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THE EFFECTS OF PERCEIVED RISK AND RESPONSIBILITY ON THE
ACCEPTANCE OF A HUMAN PAPILLOMAVIRUS VACCINE BY COLLEGE MEN

BY

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B.A., Saint Michael's College, 2007

THESIS

Submitted to the University of New Hampshire
in Partial Fulfillment of
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in
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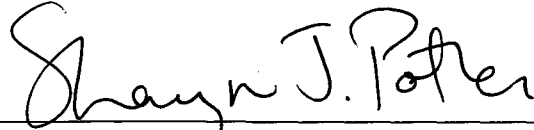
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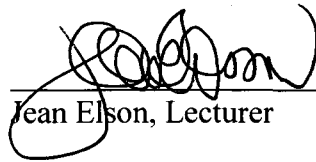
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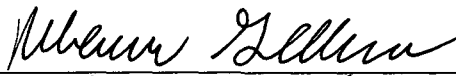
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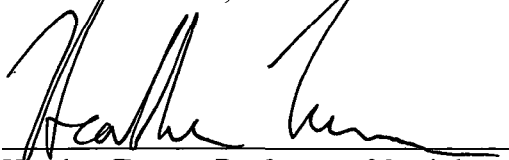
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ABSTRACT

THE EFFECTS OF PERCEIVED RISK AND RESPONSIBILITY ON THE ACCEPTANCE OF A HUMAN PAPILLOMAVIRUS VACCINE BY COLLEGE MEN

by

Angela Marie Mitiguy

University of New Hampshire, September, 2009

In the summer of 2006 the Food and Drug Administration approved a new vaccine to prevent four types of the Human Papillomavirus believed to cause the majority of genital warts and cervical cancer in women. Since that time the vaccine has experienced considerable uptake among women while it has also been met by some criticism. Current medical research aims to understand if the vaccine, which has been approved only for women, could be used to prevent HPV in men.

Little empirical research has been conducted to understand whether or not men would be willing to receive a vaccine for a sexually transmitted infection that poses few serious health risks for them. This research investigates the level of acceptance among a sample of males at a large public university in New Hampshire as well as some of the possible predictors of men's acceptance of a Human Papillomavirus vaccine. Specifically, men's perceived risk for contracting the virus and its possible health consequences and their perceived sense of responsibility for sexual behavior will be examined as predictors of vaccine acceptance.

INTRODUCTION

In the summer of 2006 a new vaccine was approved by the Food and Drug Administration to prevent the spread of certain strands of the Human Papillomavirus (HPV) in women (<http://www.cdc.gov/vaccines/vpd-vac/hpv/hpv-vacsafe-effic.htm>, 2007). HPV is the most commonly spread sexually transmitted infection in the United States and the cause of several types of cervical cancer (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008, Goldstein, 2008). Just over two years after its initial introduction medical research is now examining the possibility of a vaccine aimed at preventing HPV in men (<http://www.cdc.gov/vaccines/vpd-vac/hpv/hpv-vacsafe-effic.htm>, 2007). While the female vaccine has experienced considerable uptake, it is important to understand whether or not men would be willing to accept and receive this vaccine after nearly two years of the vaccine being marketed mainly as a cervical cancer prevention vaccine. How will men's perception of their own risk for contracting HPV and their views on sexual behavior responsibility impact their decision to receive the vaccine if one ever becomes available for them?

This study aims to investigate the effect of men's perceptions surrounding risk and responsibility on the acceptance of a male HPV vaccine. While previous research has examined the factors surrounding parents' decision making in regards to vaccinating their children (e.g. Brabin et al., 2006, Marlow et al., 2007) and men and women's willingness to vaccinate (Jones and Cook, 2008), no known prior research has looked specifically at the effects of perceived risk and responsibility on men's acceptance of a

male HPV vaccine. This study also aims to understand the effects, if any, of men's exposure to the current Gardasil¹ marketing campaign on their understanding of HPV and their willingness to receive a vaccine.

This report will begin with a review of the literature surrounding sexual behavior responsibility regarding contraceptive use and unwanted pregnancy as a theoretical structure to frame the current HPV vaccine situation. I will then review the current research that is available on the Human Papillomavirus vaccine in regards to attitudes about the vaccine and willingness to vaccinate either one's self or one's child. This will include literature regarding the effects of level of knowledge about the virus and vaccine, demographic factors, and gender.

Overall Contribution

There are gender differences when it comes to expectations in sexual responsibility. Previous research has looked at the social processes that have created an environment in which women are primarily responsible for contraceptive use and are expected to be the responsible partner in a sexual relationship (e.g. Oudshoorn, 2003). With new advancements in medical technologies to combat one of the most common sexually transmitted infections it is important to understand how these social constructions might affect the uptake of HPV vaccines by both sexes. The medical field and vaccine technologies in particular are continually growing and changing and it is important for Medical Sociology to continue to grow with and understand the social

¹ Gardasil is the leading Human Papillomavirus vaccine currently available for women. It is manufactured and marketed by Merck & Co. More information about the Gardasil vaccine and the marketing campaign around it will be presented in chapter II.

implications of these technologies on men and women and the social factors that influence how they are accepted and used by society.

Practical Implications

The Human Papillomavirus is one of the most prevalent sexually transmitted infections and has become the center of a great deal of medical research. Companies have already begun marketing and producing a vaccine to prevent HPV in women but women are not the only people to contract HPV. The Human Papillomavirus is not purely a women's health issue. Men do contract the virus and there are medical consequences associated with HPV for them as well. Currently, medical research is investigating the possibility of a vaccine that would prevent HPV in men. This study could help inform researchers as to whether or not men would be willing to receive an HPV vaccine or whether they should solely continue to promote and market the female vaccine.

CHAPTER I

LITERATURE REVIEW

The Human Papillomavirus

The Human Papillomavirus (HPV) is a common infection that is passed on through genital contact, usually through vaginal or anal sex. Most individuals are not aware they have HPV because many times it does not carry any symptoms. There are an estimated 40 different strands of HPV, with some types causing genital warts in both males and females and other types causing up to 95% of cervical cancer cases. HPV is the most common sexually transmitted infection in the United States, with approximately 20 million Americans currently infected and an additional 6.2 million people contracting the infection annually. Approximately 50% of sexually active men and women will acquire an HPV infection at some point in their lifetime. HPV is most common among people in their late teens and twenties. High-risk HPV has the ability to transform normal cells into abnormal cells, which can result in more serious medical complications. Most of the time the body will fight off the infection on its own and the virus will clear within two years (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008). HPV does have specific health consequences for men and women although women are at a greater risk for both contracting the virus and developing more serious health issues.

The Human Papillomavirus and Women. Certain strands of HPV and persistent cases of the virus have the ability to cause cervical cancer in women. In high-risk cases a woman can have HPV for many years during which time those abnormal virus cells may become cancerous. Approximately 10% of women who have high-risk HPV on their cervix will develop persistent HPV infections which could put them at risk for cervical cancer. Researchers suggest that up to 95% of all cervical cancer cases in the United States are caused by these strands of HPV. The American Cancer Society estimated that 11,070 women would be diagnosed with cervical cancer in 2008. Unfortunately, cervical cancer does not usually present any symptoms until it has reached an advanced stage so it is extremely important for women to undergo regular cervical cancer screenings (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008). Clearly, HPV poses a serious health risk to women.

The Human Papillomavirus and Men. While men contract the Human Papillomavirus, they are less likely to get the virus than women are. Few men will know that they actually have the infection as it usually does not present any symptoms. There are some complications that result from certain strands of HPV in men, including genital warts, and penile and anal cancers. The rates of these cancers are significantly lower than the rates of cancer in women; therefore, HPV does not pose as much of a risk to men as it does to women. Penile cancer only affects 1 in every 100,000 men in the United States. The American Cancer Society estimates that 1,250 men will be diagnosed with penile and other male genital cancers in 2008. Only about 1% of sexually active men in the United States will have genital warts at any one time. Currently there is no way to test for the

virus in men nor is there a vaccine like there is for women. Research is investigating the possibility of using the current vaccine for men or of developing a vaccine specifically for male use (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008).

The Human Papillomavirus Vaccine

Presently, there is a vaccine available for women which prevents four types of HPV, types 6, 11, 16, and 18, that cause most cervical cancer and genital warts (<http://www.gardasil.com/what-is-gardasil/information-on-gardasil/index.html#nine>, 2008). The vaccine is recommended for girls who are between 11 and 12 years old and is available for women through 26 years of age who have not yet had the vaccine or completed the three shot series. It is recommended that girls receive the vaccine before becoming sexually active because the vaccine works best for women who have not yet encountered any of the strands of HPV and does not work as well for women who have been exposed to the infection before getting the vaccine (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008). Currently, there is no approved vaccine for men, although research is examining the possibility of a vaccine to prevent HPV in men or if the female vaccine will be effective in men.

Breakdown by Demographic Characteristics

Research has looked at the acceptance of the HPV vaccine among different socio-demographic groups. Brabin et al. (2006) found that socio-demographic characteristics made no difference between those parents who approved of the vaccine for their children and those who did not. Ethnicity and age of respondent were not statistically associated

with vaccine acceptance (Brabin et al., 2006). Lenselink et al. (2008) found that gender and age were statistically related to vaccine acceptance among young adults, with women and younger participants being more willing to vaccinate themselves against HPV. In a study of mothers in England, Marlow et al. (2007) found that demographic characteristics such as mother's level of education, ethnic background, employment and marital status did not affect their acceptance of the vaccine. Age of respondent and relationship status will be used in the current study as demographic variables.

Knowledge about the HPV Vaccine

Previous research on the HPV vaccine has aimed to investigate whether or not the amount of knowledge a person has about the vaccine will affect their decision to have their child receive it. Dempsey et al. (2006) found that when participants were provided with a fact sheet containing information about HPV and its vaccine they scored higher on a HPV assessment. The increased knowledge provided by the HPV information sheet did not increase the likelihood that participants would accept the vaccine (Dempsey et al, 2006). Lenselink et al. (2007) also found that increased knowledge about HPV and cervical cancer would not mean increased acceptance of the vaccine and that overall about 88% of their sample would accept the vaccine regardless of differences in several independent variables, including level of education and marital status. This raises the question of whether or not the 88% acceptance is the result of all of the effort to publicize the vaccine. In a more recent study Lenselink et al. (2008) found that knowledge of HPV, and knowledge of cervical cancer were not statistically associated with young Dutch adults' acceptance of a Human Papillomavirus vaccine.

Perception of Sexual Behavior Responsibility

Previous research has examined the relationship between gender and sexual behavior responsibility. Grady et al. (1996) found that men were more than twice as likely to say that they believed men held the majority of responsibility in contraceptive decision making as they were to say that women did. If men believe that they are to be the partner responsible for contraceptive decision making then perhaps this will extend to their decision making for vaccine prevention. Therefore, men who believe that men hold the majority of sexual behavior responsibility will be more willing to vaccinate compared to those who believe that sexual responsibility should be a woman's concern.

Other research has examined a similar development in the medical field in which medical technology investigated the development of male hormonal contraceptive pill and while this pill was easily developed in the lab there were several social hurdles that made it unsuccessful in practice (Oudshoorn, 2003). Oudshoorn (2003) suggests that one of these hurdles was including men as responsible partners in family planning practices. Previously men had not been included in the discourse on family planning and contraceptive use was seen primarily as a woman's responsibility (Oudshoorn, 2003). While it seems that medical research may be able to develop the male HPV vaccine fairly quickly this does not assure that society will be ready and will to accept it and that men will be willing to vaccinate.

Perception of Risk

Jones and Cook (2008) conducted a study that addressed university men and women's intentions to receive an HPV vaccine. This study found that among college age men and women both groups reported a high intent to receive the vaccine. Men were more likely to report an intention to receive the vaccine if the vaccine would prevent genital warts and cervical cancer than they would be if the vaccine only prevented cervical cancer (Jones and Cook, 2008). Boehner et al. (2003) also found that one of the predictors of college students' acceptance of a Human Papillomavirus vaccine was whether or not students had numerous sexual partners, suggesting that the higher students' perception of risk for contracting the disease, the more likely they would be willing to accept a vaccine to prevent infections. Like Jones and Cook (2008), this study also found an overall high vaccine acceptance (approximately 74%) for a Human Papillomavirus vaccine and a genital herpes vaccine (Boehner et al., 2003).

These studies were conducted before the vaccine to prevent HPV in women became available in the summer of 2006. In November of 2006 Merck & Co., the creators of Gardasil, launched a comprehensive print, television and online campaign to market the vaccine to girls and women, age 9 to 26. The campaign's slogan, "One Less," is aimed at encouraging women to be "one less" woman who will have to battle cervical cancer. Since then there have been two years of marketing the vaccine as a cervical cancer prevention, with less attention being paid to genital warts or other complications. Would men be less likely to intend to receive the vaccine now that they have been exposed to these commercials which describe HPV as a primarily female health problem? This study aimed to explore the effects of this campaign on vaccine decision making.

Gaps in the Literature

While the previous research on the Human Papillomavirus and the vaccine has targeted parental intention to vaccinate children and looked at basic socio-demographic differences in regards to decision making, very little has investigated the response men might have to the vaccine and the factors that may affect their decision making. This study aims to fill this gap in the literature and hopefully inform researchers of the possible uptake of a male vaccine if one becomes available. This study works as an acceptability study aimed at understanding whether or not a new population will welcome a new technology and hopefully informing the direction this line of medical research should take in the future. Acceptability was defined by Marshall in 1977 as “a quality which makes an object, person, event, or idea pleasing or welcome” (Marshall, 1977: 65). The overall goal of this project is to fill a gap in the current HPV vaccine literature by adding men’s acceptance of an HPV vaccine to the information that is presently available.

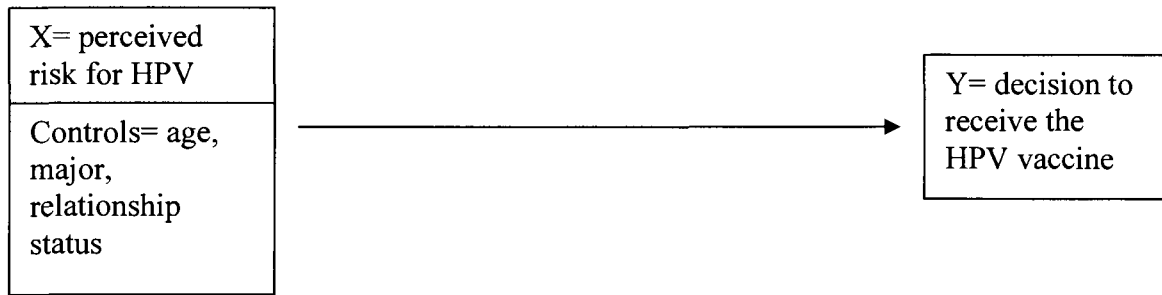
While previous research has focused on knowledge of the virus and vaccine as predictors of acceptance, this study will focus on the effects of perceived risk and responsibility, largely socially constructed, that may affect uptake. It is hypothesized that men’s beliefs surrounding their level of risk for contracting the Human Papillomavirus and the medical consequences associated with it will be the result of how society has presented information on this relatively new health topic instead of being based on actual medical facts. This could be the result of current marketing campaigns for the women’s vaccine as well as the present discussion that surrounds HPV.

In a similar manner the level of responsibility that men feel they should take in protecting themselves against the Human Papillomavirus may not be an accurate reflection of this level of risk. For example, because HPV is prevalent among men and has serious medical complications they should be interested in protecting themselves against the virus, but perhaps their level of responsibility instead reflects whether or not society has encouraged them to take responsibility for their sexual behavior and the consequences associated with it. As a basis for this idea, a book by Nelly Oudshoorn (2003) will be used. This work, in part, looks at the effect that male responsibility had on the development of a male contraceptive pill. These two medical technologies, a male contraceptive pill and a male HPV vaccine, raise parallel issues because of the effects which both topics, unwanted pregnancy and HPV, have on women compared to men. This study can be seen as an extension of Oudshoorn's work as it addresses one of the current advancements in biomedical research which differentiates men and women.

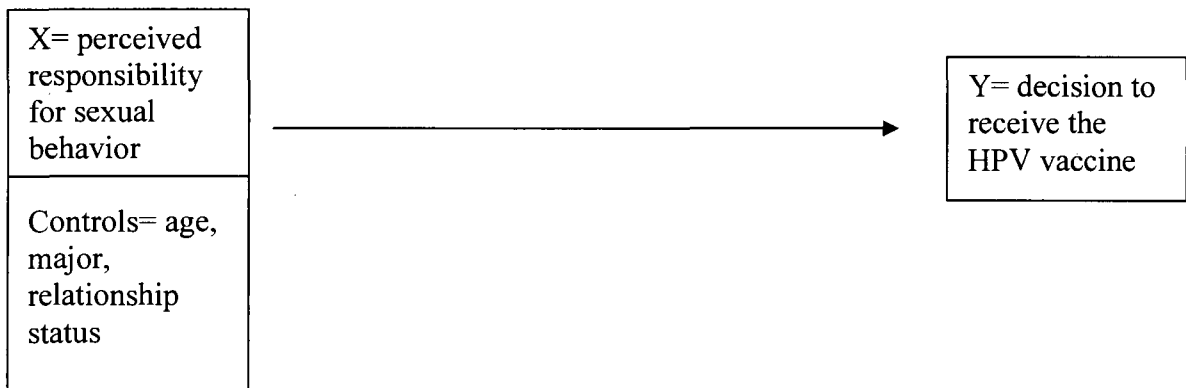
In response to the gaps in the current literature that have been outlined above, I have investigated the following hypotheses:

Hypotheses

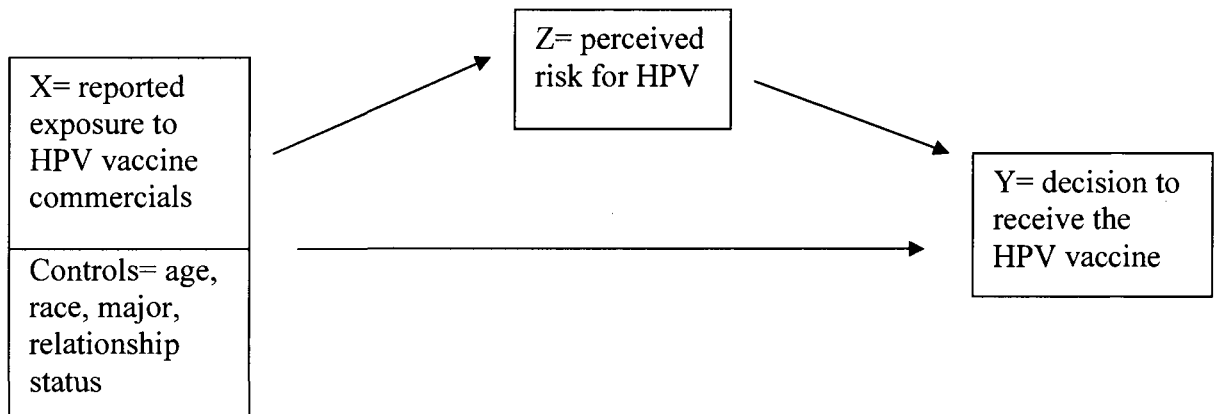
Hypothesis I. Men who report a greater perceived risk for contracting HPV and the medical complications associated with it will be more likely to accept and receive a future vaccine.



Hypothesis II. Men who believe that women are primarily responsible for the use of contraceptives will be less likely to accept and receive the HPV vaccine.



Hypothesis III. Men who report having been exposed to the current Gardasil commercials for HPV will be more likely to reject getting the vaccine. This could be a result of the fact that men who have been exposed to Merck's marketing campaign will view HPV as more of a women's health issue and the vaccine as more of a cervical cancer prevention vaccine instead of a sexually transmitted infection prevention. This relationship will be mediated by participants' perceived risk of contracting the infection.



CHAPTER II

THEORETICAL FRAMEWORK

This research will draw on the area of sexual responsibility research to create a framework in which one can understand men's relationship to the Human Papillomavirus and the vaccine. Primarily, research looking at men's views of contraception responsibility will be used to establish how men view contraceptive use and who they feel should take control of preventing unwanted pregnancy as well as contracting other sexually transmitted infections. Specifically, research on preventing and contracting HIV will be used as an example of this.

Some similarities can be established between gendered experiences of HPV and unwanted pregnancy that rationalize the use of this research for the current study. Because men are not directly affected by unwanted pregnancy, compared to women, they may feel that women should take more responsibility for preventing pregnancy. The same similarities can be seen with the Human Papillomavirus, because women experience more negative consequences from the virus, men may feel that HPV is more of a women's sexual health issue and therefore it is more their responsibility to protect against contracting the virus. Similarities can also be seen between HPV and HIV because women can contract both infections easier than men can. A woman is much more likely to contract HIV during vaginal intercourse than a man is (Padian, Shiboski, and Jewell, 1991). The Human Papillomavirus is also more easily transmitted from a man to a

woman than from a woman to a man during sexual intercourse (<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>, 2008).

This study will explore the effect of gender socialization on vaccine acceptance among college age men, specifically looking at their perception of risk and sexual behavior responsibility. These perceptions may be the result of larger socialization patterns that have tended to place a heavier burden of responsibility for sexual behavior on women than on men and the result of a marketing campaign that promotes HPV primarily as a woman's sexual health issue. If men see their risk for infection and sense of responsibility as being low then they will be less accepting of an HPV vaccine to prevent the infection in men. Lower levels of perceived risk may be associated with exposure to current HPV vaccine commercials that present it as a cervical cancer prevention tool.

Nelly Oudshoorn's book, The Male Pill (2003), examines the challenges surrounding the attempt to introduce a hormonal contraceptive pill for male use, even though one had easily been developed scientifically. Oudshoorn (2003) suggests that the acceptance of a contraceptive pill for men relies heavily on a shift in attitudes surrounding reproductive responsibility. The obstacles do not lie in the scientific field but rather in the cultural (Oudshoorn, 2003).

An important strategy in the advocacy of male involvement in family planning has thus consisted of counteracting the dominant cultural narratives on men and family planning. This was only a first step in changing family planning discourse toward the inclusion of men. Another equally, or maybe even more, important part of the cultural work of men and family planning advocates consisted of changing the objectives and vocabulary of family planning (Oudshoorn, 2003: 123).

Oudshoorn's work is an important resource for this study because it relates very closely to this paper's topic. She suggests that the development of the family planning industry focused mainly on women and the use of female contraceptive pills because the medical field had a long history of viewing sex and reproduction as closer to the nature of women than to the nature of men and this "natural" connection made women an obvious subject of special research in the medical field (Oudshoorn, 2003). Because female bodies were seen as being naturally closer to reproduction, the medical community suggested that it was "more natural" and easier to interrupt the process of ovulation than to disrupt the production of sperm cell (Oudshoorn, 2003). With a strong focus on women and a belief that women are somehow more closely connected to reproduction, men have largely been left out of the discourse on family planning and sexual behavior responsibility that has emerged out of the medical community. It seems logical that this disregard for male participation in family planning may extend to their involvement in sexually transmitted infection prevention.

Oudshoorn (2003) suggests that we can use contraceptive technologies for understanding how certain forms of gender gain cultural dominance in society while other forms remain largely marginalized. The view that women's bodies are at the center of sex makes them the focus of discussion and research and leaves men detached and unaccounted for. Oudshoorn (2003) writes that "the predominance of contraceptives for women contributed to a stabilization of performances of gender, which constituted a strong alignment between femininity and contraceptive use" (Oudshoorn, 2003:16). This view has dominated for several decades and has shaped how we view gender differences in sexual behavior responsibility.

The results of this research could have possible theoretical and practical implications for the field of sociology and the understanding of the uptake of new medical technologies. In regards to sociology this study would contribute largely to the area of a medical sociology as well as to the area of gender. This research also has practical implications for the introduction and acceptance of new medical information and may inform medical researchers about the direction they should be taking in furthering the prevention of HPV. Male acceptance of this vaccine could also provide important insight into their acceptance of possible future vaccines for other diseases, such as HIV, because both are sexually transmitted diseases and may carry a certain level of stigma.

CHAPTER III

METHODS

The goal of this research is to understand college men's acceptance of a Human Papillomavirus vaccine and factors that may predict variation in acceptance. The research design for this study is a cross-sectional survey design. A questionnaire was administered aimed at addressing the three main hypothesis discussed earlier, mainly participants' perceived risk of getting HPV and the complications associated with the infection, their sense of responsibility for sexual health and sexual responsibility and their exposure to current HPV vaccine advertisements. This last set of questions addressed whether or not participants have seen any of the HPV vaccine advertisements currently running in order to assess their effect on acceptance of a male vaccine. All statistical analyses were conducted using the computer program, Stata.

Sample

The sample for this study is college age men. Participants were recruited from a large state university in a northeastern state. These participants were enrolled in general education classes at the time of this study in an attempt to gain a representative sample of the college population. Classes were randomly sampled from each of the nine sections of general education courses at the university by assigning each course a number and then randomly drawing classes from each section. The professor for each course was

contacted via an e-mail which explained the nature of the study and asked for their assistance in recruiting male participants from their course. A copy of the recruitment letter that was sent to professors can be found in Appendix A at the end of this report. If professors declined to participate then additional courses within the same section were sampled so that there was representation from all nine of the types of general education classes. The goal sample size was approximately 200.

Unfortunately, there was difficulty establishing the size of the sample that was originally desired. While the sampling technique was sound, there was an overall unwillingness of college professors to extend the survey to their male students. After several rounds of sampling and contacting professors the study yielded approximately 80 male participants. There is an overall difficulty in getting this particular demographic group to respond to survey questionnaires. It could be that individuals in this demographic are unwilling to participate in social science research in general or that the use of the internet survey was not successful with this particular group because it required participants to go to the survey on their own. The response rate may have been higher if surveys were administered in class but it seems like it may have been difficult to collect data this way because of the difficulty in gaining assistance from some professors. Future attempts to gain access to this population may be more successful if there were more resources available and more desirable incentives for participants.

Measures

The measures for this study were included in the questionnaire which was sent to the participants using the online survey provider *Survey Monkey*. The survey began with

several questions aimed at addressing certain demographic characteristics of the sample. Other parts of the survey included scales with items aimed at creating measures of perceived risk, perceived sexual behavior responsibility, and the effects of HPV vaccine advertising. Each of the measurements will be described in detail below. All measures can be found in Appendix B at the end of this report.

Independent Variables

Perception of Risk. The first independent variable was participants' perceptions of their risk of contracting the Human Papillomavirus and the risk of developing possible complications associated with the infection. This variable was measured by asking participants to express how real they feel the possibility is for them to contract HPV, how important of an issue they feel HPV is, and whether or not they feel they feel at risk for the infection. Responses were provided by giving level of agreement on a Likert scale with low responses corresponding to low levels of perceived risk and high response corresponding to higher perceived risk.

Perception of Responsibility. The second independent variable was participants' perceptions of sexual responsibility. Items aimed to address who participants feel is most responsible for contraception, themselves or a possible sexual partner, and who should be responsible for dealing with unplanned pregnancies, men or women. This section of items aimed to understand whether or not beliefs about sexual behavior responsibility and contraception use can extend to a willingness to protect against sexually transmitted infections by receiving a vaccine. The items used to address participants' sexual behavior

responsibility come from The Gender-Equitable Men Scale (GEM Scale) created by Pulerwitz and Barker (2007).

Exposure to HPV Vaccine Advertisements. In the summer of 2006 a vaccine was introduced to prevent HPV in women, specifically two types most commonly associated with causing cervical cancer and two other types thought to cause genital warts. In order to promote the vaccine several advertisements have been created aimed at encouraging young women and mothers to get the vaccine for themselves or their daughters. These commercials largely describe the vaccine as a prevention for cervical cancer. The question becomes, will men be less inclined to think that HPV is a sexually transmitted infection that affects men if they have been exposed to commercials that promotes it primarily as a women's health issue? The final section of this survey asked participants to provide information regarding their exposure to the current HPV vaccine campaign as well as a few open-ended questions which aimed to understand what effects, if any, these advertisements have on their understanding of HPV and current prevention strategies.

Control Variables

The following variables were used as control variables during the analysis of this data: age, residency, and relationship status. Age was categorized as 18 years old, 19 years old, 20 years old, 21 years old, 22 years old, and 23 and older. Residency asked students whether they are in-state students or out-of-state students. Finally, relationship status asked respondents to categorize their current status as either single, casually dating, in a serious relationship, cohabitating with a partner, or married.

Dependent Variable

Decision to Receive the Vaccine. In order to assess whether or not respondents would accept a possible male HPV vaccine, they were asked whether or not they would personally receive the vaccine if one ever became available. The respondents were asked to disregard the cost of the vaccine or whether or not their insurance would cover the cost when making a decision about their willingness to vaccinate. This was because I wanted to understand how participants felt about the importance of vaccinating themselves regardless of the effects of financial constraints.

Mediating Variable

Perception of Risk. The level of risk participants perceive they are at for contracting HPV can also be a mediating variable between their exposure to HPV vaccine advertisements and their decision to receive the vaccine. It is possible that viewing these advertisements may reduce participants' perceived risk because they portray HPV as a predominately female health issue, resulting in men thinking that it is purely a women's health issue and not something that they are at risk for and should be concerned with.

Procedure

After a list of nine general education courses were sampled and participation was approved by the instructors of the courses, the survey link was e-mailed to professors so that it could be offered to their male students either through e-mail or through their course website. Participants could then access the survey when and wherever they wanted and complete the five minute questionnaire. Participants were also given the opportunity

to enter their names in a raffle for a chance to win a gift certificate to a local electronics store.

Limitations of the Methodology

The largest limitation to the current study is the ability to generalize the findings to a larger population of men. This is because the sample is from a large university in a predominately white northeastern state and is not representative of the national population. Another limitation surrounds the effects of exposure to Human Papillomavirus advertisements on acceptance of male vaccine. It is impossible to fully understand the extent of this effect without conducting an experiment in a laboratory setting with a control group. The best that can be done is to rely on participants' reports of their experiences with these advertisements.

Another possible limitation to this study which relates to the sample is the issue of response bias. It could be, and quite possibly is, that those male college students who chose to participate in a study regarding a sexually transmitted infection are different from those male college students who chose not to participate. This possible difference could be a major limitation to this study and to understanding what the male college population really believes about protecting about the Human Papillomavirus and what their future behavior would be regarding their decision to vaccinate if a vaccine does become available for them. Instead of understanding the male college population as a whole, this study may only address the beliefs of a specific type of male college student.

Human Subjects Research

This research used human subjects for data collection so it was imperative that all steps were taken to ensure that no harm would come to participants. This study was approved by the Institutional Review Board at the University of New Hampshire. A copy of the letter of approval from the Institutional Review Board can be found in Appendix E.

Protection of Human Subjects. In order to fully protect all study participants there were certain procedures taken to ensure participants' consent, safety and privacy. Appendix B provides an example of the consent form that participants had to read and agree to before they completed the survey. The consent form explained that all the information provided would remain confidential and that the participants would remain anonymous in any work that resulted from this research. Respondents' names were in no way associated with the information they provided in the survey.

Although there were no immediate risk to participants the questions that were asked may have raised some levels of anxiety as some deal with sexual promiscuity and sexually transmitted infections. A list of resources, including those that can provide more information about sexually transmitted infections and those that provide further information about the Human Papillomavirus and the current vaccine, were be provided to participants at the end of the survey. The list of resources provided to participants can be found in Appendix D at the end of this report. Respondents were informed that the greatest benefit of participating in this study was the contribution that they were able to make to a larger body of knowledge. Another possible benefit to participating in this

study was the opportunity to participate in a raffle drawing and the possibility of winning a gift certificate to a local computer store.

CHAPTER IV

RESULTS

The data collected for this study was analyzed using the statistical computer program, Stata. This chapter will begin with a section of descriptive statistics, which will aim to illustrate the group of college men which constitute this particular sample. Tables will then be presented that examine the relationship between the items addressing sexual behavior responsibility and perceived risk for the Human Papillomavirus and respondents' age and relationship status. This will be done to examine if there is a relationship between the age or current relationship status of participants and their agreement with each of the statements found under these two categories of sexual behavior responsibility and perceived risk.

I will then examine the effects of perceived sexual behavior responsibility on vaccine acceptance by looking at the items aimed at addressing their beliefs surrounding contraceptive use and handling unwanted pregnancy. The next section will evaluate the relationship between vaccine acceptance and perceived risk for the virus. The purpose of these two analyses is to determine if one's views on sexual behavior responsibility and their perception of risk for HPV will influence their willingness to vaccinate against the infection. Basic cross-tabulations and chi-square tests were conducted to examine the significance between the items for sexual behavior responsibility and perceived risk for HPV and the population as well as the population's willingness to vaccinate. Finally, I

will address the effects of exposure to the current Gardasil campaign on vaccine acceptance, including participants' open-ended responses, which have been categorized and presented in a table.

Descriptive Statistics

Table 1. *Summary statistics*

Variable	<i>n</i>	%
Mean age of all respondents (19.5)		
18-19	42	53.2
20+	37	46.8
In-state Status		
In-state student	47	64.4
Out-of-state student	26	35.6
Relationship Status		
Single	42	57.5
Casually dating	11	15.1
In a serious relationship	18	24.7
Cohabiting	1	1.4
Married	1	1.4
Willingness to vaccinate		
Very willing	17	25.0
Somewhat willing	25	36.8
Neither willing nor unwilling	21	30.9
Somewhat unwilling	3	4.4
Very unwilling	2	2.9

A summary of the descriptive statistics for this population can be found in Table 1. Seventy-nine undergraduate male students from a large state university in a North Eastern state responded to the internet survey that was available on Survey Monkey. Of these 79 respondents only 68 actually completed the entire survey. Participants' ages

ranged from 18 to 23 years old with the average age being 19.5 years. Age was collapsed and categorized as those who reported being 18 or 19 and those who were 20 or older. Approximately 52% of the respondents were 18 or 19 years old and 48% were 20 years old or older. These two categories of age will be used when the variable *age* is used in any further statistical analyses.

One of the first questions on the survey addressed whether respondents are in-state students or out-of-state students. In this sample, approximately 64% of respondents reported being in-state students and 36% reported being out-of-state students. This question was asked in order to establish what percentage of the sample was from the small northeastern state where the university was located. If a large percentage of the population reported being from this state then it may affect the results as the sample may not be as representative of this demographic.

The beginning of the survey also asked participants to express what their current relationship status would be. Seventy-three percent of respondents claimed to currently be either single or casually dating, while 25% claimed to be in a serious relationship. The other 2% of respondents were either married or cohabitating with a partner. This two percent was dropped from consideration during analysis because it represented such a small percentage of the sample and was only a few participants. The other categories were also collapsed so that those respondents who were currently single could be compared to those who were in exclusive relationships. In order to do this, those who reported either being single or casually dating were collapsed into one category which from now on will be considered single. This category was compared to those who reported being in a serious relationship.

Vaccine Acceptance

The central item from this survey was whether or not individuals would be willing to receive an HPV vaccine if one ever became available. Participants were asked to disregard cost or insurance coverage when responding to this item. Sixty-two percent of the participants reported being willing to receive a vaccine, only 7% reported being completely unwilling to vaccinate, and the remaining 31% of participants reported being neither willing nor unwilling to receive a vaccine. For statistical purposes this 31% was collapsed with those who reported being unwilling. The goal of this analysis is to examine what is different between those individuals who would be willing to vaccinate from everyone else. Those respondents who reported feeling neutral about their decision to vaccinate and those who would choose not to vaccinate were collapsed together because of the small sample size. It was also important to this study to be able to establish characteristics and attitudes of those who would definitely be willing to vaccinate against the HPV vaccine from those who are not. The responses for this question can also be found in Table 1.

Sexual Behavior Responsibility

Each of the seven items in the section of the survey dealing with sexual behavior responsibility were compared to respondents' age and relationship status and chi-square tests were conducted to determine if there was a relationship between any of these items with the age or relationship status of a respondents.

Table 2. Chi-square of Sexual Behavior Responsibility by Age and Relationship Status

	Age			Relationship		
	18-19 %	20+ %	χ^2	Exclusive %	Single %	χ^2
Sexual Behavior Responsibility						
It is the man who decides what type of sex to have.			2.02			0.00
Agree	61.9	45.9		61.1	60.4	
Disagree	38.1	54.1		38.9	39.6	
It is a woman's responsibility to avoid getting pregnant.			2.84			0.96
Agree	59.0	38.7		41.2	54.9	
Disagree	41.0	61.3		58.8	45.1	
I would be outraged if my sexual partner asked me to use a condom.			0.23			2.83
Agree	4.8	2.7		11.1	1.9	
Disagree	95.2	97.3		89.9	98.1	
A couple should decide together if they want to have children.			1.45			0.61
Agree	90.5	81.1		88.9	94.3	
Disagree	9.5	18.9		11.1	5.7	
In my opinion, a woman can suggest using a condom just like a man can.			0.15			0.12
Agree	94.9	96.8		94.1	96.1	
Disagree	5.1	3.2		5.9	3.9	
If a guy gets a woman pregnant, the child is the responsibility of both.			0.80			0.00
Agree	90.5	83.8		94.4	94.3	
Disagree	9.5	16.2		5.6	5.7	
A man and a woman should decide together what type of contraceptive to use.			0.13			1.07
Agree	94.9	96.7		100.0	94.0	
Disagree	5.1	3.3		0.0	6.0	
Total (n)	42	37		18	53	

*p<.05 **p<.01

In Table 2, I present the results of the cross-tabulations and chi-square tests for sexual responsibility against age and relationship status. The table presents the percentages of those respondents who agreed and disagreed with the provided statements based on their age and their relationship status. In order to compare these variables the original categories for agreement were collapsed. The original categories “agree” and “somewhat agree” were combined together and were compared to those individuals who responded that they disagreed with the statement. None of these seven items under sexual behavior responsibility were statistically related to either the respondents’ age or their reported relationship status. The first item on this list asked for respondents’ agreement with the following statement: “It is the man who decides what type of sex to have.” Almost 62% of 18 or 19 years old agreed with this statement, compared to approximately 38% who disagreed. When comparing this group with the other age group, approximately 46% of those 20 years and older agreed with this statement, while 54% of those 20 and older disagreed with it.

Another item from the sexual behavior responsibility section that was compared with age and relationship status was the relationship between with the third statement in this section, “I would be outraged if my sexual partner asked me to use a condom,” and relationship status. Of those who reported being in an exclusive relationship, approximately 89% disagreed with this statement compared with about 11% who agreed with this statement. For those respondents who reported currently being single only 2% agreed with this statement and approximately 98% disagreed.

Perceptions of Risk

Table 3. *Chi-square of Perceived Risk for Contracting HPV with Age and Relationship Status*

	Age			Relationship		
	18-19 %	20+ %	χ^2	Exclusive %	Single %	χ^2
Perceived HPV Risk						
Men are just as likely to contract the Human Papillomavirus as women.			0.77			0.01
Agree	52.4	62.2		61.1	62.3	
Disagree	47.6	37.8		38.9	37.7	
The medical complications of HPV are just as severe for men as they are for women.			0.36			0.78
Agree	50.0	43.2		61.1	49.1	
Disagree	50.0	56.8		38.9	50.9	
HPV is the leading cause of penile and anal cancers in men.			0.66			0.78
Agree	52.4	43.2		61.1	49.1	
Disagree	47.6	56.8		38.9	50.9	
It is just as important for men to protect themselves against HPV as it is for women.			0.37			0.48
Agree	73.8	67.6		83.3	75.5	
Disagree	26.2	32.4		16.7	24.5	
Total (n)	42	37		18	53	

*p<.05 **p<.01

In Table 3, I present the results of a second cross-tabulation and chi-square tests comparing respondents' agreement with certain items addressing perceived risk for the Human Papillomavirus and respondents' age and relationship status. Again, similar to the statements addressing sexual behavior responsibility, none of the items addressing perceived risk for HPV were statistically related to either respondents' age or their relationship status. Agreement with the first item, "Men are just as likely to contract the Human Papillomavirus as women," is not statistically related to respondents' relationship status. Of respondents who reported being single 62% agreed with this statement compared with 38% of single respondents who disagreed with this statement. The percentages for agreement were almost exactly the same for those respondents who reported currently being in an exclusive relationship. Approximately 62% agreed with this statement while approximately 38% disagreed. There is no difference in relationship status between those who agreed with this statement and those who disagreed with it. When compared to age, responses of agreement and disagreement were evenly split between the two age categories identified earlier. There does not seem to be a pattern to agreement or disagreement with these items and this could be because respondents do not know a lot about the Human Papillomavirus and their perceptions of risk are not based on actual knowledge.

Willingness to Vaccinate

Cross-tabulations were also conducted with these sets of items regarding sexual behavior responsibility and perception of risk for the Human Papillomavirus and participants' responses to the question regarding willingness to vaccinate to determine if

there is a relationship between respondents' views on sexual behavior responsibility and perceived risk for contracting the Human Papillomavirus and their willingness to protect themselves if a male HPV vaccine ever becomes available.

Table 4. Chi-square of Sexual Behavior Responsibility and Willingness to Vaccinate

	Willingness to Vaccinate		
	Yes %	No %	χ^2
Sexual Behavior Responsibility			
It is the man who decides what type of sex to have.			0.02
Agree	59.5	57.7	
Disagree	40.5	42.3	
It is a woman's responsibility to avoid getting pregnant.			0.10
Agree	45.2	57.7	
Disagree	54.8	42.3	
I would be outraged if my sexual partner asked me to use a condom.			1.07
Agree	2.4	7.7	
Disagree	97.6	92.3	
A couple should decide together if they want to have children. ²			--
Agree	--	--	
Disagree			
In my opinion, a woman can suggest using a condom just like a man can.			0.03
Agree	95.2	96.2	
Disagree	4.8	3.8	
If a guy gets a woman pregnant, the child is the responsibility of both. ²			--
Agree	--	--	
Disagree			
A man and a woman should decide together what type of contraceptive to use.			1.03
Agree	97.6	92.3	
Disagree	2.4	7.7	
Total (n)	42	26	

*p<.05 **p<.01

² Percentages and chi-square score could not be calculated for these items as there was no comparison between agree and disagree because none of the respondents disagreed with these statements.

The first item in the section on sexual behavior responsibility asked participants to provide the level with which they agreed with the statement: “It is the man who decides what type of sex to have.” A cross-tabulation and chi-square test was calculated between this item and the participants’ willingness to vaccinate. The results of this cross-tab appear in Table 4. Of those participants who reported being willing to vaccinate against HPV approximately 60% agreed with this statement while 40% disagreed. For the participants who would not be willing to receive an HPV vaccine approximately 58% agreed with this statement while 42% disagreed. A chi-square test suggests that this relationship is not statistically significant.

The fifth item in this section of the survey asked for agreement with the following statement: “In my opinion, a woman can suggest using a condom just like a man can.” Again, a cross-tab was generated to exam the relationship between this item and willingness to vaccinate and the results can be found in Table 4. Of those who would be willing to vaccinate against the Human Papillomavirus approximately 95% agreed with this statement compared to 5% who disagreed. Of those who would not be willing to vaccinate against HPV approximately 96% agreed with this statement compared to 4% who disagreed. Again, a chi-square test of this relationship was not statistically significant.

Table 5. *Chi-square of Perceived Risk for HPV and Willingness to Vaccinate*

	Willingness to Vaccinate		χ^2
	Yes	No	
Perceived HPV Risk			
Men are just as likely to contract the Human Papillomavirus as women.			2.17
Agree	71.4	53.9	
Disagree	28.6	46.1	
The medical complications of HPV are just as severe for men as they are for women.			0.38
Agree	50.0	57.7	
Disagree	50.0	42.3	
HPV is the leading cause of penile and anal cancers in men.			0.01
Agree	54.8	53.9	
Disagree	45.2	46.1	
It is just as important for men to protect themselves against HPV as it is for women.			1.66
Agree	85.7	73.1	
Disagree	14.3	26.9	
Total (n)	42	26	

*p<.05 **<.01

Again, cross-tabulations and chi-square tests were conducted to examine the relationship between perceptions of risk for HPV and willingness to vaccinate against the virus. The results of these tests are presented in Table 5. None of the relationships between any of these four items and willingness to vaccinate were statistically significant. For example, the percentages for the cross-tabulation for agreement with item 3, “HPV is the leading cause of penile and anal cancers in men,” and respondents’ willingness to vaccinate suggest that approximately 55% of those participants who would be willing to vaccinate against HPV agreed with this statement, while 45% who would be willing to vaccinate did not agree with this statement. The other three items in this section were not statistically related to willingness to vaccinate.

Gardasil Campaign

The end of the survey addressed a series of points regarding the current Merck Gardasil campaign. One question simply asked respondents how often in the last month they had seen or heard a commercial for Gardasil. Responses were given on a four point scale which ranges from 0-3 times, 4-6 times, 7-10 times, or 10 or more times. These responses were compared to respondents’ willingness to receive an HPV vaccine in order to determine if there is a relationship between vaccine acceptance and exposure to the current Gardasil campaign. The results of this cross-tabulation and chi-square test appear in Table 6.

Table 6. Chi-square of Willingness to Vaccinate and Exposure to Gardasil Commercials

Willingness to Vaccinate			
	Yes	No	χ^2
Exposure to Gardasil Commercials (in the past month)			5.08
0-3 times	90.5	80.8	
4-6 times	9.5	7.7	
7-10 times	0.0	11.5	
10 times or more	--	--	
Total (n)	42	26	

*p<.05 **p<.01

The results in table 6 suggest that the number of times a participant has either seen or heard a Gardasil commercial does not have an effect on whether or not respondents would be willing to receive a Human Papillomavirus vaccine. There is not a large difference between the percentages of those who would be willing to vaccinate and whether they had seen or heard a Gardasil commercial 0-3 times in the past month or 4-6 times in the past month.

One open-ended response question asked respondent what they thought Gardasil was. In order to examine these responses, the answers were categorized and frequencies were tallied for each type. These results are presented in Table 7.

Table 7. Open-ended responses to Gardasil Campaign Questions

Category of Response	<i>n</i>	%
Respondent cannot define the word Gardasil	22	40.7
Respondent identified Gardasil as a contraception for women	3	5.6
Respondent identified Gardasil as a vaccine for women	4	7.4
Respondent identified Gardasil as a cervical cancer prevention	8	14.8
Respondent identified Gardasil as a HPV prevention	17	31.5
Total	54	100%

From Table 7 we can see that the majority of respondents, almost 41%, reported not knowing what Gardasil is at all. The next most frequent category was those respondents who knew that Gardasil is some type of HPV prevention. This does not mean respondents were necessarily aware that Gardasil is a vaccine but that they knew what it aimed to prevent. It should be noted that some respondents thought that Gardasil was a type of contraception for women (5.6%) and some that that it was purely a cervical cancer prevention tool (14.8%). The responses are interesting because they suggest an ambiguity in understanding about the current HPV vaccine. This ambiguousness could influence perceptions about the need for protection and the appropriateness of an HPV vaccine for men.

Summary

Overall, none of the results of the analysis between sexual behavior responsibility or perception of risk for contracting the Human Papillomavirus and the medical complications associated with it are statistically related to college men's willingness to receive an HPV vaccine if one ever becomes available for them. None of the chi-square tests that were conducted examining agreement with the items on sexual behavior responsibility, respondents' age, relationship status, or willingness to vaccinate yielded statistically significant results. The same is true for the chi-square tests examining agreement with the items regarding perceived risk for HPV and respondents' age, relationship status, or willingness to vaccinate.

CHAPTER V

DISCUSSION/ CONCLUSION

Current medical research is aiming to establish a way to prevent high-risk strands of the Human Papillomavirus in men. HPV is the most commonly spread sexually transmitted infection in the United States and the cause of certain severe health problems, specifically, high rates of cervical cancer in women. Presently there is a vaccine that has been approved by the Federal Drug Administration for use in women that prevents for high-risk strands of HPV. In order to understand whether or not men would be willing to vaccinate themselves against the Human Papillomavirus it is important to investigate possible predictors of decision making and behavior. This acceptance study has aimed to look at two of these types of predictors, mainly, men's views on sexual behavior responsibility and decision making and their perceived risk for contracting the Human Papillomavirus and its medical complications.

Hypothesis I

The first hypothesis aimed to examine the relationship between men's perceptions of risk for contracting the Human Papillomavirus and their willingness to receive an HPV vaccine if one ever becomes available for men. In order to address this hypothesis, men were asked to provide their level of agreement with a series of statements on this topic and these responses were compared to their response to the willingness to vaccinate

question. In order to investigate this relationship I conducted chi-square tests with participants' agreement with each of these four items and their age, relationship status, and whether or not they would be willing to vaccinate against HPV.

The first set of tests regarding perceived risk for HPV and respondents' age did not yield any statistically significant results. It does not appear that older participants are more informed about the Human Papillomavirus and their risk for contracting it compared to younger participants or vice versa. This could be due to the fact that there is not a very broad age range for participants. The age range was from 19 to 23 years old and this could not be wide enough to detect any real difference in perception of risk for HPV. Part of this could be the overall lack of knowledge among this age group. The Human Papillomavirus has only recently been brought to public attention with the creation and marketing of Gardasil so it could be that it is still widely unknown to young adults, especially young men who have not been the target of HPV prevention education so far.

The second set of tests examined whether or not there was a relationship between perception of risk for HPV and respondents' relationship status. Again, it could be that there is an overall lack of knowledge, or confusion, regarding the Human Papillomavirus and men's risk for contracting the infection and this overall confusion exists regardless of whether or not men are in an exclusive relationship. It is surprising that there is not a difference between those respondents who report being single compared to those who report being in an exclusive relationship in regards to whether or not they feel it is necessary for men to protect themselves against HPV. It could be that responses to these

items were based on how responses feel about all men instead of making a judgment for themselves.

The final set of statistical tests for this hypothesis examined the relationship between perception of risk and respondents' willingness to vaccinate themselves against HPV. It was hypothesized that the greater the level of perceived risk for HPV, the more likely respondents' would be to be willing to vaccinate against the virus. Again, this relationship was not statistically significant. Previous research found that one's level of knowledge about the Human Papillomavirus and related issues like cervical cancer did not affect the decision to vaccinate either one's self or one's child (Dempsey et al., 2006, Lenselink et al., 2007 and 2008). This could also be the case with this particular study. Perhaps individuals' willingness to vaccinate is based more on the suggestion of the medical field instead of what they know about particular diseases and preventions.

Hypothesis II

The second hypothesis investigated the relationship between respondents' level of sexual behavior responsibility and their willingness to vaccinate themselves against the Human Papillomavirus vaccine. In order to test this hypothesis I ran a number of statistical analyses comparing respondents' agreement with the seven sexual behavior responsibility items with their age, relationship status, and finally, with their reported willingness to vaccinate against the Human Papillomavirus.

Initially, I investigated whether or not there was a relationship between participants' agreement with the items regarding sexual behavior responsibility and age. While none of the statistical analyses yielded significant results there were some patterns

in responses to some of the items. These patterns seem to suggest that younger respondents are more apt to think that men should make sexual behavior decisions without taking their partner's opinion into consideration. This could suggest a difference in level of maturity among respondents but again this relationship was not statistically significant so it is not possible to say that respondents' agreement with this statement is contingent on their age.

I also looked at the relationship between agreement with the sexual behavior responsibility items and relationship status. Again while there were not any statistical significant relationships it seems that those who are committed to their sexual partner would not expect their partner to ask them to use protection, while those who are single or who are casually dating think it acceptable for their sexual partner to suggest using protection. It could be that participants in committed relationships do not feel that contraception and sexually transmitted infection protection is as necessary because they are only involved with one person. Another possible explanation could be that men who are involved in a committed relationship have already established what type of protection, if any, they would use to prevent unwanted pregnancy and to raise these questions with their partner again may seem unnecessary or even insulting.

The final set of analyses which looked at respondents' agreement with the sexual behavior items and their willingness to vaccinate against HPV also did not result in any statistically significant relationships. It was hypothesized that men who felt that contraceptive use was a woman's responsibility would be less willing to vaccinate because a vaccine for a sexually transmitted infection would be viewed as another "safe sex" practice. One possible explanation is that the items used to address sexual behavior

responsibility do not deal with who men feel should be responsible for practicing safe sex but instead address men's attitudes towards sexual behavior.

This lack of relationship is interesting when compared to previous research on similar topics, such as the work done by Oudshoorn (2003). Oudshoorn's book, The Male Pill, addressed the effect of male responsibility for family planning during the initial development of a male contraceptive pill. Oudshoorn (2003) suggested that in order for a male contraceptive pill to gain acceptance men would have to be included more in the larger area of family planning and be encouraged to be responsible for contraceptive use. The author sees this as one of the most important obstacles in overcoming the barriers to introduction and uptake of a male pill (Oudshoorn, 2003). It seems logical that this line of reasoning could be extended to prevention of sexually transmitted infections, especially those that, similar to unwanted pregnancies, affect women in more obvious ways than men.

This study did not find a relationship between responsibility and acceptance that could be related to Oudshoorn's work. It could be that men do not view vaccinating against sexually transmitted infections in the same way that they view contraceptive use or other sexual behavior issues, like dealing with unplanned pregnancies. Perhaps there is a difference between vaccinating against the Human Papillomavirus and male contraceptive pills because the HPV vaccine for women has not been available long enough to have made a stereotypical impression on our views about protection and prevention. If the Gardasil vaccine for women remains the only HPV prevention tool then perhaps in the future there would be a difference in opinion about men's willingness to vaccinate themselves. It could be that, similar to a possible lack of knowledge

surrounding HPV, men also have not yet been socialized to believe that the HPV vaccine is purely a women's health issue.

Another possible explanation could be that developments in areas like male contraception have made it easier for other new technologies, like sexually transmitted infection vaccines, to gain acceptance because there has already been some discussion surrounding male involvement in sexual behavior responsibility. It may be that the history of the male pill which Oudshoorn (2003) outlined in her book has affected the way college men view the Human Papillomavirus vaccine. It is difficult to tell if this is an issue surrounding time or if men's perceptions about vaccination are different than their views on sexual behavior responsibility and contraceptive use.

Hypothesis III

The third and final hypothesis for this study aimed to understand if there was any relationship between exposure to the current Gardasil campaign and willingness to vaccinate against the Human Papillomavirus vaccine. Statistical analyses of the items in the survey addressing exposure to the Gardasil campaign and knowledge about Gardasil with vaccine acceptance suggested that there is no statistically significant relationship between exposure to the campaign and acceptance. It could be that perhaps individuals may not pay much attention to the commercials they are viewing, especially if the characters featured are not of the same demographic characteristics. The Gardasil campaign has worked very hard to target mothers and girls and perhaps they are accomplishing their goal by attracting women and subsequently disregarding men. It

seems that despite the level of exposure to Gardasil or knowledge about the vaccine, the majority of college men are willing to vaccinate.

The lack of statistical significance in these analyses could be due to the fact that the majority of college men, approximately 60% would be willing to receive an HPV vaccine and only 7% reported that they would be unwilling. It seems that regardless of how this sample feels about sexual behavior responsibility or what they believe about the Human Papillomavirus, they are willing to receive a vaccine. Could this be the result of a generation that has been raised to believe that vaccines, regardless of their risks or consequences, are a good thing? It may be due to the fact that because this generation has been receiving vaccines since birth that they do not question whether or not they should receive a particular vaccine. This willingness to vaccinate may be the result of a larger generational attitude towards vaccination instead of a gender specific attitude regarding sexual behavior responsibility and sexually transmitted infection prevention.

Limitations

There are several limitations to this study, most of which center around the methodology. These limitations are issues that should be addressed in future research in order to obtain a more accurate understanding of male HPV vaccine acceptance. The largest limitation in this study is the sample size and efforts should be made in the future to try and establish a larger, more representative sample. There was a difficulty in establishing both access to a male population for sampling and an actual sample of male participants. I think there is a specific difficulty in addressing this particular type of

population, male college students around twenty years old. As discussed earlier in the methods chapter, there may also be an effect of response bias because there may be something fundamentally different between those college men who chose to participate in this study compared to those who chose not to participate. While efforts were made to obtain participants with a raffle drawing incentive, it may have been easier to get participants if a larger incentive could have been provided. This was not possible for this study as there was not any grant or outside funding support. It may be necessary to obtain such support for a future study.

As a result of this the small sample size, responses were collapsed for some items, most importantly the item which addressed participants' willingness to vaccinate. This is problematic because respondents who actually reported feeling neutral about the decision to vaccinate may actually not have thought about their willingness to vaccinate as much as those who made a decision either way. They also may not have as much knowledge about the Human Papillomavirus or the vaccine compared to those who reported being willing or unwilling to vaccinate or they may not be willing to vaccinate at the time this study was conducted but would be willing to vaccinate at some later time. Therefore, this may affect the results because the difference between the two groups may not be as apparent if the neutral responses were influencing the group which was considered "unwilling" to vaccinate.

Another limitation to this study would be the extensiveness of the survey. I think it would be interesting for a future study to try and expand on the current survey and perhaps use scales to gain a level of sexual behavior responsibility or perceived risk. It may be helpful to compare participants based on levels of these categories instead of

having to look at each individual item in these categories as this study did. It may also be more beneficial to include more items under each of the sections of this survey to gain a better understanding of perceived risk and responsibility. Like other studies that have looked at different populations' acceptability (e.g., Dempsey et al., 2006, Lenselink et al., 2008) it may also be helpful to include a measure of participants' level of knowledge about HPV and the vaccine and use an assessment that could rate how much they actually know about the infection and vaccine. Further ideas for future research in this area are presented in the next section.

Future Research

Vaccines for sexually transmitted infections are part of a rapidly expanding medical field and it is important to have research within the social sciences to accompany the medical field in order to understand the effects of one on the other. The Human Papillomavirus and its accompanying vaccine are undergoing great advancements right now and social science research should aim to keep up with the medical field. Specifically, while the Human Papillomavirus has previously been considered primarily a women's health issue, the medical field has begun to turn its attention towards men as research aims to create HPV tests for men and vaccines for male prevention.

A future study may gain more insightful information by using in-depth interviews and focus groups to understand what men know about the Human Papillomavirus and how they feel they should be included in preventing against the infection and other sexually transmitted infections. The current study has really only provided an introduction to understanding the relationship between men's perceptions about risk and

responsibility and willingness to vaccinate. It is important that future research use larger statistical methods as well as mixed-methods approaches to gain further insight into male attitudes and beliefs that could affect behavior. Acceptability studies are important components to new medical technologies and future work in this area should aim to expand and deepen the understandings that this study has just begun to touch on.

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APPENDICES

APPENDIX A

RECRUITMENT LETTER

Dear Professor _____,

My name is Angela Mitiguy and I am a second year Master's student in the Sociology Department. I am currently working on my Master's thesis and was hoping I could ask your assistance with my data collection. The purpose of my project is to investigate male college student's acceptance of a possible Human Papillomavirus vaccine for men. I am hoping to survey men here at UNH in regards to their beliefs about the HPV vaccine and their willingness to receive a vaccine. I would like to sample men who are enrolled in courses that could fulfill general education requirements for the college in order to get the broadest sample possible. In order to do this I am sampling students from courses that count towards UNH's general education requirements. Your class, _____, was chosen by random selection to participate in this study.

I hope to collect my data as soon as possible. In order to do this I am hoping that you will be willing to provide your male students with an internet link to an online survey provided either via blackboard or during class. They could go to the website whenever they like and complete the survey in their own time. There would be a raffle incentive for those who choose to participate.

My project has been approved by the IRB at UNH. If you have any further questions please feel free to contact me or my faculty advisor, Dr. Sharyn Potter in the Sociology Department at Sharyn.Potter@unh.edu. If you would be willing to help me in this endeavor, I ask that you please e-mail me back. If you choose to participate then I will be in further contact with you soon. Thank you so much for taking the time to read and consider this. I look forward to hearing from you.

Sincerely,

Angela Mitiguy
Master's Student
Sociology Department

APPENDIX B

CONSENT FORM

Title of Study: Male Attitudes Regarding Current Public Health Issues
Principal Investigator: Angela Mitiguy, University of New Hampshire

Purpose of Study: This study is designed to investigate male attitudes and beliefs about a public health issue.

Procedure: You will be asked to complete a brief survey aimed at helping researchers understand men's attitudes towards a current public health issue. The survey should take you about 5 minutes to complete.

Possible risks and benefits: A possible risk may be discomfort or anxiety that results from the sensitive nature of some of the questions. There are no direct benefits to the participant from participating in this study.

Confidentiality of records: All records generated by this study will be confidential, to the extent possible when communicating via the internet. Paper records will only be available to researchers involved in this study. You will not be individually identified in any paper that may result from this project.

Voluntary nature of participation: Participation in this study is completely voluntary and you may withdraw from participation at any point. You are free to refuse to answer any question in the survey.

Request for more information: Please feel free to ask any questions you may have about this study. I will be happy to inform you of the results of the study when they are available. If you wish to speak with someone involved in this study regarding any problems or concerns you may have, contact the principal investigator, Angela Mitiguy at amx72@unh.edu. This study has been approved by the Institutional Review Board at the University of New Hampshire. If you have any questions about your rights as a research subject you can contact Julie Simpson in the UNH Office of Sponsored Research, 603-862-2003 or Julie.simpson@unh.edu to discuss them.

I have read and I understand this consent form. Therefore, I agree to give my consent to participate as a subject in this research project.

*** 1. Please check the appropriate box:**

- I understand the above statements and wish to continue with the survey.
- I decline to participate in this survey.

APPENDIX C

SURVEY

Demographics:

1. How old are you in years?
 1. 18 years old
 2. 19 years old
 3. 20 years old
 4. 21 years old
 5. 22 years old
 6. 23+ years old

 2. What is your college major?

 3. Which best describes your current marital status?
 1. Single
 2. Casually dating
 3. In a serious relationship
 4. Cohabiting with partner
 5. Married

 4. Are you an in-state or out-of-state student?
 1. In-state
 2. Out-of-state
-

Sexual Responsibility:

(1) Agree, (2) Partially Agree, (3) Do Not Agree

1. It is the man who decides what type of sex to have.
2. It is a woman's responsibility to avoid getting pregnant.
3. I would be outraged if my sexual partner asked me to use a condom.
4. A couple should decide together if they want to have children.
5. In my opinion, a woman can suggest using a condom just like a man can.

6. If a guy gets a woman pregnant, the child is the responsibility of both.
 7. A man and a woman should decide together what type of contraceptive to use.
-

Risk:

(1) Agree, (2) Partially Agree, (3) Do Not Agree

1. Men are just as likely to contract the Human Papillomavirus as women.
 2. The medical complications of HPV are just as severe for men as they are for women.
 3. HPV is the leading cause of penile and anal cancers in men.
 4. It is just as important for men to protect themselves against HPV as it is for women.
-

Exposure to HPV Vaccine Commercials:

1. Can you tell me what Gardasil is?

2. In the past month how many times have you seen or heard commercials for Gardasil?
1. 0-3 times
 2. 4-6 times
 3. 7-10 times
 4. 10 or more times

3. If you have seen any Gardasil commercials, can you list anything that you remember from the commercial?

Willingness to receive an HPV vaccine:

If one ever became available for men, how willing would you be to receive a Human Papillomavirus vaccine? Please disregard such issues as insurance coverage or cost.

1. Very willing
2. Somewhat willing
3. Neither willing nor unwilling
4. Somewhat unwilling
5. Very unwilling

APPENDIX D

RESOURCES FOR PARTICIPANTS

We know that sexually transmitted infections and sexual behavior is a sensitive topic. After participating in this study, you might want to talk to someone for support and to gain more information. This is a list of organizations that are here to help you for any reason as well as a list of websites that provide information about the Human Papillomavirus and the current ways to prevent it. Again, you may also choose to contact the researcher as well.

On Campus:

UNH Counseling Center.....862-2090
UNH Health Services.....862-1530

Off Campus:

Planned Parenthood (Portsmouth Health Center).....431-6803
Wentworth Douglass Hospital.....742-5252

Human Papillomavirus Websites:

Centers for Disease Control.....<http://www.cdc.gov/std/hpv/default.htm>
Gardasil Vaccine.....www.gardasil.com

Researcher:

Angela Mitiguy.....amx72@unh.edu

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL FOR THE USE OF HUMAN SUBJECTS

University of New Hampshire

Research Conduct and Compliance Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

20-Jan-2009

Mitiguy, Angela
Sociology, Horton SSC
16 Moon Brook Drive
Rutland, VT 05701

IRB #: 4460

Study: The Effects of Perceived Risk and Responsibility on the Acceptance of a Human
Papillomavirus Vaccine by College Men

Approval Date: 13-Jan-2009

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,


Julie F. Simpson
Manager

cc: File
Potter, Sharyn