (Donadiki et al., 2014; Coleman, 2007). The HBM helps facilitate autonomous health decisions by incorporating the individual's motivations and personal beliefs, which leads to improved health outcomes. The HBM can be utilized to evaluate the relationship between a person's beliefs and health-related behaviors. The limitations of the HBM in this EBP project are addressing perceived susceptibility in college aged males. A perceived benefit may be participants are already sexually active or in a monogamous relationship and may not believe the vaccine will benefit them.

Evidence-based Practice Model

Overview of EBP Model

The Stetler Model. The Stetler Model of Evidence-Based Practice guided the implementation of this EBP project and provided a framework to integrate research into practice. The original Stetler Model was published in 1976, and has been revised three times since then. The Stetler Model has been known as the practitioner-oriented model due to its focus on critical thinking, evidence based-practice, and individual findings (Stetler, 2001). This model has five steps, which are used to evaluate research findings for the implementation of evidence-based practice nursing.

The five phases within the Stetler Model include preparation, validation, evaluation/decision making, translation/application, and evaluation (Stetler, 2001). Preparation is the initial phase which involves determining the need, the purpose of the proposed project, and searching for relevant evidence. Validation is the second phase in which, the relevant evidence is critiqued. The evidence will either be rejected or accepted and the researcher can

then move on to critique another piece of evidence or move to the third phase. The third phase is evaluation/decision making. This includes the synthesis of the findings, judging the strength of the evidence, and deciding whether or not the findings should be utilized. The fourth phase is translation/application, which focuses on how to implement the evidence into practice (Stetler, 2001). The final phase, evaluation, determines if the goals related to the evidence were met (Melnyk and Fineout-Overholt, 2011). The five phases of the Stetler Model can be integrated into individual research for evidence and the implementation of the findings can be integrated into practice.

Preparation. After meeting with the Director of the Student Health Center of the private Midwestern Lutheran university where the project will take place, the needs of the population were established. This discussion, along with the literature review, helped develop the PICOT question, which needs to be considered during the initial phase. For this EBP project, a systematic search for relevant evidence aimed at answering the PICOT: in young college males ages 18-26, how does an HPV educational intervention, compared with current practice, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over a one-month period? Once the PICOT was established, a search of available literature within multiple electronic databases occurred, and the best evidence was obtained.

Validation. After performing a search for evidence within the available electronic databases, a critique of the results must be performed to determine its applicability to the project. The Melnyk and Fineout-Overholt (2011) Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions was used to identify the level of evidence. Once evidence was reviewed, it was either included for critique or excluded based on applicability to the project. The articles that were selected for critique were appraised utilizing the John Hopkins Nursing Evidence-Based Practice (JHNEBP) Research and Non-Research Evidence tools.

Evaluation/Decision Making. In this phase, decisions were made as to whether or not pieces of evidence should be utilized. Evidence was evaluated for feasibility, fit, and current

practice. Both internal and external evidence was evaluated. The evidence was placed into the following groups: (a) use, (b) consider for use, (c) use for background information, and (d) do not use, which was based on inclusion and exclusion criteria (Stetler, 2001). Full text reviews were performed for evidence that fell into group a, b, and c. After a thorough evaluation of all potential evidence, 10 articles were selected for the utilization of this EBP project.

Translation/Application. The fourth phase allows researchers to implement their findings to accomplish the desired change. To put the plan into action, the operational details must be developed, adopted, and implemented within the practice setting. With the guidance of the project advisor and facilitator, it was determined that the HPV educational intervention would be provided to college male fraternity members at the fraternity Grander Chapter meeting at a private Midwestern Lutheran university.

Evaluation. The fifth phase of the Stetler Model is important as it is an evaluation and analysis of the implementation of the evidence-based findings into practice. This phase helps to determine if the goals of the project were met. Revision may need to occur to improve the effectiveness of the intervention. If the intervention is effective, the plan may be incorporated into routine use. In collaboration with the Director of the Student Health Services of the Midwestern private Lutheran university, it was determined that integration of this HPV education intervention may be adopted as part of health program in the future.

Strengths and limitations of EBP model. A strength of the Stetler Model is its assumption that both formal and informal research findings can be incorporated into the clinical setting. The tool can be utilized by both an individual practitioner or an individual within a group that is responsible for the implementation of EBP. The Stetler Model is based on critical thinking steps and designed to buffer any potential barriers for the implementation of research findings (Stetler, 2001).

A limitation of the Stetler Model is one of the assumptions, which states its “utilization may be instrumental, conceptual, and/or symbolic” (Stetler, 2001, p.274). There are multiple

forms of research which can be utilized within this model. These research findings can be utilized to formulate a plan to persuaded how others think or behave (Stetler, 2001). Furthermore, this can result in inappropriate use of evidence-based practice due to individual practitioner interpretation.

Literature Search

A literature search was performed to identify relevant and best evidence and to determine if any best practices were already in place in the area of interest, which is an educational intervention to increase HPV knowledge and vaccine intent among college males. Although much of the research has focused on parental views, there has recently been a push to educate young adults about HPV and the HPV vaccine and determine what the barriers are to receiving the vaccine. A search was conducted, in collaboration with the research librarian, through the utilization of the electronic databases available on the university library website. The aim of this search was to discover current and relevant evidence regarding the effect of HPV education on knowledge and vaccination intention among young college males ages 18-26. After the need for this EBP was established, a PICOT question was structured to help guide the literature search. This process included search engines and keywords, classification of the level of evidence, inclusion and exclusion criteria, and appraisal of the evidence selected.

Search engines and keywords. The databases utilized were Medline via EBSCO, Cumulative Index to Nursing and Allied Health (CINAHL), ProQuest Nursing & Allied Healthsource, Joana Brigs Institute (JBI) and the Cochrane Collaboration and Library. The key search terms utilized in CINHAL included colleg* and undergraduate and universit* separated by the Boolean operator OR; knowledge and educat* separated by Boolean operator OR; HPV and papillomavirus; and vaccin*. In Medline and ProQuest Nursing Allied Healthsource the same search terms were utilized except vaccin *was changed to the MeSH term vaccination.

Inclusion and exclusion criteria. In an effort to refine the search and obtain the most relevant evidence, exclusion and inclusion criteria were established by utilizing limiters within the electronic databases. Inclusion criteria were: (a) males, (b) scholarly/peer reviewed, (c) English language, and (d) published between the years of 2009-2016. Exclusion criteria were: (a) published outside of the established dates, (b) pertained to non-HPV topic, (c) focused on children and adolescents, and (d) did not include concepts of knowledge or vaccine intent. Articles were not utilized if they did not meet the inclusion criteria. The date range of 2009-2016 was utilized to obtain the most current evidence available and to incorporate studies after the availability of the HPV vaccine for males. After a thorough literature search, a summary of the search is represented in Table 2.1

In JBI, the search term papillomavirus was utilized and 16 results were obtained. These results were examined, but none were utilized because they were not relevant to the project as they focused on other diseases or contracting the papillomavirus. Cochrane was searched for systematic reviews and the following search terms were utilized colleg* and undergraduate and universit* separated by the Boolean operator OR; HPV and papillomavirus separated by the Boolean operator OR. This yielded 13 Cochrane reviews, which none were utilized as many were repeats from CINHAL and Medline.

Studies utilizing female subjects were appraised and found applicable for this EBP project. To establish that males and females learn similarly, two studies assessing genders and learning will be discussed. A study evaluated the learning styles of males (n=108) and females (n=211) enrolled in animal science courses demonstrated the majority preferred a field-independent learning style or analytical. However, with regards to gender and learning styles, there was no difference (Hoover & Marshall, 1998). Another study evaluated the feedback preferences and cognitive styles of female (n=67) and male (n=41) student teachers. Evans & Maring (2010) found all student teachers did not highly value giving feedback back to peers as a way of learning. All student teachers valued written feedback rather than feedback by video,

telephone, or email. Finally, there was no statistically significant gender difference in regards to feedback practices as both gender found receiving feedback to be very important.

Table 2.1

Review of Literature Search

Electronic Databases	Total Results	Abstracts Reviewed	Full Text Reviewed	Selected for Project
CINAHL	71	31	13	8
Medline	174	25	6	2
ProQuest	93	9	0	0
JBI	16	0	0	0
Cochrane	13	0	0	0

Levels of Evidence

The level of evidence of the reviewed articles was identified utilizing the Melnyk and Fineout-Overholt (2011) Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions, which ranges from Level 1 (highest) to Level VII (weakest). The levels of evidence from highest to lowest are systematic reviews or meta-analysis of all relevant randomized controlled trials (RCTs), well-designed RCTs, well-designed controlled trails without randomization, well-designed case-control and cohort studies, systematic reviews of descriptive and qualitative studies, single descriptive or qualitative study, and expert opinions.

The literature review focused on HPV knowledge, HPV educational interventions, intent to vaccinate, and vaccination uptake. This was aimed at answering the following question: what the best practice for increasing HPV knowledge and intent to vaccinate among college males ages 18-26? Ten pieces of evidence were obtained and rated utilizing the rating system. Five Level II randomized control trials, one Level III non-randomized control trail, and four Level IV

cross-sectional studies. Levels of Evidences are included in table 2.2. A summary of evidence for each article is included in Appendix A.

Table 2.2

Levels of Evidence

Author (s)	Level of Evidence	Electronic Database
Dillard & Spear (2010)	IV	CINAHL
Fontenot, Fantasia, Charyk, & Sutherland (2014)	IV	CINAHL
Hopfer (2011)	II	CINAHL
Krawczyk et al. (2012)	II	CINAHL
Mehta, Sharma, & Lee (2013)	II	CINAHL
Paiva, Lipschitz, Fernandez, Redding, &Prochaska (2014)	IV	MEDLINE
Patel et al. (2012)	II	CINAHL
Ratanasiripong (2015)	IV	CINAHL
Richman, Maddy, Torres, & Goldberg (2016)	II	CINAHL
Warren (2010)	III	CINAHL

Appraisal of Relevant Evidence

To best answer a clinical question, a key step of evidence-based practice (EBP) is to critically appraise evidence. The critical appraisal of evidence was guided by the utilization of the John Hopkins Nursing Evidence-Based Practice (JHNEBP) Research and Non-Research Evidence tools. The JHNEBP research appraisal tool was utilized to determine the quality of the evidence obtained. The JHNEBP research appraisal tool can be applied to experimental, quasi-experimental, non-experimental, qualitative, and meta-synthesis studies (Dearholt & Dang, 2014). The non-research appraisal tool can be applied to systematic reviews, clinical guidelines, and expert opinions. The quality rating scale categorizes studies as A for high quality, B for good quality, and C for low quality or major flaws.

Level II evidence. Level II evidence consists of single RCTs, which are five of the ten studies included in this literature review. The dependent variables of HPV knowledge and intent to vaccinate are included in two of the five studies, which will be discussed first.

HPV knowledge and intent to vaccinate. Krawczyk et al. (2012) conducted a study comparing the efficacy of two HPV educational interventions (written and video) in increasing HPV and vaccine knowledge as well as intent to vaccinate in college students. The participants were recruited through convenience sampling at a university in Montreal, Quebec, Canada. The sample consisted of two hundred undergraduate males (n=60) and female (n=140) students. Students that had received the HPV vaccine were excluded from this study. Participants were then randomly assigned to receive one of three conditions: written, video or control conditions.

The written intervention group members were given an educational HPV and vaccine pamphlet to read. The video intervention group members watched an educational HPV and vaccine video. The control group were asked to read an educational pamphlet about general cancer prevention strategies. All participants completed an online pre-and post intervention questionnaire. Each group took approximately five minutes to complete their interventions. Both the written and video interventions were developed using the framework of the HBM. The key

factors of the HBM applied to the intention to receive the HPV vaccine, which were perceived susceptibility and severity of HPV, perceived benefits, perceived barriers, and cues to action.

All participants provided data regarding their sociodemographic, general health, and sexual health history. Intent to vaccinate was measured using the question: “Do you intend to receive the HPV vaccine?” This question was completed by all three groups on the pre-and post questionnaire. Knowledge of HPV and the vaccine was measured utilizing a 22-item scale, which was adapted from other studies.

Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) 16.0. The effects of the intervention in increasing HPV and vaccine knowledge were assessed with a 2 (Pre-Post) x 3 (Control, Written, Video) x 2 (Gender) mixed between-within subjects analysis of variance (ANOVA). The same design was used to evaluate vaccine intentions. For the entire sample, scores for pre-intervention knowledge (*M*= 10.58 out of 22, *SD* = 4.55) were modest and intent to vaccinate scores (*M* = 3.37, *SD* = 1.89 out of 7) were low. Results of the ANOVA and post Hoc turkey for knowledge demonstrated the written intervention (*M*pre=10.48, *SD*=4.86; *M*post=17.46, *SD*=2.09) and video intervention (*M*pre=11.49, *SD*=4.25; *M*post=16.70, *SD*=2.19) significantly increased knowledge, whereas there was no significant change in the control group (*M*pre=10.89, *SD*=4.15; *M*post=12.06, *SD*=4.15). Both written intervention (*M*pre=3.52, *SD*=1.94; *M*post=4.57, *SD*=1.90) and video intervention (*M*pre=3.14, *SD*=1.83; *M*post=4.39, *SD*=1.86) significantly increased intent to vaccinate. As demonstrated with HPV knowledge, there was no significant difference noted within the control group (*M*pre=3.51, *SD*=1.90; *M*post=3.88, *SD*=1.77) on intent to vaccinate.

The two educational intervention groups of this study (written and video) indicated a significant increase in both HPV knowledge and intent to receive the HPV vaccination. Neither intervention demonstrated better results than the other in increasing HPV knowledge. Another study demonstrated an increase in HPV knowledge and intent to vaccinate, however using another method of intervention (Mehta et al., 2013).

There are some limitations of this study that should be considered. The participants were randomly assigned to the three groups, the sampling utilized was convenience. This may limit the potential for generalizability. Students may have decided to be a part of the study for their own personal interests in health or sexual health. Other limitations include the lack of double blinding and the post-test questionnaire was administered immediately. The immediate administration of the post-test questionnaire prevents any measurement of long-term retention of the education and intent to receive the HPV vaccination.

Strengths of this study included randomization, 100% completion rate of pre/post intervention questionnaire, demographics were similar between the various groups, and statistical analyses outcome. This study is applicable to the development of this EBP project. This study was rated high quality of evidence due to the many strengths already mentioned. A lesson to learn from this study may be to consider the long-term effects of an educational intervention, thus consider a post-test immediately after the intervention and again one month later. The study utilized the HBM framework to develop their intervention, which was successful in demonstrating an increase in knowledge and intent to vaccinate within the target population.

Mehta, Sharma, and Lee (2013) authored the second RCT within this review. This study evaluated an intervention aimed at increasing both HPV knowledge and intent to vaccinate. Similar to Krawczyk et al. (2012), the authors utilized the HBM framework to develop an intervention evaluating the effectiveness of a HBM-based educational intervention compared with a traditional knowledge-based intervention. Utilizing snowball sampling, a total of 90 males, ages 18-25, were recruited from a large Midwestern University. Sample size was calculated using the G*Power based on: alpha = 0.05, power =.80, groups = 2, measurements = 3, effect size =.20, and correlated with repeated measures = 0.5. Participants were then randomly assigned to either the control (n=45) or experimental group (n=45). Randomization was done through the Research Randomizer, an online software program. The control group received a knowledge-based intervention on HPV and the HPV vaccine. The experimental group received

an intervention based on the HBM and its concepts. The intervention consisted of a PowerPoint® presentation on HPV, role playing, brain storming, and a discussion for two hours. A pre-test and post-test were administered to both groups.

A pre-test/post-test based on the HBM was developed by the researchers, which was determined to be valid and reliable. A panel of six experts established face and content validity. Internal consistency was established by Cronbach's alpha and values between 0.70 and 0.90 were obtained. Stability of the pre-test/post-test was established through a test-retest procedure, while test-retest reliability was computed in a sample of 30 participants and *r* values between 0.6 to 0.8 were obtained. Confirmatory factor analysis was also conducted. Finally, all evaluations of the pre-test/post-test demonstrated a good fit model.

The content for the experimental group was based on the HBM and data from the literature review, including a previous study conducted by Mehta and Sharma (2011), and a series of focus groups conducted prior to the study. The six concepts of the HBM were addressed through educational information. The intervention included a PowerPoint® presentation, role plays, brain storming session, and discussion. The control group received information about STIs and the history of vaccines. The content for the control group was based on information from the CDC and a literature review on the history of vaccines. This intervention for the control group included a PowerPoint®, discussion, and videos only.

Repeated measure of ANOVA demonstrated positive changes in the experimental group for knowledge. The main effect of time was found to be statistically significant for knowledge (p= .000). Results demonstrated self-efficacy for taking the vaccine (p = .000), perceived barriers (p = .007), and perceived severity (p = .004) were significantly positive predictors of vaccine acceptability within the experimental group.

The HBM-based intervention was successful at increasing knowledge and intent to vaccinate. Repeated ANOVA for intent to vaccinate was significant at all three times (p = .000), which indicates a positive change over time and in groups. A decrease was seen in the control

group. However, an increase in intent to vaccinate was observed in the experimental group. Thus, demonstrating the effectiveness of the information provided in the HBM-based intervention. An important piece to take from this study is addressing barriers targeted at this specific population, which may help increase HPV knowledge and intent to vaccinate.

Limitations to this study include attrition at follow-up and the demographic make-up of participants. At follow up, which occurred between one and three months later, only 16 out of 90 participants responded. Ten of which were from the experimental group and six were from the control group. The overall retention rate was 17.8%, 22.2% for the experimental group and 13.3% for the control group. The authors stated possible reasons for attrition were: end of the school year, lack of interest due to no incentives at initial follow-up notice, final exams, moving away from campus and approval for incentives at later date. The other limitations were the differences between the groups at baseline for race/ethnicity, sexual orientation, year in college, marital status, and whether the participants had heard of HPV or the vaccine. This was determined using a chi-square test. In an attempt to isolate the true effect of the intervention, similarities among the groups at baseline facilitates the minimization of possible confounders within the study.

Strengths of this study include the clear explanation of the randomization of participants and the use of the online random number generator. The authors clearly explained the validity, reliability, internal consistency, and stability of the survey. The use of a sound instrument is essential in research. Thus, this study was rated high quality evidence and was found applicable for this EBP project. This study demonstrates the importance of developing an intervention tailored to the target population and the effectiveness of incorporating the HBM concepts into the development of an educational intervention. This has also been observed in another study (Krawzcyk et al., 2012).

Receipt of HPV vaccine and knowledge. Richman, Maddy, Torres, & Goldberg (2016) authored the third RCT within this review. The researchers examined the effects of an electronic

appointment reminder with electronic health educational messaging about HPV and the HPV vaccine at increasing the HPV vaccine series completion, adherence, and knowledge among college students at a university located in North Carolina. Students were recruited from the student health center and special health events. Two hundred sixty-four participants were recruited and randomly assigned. Participants elected to receive electronic communication through either email or text message.

The intervention (n=130) group received seven electronic messages, one per month. This included four health education messages about HPV and the HPV vaccine, two appointment reminder messages, and one message asking participants to take the follow-up survey. This was in addition to the standard of care at the student health center, which included a paper card with the next appointment date. The control group (n= 134) received standard of care at the student health center, which included a paper card with the date of their next appointment. Participants in the control group also received one electronic notification seven months after their first HPV vaccine dose asking them to complete the follow-up survey. A baseline survey was obtained from all participants after receiving the first dose of the HPV vaccine and a post-survey was administered seven months after their first dose was administered. The survey was adapted from previously validated and reliable instruments from Health Information National Trends Survey by National Cancer Institute.

Data were analyzed using the SPSS statistical analysis software. All participants completed the baseline survey and 37% completed the follow-up survey. Completion rate of the second dose of the HPV vaccine was similar among the intervention and the control group (53% versus 52%). Completion rate of the third dose was also similar among the intervention and control group (34% versus 32%). Knowledge scores among the intervention group increased at follow-up (*n*=44, mean knowledge score =93%,*SD* = 0.08) compared to baseline (*n* = 44, mean knowledge = 87%, *SD* = 0.11). No significant change in knowledge scores from baseline to

follow-up were noted within the control group (*n* =52, mean knowledge score at baseline = 88%, *SD* = 0.11; mean knowledge score at follow-up = 89%, *SD* = 0.15).

Although the intervention did not impact the completion of the vaccine series within this population, participants reported satisfaction with the intervention. When asked about the experience with the electronic messages, 65% reported the experience to be mostly positive, 26% reported somewhat positive, and 9% were neutral. There were no reports of somewhat negative or mostly negative. Over three quarters of the sample (77%) reported the text message or email reminders to be helpful in reminding them to get their second or third dose of the HPV vaccine. Ninety-one percent or participants reported the electronic reminders can increase HPV vaccine use among college students in general, and eighty-one percent reported the educational messages increased their knowledge about HPV. The intervention was not successful at increasing completion of the HPV vaccine series, but it was successful at increasing HPV and HPV vaccine knowledge among the intervention group. Interestingly, the most identified predictors of receiving the second or third dose of the HPV vaccine were being female, a minority student, and those identifying as homosexual or bisexual.

Limitations to this study include recruitment methodology, the population, and delivery of the survey. The researchers originally began recruiting students receiving their first dose of the HPV vaccine from the student health center, however due to low recruitment rates and cost barriers experienced by students they changed their recruitment methodology. They began offering the vaccine at no cost to student, which increased their enrollment. No differences were identified between the two methods, however the change may have resulted in cross contamination of the study groups and confounded the results. For instance, if two friends are participating in the study, but one is in the control and the other is in the experimental group, they may decide to obtain the vaccine together. Some participants were unreachable as they leave during the summer months or they may not check their email as often during the summer months, which meant participants may have received the HPV vaccine elsewhere and did not

respond for follow-up. The baseline survey was delivered as a paper version and the follow-up survey was delivered electronically, which is not considered good practice due to the differences in interpretation and data collection.

Strengths of the study include both the participants and the health care staff were blinded, randomization of the groups, equal treatment of the groups, statistical analyses, and demographic similarities among the groups. This study demonstrates that an educational intervention is effective in increasing HPV knowledge, which has been shown with other studies (Krawczyk et al., 2012; Mehta et al, 2013; Warren, 2010). Although this study did not demonstrate an increase in vaccination completion, valuable information was gained in evaluating delivery of the educational intervention. This study was found to have good evidence and was applicable to this EBP project.

Intent to vaccinate only. A study performed by Hopfer (2011) is the fourth RCT within this review. The aim of this study was to compare the effects of an HPV narrative intervention on increasing HPV vaccination intention among college women. One thousand women, ages 18-26, were randomly sampled from the university's health services database using a random number generator. Participants were eligible if they had not received the HPV vaccine, which resulted in four hundred four women, ages 18-26. All participants who received either the control or intervention completed the survey and responded to the two-month post intervention email, which represents a 100% response rate.

Hopfer (2011) discusses culture-centric narratives and exemplification theories as the framework for the development of the intervention. This framework has similarities to some of the concepts of the HBM. The types of narratives utilized are similar to the concepts of the HBM: (1) HPV susceptibility narrative (perceived susceptibility), (2) overcoming barriers to vaccinate (perceived barriers), (3) vaccine safety (perceived severity) and (4) becoming vaccinate regardless of dating status (perceived benefits). The videos also discuss how to access the vaccines on campus (self-efficacy) and reminders about appointments (cues to

action). Although the HBM was not utilized as the framework for the development of the intervention within this study, similarities can be observed. These similarities are helping to add to the growing body of evidence that supports the use of the HBM as a framework for the development of an educational intervention aimed at this population (Krawzcyk et al., 2012; Mehta, 2013).

Participants were asked to sign up for a 30-minute time at the computer lab, which would allow them to watch the brief video intervention and complete the online post-test. When the participants arrived, the author directed the participants to their seats at either the intervention or control video. Participants that received the intervention viewed one of three videos: (1) a video of vaccine decision narratives delivered by peers, (2) a video of vaccine narratives delivered by medical experts, or (3) a video of narratives delivered by both peers and experts. The intervention content was based on a previous study by Hopfer and Clippard (2010). Each video included four types of vaccine decision narratives: (1) HPV susceptibility narratives, (2) vaccine self-efficacy narratives about overcoming barriers to vaccinate, (3) vaccine safety narratives, and (4) narratives prompting college women to vaccinate regardless of their dating status. Participants that received the control group watched one of three control videos: (1) an informational video without narratives, (2) the campus website providing information about HPV and the vaccine, or (3) no message. Two months after receiving the intervention or control, participants were emailed and asked if they received their first dose of the HPV vaccine. Vaccine intent was measured by two items used from previous research (Brewer & Fazekas, 2007). Vaccine uptake was measured using self-report (yes/no) data collected two-months after the intervention.

Logistic regression was performed to compare vaccination between the intervention and control groups. Results demonstrated among the participants receiving the peer-expert narrative intervention, the odds of vaccinating two months later were twice as likely compared to the participants in the control groups (OR = 2.07; 95% CI = 1.05, 4.10; p= .036). The peer-only

narrative intervention did not significantly increase the odds of vaccinating compared to controls (OR = 1.61, 95% CI=.80, 3.28, *p*=.25). The expert only intervention showed a decrease in the odds of vaccination compared to the control group (OR = .48, 95% CI = .13, 1.69; *p* = .25).

The results of this study demonstrated a combined peer-expert narrative was effective at increasing HPV vaccine intention within the study population. Chi square analyses of receipt of vaccination was conducted to determine the effects of the intervention. The peer-expert intervention almost doubled the rate of vaccination (22%) compared to the control condition (12%). Overall, sixty-one (15%) of the four hundred four participants received the vaccine two months after receiving either the intervention or control.

Although the peer-only and expert-only intervention did not statistically increase vaccination rates, it is important to note there were differences among the interventions groups. The peer-only intervention was 521 words in length. The expert-only intervention was shorter, containing only 210 words, which did not provide dosage effects. The peer and expert narrative was 556 words in length. The controls varied in length as well, with the information website containing 546 words and the informational video containing 120 words. The participants received videos with different lengths, thus enough time may not have been provided to absorb the information.

Internal and external validity should be looked at when appraising the literature. Internal validity may have been compromised due to the differences in interventions within the experimental group. The results of the peer-expert demonstrated a significant increase in vaccination rate compared to the control, however these results were not found for the peer-only or expert-only video. The expert-only intervention may not have been as effective as the peer-expert intervention due to the weaker dosage effect. As mentioned earlier, the expert-only video contained less words than the peer-only video or the peer-expert video, which meant the length of the video was much shorter. Unsystematic differences between the group conditions may have confounded the results.

Strengths of this study included generalizability to the general university female population, randomization of participants, and sound statistical analyses. The sampled population's sociodemographic characteristics were similar to that of the general university female population. Thus, decreasing possibilities of selection bias. This study was rated as high quality of evidence. The author was able to develop an intervention addressing the CDC's recommendation that all females through the age of 26 should receive the HPV vaccine. This was done through providing knowledge targeted at increasing HPV vaccination uptake in this population.

Patel et al. (2012) is the final RCT within this review. The researchers examined the effects of an educational intervention on the intent to receive the HPV vaccine in female college students. The sample included 256 females attending a gynecology clinic at the University Health Service (UHS) located at the University of Michigan. Participants were informed that they would be participating in a study about women's personal views about the HPV vaccine, but they were not told that one aim of the study was to evaluate the effect of an educational intervention on vaccine uptake. Participants were randomized through the utilization of a computer program, which assigned the participants to either receive HPV-specific patient education plus reminder letter or standard of care.

The intervention group received a detailed HPV and Vaccination fact sheet, which was modeled after fact sheets from the CDC website. A study coordinator discussed the fact sheet with the participants. About two weeks later, participants in the intervention group were mailed a packet containing a reminder letter and another copy of the HPV and Vaccination fact sheet. The reminder letter contained a short description of the HPV vaccine and information on how to schedule vaccinations at the UHS. Standard of care for the control group consisted of a brief mention of the HPV vaccination and a standard information sheet on the HPV vaccine, which was similar content to the HPV and Vaccination fact sheet as well as information about how to

get the vaccine at the UHS. The control group did not receive a reminder letter or another copy of the fact sheet in the mail.

All participants completed a self-administered survey based on the core assumptions of the planned behavior theory, which suggests a person's behavior is determine by his or her intention to perform the behavior. This survey was pre-tested for timing and comprehension, but revised before initial data collection. Intent to vaccinate was assessed by a single question on the survey, "Do you intend to get the HPV vaccine?" HPV vaccine rates were assessed through review of the UHS medical records six months after the intervention.

All data analyses were done using SAS statistical software version 9.1. Statistical analyses included bivariate associations of sociodemographics, sexual history, and health history. Multivariable logistics regression models were used to analyze the relationship between personal beliefs and HPV-related knowledge with intent to vaccinate, which included supplemental health insurance coverage and current sexual activity. These two factors were significantly associated with intent to receive the HPV vaccine in bivariate analyses ($p < .05$).

At baseline of all participants, 105 (41.0%) indicated an intent to receive the HPV vaccine, 80 (31.3%) did not intend to receive the vaccine, and 67 (26.2%) were unsure at the time of the survey. The most common reasons for intending to receive the HPV vaccine were, worry about getting cervical cancer (67.6%), HPV (65.7%) or genital warts (48.6%). About 40% of all participants stated a health care provider's recommendation was a reason to receive the HPV vaccine. The most common reasons for not receiving the HPV vaccine were, concerns about vaccine safety (48.8%), side effects (48.8%), high out of pocket costs or insurance copayments (41.3%), long-term consequences (40.0%), and not being at risk for STI or genital warts (28.8%).

The education-based intervention was not significantly associated with HPV vaccine uptake (RR = 0.84; 95% CI [0.31-2.28]). Only fourteen (5.5%) participants received at least one HPV vaccine dose within six months of the study. The two variables identified to be significantly

associated with intention, supplemental health insurance coverage and current sexual activity, were not significantly associated with HPV vaccine receipt. Of the participants that received the HPV vaccine, 22.8% indicated that they intended to, compared with 2.1% of those that did not intend to receive the vaccination (p = .0027).

Overall, the intervention in this study did not increase vaccine uptake among college females. Only 6 % of the study population received one dose of the HPV vaccine within the six months of the study, which did not significantly differ between the two groups. Since the recommendation is to receive the three-dose series over six months, the receipt of one dose was accepted as vaccine receipt. The fact sheet utilized was modeled after fact sheets available from the CDC website, but was not targeted to the college females. Previously discussed studies have demonstrated the importance of a tailored intervention (Hopfer, 2012; Mehta, 2013; and Paiva et al, 2014). Thus, the development of an individualized educational intervention aimed at addressing barriers to vaccination among the target population may better facilitate desire outcome of increased knowledge and intent to vaccinate.

Limitations of this study include the intervention and lack of explanation about the reliability or validity of the instrument. The fact sheet was discussed and provided to the intervention group, however it was not geared towards the target population. Again, it would be beneficial to develop a tailored intervention aimed at addressing barriers to receiving the vaccine among college females. The researchers did not discuss the reliability or validity of the instrument. They only stated the instrument was pretested for comprehension and timing, which was then revised.

Strengths of this study include computer randomization of the groups, similarities between the groups, and equal treatment of the groups. This study demonstrated the importance of creating an individualized educational intervention. This study was rated high quality of evidence and was found applicable to this EBP project.

Level III evidence. When reviewing the literature, one study was ranked Level III evidence. The study has a dependent variable of knowledge only and the findings were discussed next.

Knowledge only. Warren (2010) performed a study to determine if a brief educational intervention improves college women's knowledge of HPV. Warren recruited 63 female college students from a private college in northeastern Pennsylvania. The participants were asked to voluntarily participate. Participants were not randomized. Of the original 63 participants, only 55 responded to complete the post-test questionnaire.

In this one-group pre-test/post-test study, participants received a brief HPV educational intervention. Participants were asked to anonymously fill out a questionnaire, which included seven true-false questions regarding HPV and other related health issues. The questionnaires were filled out prior to receiving the HPV education and again one-month post-intervention to evaluate the effectiveness of the brief educational intervention. The intervention consisted of a brief discussion on HPV and the students were given a two-sided educational handout about HPV.

Results were analyzed using the General Linear Model procedure and all analyses were performed using SPSS. Of the original 63 participants, only 55 responded to complete the post-test questionnaire, which resulted in a loss of 8 students unavailable to respond. Students scored significantly higher post-intervention (M = 5.8) on the questionnaire one-month after the brief educational intervention compared to pre-intervention (M = 4.6). Thus, this study demonstrates that a brief HPV education increases short-term knowledge of HPV. There were no other statistical analyses performed.

Limitations of this study were lack of randomization. During analysis, the groups were analyzed as a whole when comparing pre-test and post-test scores. There was also significant lack of statistical analyses performed. The author only reported the mean scores of the pre-

intervention and post-intervention. Further analyses may help contribute to the overall validity of the study.

The strengths of the study include feasibility to replicate the intervention. This study greatly adds to the growing body of evidence demonstrating educational intervention are successful at increasing HPV knowledge and intent to vaccinate in the college population. The results of this study reveal the efficacy of an educational intervention in increasing HPV knowledge. Due to the strong results of this study, it was rated good quality.

Level IV evidence. Level IV evidence are cross-sectional studies, which represent four of the ten studies included in this literature review.

Intent to receive vaccine only. Pavia, Lipschitz, Fernandez, Redding, and Prochaska (2014) conducted a cross-sectional study examining the acceptability and feasibility of a transtheoretical model (TTM)-based computer-tailored intervention for increasing initiation of the HPV vaccine and completion of the vaccine series among college-aged women. The final sample for this study was 243 college-aged women recruited from non-HPV vaccinated females in undergraduate courses (n=78) and by survey through Survey Sampling International (n=165).

Prior to the intervention participants were asked to answer screening questions, which were related to sex, age, and HPV vaccination status. This information was then utilized to tailor the intervention to the individual. Participants were provided information based on the stage of change (precontemplation, contemplation, and preparation) they are in. The participants also received tailored messages regarding HPV and the HPV vaccine.

After the intervention, participants were asked to complete the knowledge and acceptability questionnaire. Knowledge about HPV and the HPV vaccine was measured by a 13-item questionnaire. The knowledge questionnaire was based on previous studies and discussions with two outside experts within the field of sexually transmitted infections (STIs). Acceptability was measured using a 14-item questionnaire, which was based on the National Cancer Institute's Educational Materials Review Form.

All data collected were entered into SPSS for analyses. ANOVA analyses evaluated differences among stage of change groups. For acceptability of this program, there were significant differences observed across stage of change among the different groups, $F(2,243) = 11.14$, $p = .000$, $n^2 = .09$. Follow-up tukey tests demonstrated that scores among participants in precontemplation were significantly lower ($M = 3.27$, $SD = 0.6$), than those in contemplation ($M = 3.56$, SD = 0.4) or preparation ($M = 3.61$, $SD = 0.4$). In terms of accuracy on questions evaluating knowledge about HPV and the HPV vaccine, there were no significant knowledge differences observed across the stage of change groups, $F(2,243) = 0.35$, $p = .697$, $n^2 = .003$.

Results demonstrated that eighty-nine percent of participants rated the intervention positively across all acceptability items of the TTM-based educational intervention. Ninety-one percent of participants endorsed intention to vaccinate after the completion of the intervention. These findings were similar to Hopfer (2012), which also evaluated the intent to receive the HPV vaccine among college females and demonstrated an educational intervention was successful at increasing intentions to vaccinate. This further demonstrates the effectiveness of tailored interventions at reaching young adult females and improving HPV outcomes.

Limitation of this study include two sampling methods were used. One method of sampling should be utilized to decrease any threats to both internal and external validity. There was no comparison of the two different samples, although demographic information was obtained from the participants.

Strengths of this study are description of recruitment methods, eligibility, sound statistical analyses, and thorough discussion of the results. The authors provide recommendations for future research studies. This study was rated as high quality evidence and is applicable to this EBP project. Although the authors did not utilize the HBM framework to develop their educational intervention, the TTM demonstrated efficacious in the increasing the intention to vaccinate. This study demonstrated the effectiveness of tailoring an intervention to this population. Educational interventions have been shown to be effective in this population,

however it important to consider an individual's readiness for change when making a decision regarding their own health.

HPV knowledge and perceived barriers. The second cross-sectional study discussed within this review was conducted by Dillard and Spears (2010). The researchers examined HPV knowledge and perceived barriers to receiving the HPV vaccine. Participants were recruited through email and invited to take part in an online survey on women's vaccination decisions. Three hundred ninety-six female, ages 18-26, participants were selected for the study from Penn State University.

The survey was developed from review of the literature on HPV and data from four focus groups. The survey was then pretested on undergraduate females and reviewed by several medical professionals, one HPV researcher, and one expert in survey research. Eighteen true-false items were designed to assess specific aspects of knowledge about HPV and the vaccine. Participants were also presented with barriers to vaccination, which were developed from a focus group prior to the study.

Regression analyses were conducted to identify predictors of knowledge and barriers. Two significant predictors of knowledge include self-reported frequency of exposure to media messages ($B = .13$, $p < .05$) and encouragement by their physician ($B = .20$, $p < .001$). The participants demonstrated high levels of awareness of HPV (96%) and the vaccine (98%). Although participants were aware of HPV, they were unaware of its consequences. For instance, 34% to 35% of the sample believed that men cannot contract HPV and 42% to 45% of the sample believed HPV and HIV have similar effects on the human body. Additionally, 44% to 51% of participants believed the HPV vaccine is almost 100% effective in preventing all types of HPV-related diseases. The researchers suggest to promote vaccine uptake that four issues need to be emphasized, which are immediate health threat, validity of research on vaccine effectiveness, the efficacy of the vaccine itself, and encouraging more realistic assessment of the risk of HPV. Again, about a third of the sample understood HPV causes genital warts and

over one-quarter of the sample believed that because they were not sexually active, the vaccine was not necessary. Twelve percent of the participants also believed they did not need to receive the vaccine because they were in a monogamous relationship.

Limitations of this study include limited response rate, phrasing of questions on the questionnaire, and limited generalizability. There was a tendency for participants to respond until the questions asked about number of partners and frequency of condom/dental dam use. These items occurred early on within the questionnaires resulting in many participants dropping out, which produced selection bias. This limits the ability to generalize to this population. Some of the questions were phrased poorly, such as the vaccination protects against HPV and genital warts. This may have alternated the results as well.

Strengths of this study included statistical analyses and future recommendations from the researchers. This study demonstrated this population is aware of HPV, but there is still a need for additional education. Participants identified exposure to media message and encouragement from their physician were predictors for increasing knowledge. This study was rated good quality of evidence and was found applicable for this EBP project.

Factors influencing receipt of HPV vaccine. Ratanasiripong (2015) conducted a cross-sectional study examining factors influencing vaccination among college males. The TPB was used to provide the framework for this study, which helped understand the factors associated with vaccination and intent to vaccinate. A convenience sample of 410 college males, ages 18-26, from a university in Southern California.

The questionnaire used in this study was HPV and HPV vaccine-related Knowledge, Attitudes, and Behaviors, which was adapted from a previous study on college female students (Ratanasiripong, Cheng & Enriquez, 2013). The questionnaire used concepts of the TPB and was reviewed for face and content validity. Reliability was provided from the previous study data. Nine true-false items were used to measure HPV/HPV vaccine knowledge, nine items were used to measure attitudes towards the HPV vaccine, six items were used to measure

attitudes toward receiving the vaccine, five items to measure subjective norms, four items to measure behavioral control and four items to measure intent to vaccinate.

Data analysis was done using the SPSS 20.0. Intent to vaccinate was analyzed using Spearman's or Pearson's correlation coefficients to determine the correlation between the indirect predictors, direct predictors, and intent to vaccinate. Of the 410 participants, 210 (51.2%) were aware of HPV and the HPV vaccine and 141 (67.1%) had not obtained the vaccine. The mean score of HPV/HPV vaccine knowledge for those that have not received the vaccine was 5.73 (*SD* = 2.23) and those that have received the vaccine 6.10 (*SD* = 2.36). The difference of the knowledge mean score between the groups was not statistically significant, *t* (187) = -0.99, *p* = .33. Over 75% of participants in both groups knew that condoms provided partial protection from HPV, transmission can occur when asymptomatic, all males should receive the HPV vaccine regardless of sexually active, and the vaccine does not protect against other STIs. Less than half of the participants in both groups knew HPV can cause anal cancer and can be transmitted through skin to skin contact. Attitude toward the vaccine significantly predicted the intent to vaccinate, F (1,139) = 15.22, p = .000, adjusted R^2=0.09.

Limitations of this study included limited generalizability and low response rate. Again, a convenience sample of college males at a university was recruited, which may reduce the generalizability. There was a low response rate, which was by subjected to nonresponse bias. Although there were limitations to this study, this was the first study to report vaccination numbers in college-aged males. This is an area that lacks evidence and this study has added to the body of evidence.

Strengths of this study included statistical analyses, validity/reliability of instrument, and future recommendations. This study demonstrates the lack of knowledge in college-aged males and the need for an educational intervention aimed at this population. This study was found to have good quality of evidence and was applicable to this EBP project.

HPV vaccine rate and barrier to vaccination. Fontenot, Fantasia, Charyk, and Sutherland (2014) conducted a cross-sectional study examining HPV rates, including initiation and completion, and barriers to vaccination among college males, ages 18-25, at a large public university in the northeastern US. Inclusion criteria consisted of currently or previously sexually active, ages 18 to 25, enrolled part time or full time at the university, and ability to read and understand English. A sample of 735 college age males were recruited for this study. Quantitative data was collected on demographic characteristics, sexual history, sexual risk behaviors, and vaccination rates. Information about participant's sexual history was obtained by asking following: if they engaged in sexual activities with men, women or both; if they are currently engaged in sexual activity (past 30 days); and the age of their first intercourse. Information for sexual risk was obtained by asking if they believed they were at risk for STIs (yes/no) and if they have ever been diagnosed or treated for a STI (yes/no). To obtain vaccination rates, participants were asked, "Have you ever received the vaccine for HPV?" They were given the choices of (1) No, (2) Yes, I have already completed the vaccine series, (3) Yes, I have started the vaccine series (3 shots) and intend to complete it, and (4) Yes, I have started the vaccine series (3 shots) and DO NOT intend to complete it. Qualitative data was produced by a single question, "If you have not gotten the HPV vaccine or have but do not intend to complete the vaccine series why?" Participants were asked to type their answer in an open-response box.

Multivariate analysis was completed using binary logistic regressions to assess how the odds of receiving the HPV vaccine were related to demographic characteristics and risk factors for HPV. Statistical analyses were conducted using SPSS version 19. Over 85% of participants were currently sexually active and most reported engaging in sexual activities with women (92.7%). Participants reported condom use as follows: 10. 5% never using condoms, 41% sometimes, and 48.5% always. When participants were asked if they believed they were at risk for STIs, 92% reported no and 2.7% reported ever being diagnosed and treated for an STI.

Always using condoms was significantly (*p*= .008) associated with the HPV vaccine. Participants that reported always using condoms had a 58% higher odds of receiving the HPV vaccine (OR=1.59, 95% CI [1.10,2.16]) as compared to those that did not reported always using condoms. Qualitative data reported four main categories: lack of awareness and knowledge, barriers to vaccination, belief that they are not at risk, and belief the vaccine is not for men. Lack of awareness and knowledge was reported by half of the participants. Many participants admitted to never hearing of HPV and not knowing about the HPV vaccine. Barriers to vaccination were both real and perceived. A real barrier was cost as many participants reported worry about out-of-pocket costs and issues with health insurance coverage. Some perceived barriers were time and student lifestyle. Many believed they were not at risk for HPV because their girlfriends were vaccinated and they used condoms. Many participants were confused about whether or not the vaccine was available for men.

Limitations of this study include design, self-reported measures, low response rate, and non-diverse sample. The sample was of males from one university, which makes it difficult to generalize the findings to others within this age group. The participants may not have been truthful about their answers, which may have altered the results.

Strengths of this study were the results, future recommendations, and statistical analyses. This study has similar findings to the study by Ratanasiripong (2015), which demonstrates the need for additional educational interventions aimed at the college aged male population. This study was rate high quality of evidence and was found applicable for this EBP project.

Construction of Evidence-based Practice

After a thorough review and appraisal of the literature, commonalities among the current evidence were identified and pieces of evidence were incorporated into the development of a best practice guideline. Synthesis of evidence provided the foundation for answering PICOT question. This will be discussed next.

Synthesis of evidence

In order to determine the best practice, synthesis of current literature must be performed. There were many similarities among the HPV educational interventions throughout the literature, however no two interventions were identical. A commonality among the evidence was that an HPV educational intervention had a positive effect on young adult males in increasing HPV knowledge and/or intention to receive the vaccine. Common themes throughout the evidence aided in the development of an education intervention that addressed barriers to vaccination, lack of HPV knowledge, and intent to vaccinate. These themes were essential in determining best practice to address the question: What is the best practice for increasing HPV knowledge, intent to vaccinate, and receipt of vaccination among college males ages 18-26?

Lack of HPV knowledge. The articles that used an educational intervention had an increase in HPV knowledge post intervention (Krawczyk et al. 2012; Mehta et al, 2013; Richman et al., 2016; Warren, 2010). Each study used a different methodology for increasing knowledge, however they all increased HPV knowledge. Each person learns differently, such as some individuals learn better through reading, listening, or being hands-on. Thus, utilizing each learning style within an intervention may be more beneficial. Overall, gaining knowledge is the first step needed to improve health outcomes, such as obtaining the HPV vaccine. These studies demonstrated an increase in HPV knowledge and an increase in intent to vaccinate.

Intent to vaccinate. Krawczyk et al. (2012) and Mehta (2013) both utilizing an HBM-based educational intervention increasing HPV knowledge, which showed an increase in intent to vaccinate. Both researchers used different methodologies for delivery of educational interventions. Krawczyk et al. (2012) compared written and video educational interventions, while Mehta et al. (2013) delivered an intervention based on the six concepts of the HBM.

Barriers to vaccination. Many studies in this review identified barriers to vaccination among young males and females ages 18-26 (Dillard and Spears, 2010; Fontenot et al., 2014; Hopfer, 2012; Mehta et al., 2013; Patel et al. 2012). Some of these barriers included: cost,

safety of the vaccine, lack of knowledge, and perceived low susceptibility to HPV related diseases. The best practice to increase knowledge, increase intent to vaccinate, and receipt of vaccination may be to address these barriers.

Best practice model recommendation

The integration of the most current evidence obtained from the critically appraised literature provided the best practice model for this EBP project. The best practice for increasing HPV knowledge and vaccine intent and receipt among young adult males may be a HPV educational program. The aim of this EBP project is to increase HPV knowledge, intent to vaccinate and receipt of vaccination by implementing an intervention directed at addressing barriers specific to this population. Participants were asked to complete the questionnaire before and again, one-month post-intervention. The educational intervention included a PowerPoint® and a discussion based on the six key concepts of the HBM. An educational handout for men was also given to the participants.

Answering the clinical question

The appraisal of literature was utilized to produce the best practice recommendation and assisted in answering the clinical question: What is the effect of a HPV educational intervention on HPV knowledge, intent to vaccinate, and receipt of vaccination among college males? With the evidence supported in the literature, an effective HPV intervention was developed and implemented within a university setting. The intervention was based off of the six concepts of the HBM.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Chapter 3 presents the fourth phase of the Stetler Model, which is translation. In the translation phase, the findings are built into a plan for implementation. This chapter will discuss the method for translation and implementation of the best practice recommendation as well as the participants and setting, outcomes, intervention, planning, data, and protection of human subjects. A tailored educational intervention was presented at a mandatory fraternity Grand Chapter meeting, followed by an open discussion session. Data collected before and after helped answer the PICOT question. In college males ages 18-26, how does an HPV educational intervention, compared with current practice, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over a one-month period?

Participants and Setting

The setting for this EBP project was a private Midwestern Lutheran university campus during the fraternity Grand Chapter meeting for all fraternity members from sophomore through senior years. Freshman were not included in this meeting as they are not able to join fraternities until the spring semester, thus they were unable to attend the Grand Chapter meeting. There are approximately 275 fraternity members and nine different fraternities within the university. There were 188 males in attendance at the meeting, 134 males participated in the pre-test questionnaire project, which represented a 71% participation rate. The education intervention was implemented at the program, which took place on September 13th, 2016. This chosen setting provided for convenience sampling consistent with the population of interest. The HPV educational intervention was provided to participants in attendance at the meeting. Those who voluntarily chose to participate in this project, acknowledged by completion of the questionnaire, completed the pre-test.

Outcomes

The goal of this EBP project was to increase knowledge, vaccine intention, and vaccine uptake among college males. The three outcomes were HPV knowledge, vaccine intent, and receipt of the HPV vaccine. Baseline data were measured immediately prior to the intervention and one month after the intervention. With permission from the author (Appendix B), a modified HPV and HPV Related Knowledge, Attitudes, and Behaviors Questionnaire (Ratanasiripong et al., 2013) was utilized for the pre- and post-test questionnaire (personal communication, Nop Ratanasiripong, July 6th, 2016). Modification of the tool included three questions regarding the HPV vaccine: 1) Have you already received the HPV vaccine, 2) Do you intend to receive the HPV vaccine?, and 3) Did you receive the first dose of the HPV vaccine (this question is placed on the one-month follow-up)? (Appendix C).

Intervention

The review of literature did not reveal a specific style of educational intervention as most effective. Multiple methods of education were effective in increasing HPV knowledge and intent to vaccinate. However, there was less research demonstrating interventions to increase in receipt of vaccination. As mentioned earlier, in the review of literature, different theoretical frameworks and educational delivery methods have been utilized in previous studies, and one study found no difference between groups when comparing educational approaches (Krawzcyk et al., 2012). Thus, this EBP project PowerPoint® presentation incorporated knowledge gained from all the articles reviewed to develop a tailored intervention directed at the target population.

The aim of this intervention was to increase HPV knowledge, intent to vaccinate, and receipt of vaccination among college males ages 18-26. A group intervention was conducted at the mandatory Grand Chapter meeting for all sophomore, junior, and senior fraternity members. Prior to the educational intervention, an explanation of the project was provided. Attendees of the meeting were instructed that although everyone would receive the educational intervention, participation in the project was voluntary. Confidentiality of the data was explained, which

included thoroughly discussing that the completion of the questionnaire would be considered informed consent. The above information was printed at the top of questionnaire (Appendix C).

After introductions were made, study procedures were explained, and any concerns or questions were addressed. Participants then received the questionnaire and verbal instructions were provided regarding completion of the questionnaire. The questionnaire included data about the participants' demographics, which were used for the purpose of this project only. The participants were instructed to write the last four digits of their cellphone number on the top of the questionnaire to help identify the pre-test and post-test for data analysis. They were also asked to fold their questionnaire, with answers inward, once they were finished. The questionnaires were collected, and all participants were then provided with an informational HPV handout to keep. The handout reflects the information provided throughout the PowerPoint® presentation (Appendix D). After the questionnaires were completed and the handouts were distributed, an approximately 10-minute PowerPoint® presentation was provided by the project manager. The presentation was modeled after the HBM and incorporated all six concepts of the model: (a) perceived susceptibility, (b) perceived benefits, (c) perceived barriers, (d) perceived severity, (e) cues to action, and (f) self-efficacy (Appendix E). The presentation incorporated information from the CDC website and the review of the literature. Following the presentation, a discussion session occurred with the opportunity for an open question and answer session in which the project manager answered all questions from the participants.

Approximately one month after the educational intervention, participants were asked to complete the same questionnaire. Again, the participants were reminded to write their last four digits of their cell phone on the top of their questionnaire. In collaboration the Assistant Dean of Students for Greek Life, Leadership & Volunteer programs, the post-test questionnaires were distributed at the individual fraternity Chapter meetings. Participants were asked to complete the post-test questionnaire and reminded of the confidential nature of their responses. Once all

questionnaires were obtained from the nine different fraternity Chapter meetings, data-analyses began.

Planning

Following the Stetler Model, the first phase is preparation and during this phase, the need to increase HPV knowledge, intent to vaccinate, and receipt of vaccination among college males was defined. A systematic review of the literature was conducted. The identified area of need was to educate young males about HPV in an effort to increase knowledge, intent to vaccinate, and receipt of vaccination. By applying the inclusion and exclusion criteria, the evidence was narrowed down and relevant and applicable evidence was determined.

The second phase of the Stetler Model is validation, which consisted of a critique of the evidence. Each piece of evidence was evaluated for strengths, weakness, and applicability to this EBP project. The pieces of the evidence were summarized in preparation for the third phase of the Stetler Model, which focused on comparative evaluation and decision-making.

The third phase consisted of comparative evaluation and decision-making. During this phase, all the evidence was synthesized to discover commonalities among the studies. In addition, each piece of evidence was evaluated for utilization and assessed for feasibility, fit, and applicability to current practice. Common themes were identified and evidence summary followed.

The fourth phase of the Stetler Model is translation/application, which focuses on how to implement the evidence into practice. An assessment of the accessible population was performed. After discussion with the project advisor and project facilitator, it was determined that fraternity members at a private Midwestern Lutheran college fit the desired population of interest. The Assistant Dean of Students for Greek Life was notified of my interest in this population via e-mail. The aim of the EBP project was discussed with the Assistant Dean of Students for Greek Life. She offered implementation to take place during a mandatory Grand

Chapter meeting for all sophomore, junior, and senior members. The Grand Chapter took place on September 13th, 2016.

The similarities throughout the literature were gathered to create an HPV educational intervention with the aim of improving both HPV knowledge, intent to vaccinate, and receipt of vaccination among college males. Modification to the intervention was continuously considered throughout development to best fit the university setting. During the translation phase, permission to use and modify the HPV and HPV related Knowledge, Attitudes, and Behaviors Questionnaire was obtained from the author.

The final stage of the Stetler Model consisted of evaluation and analysis of the implementation. Results of the questionnaires were analyzed using the appropriate statistical methods to determine the impact of the intervention. Also, it was determined whether or not the aims of the project were met. The implementation of the intervention was evaluated to determine if any adjustments were needed to improve guidelines for future implementation.

Recruitment of participants occurred during the Grand Chapter meeting before the intervention began. The project manager explained the purpose of the project. An explanation of the voluntary aspect of this project and instructions for giving informed consent were provided. Confidentiality of both the pre-intervention and post-intervention questionnaires were discussed. Due to the implementation of this project within a regularly scheduled mandatory meeting, no recruitment tactics were utilized prior to the established date.

Data

Sociodemographic characteristics were added to the original HPV and HPV Vaccine Related Knowledge, Attitudes, and Behaviors Questionnaire. The modified questionnaire was used to collected the sociodemographic characteristics of participants. Remaining data were collected using the same measurement tool. Discussion of the reliability and validity of the measurement tool, data collection, and management and analysis of data will be discussed next.

Measures

Reliability and validity of the HPV and HPV Vaccine Related Knowledge, Attitudes, and Behaviors Questionnaire have been established through previous studies (Ratansiripong et al., 2013; Ratanasiripong, 2015) (Appendix C). In the original study, Ratanasiripong et al. (2013) demonstrated validity and reliability. The constructs of the Theory of Planned Behaviors were used to develop this questionnaire. The questionnaire was reviewed for face and content validity. Reliability with a Cronbach's coefficient alphas of all the scales between 0.71 and 0.93. The questionnaire measured HPV/HPV vaccine knowledge using nine true/false items. Next, attitudes towards the HPV vaccine were measured using another nine items on a semantic differential scale. For non-vaccinees, six items measuring attitudes towards getting vaccinated against HPV were measured on a semantic differential scale. The statement of attitude was "my getting vaccinated against HPV would be…" and for those who had received the vaccine, the statement of attitude was," I thought that my getting vaccinated against HPV would be…" Five items for subjective norms were measured on a Likert scale. Perceived behavioral control was measured by four items on a Likert scale. Vaccination intention was measured by four items on a Likert scale. For the current EBP project, the modified three questions, were related to HPV vaccination and were as follows: 1) Have you ever received one or more doses of the HPV vaccine, and 2) If you have not already, do you intend to receive the HPV vaccine? At the one-month follow up: 3) Did you receive the first dose of the HPV vaccine? These first two questions had the possible responses of: (a) yes, (b) no, and (c) don't know. The follow up question had the possible responses of: (a) yes or (b) no.

Collection

Collection of all pre-intervention questionnaires took place at the Grand Chapter meeting. Participants completed the questionnaires immediately before the HPV educational intervention. The project manager collected the questionnaires. Due to Chapter meetings being closed, the Assistant Dean of Students for Greek Life, collected all the one-month post-

intervention questionnaires. The post-test questionnaires were placed in a closed packet, which would be handed to the project manager once post-tests have been collected by the Assistant Dean of Students for Greek Life. Only the project manager had access to the questionnaires after collection, and all data were kept secure inside a locked box. The project manager personally did all input of information for data analysis.

Management and Analysis

The effect of the HPV educational intervention on HPV knowledge, vaccine intent, and receipt of the HPV vaccine was measured through pre-test and post-test design. This design allowed for comparison of baseline data before the educational intervention with data one-month after the intervention. Descriptive statistics were obtained from the sociodemographic information completed on the questionnaire.

Protection of Human Subjects

When implementing an intervention, it is essential and mandatory to provide protection of all human subjects. For this EBP project, various methods were utilized to protect the rights of the participants. Before initiation and planning of the EBP project, the project manager completed the IRB training through the National Institutes of Health. IRB approval was obtained from the project site, where the project manager was a Doctor of Nursing Practice student, prior to implementation of the EBP project. Participation in this study was strictly voluntary, and this was thoroughly explained prior to implementation of the intervention. Additionally, written explanation of the nature of the study and informed consent was printed at the top of the questionnaires. The questionnaire did not include any identifying information, which assured confidentiality. All data were stored in a locked cabinet and the project manager, solely, transferred all data to a computer. The computer was password protected and only the project manager had access to it.

CHAPTER 4

FINDINGS

The Effects of an HPV Educational Intervention Aimed at Collegiate Males on Knowledge, Vaccine Intention, and Uptake was an EBP project developed to provide an evidence-based approach to educating young males about HPV-related diseases and to increase intent to receive and uptake of the HPV vaccine. The project manager developed this project to determine the effects of an educational intervention for collegiate males on knowledge about HPV and increasing the intention to receive the vaccine as well as uptake of the vaccine. The following data analyses describe project outcomes and assess the effectiveness of the HPV educational intervention when compared to the previous standard of care, which consisted of no formal HPV education within this college population.

Participants

College males ages 18 to 26 years old in fraternities at a private Midwestern university were recruited for this project. The size and characteristics of the sample will be further described within the following text.

Size

In total, 188 males participants attended the Grand Chapter meeting and of those in attendance, 134 males completed the pre-intervention questionnaire, for a response rate of 71%. All 188 participants received the educational intervention and had the opportunity to participate in the post-intervention discussion. One month follow-up questionnaire responses were received from 156 participants, for a follow-up response rate of 83%.

Characteristics

Participant characteristics were assessed with the completion of the demographic portion of the questionnaire. The demographic portion included age, year of study, ethnicity, currently have health insurance, history of sexual intercourse, number of sexual partners, use of

protection, and marital status. The mean age for the pre-intervention group (*n* = 188) was 19.9 years, and the majority of participants were sophomores (*n* = 52, 26.5%). In both the pre-intervention and post-intervention the majority of participants were white (*n* = 115, 58.7% and *n* = 131, 66.8%) and the vast majority had health insurance (*n* = 133, 67.9% and *n* = 155, 79.1%). The majority of pre-intervention participants (53.3%) reported engaging in sexual intercourse (Figure 4.1), while some of the sexually active participants stated they use condoms (27.6%) (Figure 4.2). The mean of reported sexual partners in the pre-intervention (*M* = 1.95) varied from the mean reported in the post-intervention (*M* = 4.92). Similarly, the participants in the post-intervention group reported being sexually active (*n* = 120, 61.2%) and only 31.1% (*n* = 61) use condoms (See Figure 4.3 and 4.4). In accordance with the literature, overall vaccine rates among participants in both pre-and post-intervention groups were low, with over a quarter reporting they had not been vaccinated against HPV (29.6% and 43.9%) (See Figures 4.5 and 4.6). Demographic characteristics for those completing both the pre-intervention and post-intervention questionnaire are shown in Table 4.1.

Table 4.1

Participants Demographics

Characteristics	Pre-Test	Post-Test
Age(mean)	19.97	20.25
Education	Sophomores: 26.5% (52)	Sophomores: 27.0% (53)
	Juniors: 21.14% (42)	Juniors: 23.0% (45)
	Seniors: 20.9% (41)	Seniors: 59 (30.1%)
Race	White: 58.7% (115)	White: 66.8% (131)
	Asian: 1.5% (3)	Asian: 2.0% (4)
	Latino: 1.0% (2)	Latino: 3.1% (6)
	African-American/Black: 6 (3.1%)	African-American/Black: 7 (3.6%)
	Other: 1.5% (3)	Other: 3.1% (6)
	More than one race circled: 3.1% (6)	More than one race circled: 1.5% (3)
Insurance	Yes: 67.9% (133)	Yes: 79.1% (155)
	No: 1.0% (2)	No: 1 (0.5%)
Sexual History	Yes: 53.6% (105)	Yes: 61.2% (120)
	No: 12.6% (25)	No: 14.8% (0.5%)
	Prefer not to answer: 2.6% (5)	Prefer not to answer: 3.6% (7)
Number of Sexual Partners (Mean)	1.95	4.92

Table 4.1 (continued)

Participants Demographics

Characteristics	Pre-Test	Post-Test
Protection against STIs	Condoms: 27.6 % (54)	Condoms: 31.3 % (61)
	Monogamy (have only one partner): 4.1% (8)	Monogamy (have only one partner): 5.6% (11)
	Long term relationships (Over a few years): 3.1% (6)	Long term relationships (Over a few years): 2.6% (5)
	I do not use any method: 4.6% (9)	I do not use any method: 3.6% (7)
	I did not have sex in the past 12 months: 4.1% (8)	I did not have sex in the past 12 months: 7.1% (14)
	Prefer not to answer: 4.1% (8)	Prefer not to answer: 4.1% (8)
	Condoms, Monogamy, & Long term relationship: 6.1% (12)	Condoms, Monogamy, & Long term relationship: 8.2% (16)
	Condoms & monogamy: 3.6% (7)	Condoms & monogamy: 4.1% (8)
	Monogamy & Long term relationship: 0% (0)	Monogamy & Long term relationship: 1.0% (2)
	Condoms & Long term relationship: 1.5% (3)	Condoms & Long term relationship: 3.1% (6)

Table 4.1 (continued)

Participants Demographics

Characteristics	Pre-Test	Post-Test
Marital Status	Single: 45.9% (90)	Single: 52.6% (103)
	Dating: 21.9% (43)	Dating: 25.0% (49)
	Married: 0% (0)	Married: 0.5% (1)
	Widowed: 0.5% (1)	Widowed: 0% (0)
	Separated: 0% (0)	Separated: 0% (0)
	Other: 0.5% (1)	Other: 1.5% (3)

Figure 4.1 Pre-Intervention Sexual History of Participants

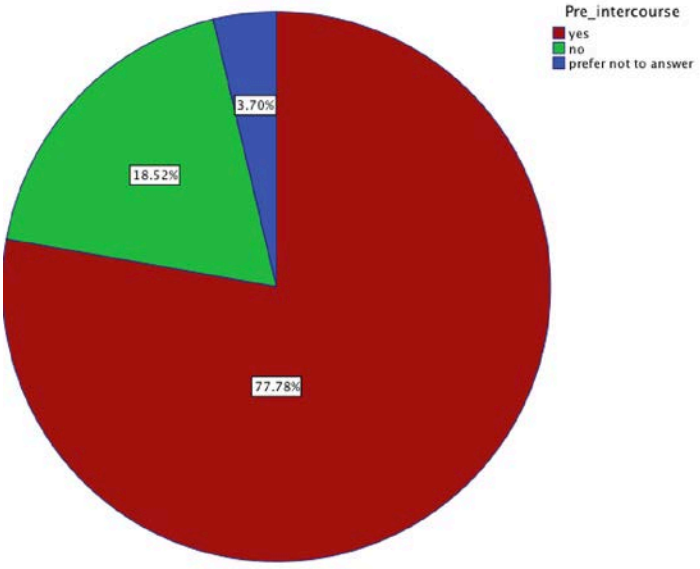


Figure 4.2 Post-Intervention Sexual History of Participants

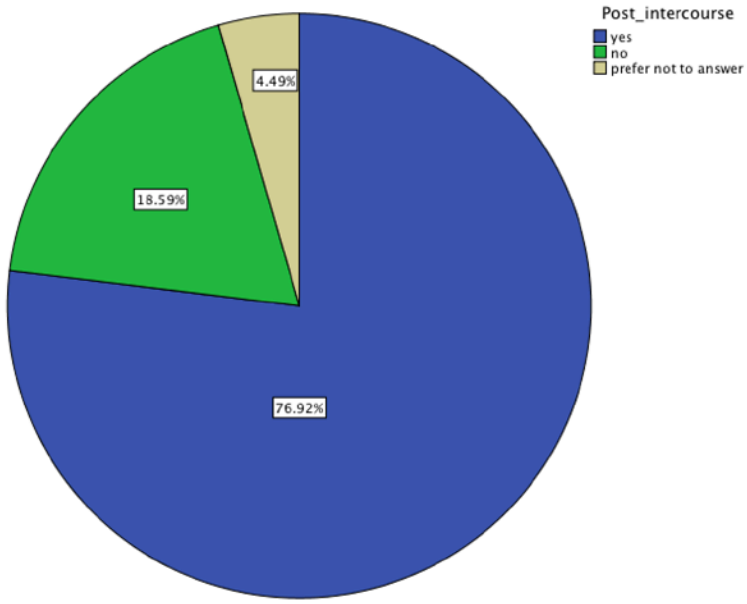


Figure 4.3 Pre-Intervention Self-Reported STI Protection

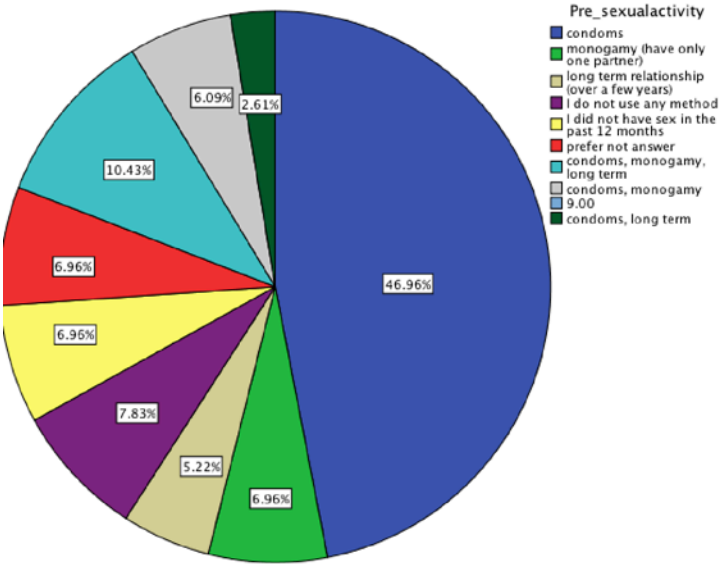


Figure 4.4 Post-Intervention Self-Reported STI Protection

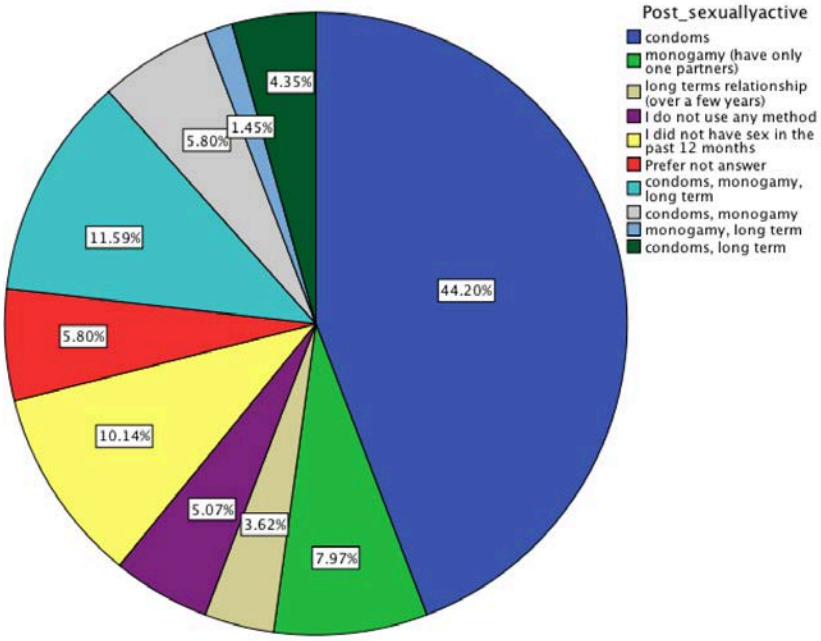


Figure 4.5 Pre-Intervention Participants Vaccinated against HPV

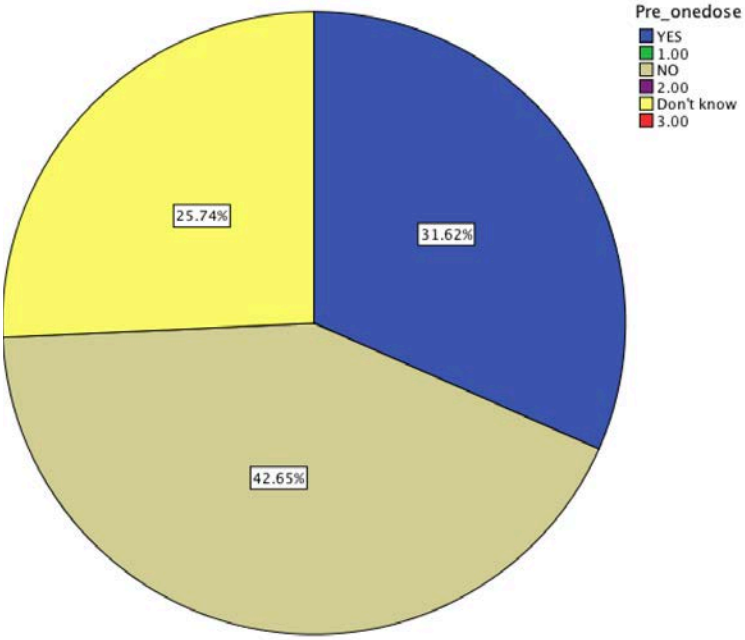
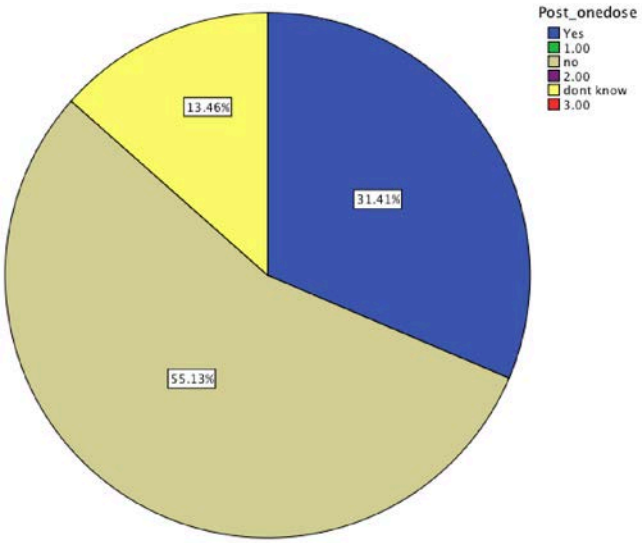


Figure 4.6 Post-Intervention Participants Vaccinated against HPV



Changes in Outcomes

The primary outcomes for this EBP were HPV knowledge, and intent to receive the HPV vaccine. The other measured outcome was uptake of the HPV vaccine. The aim of the educational intervention was to answer the PICOT question: In college males ages 18-26, how does an HPV educational intervention, compared with current practice, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over a one-month period? The HPV educational intervention resulted in improved scores of HPV knowledge. Intent to receive the HPV vaccine slightly increased from pre- to post-test, but was not statistically significant. Uptake of the HPV vaccine did occur, but among a small number of participants (*n* = 38, 19.4%).

Statistical Testing

To determine the effectiveness of the educational intervention, paired sample *t*-tests were calculated comparing the mean scored of participants' overall HPV knowledge at two different times: pre-intervention and one-month post-intervention. All statistical testing was

conducted using SPSS 24.0. Statistical significance for all categories was determined was determined to be a value of $p < .05$.

Significance

Statistical analyses revealed a significant increase in knowledge scores from pre-test to post-test. There was not a statistically significant increase in intention to receive the HPV vaccine. Scores remained about the same between pre-test and post-test. Uptake was similar to intention with no significant increase. See Table 4.2 for frequencies of means, standard deviations, and paired *t*-test scores for total knowledge.

Knowledge. There were 9 true-false knowledge questions with a possible range of scores from 0 to 18. The results of the pre-test demonstrated the majority of participants (13.3%) received 0/18. The results of the post-test demonstrated the majority of participants (16.8%) received 16/18. Bar graphs depict the distribution of the knowledge scores from both the pre-test and one month post-test, which are shown in Figures 4.7 and 4.8. Specific knowledge questions showed increase from pre-test to post-test. For instance, question #3 and question #4. Question #3 states “HPV can cause anal cancer.” On the pre-test, 35.0% (n = 49) of participants answered “true” and 37.8% (n = 74) answered “don’t know.” The post-test showed a decrease in “don’t know” (13.3%, n = 26) answers and increase in the correct answer of “true” (62.2%, n = 122). Question #4 states “HPV can be transmitted via skin-to-skin contact (Penetration of the vagina or anus is not essential).” The correct answer is true, but 29.1% (n = 57) of pre-test participants picked “don’t know” and only 24.5%(n = 48) picked “true.” This changed on the post-test with 50.0% (n = 98) of participants choosing “true.” A paired *t*-test was calculated to compare the mean pre-test knowledge score to the mean post-test knowledge score (See Table 4.2 and 4.3). The mean on the pre-test was 9.51 (SD=0.63) and the mean of the post-test was 13.67 (SD=0.47). A statistically significant increase from pre-test to post-test was found ($t(84) = -5.76$, $p < 0.001$) .

Intent. Intent to vaccinate was addressed by participants answering the following question: “If you have not already, do you intend to receive the HPV vaccine?” The possible response were a) yes, b) no or c) don’t know. In the pre-test of those not already vaccinated, only 9.2% indicated that they intend to receive the vaccination. The majority (30.1%) answered with the response don’t know. Of the 155 post-test participants, 35 (17.1%) participants responded that they intended to receive the HPV vaccine. A chi-square test was used to calculate the frequency of intent to vaccinate for the pre-test and post-test questionnaire. For the pre-test, there was significant deviation from the hypothesized values found ($X^2(2) = 26.114$, $p < 0.05$). The post-test had no significant deviation from the hypothesized values found ($X^2(2) = 2.333$, $p > 0.05$). Thus, the results were not statistically significant for intention to receive the HPV vaccine. Pre-test and post-test intent to vaccinate results are shown in Figure 4.7 and 4.8.

Uptake. Uptake of the HPV vaccine was addressed during the one-month follow up by participants answering the following questioning: “Did you receive the first dose of the HPV vaccine?” The possible responses were a) yes or b) no. Of the 155 post-test participants, 49 participants had already been vaccinated against HPV. Of the 106 participants that had not been vaccinated against HPV, 38 (19.4%) had received the first dose of the HPV vaccine. A chi-square test was used to calculate the frequency of uptake of the HPV vaccine during the post-test. There was significant deviation from the hypothesized vales found ($X^2(1) = 14.368$, $p < 0.05$). These results are statistically significant. Uptake of the HPV vaccine results are shown in Figure 4.9.

Table 4.2

Paired Sample Tests for Knowledge

Test	M	SD	t	*p*
Knowledge				
Pre	9.5176	5.83016	-5.760	*p < 0.001*
Post	13.6706	4.39260		

Table 4.3

Comparison of Pre- and Post-Intervention Knowledge Scores

Item	Pre-Test	Post-Test
Question #1	True: 28.6% (56)	True: 57.1% (112)
	False: 8.2% (16)	False: 5.6% (11)
	Don't Know: 32.1% (63)	Don't Know: 16.8% (33)
Question #2	True: 38.8% (76)	True: 64.3% (126)
	False: 3.6% (7)	False: 3.6% (7)
	Don't Know: 26.5% (52)	Don't Know: 12.2% (24)
Question #3	True: 35.0% (49)	True: 62.2% (122)
	False: 6.6% (13)	False: 3.1% (6)
	Don't Know: 37.8 % (74)	Don't Know: 13.3% (26)
Question #4	True: 24.5% (48)	True: 50.0% (98)
	False: 14.8% (29)	False: 13.8% (27)
	Don't Know: 29.1% (57)	Don't Know: 15.8% (31)

Table 4.3 (Continued)

Comparison of Pre- and Post-Intervention Knowledge Scores

Item	Pre-Test	Post-Test
Question #5	True: 35.2% (69)	True: 57.7% (113)
	False: 7.7% (15)	False: 5.1% (10)
	Don't Know: 25.5% (50)	Don't Know: 14.8% (29)
Question #6	True: 46.4% (91)	True: 66.3% (130)
	False: 3.6% (7)	False: 3.6% (7)
	Don't Know: 18.9% (37)	Don't Know: 10.2% (20)
Question #7	True: 43.9% (86)	True: 65.8% (129)
	False: 1.5% (3)	False: 4.1% (8)
	Don't Know: 24.0% (47)	Don't Know: 9.7% (19)
Question #8	True: 7.1% (14)	True: 18.9% (37)
	False: 39.8% (78)	False: 53.6% (105)
	Don't Know: 22.4% (44)	Don't Know: 7.7% (15)
Question #9	True: 6.6% (13)	True: 16.3% (32)
	False: 36.2% (71)	False: 53.1% (104)
	Don't Know: 25.0% (49)	Don't Know: 10.2% (20)

Figure 4.7 Pre-test intent to vaccinate

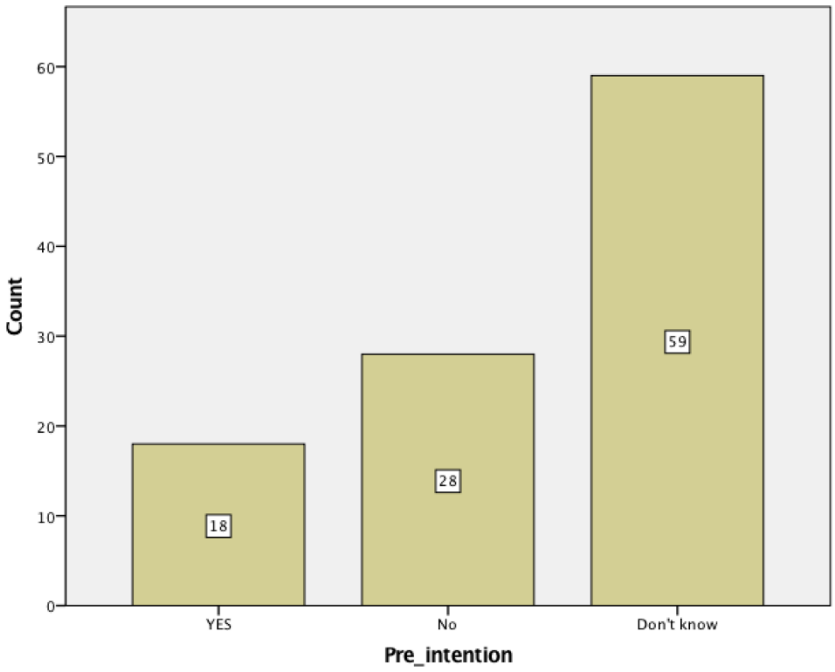


Figure 4.8 Post-test intent to vaccinate

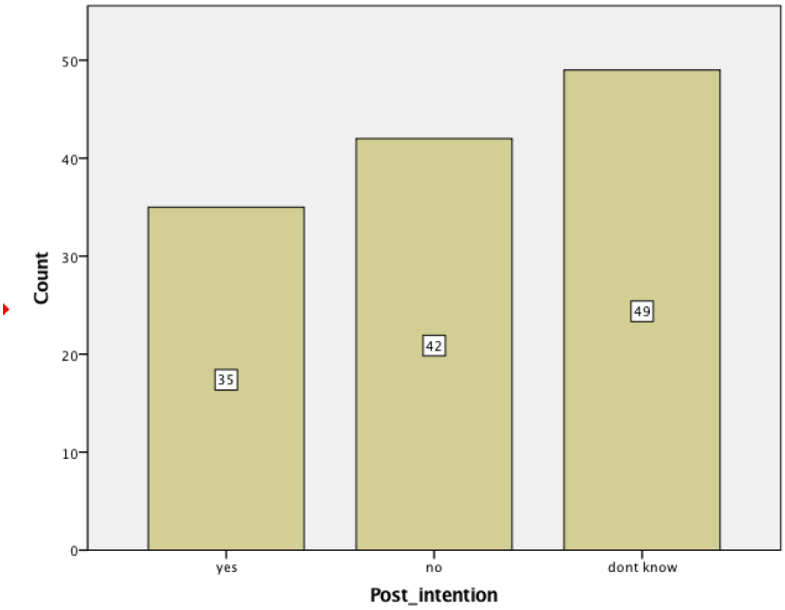
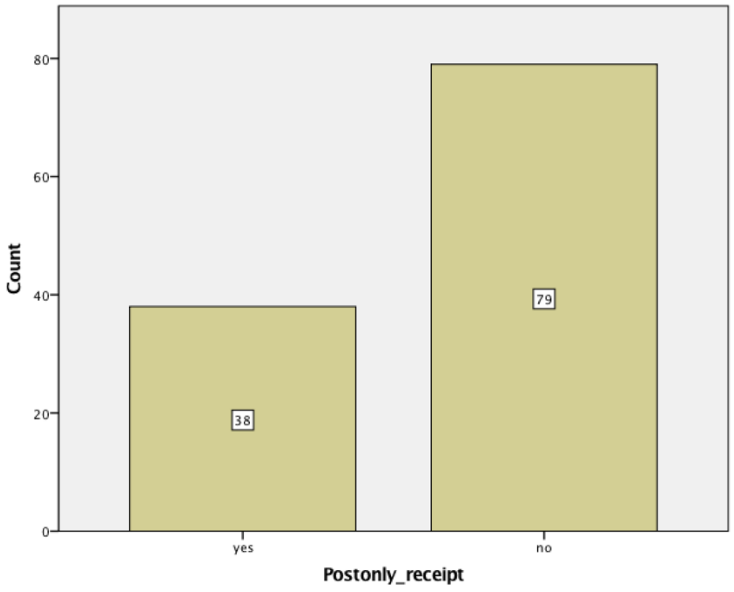


Figure 4.9 Uptake of HPV vaccine



CHAPTER 5

DISCUSSION

The purpose of this EBP project was to determine if an HPV educational intervention increased knowledge, intent to receive the HPV vaccine, and uptake of the HPV vaccine among college males ages 18 to 26 years. Based on a thorough review of the literature, educational interventions may improve HPV knowledge, intent to receive the HPV vaccine, and uptake of the HPV vaccine among this target population. This chapter will discuss the findings, applicability of the EBP and theoretical frameworks, and implications for the future of this EBP project.

Explanation of Findings

The use of the HPV and HPV related Knowledge, Attitudes, and Behaviors Questionnaire allowed for comparison of HPV knowledge and intent to receive the HPV vaccine between pre-intervention and post-intervention groups. This questionnaire was also used to determine uptake of the HPV vaccine at one-month follow-up.

Knowledge

This EBP project demonstrated a statistically significant increase in HPV knowledge when comparing pre-test and post-test scores ($p < 0.001$). The scores increased from pre-test (M= 9.52) to post-test (M=13.67), indicating an overall increase in knowledge after the tailored educational intervention. When examining individual scores within the instrument, there was a significant increase in correct responses in the first four questions. Particularly when providing participants with question three and question four. Question three is HPV can cause anal cancer. Only 35.0% of pre-intervention participants answered correctly (true), while 62.2% of the participants in the post-intervention answered correctly. Question four is HPV can be transmitted via skin-to-skin contact (Penetration of the vagina or anus is not essential): True, false, and don’t know. Only 24.5% of the pre-intervention participants answered the question

correctly (true), while 50.0% of the participants in the post-intervention group answered it correctly. These results were not surprising. Ratanasiripong (2015) reported consistent results in their study with college age males, which demonstrated less than half of participants (42.6, 39.6) knew that HPV can cause anal cancer and can be transmitted via skin-to-skin contact.

The significant increase in knowledge scores is similar to other studies that had showed an increase in knowledge after HPV educational interventions (Dillard & Spears, 2010; Krawzcyk et al., 2012; Mehta et al. 2013; Ratanasiripong, 2015; Richman et al. 2016; and Warren, 2010). HPV knowledge helps to create an awareness of the consequences of HPV and HPV-related diseases. Thus, this may help to increase an individual's desire to protect one's self from HPV-related disease, which may increase an individual's intention to receive the HPV vaccine and actual uptake of the vaccine. This will improve overall health and burden from HPV in college age males.

Intent

Before the educational intervention, only 9.2% of pre-intervention participants intended to receive the HPV vaccine. At the post-intervention, only 17.1% of participants stated they intended to receive the HPV vaccine. The findings from this EBP project was not consistent with the findings from other studies that demonstrated an increase in intent to receive the HPV vaccine following a tailored educational intervention (Hopfer, 2012; Krawzyck et al., 2012; Mehta et al., 2013; and Pavia et al., 2014). Of the 134 pre-intervention participants, 43 participants had already been vaccinated against HPV, 58 had not been vaccinated, and 35 were unsure of their vaccine status. The majority of pre-intervention participants, either skipped the question about intention or picked "don't know" (59) for the answer. Of the 156 post-intervention participants, 49 participants had already been vaccinated against HPV, 86 had not been vaccinated, and 21 were unsure of their vaccine status. The majority of post-intervention participants, picked "no" (40) or "don't know" (49). Many participants picked the answer "don't

know" for intent to receive the HPV vaccine because they did not know their own vaccine status. Thus, making it difficult to answer if they intend to receive the vaccine.

Uptake

Vaccine uptake was measured one month after the educational intervention by asking participants if they received the first dose of the HPV vaccine: Yes or no. Unfortunately, many participants misunderstood this question on the questionnaire. It seems that many participants thought the question was asking if they had already received the vaccine, however it was asking if they had begun the vaccine series since the educational intervention. The majority of participants answered the question with no (79). There were 39 participants that skipped this question because they thought they had already answered it with the question, have you ever received one or more doses of the HPV vaccine. These results are similar to the findings of Richman et al.(2016), which studied participants that had begun the vaccine series. Richman et al. (2016) educational intervention was not successful at getting participants to complete the vaccine series as results were similar among the control and intervention groups.

Evaluation of Applicability of Theoretical and EBP Frameworks

Theoretical Framework

The Health Belief model was chosen as the theoretical framework for this project. The model served as the framework for development, implementation, and evaluation of the project. The six major concepts of the HBM were used to guide the educational intervention and evaluate its effectiveness. These concepts include: (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, (d) perceived barriers, (e) cues to action, and (f) self-efficacy. The HPV educational intervention addressed each component of the HBM as it relates to HPV knowledge and vaccine intent. For instance, perceived susceptibility and perceived severity, were integrated into the educational presentation by discussing HPV-related diseases, risk factors and consequences. Perceived benefits and efficacy of the HPV vaccine were also discussed by including data from the literature.

The HBM was also used to help identify perceived barriers to vaccination. Through a comprehensive review of the literature, it demonstrated that perceived barriers were important for addressing HPV vaccine intent among college males. The HPV educational intervention incorporated specific barriers, which included: cost, safety of vaccine, lack of knowledge, perceived low susceptibility to HPV related diseases, and perceived low efficacy of the HPV vaccine. By focusing on these barriers and helping break them down, it would help result in an increase in intent to receive the HPV vaccine. This EBP project drew on barriers and did have a slight increase in intent to receive the HPV vaccine. Thus, the HBM helped in addressing barriers to HPV vaccination.

The final two concepts of the HBM, cues to action and self-efficacy, played an important role when developing this EBP project. Participants were given handouts with the information as cues to action about how to contact the student health center for more information regarding the HPV vaccine. Cues to action help to support the message of importance of protecting oneself by vaccinating against HPV. Self-efficacy was incorporated throughout the HPV educational intervention by discussing, providing guidance, and answering any questions about HPV-related diseases and the HPV vaccine.

Incorporation of the six concepts of the HBM provided a framework to help develop both short-term and long-term behavior changes. The HBM limited the ability to address perceived risk among college age males, which was considered prior to the implementation of this EBP project. This limitation did not affect its applicability. The HPV vaccine is recommended to be given as early as age 11 years old, thus it was taken into consideration that college males might perceive limited risk for the disease. Another consideration was that some participants were already sexually active or in a monogamous relationship and may not have believed the vaccine would serve any benefit to them. With these limitations to consider, the EBP project manager spent more time discussing susceptibility statistics and risk factors that related to this population, such as multiple sexual partners and contracting any other sexually transmitted

infections. The outcomes of the EBP project showed that even though college males may have a decreased perceived risk to HPV-related diseases, the educational intervention increased HPV knowledge.

EBP Framework

The Stetler model of evidence-based practice was used as the framework for this educational intervention. This model provided the framework and process to integrate research into practice. The five phases of the Stetler model are: (a) preparation, (b) validation, (c) comparative evaluation/decision making, (d) translation/application, and (e) evaluation. All of these phases were significant to the development, implementation, and evaluation of this EBP project. This model is typically useful within the clinic setting, however it also proved to be useful within the educational setting which was used for this project.

The first step of the model is the preparation phase. This phase involved the identification of a clinical problem and a need for improvement. A thorough review of the literature established that HPV knowledge and vaccine rates were low among young males ages 18 to 26 years. When working in the preparation phase, it was crucial to consider the PICOT question, which was: In college males ages 18-26, how does an HPV educational intervention, compared with current practice, affect HPV knowledge, intent to vaccinate, and receipt of vaccination over a one-month period? The preparation phase, which included a review of literature, revealed the vital need for educational interventions among young males, a university setting involving fraternity members were chosen. After the project manager discussed the project with the Assistant Dean of Students for Greek Life at a private Midwestern university, the decision was made to implement the educational intervention at a mandatory Grand Chapter meeting. This meeting was chosen because it was mandatory for all sophomore, junior, and senior fraternity members at the university. Implementation at the meeting helped deliver the HPV educational intention to a large group of students at the one time.

The next step is validation phase, which was used for analyzing each article and synthesizing the evidence. Both synthesis of the findings and evaluation of related characteristics of each article assisted in the development of an evidence-based intervention for the target population. Using the validation phase was helpful in reducing evidence used within this EBP project. Numerous articles were considered, however the most valuable, applicable, current, and best evidence available was selected for analysis. Evidence was then summarized, which lead to the comparative evaluation/decision making phase.

Comparative evaluation and decision making is the third phase of the Stetler model, which involved performing a systematic critique of the evidence and developing a summary of the evidence table. This phase helped guide the EBP project and further incorporate research into the HPV educational intervention. Five computer databases were systematically searched. Ten pieces of evidence were selected and critiqued for their reliability, quality, and applicability to this project.

The fourth phase is translation and application, which helped guide the project manager with making decisions about the educational content used in the presentation and its importance to the target population. Using evidence from the literature search, a tailored HPV educational presentation was developed. Using information from the CDC, an education handout was developed to give to each participant. The project manager discussed time frame and availability for follow-up data with the project facilitator and Assistant Dean of Students of Greek Life. The educational intervention was implemented during this phase, which included a pre-intervention questionnaire and a one-month post-intervention questionnaire.

The final phase is evaluation, which looked at the outcomes. Primary outcomes of this EBP project were to evaluate the effect of the educational intervention on HPV knowledge, intent to receive the HPV vaccine, and uptake of the vaccine. While evaluating the results of the HPV and HPV related Knowledge, Attitudes, and Behaviors Questionnaire, the project manager found many participants were responding with “don’t know” for their intention to receive the

vaccine and misunderstood the question about uptake. The Stetler model suggests that revisions of the plan should be considered to improve the effectiveness of the intervention if determined appropriate. Evaluation involved appraisal of each part of the process, including obtaining evidence, implementation, changes, and analysis of the questionnaire as well as outcomes.

Strengths and Limitations of the EBP Project

Strengths

There were many strengths of this EBP project. A strength of this EBP project was the convenience and ease of the implementation to a large group of participants. The project was exempt by the university IRB board because it took place within an educational setting. The project was implemented within a mandatory Grand Chapter fraternity meeting that 188 young men attended. Of those 188 males, 134 completed the pre-test questionnaire. The large group atmosphere made many participants feel at ease when asking questions versus a smaller group they may have felt more vulnerable when raising their hands.

Another strength was the age of the population. College males were chosen in an effort to reach men of this age group because although there is a large amount of knowledge about HPV, there continue to be low percentages of college age males receiving the HPV vaccine within the US. In 2013, approximately 6% of 19 to 26-year-old males had received at least one dose of the HPV vaccine (Richman, Maddy, Torres, & Goldberg, 2016). By targeting this age group there may be a decrease in the occurrence of HPV-related diseases by increasing knowledge, intent to receive the vaccine, and actual uptake of the vaccine. This EBP project demonstrated a statistically significant increase in knowledge among college age men ages 18 to 26 years.

Limitations

There were many limitations within this EBP project. One limitation was major differences in number of participants for pre-intervention and post-intervention. Pre-intervention

consisted of those present at the Grand Chapter meeting. The post-intervention consisted of all of the fraternities, thus members that did not come to the Grand Chapter meeting may have filled out the post-intervention. More post-interventions (n=156, 83%) were received than pre-interventions (n=134, 71%), which is a large increase. Another limitation with the post-intervention is the project manager was not allowed to distribute and collect the questionnaires due to the discreteness of the individual fraternity meetings. Participants may have also filled out the post-intervention with one another as many participants had identical answers on their questionnaires.

Another limitation was the timeframe of this EBP project. There was a lack of long-term follow-up to evaluate if outcomes were maintained over time. For instance, even though there was a significant increase in knowledge one-month after the intervention, there is lack of evidence that the knowledge was retained long-term. Additionally, participants may have received the first dose of the HPV vaccine, but there is no further evidence of uptake long-term and completion of the HPV vaccine series. This project supported that HPV knowledge can be improved and maintained over a one-month time period following the educational intervention among this population. The data does not provide enough evidence to demonstrate the effectiveness of the intervention over time.

Implications for the Future

This EBP project was implemented to examine the effects of a tailored HPV educational intervention on HPV knowledge, intent to vaccinate, and uptake among college males ages 18 to 26 years. The intervention demonstrated a statistically significant increase in knowledge and uptake of the HPV vaccine. However, the results of intention to receive the vaccine were not statistically significant. It is crucial to consider the future of implications of this EBP project as it relates to practice, research, and education. Further evaluation of these concepts will serve to strengthen future projects on this topic.

Practice

This project has implications for practice within student health centers and health professionals that provide care to college age males. Due to the low vaccination rates among college age males, this EBP project can help to advise health care team members of the usefulness of educational interventions. University health centers should include a HPV education program within their campus and provide HPV education to their young males during routine exams and check-ups. Knowledge from this project can be used within community based educational programs as well as primary care offices. Health care providers caring for young males should take the time to incorporate health promotion method related to HPV infections and provide information about how to protect themselves from the consequences of HPV-related diseases. Additionally, to help increase the percentage of males obtaining the HPV vaccine, health care providers should discuss the HPV vaccine, answer any questions, and address barriers related to the vaccine with their young male patients. It is very important that health care providers use this time well as young males do not seek medical care often.

Theory

The HBM was applicable to this project and provided the framework for its use in future projects related to health promotion and young males. It was important that the theoretical framework used for this EBP project took into account components that would have an influence on young adult males. The six concepts of the HBM addressed specific issues that are important when considering health-promotion behavior changes. By understanding barriers related to young males, future HPV related projects may be effective in providing a positive influence on the health of this population. Many young adults may not recognize the susceptibility and seriousness of HPV and its related diseases because many of them are relatively healthy. Thus, determining methods for effectively communicating the impact of HPV-related diseases among this population will help to achieve successful future efforts within this field.

Research

Needs for future research were identified. Although this EBP project was successful in increasing knowledge and vaccine uptake, however it was not successful in increasing intention to vaccinate among young adult males. Future research should continue exploring intention to vaccinate and vaccine uptake among young adult males. The CDC (2015b) recommends routine HPV vaccination for males 11 through age 21. HPV has been linked to cause 69% of vulvar cancer, 63% of penile cancer, and 91% of anal cancer as well as genital warts (CDC, 2015b; CDC, 2015d). Further efforts to increase vaccination rates among males may help to decrease disease in the male population as well as decrease the spread of the HPV infection to females.

Education

This EBP project supported the role of educational interventions in increasing HPV vaccine intent and uptake among college males. Additional considerations should be given to incorporate education interventions within college health center programs in order to increase vaccine uptake among this population. College educators could consider developing courses focusing on personal health and health promotion, which could incorporate HPV education into the course framework.

Conclusion

This EBP project has provided substantial evidence supporting the use of a HPV educational intervention among college age males to improve knowledge, intent to receive the HPV vaccine, and uptake of the HPV vaccine. There is very limited evidence on college age males and HPV knowledge, intent to receive the HPV vaccine, and uptake of the HPV vaccine. Key outcomes of the PICOT questions were measured and answered, however long-term outcomes related to knowledge retention for this population is uncertain. The actual uptake of the HPV vaccine also remains uncertain due to the misunderstanding of the participants. The HBM was an ideal fit for this EBP project as it provided the necessary concepts to address an

effective method for increasing knowledge among college males. The Stetler model was right framework to guide the development, implementation and evaluation of this project. The interest of the participants during the educational intervention helps support the importance and relevance of this project. Findings from this project may be useful for future HPV-related knowledge and vaccination educational programs, thus helping to decrease disease burden and improve overall health outcomes throughout the US.

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BIOGRAPHICAL MATERIAL

Ms. Knudtson graduated from Chamberlain College of Nursing with a Bachelors of Science in Nursing (BSN) in 2014. Her nursing career has included experiences in medical, surgical, orthopedic, and cardiac hospital units. She is currently attending Valparaiso University where she will complete her Doctor of Nursing Practice (DNP) with a clinical focus as a family nurse practitioner (FNP) in May 2017. Ms. Knudtson is a member of the American Association of Nurse Practitioners (AANP). During her clinical experience, Mary recognized there was lack of knowledge about HPV and the HPV vaccine and low vaccination rates among young males. Thus, the need to educate this target population to help make informed vaccine decisions. Her DNP evidence-based project (EBP) focused on providing an education intervention to increase HPV knowledge, vaccine intention, and uptake among collegiate males. Ms. Knudtson was selected to present her findings at the American College Health Association's (ACHA) Annual Meeting in June 2017.

ACRONYM LIST

ANOVA: Analysis of Variance

CDC: Centers for Disease Control

CINAHL: Cumulative Index to Nursing and Allied Health

EBP: Evidence Based Practice

FDA: Food and Drug administration

HBM: Health Belief Model

HPV: human papillomavirus

IRB: Institutional Review Board

JBI: Joanna Briggs Institute

JHNEBP: John Hopkins Nursing Evidence-Based Practice

PICOT: population, intervention, comparison, outcome, time

RCT: randomized controlled trial

SPSS: Statistical Package for the Social Sciences

STI: sexually transmitted infection

TPB: Theory of Planned Behavior

TTM: Transtheoretical Model

US: United States

UHS: University Health Service

Appendix A

Table 1

Appraisal of the Evidence

Citation	Purpose	Sample	Design/ Intervention	Measurement/ Tool	Results/ Findings	LOE/ Findings
Dillard, J. P., & Spear, M. E. (2010). Knowledge of human papillomavirus and perceived barriers to vaccination in a sample of US female college students. *Journal of American College Health, 59*, 186-190. doi:10.1080/07448481.2010.493189	To examine HPV knowledge and perceived barriers to receiving the HPV vaccine.	296 females 18-26 years old from Penn State University Participants were recruited through email and invited to take part in a survey on women's vaccine decisions.	Cross-sectional Participants answered questions about their vaccine status and knowledge about HPV and the vaccine.	Eighteen true-false items were designed to assess specific aspects of knowledge about HPV and the HPV vaccine. The survey was developed from a review of literature on HPV and data from four focus groups.	Regression Analyses were conducted. Two significant predictors of knowledge include self-reported frequency of exposure to media messages (*B = .13, p* <.05) and encouragement by their physician (*B* = .20, *p* < .001).	IV Good

				The survey was then pretested on undergraduate females and reviewed by several medical professionals, one HPV researcher, and one expert in survey research	The participants were demonstrated high levels of awareness of HPV (96%) and the vaccine (98%).	
Fontenot, H.B., Fantasia, H.C., Charyk, A., & Sutherland, MA. (2014). Human papillomavirus (HPV) risk factors, vaccination patterns, and vaccine perceptions among a sample of male college students. *Journal of American College Health, 62(*3). ttp://dx.doi.org.ezproxy.valpo.edu/10.1080/07448481.2013.872649	To examine HPV rates, including initiation and completion, and barriers to vaccination among college males.	735 College males ages 18-25 at a large public university in the northeastern US.	Cross-sectional Participants were asked to answer questions about their sexual history. Vaccination rates were obtained by asking the participants	Quantitative data consisted of demographics, vaccination rates, and sexual health behaviors. Qualitative information consisted of	SPSS was used and multivariate analysis. Participants that reported always using condoms had a 58% higher odds of receiving the HPV	IV High

			three questions.	determining participants' perspectives for why they had received or did not intent to complete the HPV vaccination series.	vaccine (OR=1.59, 95% CI [1.10,2.16]) as compared to those that did not reported always using condoms.	
Hopfer, S. (2012). Effects of a narrative HPV vaccination intervention aimed at reaching college women: A randomized controlled trial. *Prevention Science, 13*(2), 173-182. doi:10.1007/s11121-011-0254-1	To compare the effects of HPV narrative vaccination interventions aimed at increasing intent to vaccinate among college aged women	1,000 females ages 18-26 years old were randomly sampled from a university health service's database using a random number generator. 404 female students were eligible and	Randomized controlled trial IV: Participants in the intervention group watched on of three videos (Video of vaccine decision narrative delivered b peers, video of narratives by medical experts, and video of	Pre-intervention survey and immediate post-test survey was completed online. Two months after receiving the intervention or control, participants were emailed asking	Participants that had received the combined peer-expert narrative intervention, the odds of vaccinating two months later were twice as likely compared to controls (OR=2.07; 95% CI=1.05-	II High

		participated.	narrative by combination of peers and medical experts) Control: viewed one of the three control videos (Vided o without narrative, the campus website with information about HPV and the vaccine or no message) DV: Increase in HPV vaccination	them whether they received the first HPV vaccine shot. Tool: The authors developed their own survey based on existing scales Measurements: HPV knowledge, sexual activity, daughter-mother HPV vaccine communication, HPV vaccination intent, and HPV vaccine safety	4.10; p=.036). The peer only narrative intervention did not significantly increase the odds of vaccinating compared to controls (OR=1.61, 95% CI=.80-3.28, p=.185). The expert-only intervention showed a decrease in the odds of vaccinating compared to control group	

					(OR=.48, 95% CI=.13-1.69;p=.25).	
Krawzcyk, A., Lau, E., Perez, S., Delisle, V., Amsel, R., & Rosberger, Z. (2012). How to inform: Comparing written and video education interventions to increase human papillomavirus knowledge and vaccination intentions in young adults. *Journal of American College Health, 60*, 316-322. doi:10.1080/07448481.2011.615355	To compare the efficacy two forms of HPV knowledge interventions on HPV knowledge and intent to vaccinate among college student	Convenience sample of 200 undergraduate males (n=60) and female (n=140) students were recruited at University in Montreal, Quebec, Canada	RCT multiple experimental group design Intervention developed and based on HBM framework IV: Written educational HPV pamphlet group, educational HPV video group Control group: Educational pamphlet about general cancer prevention strategies DV: HPV knowledge and intent to vaccinate	HPV knowledge and intent to vaccinate were assessed through pre- and post-intervention Tool: The authors created a tool by adapting questions from previous studies and developed their own questions on the survey	Knowledge: Both the written intervention (*M*pre = 10.48, *SD* = 4.86; *M*post = 17.46, *SD* = 2.09) and video intervention (*M*pre = 11.49, *SD* = 4.25; *M*post = 16.70, *SD* = 2.19) significantly increased knowledge. There was no significant changed observed in the control group	II High

					(*M*pre = 10.89, *SD* = 4.14; *M*post = 12.06, *SD* = 4.15). Intent to vaccinate: A significant increase in intention for both the written intervention (*M*pre = 3.53, *SD* = 1.94; *M*post = 4.57, *SD* = 1.90) and the video intervention (*M*pre = 3.14, *SD* = 1.85; *M*post = 4.39, *SD* = 1.86) groups. As with HPV knowledge, no significant difference	

					on intent to receive vaccine was observed in the control group (*M*pre = 3.51, *SD* = 1.90; *M*post = 3.88, *SD* = 1.77). No differences were found between the written and video educational intervention groups	
Mehta, P. (2013). Designing and evaluating a Health Belief Model-based intervention to increase intent of HPV vaccination among college males. *The International Quarterly of Community Health Education, 34*, 101-117. doi:10.2190/IQ.34.1.h	To evaluate the effectiveness of a Health Belief model-based HPV educational intervention	Snowball sampling technique was used to recruit 90 college male students from a Midwester	Random controlled trial IV: Health Belief Model based HPV educational intervention, which	Measured intent to receive HPV vaccination after educational intervention	Intent to vaccinate: significant positive changes in the intervention group for knowledge and Health	II high

	compared with a traditional knowledge-based education intervention.	n University. Participants were randomly assigned to a control group (n=45) or and intervention group (n=45).	consisted of addressing perceived severity and perceived susceptibility. Control group: Traditional knowledge-based educational intervention. DV: Health Belief Model concepts, HPV knowledge, and intent to received HPV vaccination.	Tool: Authors developed own tool based on Health Belief Model	Belief Model concepts. Results also indicated self-efficacy for taking the vaccine (p=0.000), perceived barriers (p=0.007), and perceived severity (p=0.004) were significantly positive predictors of vaccine acceptability in the intervention group. Knowledge: The main effect of time was found to be statistically significant	

					for knowledge (p=.000). This demonstrated a difference between the two groups.	
Paiva, A. L., Lipschitz, J. M., Fernandez, A. C., Redding, C. A., & Prochaska, J. O. (2014). Evaluation of the acceptability and feasibility of a computer-tailored intervention to increase human papillomavirus vaccination among young adult women. *Journal of American College Health, 62*(1), 32-38. doi:10.1080/07448481.2013.843534	To evaluate the acceptability and feasibility of a Transtheoretical-based computer-tailored intervention for increasing HPV vaccination intention in college-aged females	243 college aged non-HPV vaccinated females were recruited from undergraduate courses and a survey sampling by Survey Sampling International.	Cross-sectional Participants answered questions on a survey and the intervention feedback was based on an individual's response to each assessment. Participants were provided with feedback based on their stage of change (precontemplation,	Acceptability of the program was measured using a 14-item questionnaire developed by the authors based on the National Cancer Institute's Educational Materials review form. Knowledge about HPV and	Eighty-nine percent rated the intervention positively across all acceptability items and ninety-one percent endorsed intention to be vaccinated after the intervention.	IV high

			contemplation, and preparation).	HPV vaccination as measured using a 13-item questionnaire developed by the authors based on previous studies and experts within the field of sexually transmitted diseases.		
Patel, D. A., Zochowski, M., Peterman, S., Dempsey, A. F., & Ernst, S. (2012). Human papillomavirus vaccine intent and uptake among female college students. *Journal of American College Health, 60*(2), 151-161. doi:10.1080/07448481.2011.580028	To examine the effect of an educational intervention on vaccine intent among college females	256 female students attending a gynecology clinic at University health clinic. Participants were randomized to	Random control trial two-group pre-test Control group: standard of care, which consisted brief mentioning of HPV and information	The intent to receive HPV vaccination at baseline and HPV vaccine uptake at 6 months of enrollment was measured.	The education intervention was not significantly associated with HPV vaccine uptake (RR=0.84; 95% CI [0.31-2.28]).	II High

		receive HPV	on how to get the vaccine at the University health center. IV: HPV-specific educational intervention consisting of a fact sheet from the CDC and a mailed reminder about the vaccine and an additional fact sheet	Tool: The authors developed own survey, which included questions regarding intent to vaccinate.	Only 14 participants receive at least one HPV vaccine dose within 6 months of study enrollment.	
Ratanasiripong, N.T. (2015). Factors related to human papillomavirus (HPV) vaccination among college men. *Public Health Nursing, 32*(6). doi: 10.1111/phn.12198	To examine factors influencing vaccination among college males	Convenience sample of 410 college males ages 18-26 from a university in Southern California.	Cross-sectional HPV and HPV vaccine-related Knowledge, Attitudes, and Behaviors questionnaire was utilized. The	Nine true-false items were used to measure HPV/HPV vaccine knowledge, nine items were used to measure attitudes towards	SPSS 20.0 was used for data analysis. Of the 410 participants, 210 (51.2%) were aware of HPV and the HPV vaccine and 141	IV Good

			questionnaire uses concepts from the TPB and was adapted from a previous study on college female students.	the HPV vaccine, six items were used to measure attitudes toward receiving the vaccine, five items to measure subjective norms, four items to measure behavioral control and four items to measure intent to vaccinate.	(67.1%) had not obtained the vaccine. The difference of the knowledge mean score between the groups was not statistically significant, t (187) = -0.99, p = .33. Attitude toward the vaccine significantly predicted the intent to vaccinate, F (1,139) = 15.22, p = .000, adjusted R^2=0.09.	

Richman, A.R., Maddy, L., Torres, E., & Goldberg, E.J. (2016). A randomized intervention study to evaluate whether electronic messaging can increase human papillomavirus vaccine completion among college students. *Journal of American College Health, 64*(4). DOI: 10.1080/07448481.2015.1117466	To examine the effects of an electronic appointment reminder with electronic health educational messaging about HPV and the HPV vaccine at increasing the HPV vaccine completion, adherence, and knowledge	264 college students (both male and female) from a university located in North Carolina. Students were recruited from the student health center and special health events. Participants were randomly assigned to either the intervention group or control group. Participants were elected to receive	Random controlled trial IV: Intervention group (n=130) received seven electronic messages, one per month plus standard of care at the student health center. The messages included four health education message about HPV and the HPV vaccine, two appointment reminder messages, and one message asking participants to take the	The survey was adapted from Health Information National Trends Survey by National Cancer Institute. The outcome of HPV vaccine completion was retrieved from the student health center. HPV and HPV vaccine knowledge was measured by 12 items. Five questions were used to assess	Knowledge scores among the intervention group increased at follow-up (*n*=44, mean knowledge score =93%,*SD* = 0.08) compared to baseline (*n* = 44, mean knowledge = 87%, *SD* = 0.11). Completion rates of the second (53% versus 52%) and third (34% versus 32%) dose were similar among the groups.	II Good

		electronic communication through either email or text message.	follow-up survey. Control (n=134): received standard of care and one electronic notification seven months after their first HPV vaccine dose asking them to complete the follow-up survey. A baseline survey was obtained from all participants after receiving the first HPV dose and seven months later. DV: knowledge, completion rate	sexual health and behavior.		

Warren, K. (2010). HPV knowledge among female college students and the short term effectiveness of HPV education. *The Internet Journal of Academic Physician Assistants, 7*(2). von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gotzsche, P. C., & Vandenbroucke, J. P.	To determine if a brief educational intervention increases HPV knowledge among college women	63 female college students were asked to voluntarily participate. Participants were from a private college in northeastern Pennsylvania. 55 of the original group of 63 students completed the post-intervention questionnaire	Quasi-experimental Participants received a brief HPV educational intervention	The questionnaire consisting of 7 true-false questions about HPV was administered pre-intervention and the again one month post intervention to evaluate effectiveness of a brief educational intervention.	Results demonstrated students scored significantly higher post-intervention (*M=5.8)* on the questionnaire one-month after the brief educational intervention compared to pre-intervention (*M* = 4.6).	III Good

Appendix B

Permission to use questionnaire

Ms. Ratanasiripong,

My name is Mary Knudtson and I am a Doctorate of Nursing Practice student at Valparaiso University in Indiana. I am doing an evidenced based project titled The Effects of a HPV Educational Intervention aimed at Collegiate Males on Knowledge, Vaccine Intention, and Uptake. In searching the literature, I saw your study titled, Factors Related to Human Papillomavirus (HPV) Vaccination in College Men. I would like to know if I could use a modified version of the questionnaire, HPV/HPV vaccine-related Knowledge, Attitudes, and Behaviors, which would include questions related to vaccine intent and uptake? Please feel free to let me know if you have any further questions about my project. Thank you for your time and consideration.

Sincerely,

Mary Knudtson

Appendix B (continued)

Hello Mary, thank you for your interest. I am happy to share the questionnaire with you. Below is the intention to vaccinate portion. If you need to see the entire questionnaire, pls let me know.

When you implement the study, would you please also share the reliability result and study finding with me? It will be helpful for my future research as well.

Intention to obtain an HPV vaccine

Please rate how strongly you agree or disagree with each of the following statements.

	Strongly agree	*Agree*	*Neither*	*Disagree*	*Strongly disagree*
I intend to get vaccinated against HPV					
I have decided to get vaccinated against HPV					
I plan to get vaccinated against HPV					
I expect to get vaccinated against HPV at some point					

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Appendix C

Modified HPV and HPV Vaccine Related Knowledge, Attitudes, and Behaviors Questionnaire

Participation in this study is voluntary. All answers will be kept confidential. All information obtained on this form will only be used for the purpose of this study. You do not have to answer all questions and can skip questions if you would like. By completing this survey, you are giving informed consent to participate in this survey.

HPV and HPV vaccine Knowledge

Multiple choice (circle one)

1. Have you heard about Human Papillomavirus (HPV)?
   a) YES
   b) NO

2. Have you heard about HPV vaccine?

   a) YES
   b) NO

Read each statement below and place an X if the statement is "true" or "false". Please choose "I don't know" if you do not know the answer.

	True	False	I don't know
1. HPV is the most common sexually transmitted disease			
2. HPV can cause genital warts			
3. HPV can cause anal cancer			
4. HPV can be transmitted via skin-to-skin contact (Penetration of the vagina or anus is not essential)			
5. Most people with genital HPV have no visible signs or symptoms			
6. Using a condom provides partial protection against HPV			
7. I can transmit HPV to my partner(s) even if I have no HPV symptoms			
8. Only sexually active men should receive the HPV vaccine			
9. HPV vaccine protects against all sexually transmitted infections			

Appendix C (continued)

HPV vaccine status
Multiple choice (circle one)

1) Have you ever received one or more doses of the HPV vaccine?

a) Yes
b) No
c) Don't know

Intention to obtain an HPV vaccine
Multiple choice (circle one)

2) If you have not already, do you intend to receive the HPV vaccine?

a) YES
b) NO
c) Don't know

RECIEPT OF VACCINE- One month follow up:

3) Did you receive the first dose of the HPV vaccine? (multiple choice- circle one)

a) YES
b) NO

Demographic Information
Please answer the following: fill in the blank and Multiple choice (circle one)

1. How old are you?_____
2. Are you a sophomore, junior, or senior?_____
3. Please describe your ethnicity (check all that apply)
   a) White
   b) Asian
   c) Latino
   d) African-American/Black
   e) Other

Appendix C (continued)

4. Do you have health insurance?
    a) Yes
    b) No

5. Have you ever had sexual intercourse (this includes anal, vaginal, or oral)?
    a) Yes
    b) No
    c) Prefer not to answer

6. What is the number of sexual partners you have had in the past year? _____

7. If you are sexually active, how do you protect yourself from STIs, such as HPV?
    a) Condoms
    b) Monogamy (have only one partner)
    c) Long term relationship (over a few years)
    d) I did not use any method
    e) I did not have sex in the past 12 months
    f) Other, specify: _____
    g) Prefer not answer

8. What is your marital status?
    a) Single
    b) Dating
    c) Married
    d) Widowed
    e) Separated
    f) Other

Thank you for participating in this study. All statistical data analyzed for the purpose of this study will be aggregated data to prevent disclosure of information about any individual.

Appendix D

Human Papillomavirus (HPV) and Men: The Facts

What is HPV?

HPV is a virus and one of the most common sexually transmitted infection (STI) in the US. There are different types of HPV. Some of the different types can cause genital warts and cancer. Receiving the HPV vaccine can prevent these diseases.

How do MEN get HPV?

It can spread from one person to another through sex with an individual infected with HPV. This includes anal, vaginal or oral sex. It can also be spread through close skin-to-skin touching during sexual activity. HPV can even be spread when the infected individual has no visible signs or symptoms.

What are health problems can occur from HPV?

Most of the time HPV will go away on its own and will not cause any health problems. However, when HPV does not go away on its own it can cause genital warts and many forms of cancer, including penile, tongue, anal, cervical, vulvar and throat cancer.

What are the symptoms of genital warts?

Genital warts appear as a small bump or a group of bumps in the genital area around the penis or the anus. The warts may be small or large, raised or flat, or shaped like a cauliflower. The warts may go away, or stay the same, or grow in size or amount. Genital warts can usually be diagnosed by a health care provider by looking at the warts. Genital warts can come back, even after treatment. A form of HPV causes genital warts.

How can I decrease my chance of getting HPV?

Get vaccinated: The HPV vaccine protects against most forms of HPV that cause anal, penile, and throat/mouth cancer and genital warts.

If sexually active: Use condoms the correct way. Although HPV can infect areas not covered by the condom, it can lower your chance of infection.

Can MEN get tested for HPV?

There is currently no test available for HPV in men.

Is the HPV vaccine safe?

Yes. Over 86 million doses of the HPV vaccine have been administered. There have been no reports of serious adverse events greater than rates of vaccines given.

Appendix D (continued)

Are there side effects of the HPV vaccine?

The most common side effects include:

- Pain, redness or swelling at the injection site
- Fever
- Headache or feeling tired
- Nausea
- Dizziness or fainting after injection

Next steps?

Talk to your Health Care Provider or contact the VU Student Health Center for an appointment to receive the HPV vaccine: ***219-464-5060***

* *Information based off the Centers for Disease Control and Prevention (CDC) website:* http://www.cdc.gov/std/hpv/stdfact-hpv-and-men.htm

Appendix E

HPV PowerPoint® Presentation

HPV: WHAT IS HPV??

- Human Papillomavirus (HPV) is one of the most common sexually transmitted infections in the US
- It is transmitted through close sexual contact
- Most sexually active individuals will get HPV at some point in their life
- HPV is more common in individuals in their late teens and early 20s
- There are more than 40 types of HPV that can infect the genital area of males and females

(CDC, 2015a; CDC, 2015b)

HPV: EPIDEMIOLOGY

- Approximately 79 million Americans are currently infected with HPV
- Each year, there are about 14 million individuals newly infected with HPV
- Each year, 9,300 males are diagnosed with cancers related to HPV
- Each year, 160,000 males are diagnosed with genital warts
  - (CDC, 2015b)

HPV-RELATED DISEASES

- Cancer
  - Anal –91% linked to HPV
  - Penile – 63% linked to HPV
  - Throat/Mouth (Oropharyngeal)– 72% linked to HPV
  - For females: cervical (100%), vaginal (75%), vulvar (69%)
- Genital warts – 90% caused by HPV types 6 and 11
- Recurrent Respiratory Papillomatosis (RRP)

(CDC, 2015c)

HPV: HEALTH CONSEQUENCES

- HPV infections usually go away by themselves
- Having the HPV infection can cause certain types of cancer to develop
- Cancer, including penile, anal, and mouth/throat, can take years or decades to develop
- Genital warts appear as a small bump or a group of small bumps on the genital area
- There is currently no test approved for HPV in men
- There is currently no way to know who will have a temporary HPV infection and who will get cancer caused by an HPV infection
- There is no treatment or cure for HPV, ONLY PREVENTION!

(CDC, 2015a; CDC, 2015d)

HPV: PREVENTION!!

- Vaccination (Gardasil and Gardasil 9)
  - Prevents against most HPV related cancers and genital warts
- Condom use: may decrease risk
- Limiting number of sexual partners: may decrease risk
- Monogamous relationship: may decrease risk
- Abstinence

- (CDC, 2015c; Krawczyk, 2012; Richman, Maddy, Torres, & Goldberg, 2016)

HPV: VACCINATION

- Given in series of three injections over 6 months
- Gardasil and Gardasil 9 are approved for males
- CDC recommends vaccination for males 11-21 years of age
  - Can be given as young as 9 years old
  - Males that are gay or bisexual OR
  - Males with a compromised immune system, such as HIV
    - are recommended to receive the HPV vaccine through age 26
- CDC recommends vaccination for females 11-26 yeas of age
- Available at the VU Student Health Center
- Even those in a monogamous relationship can benefit from the vaccine

(CDC, 2015a)

HPV: VACCINE SAFETY

- Each vaccine went through years of extensive safety testing prior to being licensed by the FDA
- Combined Gardasil and Gardasil 9 has been tested on more than 44,000 males
- In the US, over 46 million doses have been administered
- Vaccines are carefully monitored by the CDC and FDA
- Most common side effects include:
  - Pain, redness or swelling at the injection site
  - Fever
  - Nausea
  - Dizziness or fainting after injection
- Vaccine Adverse Event Reporting System (VAERS)-no indication of serious adverse events greater than rates found in all other vaccines
  - (CDC, 2012)

HPV: VACCINE EFFICACY

- In clinical trials Gardasil demonstrated :
  - 90% vaccine efficacy in preventing genital warts
  - 75% vaccine efficacy in preventing anal pre-cancers in males

(CDC, 2012)

WHAT CAN YOU DO??

- Protect yourself from genital warts and HPV:
  - Condom use
  - Limit number of sexual partners
  - **Make an appointment to receive the HPV vaccine**
    - Call the VU Student Health Center: **219-464-5060**

Questions???

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