

## ABSTRACT

### An Analysis of the Concerns Regarding the HPV Vaccination

Elijah Daniel Paraiso

Director: Dr. Rizalia Klausmeyer, PhD

The topic of the HPV vaccination has been one of controversy since its introduction. Although many arguments may be made to reject the vaccination, the most common answer given by most noncompliant patients is that the set is not necessary. In this thesis, I will demonstrate the necessity for the HPV vaccination given the current model of society. Explaining with biological pathways, I will argue that the basis of safe sex or the lack of sex is not a sufficient basis to decline. Moreover, I anticipate offering physicians adequate research to raise the compliance of their clinics. The results show that 26.4% of parents will not accept the HPV vaccination on the basis of four factors: necessity, safety, promotion of sex, and religion.

APPROVED BY DIRECTOR OF HONORS THESIS

---

Dr. Rizalia Klausmeyer, Undergraduate Research

APPROVED BY THE HONORS PROGRAM

---

Dr. Andrew Wisely, Interim Director

DATE: \_\_\_\_\_

AN ANALYSIS OF THE CONCERNS REGARDING THE  
HPV VACCINATION

A Thesis Submitted to the Faculty of  
Baylor University  
In Partial Fulfillment of the Requirements for the  
Honors Program

By  
Elijah Daniel Paraiso

Waco, Texas  
November 2020

## TABLE OF CONTENTS

|   |     |
|---|-----|
| LIST OF FIGURES.....                          | iii |
| ACKNOWLEDGEMENTS.....                         | iv  |
| CHAPTER ONE: LITERATURE REVIEW.....           | 1   |
| Overview.....                                 | 3   |
| CHAPTER TWO: RESEARCH METHODS-PHASE ONE.....  | 5   |
| Hypothesis.....                               | 7   |
| Methods.....                                  | 8   |
| Apprehensions.....                            | 9   |
| CHAPTER THREE: RESULTS.....                   | 12  |
| Apprehensions.....                            | 13  |
| CHAPTER FOUR: RESEARCH METHODS-PHASE TWO..... | 17  |
| Hypothesis.....                               | 17  |
| Methods.....                                  | 18  |
| Results.....                                  | 19  |
| Implications.....                             | 20  |
| CHAPTER FIVE: CONSLUSION.....                 | 21  |
| BIBLIOGRAPHY.....                             | 23  |

## LIST OF FIGURES

|   |    |
|---|----|
| Why parents choose to refuse the HPV vaccination..... | 6  |
| HPV survey.....                                       | 8  |
| Apprehensions about the HPV vaccination.....          | 13 |
| HPV pamphlet.....                                     | 18 |
| HPV posters.....                                      | 19 |

## ACKNOWLEDGEMENTS

The author would like to acknowledge to work of Jae Lee, Baylor University class of 2021. Both the author and she conducted the surveys in Baylor Scott and White Hillcrest. She was instrumental in aiding with the dissemination of posters and doubled the efficiency of the research.

## CHAPTER ONE

### Literature Review

For the pediatrician, there are many well-visits which become complicated by new or frightening information. These may be due to an unexplainable sickness or by a broken bone. Most often, the children may be referred to a specialist to more efficiently address their issues. However, with unforeseen vaccinations, this is not the case. Most recommended vaccinations are available at a doctor's office, so a specialist is not needed (U.S. Department of Health & Human Services, 2020). Of such vaccines, none are as controversial as the human papillomavirus (HPV) vaccination. In a study on Kansas guardians, most parents not complying with the vaccination acknowledged the role of outside educational resources discouraging them from getting this vaccination (Luisi, 2020). The information gained from such resources requires doctors to have a lengthy discussion with patients to comply with the recommendations. This thesis will provide a method to most efficiently provide doctors the materials to initiate conversations centered around the education of HPV. To introduce this research, we must take the following preliminary measures:

- We must first introduce the nature of HPV, by first discussing its symptoms then its causes for effect.
- We must then introduce the demographics – who the virus affects and how many people the virus affects.

- Finally, we must deliver a brief synopsis of the main research and its relevance to a general pediatric clinic.

The human papillomavirus is a disease which commonly affects the skin and epithelial membranes of the body, typically causing warts in the genital area (Mayo Clinic, 2016). In some cases, this virus is known to have caused cancers. In fact, HPV is responsible for 70% of cervical cancers (Braaten and Laufer, 2008). Moreover, in 2012, HPV was correlated with oropharyngeal cancers by 74% (You et al., 2019). The symptoms of HPV have devastating consequences, but we must also examine the causes. Human papillomavirus is a disease consisting of 100 subtypes, 13 of which are considered carcinogenic (Janicek and Averette, 2001). It is most often a sexually transmitted disease, but newer studies are beginning to show that the disease may not be strictly of a sexual nature in horizontal transmission but rather may be transmitted by nonsexual skin abrasion; further, samples are being taken concerning the effects of vertical transmission, in which pregnant mothers who are HPV carriers transmit the disease for their newborn children (Sabeena et al., 2017).

The prevalence of this disease is about 80% by the age of 45 (Chesson et al., 2014). These results assume that the subjects have had at least one opposite sex partner. One study shows that this prevalence is higher in sexually active females prior to age 19 but higher in sexually active males after age 19 (Lewis et al., 2018). Overall, the prevalence rates are higher in men. Another study shows that in a group of 786, 50% completed the vaccine set, females aged 16-20 having the lowest completion. This was



because they had not received sufficient advertisement that educated them on the vaccine (Gold et al., 2019).

Cervical cancer associated with HPV also is found to have higher rates in black and Hispanic women than those of other races or ethnicities (CDC, 2019). Some results hint that this is due to a lack of provider recommendation (Jeudin et al., 2014). The difference in recommendation is explainable for Hispanic groups as there is a language barrier. However, a lack of recommendation for black groups cannot be explained by miscommunication. Rather, it is from the lack of communication from providers that this people group is unable to receive the best information available to make the right decision regarding their health. Each of the disparities regarding these minorities is enough to branch into another topic and are thus beyond the scope of this study. To address the need for educational materials, regardless of the cause of the disparity in the black and Hispanic minorities, there is a demonstrated need for more education and recommendation for the HPV vaccination. The commonality between the low completion in females before the age of 20 and racial/ethnic minorities is that there is not advertisement to inform them of the dangers of HPV.

### *Overview*

This thesis will delve into research concerning the dissemination of this information to patients in clinics. This study will provide clinical surveys to show the opinions of the patients. The questions have been restricted to allow only two answers for efficient quantitative study. Further, the research will provide methods to provide doctors with enough HPV statistics to adequately hold a conversation with a patient to determine

the best step for them. Preserving the order of seeking the best interest of the patient, doctors should be advocating for the vaccination using subtle printed educational materials (pamphlets and posters) to support their argument in favor of the HPV vaccination.

## CHAPTER TWO

### Research Methods: Phase I

In Chapter 2, I will discuss the first phase of my research at Hillcrest. I will outline every step of the procedure. In short, I will discuss how the survey was structured and will discuss the methods used to conduct the survey. I will discuss main apprehensions while also noting visible, unspoken signs of concern of parents and children. I will discuss statistical methods used. Moreover, I will touch upon the issues of ethics that were brought up by parents during this study. Because some pharmaceutical companies pay for the posters inside the hospitals, I can explore why parental apprehensions are so doubtfully held.

At Baylor Scott & White Hillcrest, I conducted my clinical research with an associate. Drawing from the research of Johns Hopkins Institute for Clinical and Translational Research, we devised our methods to fit those of the apprehensions of the figure below. Each apprehension was shown to be significant in acts of noncompliance.

# THE HPV VACCINE:

Why parents *really* choose to refuse

Study results suggest safety concerns top the list, and that physicians need to step up their patient education and vaccine recommendations.

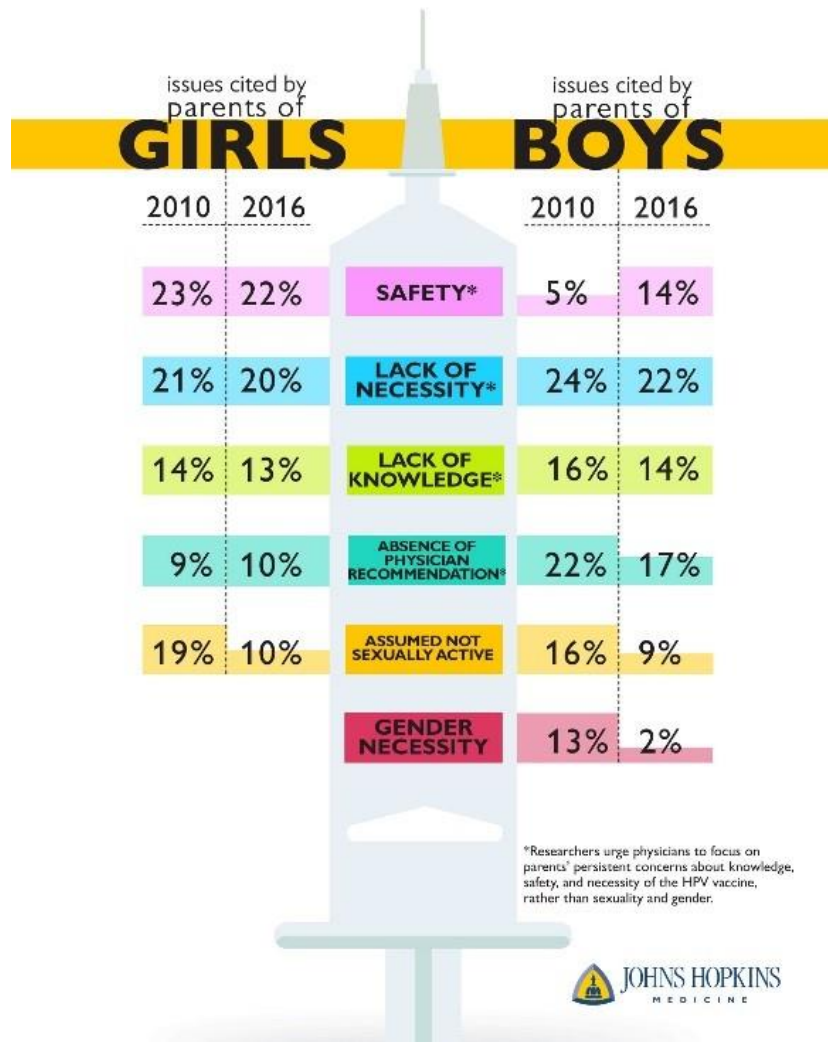


Figure 1: Why parents refuse to choose the HPV vaccine

### *Hyphothesis*

We hypothesized that one of the concerns listed in the graphic on the previous page would prove most significant within the Hillcrest Pediatric Clinic. Moreover, we decided to ask which form of education was more conducive to a hospital setting. This resulted in a clinical survey as shown below.

|  |
|--|
| <p style="text-align: center;"><b>HPV Survey</b></p> <p>Beginning questions: <b>Do you mind if we question you and potentially your child concerning the HPV vaccine?</b></p> <p>1. <b>Age :</b></p> <p>2. <b>Sex :</b> M / F</p> <p>3. <b>Stance on HPV vaccination:</b><br/><b>Has your child taken or planning to take the HPV vaccination?</b><br/>Y / N<br/><b>Do you think the vaccine is useful or harmful?</b><br/>Useful / Harmful</p> <p>4. <b>Perception of HPV</b></p> <p style="padding-left: 40px;">a. <b>Can you tell us, to the best of your knowledge, your understanding of HPV?</b></p> <p style="padding-left: 40px;">b. <b>Do you have these apprehensions concerning the HPV vaccination?</b></p> <p style="padding-left: 80px;">i. <b>It's not safe:</b> Y / N</p> <p style="padding-left: 80px;">ii. <b>It's not necessary:</b> Y / N</p> <p style="padding-left: 80px;">iii. <b>It advocates for sexual activities:</b> Y / N</p> <p style="padding-left: 80px;">iv. <b>Based on the preceding question, your child doesn't need it:</b> Y / N</p> <p style="padding-left: 80px;">v. <b>It's too expensive:</b> Y / N</p> <p style="padding-left: 80px;">vi. <b>Males don't need it:</b> Y / N</p> <p style="padding-left: 80px;">vii. <b>Doctors don't strongly recommend it:</b> Y / N</p> <p style="padding-left: 80px;">viii. <b>You have not been made aware of HPV vaccination and its effects:</b><br/>Y / N</p> |
|--|

**c. Have you at least heard of these apprehensions from others? Circle the numbers according to what the parent says.**

**d. What other comments have you seen that are against vaccination?**

5. Teens ( 13 and above) :

a. Do you know what HPV is?  
Y / N

b. If so, can you please briefly describe it?

6. Parents and Teens:

a. Is this a topic you would be interested in?  
Y / N

b. If so, would you find pamphlets or posters adequate resources to convey this information?  
Y / N

Figure 2: HPV survey

### *Methods*

This survey was given to the parents of 163 patients in the pediatric clinic at Baylor Scott and White Hillcrest. At Hillcrest, the certified nursing assistant would finish the patient background before the physician performed a wellness check. Between these two visits, my associate and I conducted the interviews. The survey was addressed to parents as they are responsible for opting to complete the set of immunizations. For those in their teenage years, an additional section was added to ask for the perception of one that is of the age to take the vaccine. Aside from the age limit of 18 years, the participant selection was random.

To properly assess the data, my associate and I decided to ask preliminary questions before asking why parents did not comply with the HPV vaccination. By asking the age and biological sex of the patients, we were able to obtain demographics. We decided to omit any question regarding ethnicity as it did not specifically fit within the scope of our hypothesis. The next set of questions asked for patient background on the

HPV vaccination. We asked if the patient had taken or was currently taken the round of shots for immunization, and we subsequently asked if parents viewed the vaccine as useful. For the last set of questions, we inquired of the various perceptions of HPV. Aside from the overall stance towards the vaccine, apprehensions were listed as follows:

1. It's not safe. A common misconception about the vaccine is that it does more harm than good despite current research (CDC, 2019).
2. It's not necessary. Parents have concerns that the HPV vaccination has no efficacy.
3. It advocates for sexual activities. Given the demographic within Hillcrest, a Christian medical center, there exists a possibility of noncompliance due to religious views of sex.
4. It's too expensive. For those without insurance coverage, the fee to complete each step of the vaccination is \$250 (Planned Parenthood, 2020).
5. Males don't need it. Most parents are aware that females need the vaccination, but the male population is often overlooked.
6. Doctors don't strongly recommend it. This concern is raised primarily due to a lack of education.

### *Apprehensions*

In our study, the main concern raised by those who took the vaccination was that they were not informed enough when making the decision. For those who have heard of the apprehensions before, the major concerns raised were about the lack of understanding of safety, the lack of necessity for males, and the advocacy for early sex. To address first of these topics, we must first refer to the Brueggmann et al. article. The main concern is

that parents are not educated enough on the HPV vaccination (Brueggmann et al., 2016). The primary dissonance between parents and the primary care physicians at the clinic centered around the language barrier experienced by Hispanic mothers. The lack of cultural context, explored by Siu in a similar manner, is important when educating parents: “Findings highlight the importance of incorporating cultural considerations when designing research and educational programs with Latina college students” (Siu, 2013). The research conducted attempted to provide information on the apprehensions of parents in a manner that would understand cultural norms. Moreover, Latino parents have stated the importance of pamphlets and legible documents to understand vaccine efficacy (Bair et al., 2008 and Allen et al., 2012). In the Waco-McLennan county, 25.2% of the population served have limited English, which is comparable to the population of those with limited English in the United States (United States Census Bureau, 2019). Thus, while our target audience was families in the pediatric clinic, there was an implied hypothesis that parents that did not primarily speak English at home would respond more positively to suggestions regarding a pamphlet for further review of the HPV vaccination. Through this review, I have found that resources are necessary to determine the safety of a procedure, especially to parents of patients who do not speak English as a primary language.

The second concern is centered around gender stereotypes of the vaccine. Although HPV is a sexually transmitted disease, there are notions that the effects are most spread in girls. In the UK, the vaccination was not to be continued in males on the basis that “it would not be cost effective” (Wise, 2017). Although there is recognition that males can contribute and even receive some of the consequences of the virus, they are not



viewed as being major components of the spread of the disease. With less programs to adequately vaccinate every member of a population, males will continue to be a factor in the spread of the disease while the public will continue to view males as not having to need it. Because the perception of the vaccine is dependent on the content and delivery of education, parents will not be able to comprehend the truth of the vaccine (Sanderson et al., 2009).

Third is the apprehension that complying with the vaccination is the equivalent of approval to have sexual contact at an early age. Since the virus has a sexual nature, most parents believe that obtaining the vaccine acts as a green light for sexual activity. For these parents, the risk of the consequences without the vaccine trump the perceived outcome of promiscuity. The perception of the HPV vaccination marking the start of sexual activity is one held not only by the noncompliant; it also is held by those who hold the vaccination in a good regard (Hansen et al., 2016). The main difference is the education of how the vaccine affects sexuality. In Canada, a study shows that, for parents without coming to the clinic with the intention of having their daughter receive the HPV vaccination, the compliance rates are low. With regard to the previous resolve to have the vaccine, it seems that parents who are just presented new information about HPV have a view that the vaccination will not have major effects on sexual activity. Older generations of parents were found to decline the vaccination (Ogilvie et al., 2007).

## CHAPTER THREE

### Results

In Chapter 3, I will present the statistics of the surveys. Comparing these results with various nationwide demographics, I will find Waco's general stance towards the HPV vaccination. This chapter will serve to present the logic of most parents given the option of the series. It will not only discuss the stance of the parents but also try to reason why each apprehension exists given the demographics in Waco.

Our results were displayed on a graph depicting the apprehensions of the parents, both in terms of whether they had heard it and in terms of whether they have the concern themselves. The main concerns listed were as follows: lack of safety, lack of necessity (overall and specifically in males), promotion of sex, and lack of information.

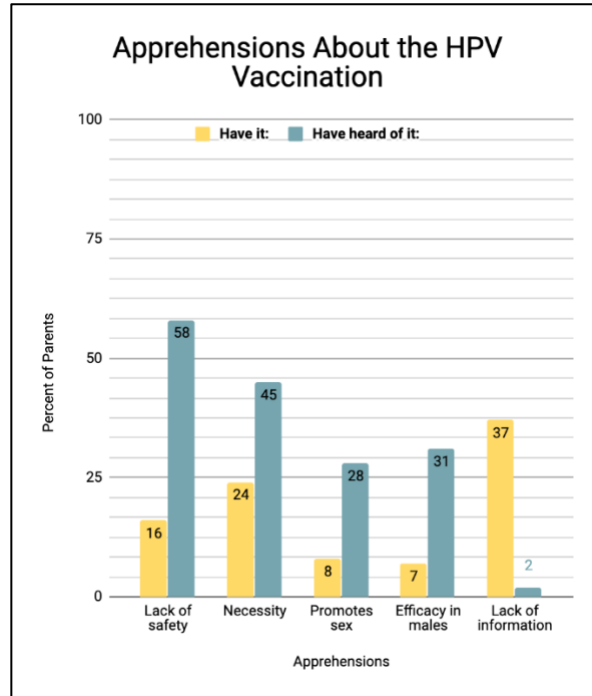


Figure 3: Apprehensions about the HPV vaccination

### *Apprehensions*

Most parents had heard of the concerns of the vaccine's safety. Due to television campaigns, as some had admitted, the HPV was portrayed as a detriment to health. In a study by Blitshteyn, six girls that had the HPV vaccination developed postural tachycardia syndrome, a disorder which may be due to autoimmune disease (Blitshteyn, 2014). Because of some outlier events which may not be correlated with the vaccination, it has become widespread rumor that the HPV vaccination leads to incurable disease. This was evidenced in the first data set, the apprehension listed "Lack of Safety." Overall, 16% of parents have that apprehension, and 58% have heard of that apprehension. This data proves the effectiveness of advertisements on human perception. For, all parents that had this apprehension or heard of this apprehension admitted to

seeing commercials on the television questioning or even denouncing the benefits of the HPV vaccine as outweighing the negatives.

Moreover, in our study, one common theme amongst the parents was that they were not aware that both females and males need to have the vaccine. The two data sets listed here were “Lack of Necessity” and “Gender Overgeneralization.” Twenty-four percent of parents did not believe that their children needed the HPV vaccination. Although not a majority, nearly one-fourth of the those asked did not think it necessary to be immunized, regardless of whether or not their children were actually vaccinated. Further, of the parents who agreed that the vaccination should be required, 31% have heard that the set is sex-specific, with 7% of parents having had that apprehension. Because of the extreme manifestations of HPV in female reproductive organs, parents focused on having their daughters vaccinated. However, because of the strong association of the virus with cervical cancer, the effects on males is overlooked. Thus, many parents did not have their sons take the vaccination.

Further questions directed toward the necessity of the HPV vaccination led to another topic, “Promotes Sex.” Studies are beginning to show that the vaccine is not a significant deciding factor in sexual activity (Shute, 2014). Moreover, there are other modes besides sex in which HPV is transmitted (Sabeena et al., 2017). Because HPV is a sexually transmitted disease, parents treat it as one in which it is only transmitted via sexual intercourse. However, given the nature of HPV, it is not only transmitted by conjugation; it is also spread by skin contact. The existence of genital and anal warts supports this claim. Thus, there is no reason to claim that the HPV vaccination promotes sex. For, it not only prevents the consequences of sex, but it also prevents the

consequences of regular physical contact. One cannot simply limit his or her perception of the virus to the sexual nature of its prevalence.

On another note, many parents find it allowable to decline the vaccination due to religious reasons. Most parents thought introducing the subject through explicit doctor-patient interaction was inappropriate. Although there were no questions regarding religious influence, it was difficult to ignore the surprise look on parents' faces as the vaccination and its nature as a sexually transmitted illness was introduced. In a pediatric clinic, they did not expect to be asked questions of a seemingly controversial nature. Most answered the "Promotes Sex" category with claims that their child was going to wait before having sex. Studies show that religion and age have roles in this decision. Religious norms have been shown to have a significant effect on compliance towards the HPV vaccination. Protestants and Catholics show a correlation between noncompliance and religious attendance (Shelton et al., 2013). Because Baylor Scott & White Hillcrest is a primarily Christian clinic, most parents fit well into this study's demographics. However, the reasoning that the HPV vaccination advocates for sex does not follow. For one, waiting before having sex does not prevent the virus from becoming less active. As long as it has a host, HPV will continue to spread. Second, parents cannot fully control when their child will have sex. Although they can shape a child's environment, parents cannot completely take charge of their child's thinking and inclinations. This point led us to think that it may be beneficial for adolescents to understand the basics of HPV and its vaccination in an appropriate clinical manner.

The results of the clinical study show that there are four apprehensions which correlate greatly with noncompliance: concerns about safety, concerns about necessity,

concerns about the promotion of sex, and concerns about religious preferences. These four categories painted a picture larger than the scope of the hypothesis which was originally laid out. As the hypothesis guessed that there would be significant correlation with a certain apprehension in the clinic, the results from this study were very broad. In fact, each of the concerns seems to have connections with the others, any of which do not have do even have a causal relationship to noncompliance. So, to address the need in the clinic, my partner and I conducted a second study focusing on a new hypothesis. Knowing that there were many factors in making the decision to accept or deny the HPV vaccination, we decided to attack every apprehension at once in one simple material. We based the second phase of the experiment from these thoughts.

## CHAPTER FOUR

### Further Implementations: Phase II

In this chapter, I will discuss the second phase of the research. After the surveys were recorded, the next step was to present the apprehensions in a medium which was easily legible and accessible to parents. This chapter focuses on the effectiveness of pamphlets and posters in the pediatric clinic in Hillcrest. This step was being implemented as the research program ended. Although there is data on the pamphlets and posters, at least a 3-year study is optimal to see the effects of the materials. Thus, the implementations could additionally focus on concurrent studies of similar informational materials.

#### *Hypothesis*

My research partner and I hypothesized that printed materials would have a significant correspondence to vaccine compliance. This hypothesis was supported by the research from the first phase, in which many parents felt there was a lacking educational factor in the hospital clinic regarding HPV.

### *Methods*

Given the apprehensions concerning the education on the HPV vaccination, my research partner and I decided to appropriately present the data within a clinical setting. Because studies have shown the efficacy of pamphlets for those who speak English as a second language (Brueggmann et al., 2016), we decided to test how effective pamphlets would be for the demographic in Waco, Texas.

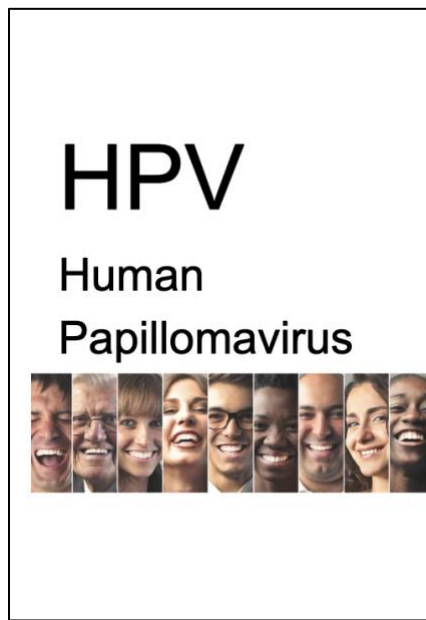


Figure 4: HPV pamphlet

Additionally, we decided to compare this to some poster visuals. We hypothesized that more parents would view the posters but that more information would be gleaned from the pamphlets.



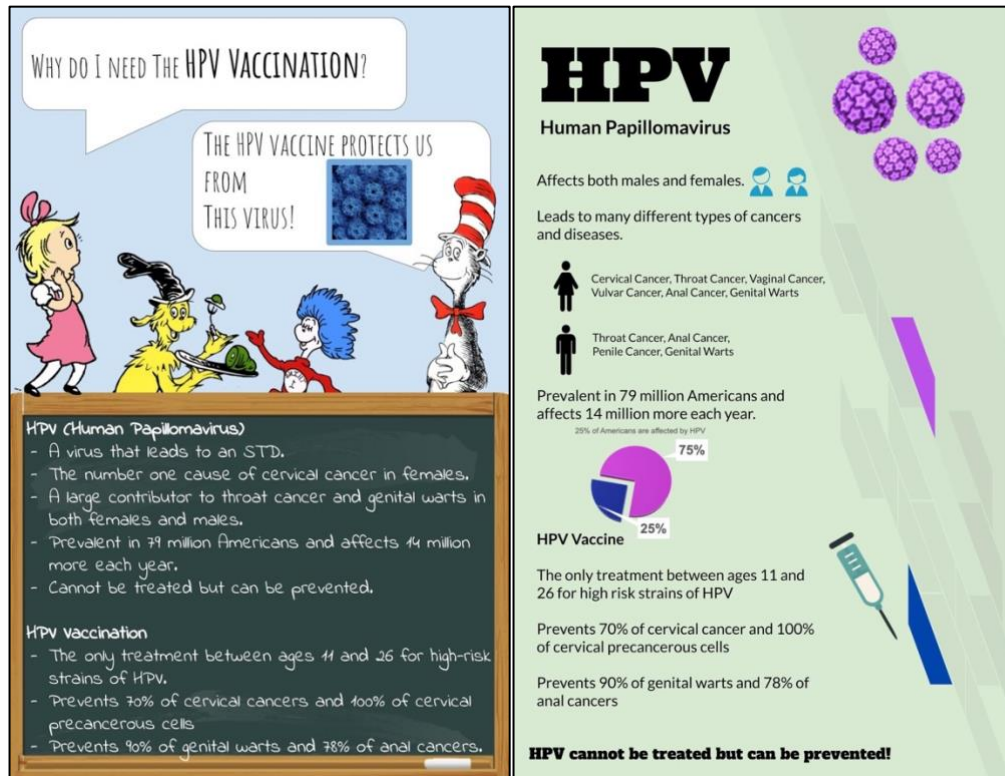


Figure 5: HPV posters

Each of these resources had vital pieces of information. All the graphics showed the compliance rates in the HPV vaccination. Moreover, it listed the apprehensions that most parents have, including the data that my partner and I obtained in the first phase of the experiment. At the end, these apprehensions were combatted by factual evidence located in various journal articles.

### *Results*

Overall, 50 pamphlets and 18 posters were printed. They were disseminated throughout the pediatric clinic's patient rooms. Surveys were conducted to test the efficacy of these materials. The surveys asked the same questions as the first phase but added questions asking about the usefulness of the pamphlets and posters. We recorded

77 responses. 57% of patients noticed the pamphlets, and 51% noticed the posters. This did not confirm our hypothesis that patients would notice the posters more often than the pamphlets. However, our hypothesis that more patients would gain more information from the pamphlets than the posters was supported by 80% of parents taking the pamphlets home with them, showing that the pamphlets aided in gleaning information. Since nine patients learned completely new information from the pamphlets, our hypothesis showed to have effects on the public perception of HPV. Moreover, 99% of patients found the sexual nature of HPV appropriate to discuss in the pediatric clinic.

### *Implications*

The study has not been completely finished. Because about half of the patients in the clinic noticed the pamphlets and posters, research should be made regarding the optimal position and location of the posters. Moreover, if the pediatricians are asked to route patient questions to pamphlets during provider care, much more time can be saved. Thus, a full-clinic effort is needed to further study. However, the current data show promising results concerning the second hypothesis. Educational materials aided in addressing the many apprehensions that parents have towards the HPV vaccination. Generalizations of this study can be made in larger, regional printed material dissemination.

## CHAPTER FIVE

### Conclusion

The conclusion will broaden from the narrow perspective of my study and provide a brief summary of the potential countrywide effects of informational HPV materials. The apprehensions named in the “Introduction” section and the logic discussed in the “Results” section will be answered by the first and second research phases. The conclusion will begin by unravelling the data and end by adding future implications. The structure will be as follows:

1. A review of chapters 2 through 4 will display the data and the effectiveness of printed materials inside pediatric clinics.
2. A review of chapter 1 will provide a transition into generalization of the HPV study.
3. A culmination of the chapters will lead me to the next section: a projection of the clinic’s data in the future and how this can translate to the unsettling percentages of noncompliance in minorities.

When we review the statistics in chapters 2 and 4, we see two hypotheses. The first, in chapter 2, is that parents will comply with the vaccine depending on the depth of their familiarity with an apprehension. We tested this by interviewing each patient that came into the clinic. After data analysis, we found that the range of apprehensions were very large and could have been any of the reasons that parents chose to not comply with the vaccination. In chapter 3, we reviewed the articles which are most pertinent to this

study, for these are the reasons behind most parents' apprehensions. Again, the sheer number of these apprehensions is so great that it is difficult to combat each one directly. So, we move to chapter 4, in which we planned what would be the best way to disseminate the information of each apprehension to address most of the general public's fears.

The second hypothesis, in chapter 4, is based off the first. Consisting of the data found in that specific clinic, educational materials will be well received by the audience. We proved this hypothesis true as we conducted more interviews and measured pamphlet uptake. These data show that parents acknowledged this information and began an active learning process. What we could not find, however, was whether or not this actually affected the compliance rates of that clinic. To complete this study, we would need to undergo a longitudinal study, which would not be possible given the time and resources of the research program at Baylor Scott and White Hillcrest.

Despite the lack of assurance, there is an outlook in which more research can and should be done in clinics regarding the use of printed HPV educational material in clinics. This research should be used in more than one clinic. Hospitals and research labs with the resources to complete longitudinal public health studies can use this information to confirm to what extent will apprehensions towards the vaccine give way to researched information. I see this project as part of a start to invite patients to become more aware of their health and urge doctors to have some resource to converse with their patients.

## BIBLIOGRAPHY

- Albright, A. E., & Allen, R. S. (2018). HPV Misconceptions Among College Students: The Role of Health Literacy. *Journal of Community Health*, 43(6), 1192–1200. <https://doi.org/10.1007/s10900-018-0539-4>
- Allen, J. D., de Jesus, M., Mars, D., Tom, L., Cloutier, L., & Shelton, R. C. (2012). Decision-Making about the HPV Vaccine among Ethnically Diverse Parents: Implications for Health Communications. *Journal of Oncology*, 2012, 1–5. <https://doi.org/10.1155/2012/401979>
- Bair, R. M., Mays, R. M., Sturm, L. A., Perkins, S. M., Juliar, B. E., & Zimet, G. D. (2008). Acceptability to Latino Parents of Sexually Transmitted Infection Vaccination. *Ambulatory Pediatrics*, 8(2), 98–103. <https://doi.org/10.1016/j.ambp.2007.11.002>
- Blitshteyn, S. (2014). Postural tachycardia syndrome following human papillomavirus vaccination. *European Journal of Neurology*, 21(1), 135–139. <https://doi.org/10.1111/ene.12272>
- Braaten, K. P., & Laufer, M. R. (2008). Human Papillomavirus (HPV), HPV-Related Disease, and the HPV Vaccine. *Reviews in Obstetrics & Gynecology*, 1(1), 2–10.
- Brueggmann, D., Oppen, N., Felix, J., Groneberg, D. A., Mishell, D. R., & Jaque, J. M. (2016). Development of a Cost-Effective Educational Tool to Promote Acceptance of the HPV Vaccination by Hispanic Mothers. *Journal of Community Health*, 41(3), 468–475. <https://doi.org/10.1007/s10900-015-0116-z>
- CDC. (2019, August). *HPV-Associated Cancers Rates by Race and Ethnicity*. <https://www.cdc.gov/cancer/hpv/statistics/race.htm>
- Chesson, H. W., Dunne, E. F., Hariri, S., & Markowitz, L. E. (2014). The estimated lifetime probability of acquiring human papillomavirus in the United States. *Sexually Transmitted Diseases*, 41(11), 660–664. <https://doi.org/10.1097/OLQ.0000000000000193>
- Forsner, M., Nilsson, S., Finnström, B., & Mörelius, E. (2016). Expectation prior to human papilloma virus vaccination: 11 to 12-Year-old girls' written narratives. *Journal of Child Health Care*, 20(3), 365–373. <https://doi.org/10.1177/1367493515598646>

- Gold, R., Naleway, A., & Riedlinger, K. (2013). Factors Predicting Completion of the Human Papillomavirus Vaccine Series. *Journal of Adolescent Health*, 52(4), 427–432. <https://doi.org/10.1016/j.jadohealth.2012.09.009>
- Hansen, C. E., Credle, M., Shapiro, E. D., & Niccolai, L. M. (2016). “It All Depends”: A Qualitative Study of Parents’ Views of Human Papillomavirus Vaccine for their Adolescents at Ages 11–12 years. *Journal of Cancer Education*, 31(1), 147–152. <https://doi.org/10.1007/s13187-014-0788-6>
- Janicek, M. F., & Averette, H. E. (2001). Cervical Cancer: Prevention, Diagnosis, and Therapeutics. *CA: A Cancer Journal for Clinicians*, 51(2), 92–114. <https://doi.org/10.3322/canjclin.51.2.92>
- Jeudin, P., Liveright, E., del Carmen, M. G., & Perkins, R. B. (2014). Race, Ethnicity, and Income Factors Impacting Human Papillomavirus Vaccination rates. *Clinical Therapeutics*, 36(1), 24–37. <https://doi.org/10.1016/j.clinthera.2013.11.001>
- Kulczycki, A., Qu, H., & Shewchuk, R. (2016). Primary Care Physicians’ Adherence to Guidelines and Their Likelihood to Prescribe the Human Papillomavirus Vaccine for 11- and 12-Year-Old Girls. *Women’s Health Issues*, 26(1), 34–39. <https://doi.org/10.1016/j.whi.2015.07.012>
- Lewis, R. M., Markowitz, L. E., Gargano, J. W., Steinau, M., & Unger, E. R. (2018). Prevalence of Genital Human Papillomavirus Among Sexually Experienced Males and Females Aged 14-59 Years, United States, 2013-2014. *The Journal of Infectious Diseases*, 217(6), 869–877. <https://doi.org/10.1093/infdis/jix655>
- Luisi, M. L. R. (2020). Kansan Guardian Perceptions of HPV and the HPV Vaccine and the Role of Social Media. *Kansas Journal of Medicine*, 13, 9–18.
- Mayo Clinic. (n.d.). *HPV Infection*. <https://www.mayoclinic.org/diseases-conditions/hpv-infection/symptoms-causes/syc-20351596>
- Ogilvie, G. S., Remple, V. P., Marra, F., McNeil, S. A., Naus, M., Pielak, K. L., Ehlen, T. G., Dobson, S. R., Money, D. M., & Patrick, D. M. (2007). Parental intention to have daughters receive the human papillomavirus vaccine. *CMAJ: Canadian Medical Association Journal = Journal de l’Association Médicale Canadienne*, 177(12), 1506–1512. <https://doi.org/10.1503/cmaj.071022>
- Petäjä, T., Keränen, H., Karppa, T., Kawa, A., Lantela, S., Siitari-Mattila, M., Levänen, H., Tocklin, T., Godeaux, O., Lehtinen, M., & Dubin, G. (2009). Immunogenicity and Safety of Human Papillomavirus (HPV)-16/18 AS04-Adjuvanted Vaccine in Healthy Boys Aged 10–18 Years. *Journal of Adolescent Health*, 44(1), 33–40. <https://doi.org/10.1016/j.jadohealth.2008.10.002>

- Planned Parenthood. (n.d.). *Should I get the HPV vaccine?*  
<https://www.plannedparenthood.org/learn/stds-hiv-safer-sex/hpv/should-i-get-hpv-vaccine>
- Rositch, A. (2016) *Why parents choose to refuse the HPV vaccine*. Johns Hopkins Medicine
- Sabeena, S., Bhat, P., Kamath, V., & Arunkumar, G. (2017). Possible non-sexual modes of transmission of human papilloma virus: Non-sexual modes of HPV transmission. *Journal of Obstetrics and Gynaecology Research*, 43(3), 429–435. <https://doi.org/10.1111/jog.13248>
- Sabeena, Sasidharanpillai et al. (n.d.). *Possible non-sexual modes of transmission of human papilloma virus*.  
<https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1111/jog.13248>
- Sanderson, M., Coker, A. L., Eggleston, K. S., Fernandez, M. E., Arrastia, C. D., & Fadden, M. K. (2009). HPV Vaccine Acceptance among Latina Mothers by HPV Status. *Journal of Women's Health*, 18(11), 1793–1799. <https://doi.org/10.1089/jwh.2008.1266>
- Schiffner, T., & Buki, L. P. (2006). Latina college students' sexual health beliefs about human papillomavirus infection. *Cultural Diversity and Ethnic Minority Psychology*, 12(4), 687–696. <https://doi.org/10.1037/1099-9809.12.4.687>
- Shelton, R. C., Snaveley, A. C., De Jesus, M., Othus, M. D., & Allen, J. D. (2013). HPV vaccine decision-making and acceptance: Does religion play a role? *Journal of Religion and Health*, 52(4), 1120–1130. <https://doi.org/10.1007/s10943-011-9553-x>
- Shute, Nancy. (n.d.). *HPV Vaccine Doesn't Promote Riskier Sexual Behavior In Teens*.
- Siu, J. Y. (2013). Barriers to receiving human papillomavirus vaccination among female students in a university in Hong Kong. *Culture, Health & Sexuality*, 15(9), 1071–1084. <https://doi.org/10.1080/13691058.2013.807518>
- U.S. Department of Health & Human Sources. (2020).  
<https://www.vaccines.gov/getting/where>
- U.S. Census Bureau. (2019).  
<https://www.census.gov/quickfacts/fact/table/wacocitytexas,mclennancountytexas,TX,US/PST045219>
- Williams, C. (n.d.). *WHY PARENTS CHOOSE TO REFUSE THE HPV VACCINE*.  
[https://ictr.johnshopkins.edu/news\\_announce/why-parents-choose-to-refuse-the-hpv-vaccine/](https://ictr.johnshopkins.edu/news_announce/why-parents-choose-to-refuse-the-hpv-vaccine/)

- Wise, J. (2017). Teenage boys shouldn't be given HPV vaccine, says joint committee. *BMJ*, j3523. <https://doi.org/10.1136/bmj.j3523>
- You, E. L., Henry, M., & Zeitouni, A. G. (2019). Human papillomavirus-associated oropharyngeal cancer: Review of current evidence and management. *Current Oncology (Toronto, Ont.)*, 26(2), 119–123. <https://doi.org/10.3747/co.26.4819>