

“Someone You Love” Documentary: Using Narratives in Entertainment Media to increase HPV vaccination in Georgia

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ABSTRACT

Background: Although HPV is the most common sexually transmitted disease in the United States, vaccination rates are still lagging among adolescents and young adults. Entertainment-education is a popular strategy for incorporating educational messages into entertainment media. With popular shows on television now integrating health messages into their narrative, there are more opportunities to influence knowledge, attitude and health behaviors. Objective: To (a) determine the effectiveness of the HPV narrative included in the “Someone You love” documentary on HPV risk perception, vaccine self-efficacy and behavioral intention for HPV vaccine uptake on college students and (b) assess the immediate impact of the documentary on HPV vaccine initiation.

Methods: A dependent samples t-test was conducted to determine if differences in the scale scores for each variable existed between pre and post viewing. Scale items were measured on a 7-point Likert scale and summed for analyses.

Results: Students (n=126) participated in four screenings. Participants were mostly female (76.5%), freshman (40%), Caucasian (48.3%), heterosexual (81.5%) and sexually active (74.3%). The results showed a positive and significant effect from pre- and post-test scores on Risk Perception 7.150, $t(119) = 14.502$, $p < .001$.

Discussion: While the documentary shares light on the impact of HPV transmission and its deadly impact, no formal research study has been done to measure its overall impact on behavior change. After watching the documentary in our study, gains pre to posttest scores indicate that overall students in our study felt more at risk for HPV, were confident in their ability to seek out and receive the vaccine and they had a greater intention to start the HPV vaccination series.

Conclusion: With more young adults streaming television on services like Netflix and watching documentary series, public health should explore using messaging in media as a tailoring strategy to improve health outcomes.

Keywords: Health communication, public health, narratives, persuasion, young adult, Human papillomavirus (HPV), cancer prevention

INTRODUCTION

HPV Vaccination

Human Papillomavirus (HPV), a sexually transmitted infection, is a highly prevalent disease (Centers for Disease Control and Prevention, 2017a; Nan, 2012). Approximately 79 million Americans are infected with HPV, with 14 million becoming newly infected annually (Centers for Disease Control and Prevention, 2017a). HPV is the primary cause of cervical cancer in the United States (Nan, 2012) and the most common HPV-associated cancer among women (Centers for Disease Control and Prevention, 2018a). In the United States, approximately 4,000 women die from this type of cancer each year (2.3 deaths per 100,000 persons) (National Cancer Institute, 2018; USCSWG, 2014). Oropharynx cancers are the most

common HPV-related cancers among men (Centers for Disease Control and Prevention, 2018a). Each year, there are 3.9 deaths per 100,000 persons attributed to oral cavity and pharynx cancer (National Cancer Institute, 2018). Cancer of the anus is also associated with HPV among men (Centers for Disease Control and Prevention, 2018a). The number of deaths among men per year associated with this cancer is 0.3 per 100,000 persons and (National Cancer Institute, 2018). The HPV vaccine protects against persistent infection of HPV subtypes associated with most HPV cancers (Centers for Disease Control and Prevention, 2017b; Rothman, 2009). The vaccine is recommended for males and females aged 9-26 (Meites, et al. 2016). The vaccine is highly effective. It has been shown to prevent 90-100% of new high-risk HPV infections among women not infected

with HPV at time of vaccination (Herrero, et al. 2015). Since the vaccine was introduced, 4- and 9-valent type HPV infections have decreased among vaccinated women (Spinner, et al. 2018). The vaccine is also effective at preventing HPV related anogenital disease in vaccinated men (Goldstone et al., 2018) and reduces the prevalence of oral HPV among young adults in the US (Chaturvedi et al., 2018). In 2017, HPV vaccination coverage increased 5% among teenagers, compared to 2016, with 65.5% of teens having one or more doses of the vaccine (Walker et al., 2017). However, vaccination coverage is lower among rural teens compared to urban residents, likely related to a lack of knowledge about HPV and awareness of the vaccine (Walker et al., 2017). Overall, adolescent HPV vaccine rates remain suboptimal in the US (Reagan-Stiner et al., 2016, Ragan et al., 2018, Rahman et al., 2015) and those rates are even lower among older-aged college students, with 18 to 21-year-old female and male college students more likely to be vaccinated than 22 to 26-year-old female and male college students (Thompson et al., 2016). While vaccination rates have increased among college students since 2009, there was a lower increase among single women, Non-Hispanic Black men and women, and men that were married or living with their partner (Thompson et al., 2016).

HBM Theoretical Model

According to the Health Belief model (HBM), disease prevention techniques are used by individuals who are well informed, perceive themselves to be at risk, are motivated to change their behavior, and feel capable of using prevention strategies (St. Lawrence and Fortenberry, 2007; Glanz, Rimer, & Viswanath, 2008; Bahrami and Zarani, 2015). In order to reduce the risk of contracting a sexually transmitted infection, individuals must be knowledgeable about transmission and prevention methods (Fisher and Fisher, 1992; St. Lawrence and Fortenberry, 2007). Many Americans are unaware of HPV's prevalence and mode of transmission (Blake et al., 2015; Sandfort and Pleasant, 2009). This knowledge varies based on level of health literacy, education, age, and race (Blake et al., 2015). While many college students are knowledgeable about HPV's link to cervical cancer, they tend to be unaware of the link to genital warts and skin-to-skin transmission (Gerend and Magloire, 2008; Sandfort and Pleasant, 2009).

Additionally, many people do not perceive themselves at risk for HPV (Sandfort and Pleasant, 2009; Blake et al., 2015). This is likely related to the lack of understanding that HPV is highly prevalent (Blake et al., 2015; Gerend and Magloire, 2008; Sandfort and Pleasant, 2009). In fact, low perceived risk in a commonly cited barrier to vaccine intent (Patel et al., 2012; Ragan et al., 2018). In order for a knowledgeable, motivated individual to actually change their risky behavior, they must have the skills to perform the recommended preventive behaviors (St. Lawrence and Fortenberry, 2007). Individuals must feel they are skilled

enough to act on their knowledge and motivations in order to initiate and maintain preventive behavior (Fisher and Fisher, 1992). This skillfulness occurs when self-efficacy or confidence to change a behavior or engage in a new behavior is high. This leads them to a greater intention to access and obtain the vaccine and complete all HPV vaccine doses; thus adopting a new behavior (Darville et al., 2018).

Transportation-Imagery Model

Communication and social psychological theories of narrative are now being applied to health-behavior research to better understand how narratives, as opposed to statistical evidence and appeals to logic and reason, have the power to impact behavior change (Hinyard and Kreuter, 2007, Krakow et al., 2017). Research now highlights how narratives enable viewers to remember scientific facts and tie them to prior experiences (Glaser et al., 2012). Narratives are also more likely to promote health-information seeking among viewers, compared to non-narrative messages (Lemal and Van den Bulck, 2010). Application of the transportation-imagery model is particularly useful for understanding the influence of narrative documentaries on belief change and behavior change. Green and Brock (2000, p. 703), posit that viewers are transported into the narrative world and their beliefs may be changed through "emotional reactions, mental imagery, and a loss of access to real-world information." Persuasion takes place because viewers develop strong emotional connections to the story characters, believe the story to be actual experience, and are less likely to argue against the beliefs of the characters (Green and Brock, 2000). According to docutainment research, transportation is often associated with knowledge acquisition (Glaser et al., 2012). Furthermore, among the less educated and those not personally impacted by disease, viewing narratives on cancer is associated with greater likelihood of undergoing cancer screening (Kreuter et al., 2010). Narratives have the ability to empower the viewer and increase self-efficacy by showcasing an individual who was able to overcome barriers and perform an action such as cancer screening or vaccination (Krueter et al., 2007). They can also increase viewers' perceived efficacy of the prevention method (Krueter et al., 2007). Individuals who view a narrative about cancer screening may be more convinced that preventive screening will save their life than someone who is presented with statistical information about cancer screening (Kreuter et al., 2007). HPV researchers found that, when compared to statistical messages on HPV, hybrid messages containing statistics and a narrative message elicited greater perceived risk of getting HPV, especially when the narrative was first-person rather than third-person (Nan et al., 2015). This increased risk perception can indirectly impact participants' intention to obtain the HPV vaccine (Nan et al., 2015). Researchers have found that cervical cancer narratives are more likely to transport viewers and potentially increase their intent to get the HPV

vaccine if they feature cancer survivors who face a social barrier to vaccination (perceived promiscuity, etc.) compared to those with characters that face structural barriers (access to vaccination, etc.) or die from their condition (Krakow et al., 2017). Others found that viewers who were more fully immersed in a narrative film about HPV and felt the plot was relevant to their own life were more likely to view the HPV vaccine as effective (Frank et al., 2015).

While there have been several studies that have explored the effectiveness of HPV narratives on HPV vaccination, the majority of these studies tested the effectiveness of narratives via stories published on cancer advocacy organization or informative websites (Krakow, et al., 2017; Kim & Nan, 2019), public service announcement (Nan & Futerfas & Ma, 2017) family / peer communication and healthcare provider recommendation (Hopfer & Clippard, 2011). And of the few media (film) studies that have been conducted, the narrative integrated has been based on a fictional story to communicate about the importance of HPV detection and prevention (Walter et al., 2017; Frank et al., 2015) or have focused specifically on key demographic groups such as Latinos or African Americans (Frank et al., 2015). The main objectives of previous studies also explore the processing, persuasion and first person vs. second person impacts of the message and are often done using experimental design, whereas our study highlights real stories (non-fictional) from a group of diverse women who not only differ in their diagnosis and clinical manifestation of the effects of cancer diagnosis, but also differ in terms of age, ethnicity, marital status, and professional accomplishments. The documentary provides an opportunity for viewers to follow the unique stories of each of these women and experience the highs and lows as they transition in their cancer journeys.

Additionally, this study aims to determine behavioral intention (vaccine uptake) as a proxy for behavior change using key constructs of the HBM theory. This is increasingly important and relevant since the documentary is currently being adopted and licenses acquired to implement statewide screenings as a way to increase HPV vaccination rates. Using a mixed method approach the data collected not only gives indication of the impact of using the narratives in “Someone you Love” documentary among the target population but also insight on how to develop future film-based interventions in public health. Therefore, the objectives for the research study were to (a) determine the effectiveness of the HPV narrative included in the “Someone You love” documentary on HPV risk perception, vaccine self-efficacy and behavioral intention for HPV vaccine uptake on college students and (b) assess the immediate impact of the documentary on HPV vaccine initiation. Additionally, our research hypothesis for this study are

1. Females will have an increased risk perception for the HPV virus, increased self –efficacy, and increased behavioral intention to receive the HPV vaccine.
2. Caucasian students (all genders) will have an increased risk perception for the HPV virus, increased self- efficacy and increased behavioral intention to receive the HPV vaccine.
3. Sexually active students will have an increased risk perception for the HPV virus, increased self –efficacy and increased behavioral intention to receive the HPV vaccine.

METHODS

Participants

The study was conducted at a large research-intensive university in Georgia. To be included in the study, students have to be currently enrolled, between the ages of 18 – 26 years old and non-recipients of the HPV vaccine. After Institutional Review Board (IRB) approval was received for the study, study staff recruited eligible participants for a 3-week time period through convenience sampling at the beginning of the Fall semester. A variety of marketing strategies were used to enlist participants. These tactics included tabling events, flyers in residence halls and buildings throughout campus (see Figures 1 & 2), announcements in university classes, email distributions over departmental and college listservs and provided freshmen seminar credits to recruit participants for the documentary screening (see Figure 3 & 4).

Figure 1
Marketing Flyer used to recruit students for the documentary screening (Option 1)

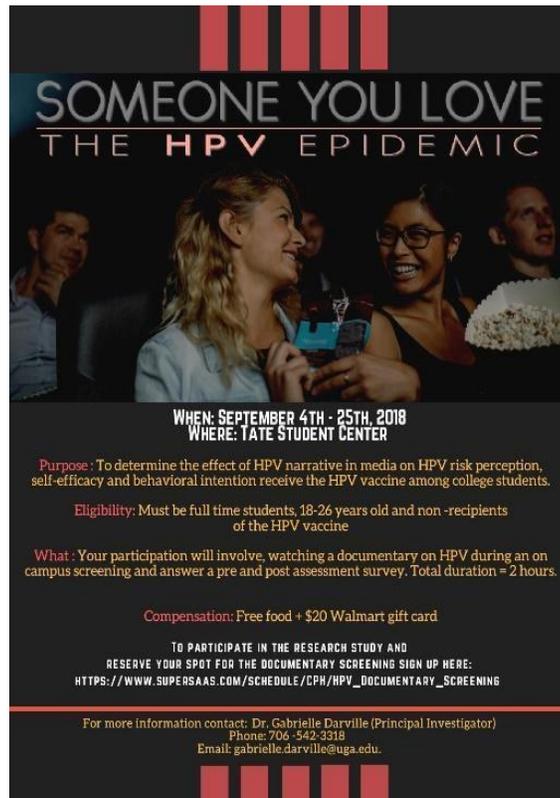


Figure 2
Marketing Flyer used to recruit students for the documentary screening (Option 2)



Figure 3
Online Recruitment via Freshman Seminar Course



"Someone You Love" Research Study - Documentary Screening

Tue. September 25, 2018, 06:00 PM - 08:00 PM - Student Tate Center

his study seeks to determine the effect of the HPV narrative in media on HPV outcomes among college students. College students meeting the inclusion criteria (18-26 years of age, full time students and non-recipients of the HPV vaccine) will be asked to complete a pre-survey, watch the "Someone You Love" documentary, and complete a post survey. Free food will be provided and participants will be compensated with a \$20 visa card. Documentary Trailer: <https://www.hpvepidemic.com/trailer>

This event is limited to 60 students

Reservation information: To participate in the research study and reserve your spot for the documentary screening sign up here: https://www.supersaas.com/schedule/CPH/HPV_Documentary_Screening

Event type: Documentary Screening as part of a research study. Host: The College of Public Health

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Figure 4
Example of Recruitment via Departmental and College Listservs

Research Study Participants Needed

Dr. Gabrielle Darville, a Faculty member in the College of Public Health is looking for students to participate in a research study aimed at determining the effects of HPV narrative in media on HPV vaccine uptake. See more details in the attached flyers.

RESEARCH OPPORTUNITY DETAILS

WHO: Male and female students at the University of Georgia who are between the ages of 18 and 26 years old, fully enrolled at UGA and are non-recipients of the HPV vaccine.

WHAT: You will participate in a free screening of the documentary called "Someone You Love." Prior to the documentary screening date and time, you will be asked to complete a pre-assessment survey. After you finish watching the documentary, you will then complete a post- assessment survey.

WHEN: Screening of the documentary will run **September 4th – 25th, 2018 from 6:00pm – 8:00 pm in the Student Tate Center.** There will be a total of **four screenings** that will be conducted for the Fall 2018 semester. You will be informed of the exact date when you sign up to reserve your spot using the link below. The documentary is 1 hour and 20 minutes long. Free food will be provided to all participants and you will be compensated with a \$20 Walmart gift card for your time.

HOW: Sign-up TODAY by filling out the link: https://www.supersaas.com/schedule/CPH/HPV_Documentary_Screening to secure your reservation.

On all marketing materials, a link was provided to the Super SaaS (2018) scheduling software to allow eligible participants to reserve a spot for the documentary screening event that best fit their schedule. Each screening event was a total of 2 hours and the day varied. Four screenings were conducted over a one-month period allowing for a total of 50 participants to sign up per screening. After signing up for a screening date and time, study participants were emailed by research staff and provided their Participant ID number and a link to an electronic informed consent and the pre-assessment survey.

Stimulus

The “Someone You Love: The HPV Epidemic” documentary was for this particular research project. The film was developed by Frederic Lumiere in 2014 as an advocacy film and tool to educate medical professionals and the general public about the human papillomavirus (HPV) and the cancers associated with infection. Narrated by Vanessa Williams provides an in depth look into the lives of five women (Christine, Kelly, Tamika, Kristen and Susie) who have been diagnosed with the HPV. The film in a storytelling narrative follows the medical journey of the women, its effects on the family and the outcomes that result. Ultimately, this feature length film highlights the stories of “struggle tragedy and triumph surrounding this complicated and often misunderstood infection” (Lumiere, Hefti & Staurulakis, 2018) The Department of Public Health acquired the licensure of this documentary in June 2018 permitting free screenings of the documentary in the state of Georgia.

Procedure

Once participants completed the electronic informed consent and pre-assessment survey administered through Qualtrics their spot for the screening was re-confirmed by study staff. Students who did not meet eligibility requirements reservations were removed from the Super SaaS software and notified of their ineligibility. On the day of each screening and outside of the screening events, participants had to check in with study staff to confirm that their pre-assessment survey was completed. Upon successful check – in, participants were informed of available refreshments and provided a 15-20-minute window to get settled. Following this, participants were thanked for participating and watched the documentary for a total of 1 hour and 20 minutes in an intimate enclosed screening room located in the University’s student union. During this time, research staff emailed each post assessment survey. After the documentary ended, students were asked to complete the post assessment survey using their own personal mobile devices and in silence to reduce the risk of lack of independence of their individual responses. Each participant was provided with a \$20

Walmart gift card as incentive after completing the post assessment survey. Before leaving the event, all participants were notified that representatives from the Northeast Health District were present to provide confidential health education/ counseling and the 1st dose of the HPV vaccine to anyone who were interested in auxiliary private rooms. One month after the completion of the documentary screenings, students who previously agreed to participate in the follow-up survey were contacted via email. After completing the follow up survey, participants were provided with a \$5 Walmart gift card as an incentive.

Measures

The questionnaire used in this study for the pre and post assessment survey collected data on age, race, ethnicity, student classification, health insurance, spirituality and current sexual health beliefs and practices (Division of STD Prevention, 2015; Ward, Dahlhamer, Galinsky, & Joestl, 2014). Because many public health scales and survey tools do not accurately measure sexuality and sexual orientation, the Kinsey Scale was adapted and integrated as a measure (Gillis & Jacobs, 2017).

Scale items included on the survey were adapted from a scale used in previous HPV studies (Katz, Kam, Krieger, & Roberto, 2012). Three items measured risk perception, three items measured self-efficacy, and four items measured behavioral intention and were measured using a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). The scales were within the acceptable range with respect to internal consistency for self-efficacy ($\alpha = 0.812$) and intention ($\alpha = 0.836$). Although risk perception was a variable of interest for the previous study the scale was used in, Cronbach’s alpha was not reported. In our study however, Cronbach’s alpha of 0.910 was reported for risk perception which indicated an excellent level of internal consistency. The questionnaire was also used to capture qualitative data using open ended questions. Participants were asked (a) What are some things you liked about the documentary and (b) In what ways can the documentary improve? What changes do you suggest? These qualitative questions were only included in the post test and not the pretest to reduce the risk of unintentionally priming the participants.

The follow up survey used in this study, consisted of 5 questions. The questions asked if and where the first dose of the HPV vaccine initiated, how many doses were completed after watching the documentary, if the participant intended to complete all 3 doses and if the documentary directly influenced their decision.

Data Analysis

All analyses were performed using Statistical Package for the Social Sciences (SPSS) version 25.0 software. Descriptive statistics were calculated for each dependent variable. A dependent samples t-test was conducted to determine if differences in the scale scores for each variable existed between pre and post viewing of the HPV narrative in the documentary “Someone You Love”. Analysis of Covariance (ANCOVA) was conducted to determine if a difference existed in the post-test scores when controlling for the pre-test scores for several conditions related to gender, race and ethnicity, religious affiliation, sexual orientation, type of insurance and student major. Scale items were measured on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree) for the scales of Risk Perception, Self-Efficacy and Behavioral Intention. Summed scores were created for each of the three scales. The three summed scores served as the dependent variables for all analyses.

RESULTS

Demographics

A sample of 151 students at the University of Georgia completed the pre-test survey and 126 students from the same sample of students completed the post-test survey. After removal of incomplete records, a sample of 120 students that completed both the pre- and post-test scores were collected and analyzed. Only 54 of the 120 students completed the Follow-Up survey. Participants were mostly female (91, 76.5% female), freshman (48, 40.0%) freshmen and Liberal Arts majors (48, 40.0%) Liberal Arts. The distribution of race and ethnicity was (58, 48.3%) Caucasian, (38, 31.7%) Asian, (18, 15.0%) Black or African-American, (4, 3.3%) Hispanic and (2, 1.7%) Bi-or Multi-Racial.

Current Health Practices

Study participants were generally heterosexual (97, 81.5% heterosexual), and indicated a relationship status of single

(78, 65.5% single). When asked about their sexual activity, (51, 42.9%) indicated they had been sexually active within the last six months and (52, 74.3%) indicated they had 1- 4 sexual partners. Condoms were the birth control method used the most (45, 36.8%). Most of the study participants have never had a sexually transmitted disease (115, 97.5%). In order to have participated in the study, none of the participants had to be recipients of the HPV vaccine or initiated even the 1st dose of the HPV vaccine.

Risk Perception

Three items were used to measure Risk Perception. Thus, summed scores ranged from a minimum of 3 to a maximum

of 21. A dependent sample t-test was conducted to determine if the HPV narrative in the documentary “Someone You Love” resulted in significant and positive increase in post-test scores from students’ pre-test scores on Risk Perception. The results showed a positive and significant effect. The mean difference between pre- and post-test scores on Risk Perception was 7.150, $t(119) = 14.502$, $p < .001$, $d = 1.324$. (see Table 1). Results for gender assignment at birth showed a significant difference in post-test scores when holding pre-test scores constant between males and females, $F(1, 116) = 17.171$, $p < .001$, $\eta^2 = .129$. The post-test scores for the females, adjusted for the pre-test score average of 20.81, was 28.89 compared to an adjusted average of 24.79 for males. Mean differences between the pre- and post-tests for Risk Perception were not significant for race and ethnicity, religious or spiritual affiliation, student major, and type of insurance. There were no significant mean differences in Risk Perception for those that were sexually active and those that were not sexually active. The type of sexual behaviors the student engaged in also did not influence their response to the documentary. Also, there was also no mean difference due to sexual orientation.

Table 1
Means for Risk by Gender

	Pre-test	Post-Test
Male	20.71(4.46)	24.79(5.96)
Female	20.81(4.88)	28.89(4.74)

Self-Efficacy

The Self-Efficacy scale contained three items. Therefore, summed scores ranged from a minimum of 3 to a maximum of 21. Dependent t-test results showed a positive and significant effect of the narrative on vaccine Self-Efficacy. The mean difference between pre-and post-test scores on Self-Efficacy was 1.050, $t(119) = 1.761$, $p = .04$, $d = .161$ (see Table 2).

Table 2
Means for Self-Efficacy by Gender

	Pre-test	Post-Test
Male	21.96(7.13)	23.79(3.79)
Female	22.98(7.22)	23.54(4.29)

There was not a significant difference in post-test scores when holding pre-test scores for gender. The results for race and ethnicity showed a significant difference in post-test scores when holding pre-test scores constant for Self-Efficacy, $F(4, 114) = 3.186$, $p = .016$, $\eta^2 = .101$. Bi-racial or Multi-racial students had the highest adjusted mean followed by Asians. Black or African-American

students had the lowest adjusted mean. A post-hoc analysis using a Bonferroni adjusted alpha of .0125 showed a significant mean difference between Asians and Black or African-American individuals, $p = .001$. Mean differences between the pre- and post-tests for Self-Efficacy were not significant for religious or spiritual affiliation, student major, and type of insurance. As with Risk Perception there were no significant mean differences in Self-Efficacy for those that were sexually active and those that were not sexually active and the type of sexual behaviors the student engaged in also did not influence their response to the documentary. There was also no mean difference due to sexual orientation.

Behavioral Intention for HPV Vaccine Uptake

Four items were used to measure HPV vaccine uptake. The summed scores on the scale ranged from 4 to 28. Dependent samples t-test results indicated a positive and significant mean difference between the pre- and post-test scores for behavioral intention for HPV Vaccine uptake on college students. The results for all three dependent variables showed a positive and significant effect. The mean difference between pre- and post-test scores was 4.775, $t(119) = 10.300$, $p < .001$, $d = .941$ (see Table 3).

Table 3
Means for Behavioral Intention by Gender

	Pre-test	Post-Test
Male	15.96(5.56)	21.86(6.35)
Female	18.21(5.82)	22.88(5.03)

Results for individual major yielded significant results for HPV Vaccine Uptake only, $F(11, 107) = 1.916$, $p = .045$, $\eta^2 = .165$. Mean differences between the pre- and post-tests for HPV Vaccine Uptake were not significant for gender race or ethnicity, religious or spiritual affiliation, and type of insurance. As with Risk Perception and Self-Efficacy there were no significant mean differences in HPV Vaccine Uptake for those that were sexually active and those that were not sexually active, and the type of sexual behaviors the student engaged in also did not influence their response to the documentary. There was also no mean difference due to sexual orientation.

Qualitative Findings

Apart from the quantitative data, qualitative data was also collected. Students were asked “*What are some things that you liked about the documentary?*” Some of their answers are included below:

- “I loved the rawness of the documentary; it didn’t dance over the topic or shy away from the severity

that HPV can bring to your health. I think that it was quite informative and I learned many things that I did not know before about the virus. I also think that it was very important to show the perspectives of different people and how different people can be affected.”

- “I really liked how the documentary displayed different stories from different women. They all had the same struggle, but different lifestyles and outcomes. I liked how in-depth each story got as well. I was particularly impacted by how we got to see all of Kelly’s story. I also liked the mix of testimonials from the women and scientific facts from the doctors. You got to see both sides. It was definitely emotional and got the message across.”
- “I liked how it followed the journey of each person who experienced HPV. I especially liked how it followed Kelly’s journey and even though it had a bittersweet ending her spirit continues to live on. I thought it was important how they explained that having HPV is normal and does not make you any less of a person.”

Students were also asked “*In what ways can the documentary improve? What changes do you suggest?*” Some of the answers are included below:

- “I thoroughly enjoyed learning about each story although I would have liked a more scientific aspect to what it is and how it is able to be stopped. Also each story was about females and at this point I don’t know how it affects males. I don’t know how this is preventable besides the vaccine and condoms. I would like to be more aware of the science behind why they made such a common virus.”
- “At first I thought it was a little long but honestly every moment was relevant and I don’t think anything should be cut. There is some confusion still on how this virus originated, how someone with one partner can still get the virus, especially if your partner has only been with you.”
- “I kind of wish that it showed more scientific evidence and statistics in tables and graphs but otherwise it was good. But also I wish it showed men victims as well who have the virus and have suffered from it. It doesn’t make sense to tell men they can get it too but not interview any of them. It seems like a biased narrative.”

HPV Vaccination Uptake on Day of Screenings

Although the vaccine was offered immediately after each screening of the documentary. Only twenty students (16%) of students received the first dose of the HPV vaccine series at the screening events. The breakdown for each screening were as follows: Wednesday night (n=4), Monday night (n=6), Monday night (n=5), Tuesday night (n=5).

Follow-Up Survey

The follow-up survey was completed by 54 individuals. Of those students that responded to the follow-up survey, (43, 79.5%) were female, (45, 83.3%) were heterosexual, (28, 51.9%) were sexually active and (33, 61.1%) were single, not in a committed relationship. For the question "Have you initiated the HPV vaccine", (28, 51.9%) answered "Yes" and (26, 48.1%) answered "No". Of those that answered "Yes", (24, 85.7%) were female. The majority of the students (36, 66.7%) indicated they planned to complete all three doses of the vaccine.

Most indicated they began the vaccine series at the Health Department the day of the documentary streaming (44.2%) or at their family physician office (32%) or the UGA Student Health Center (12%). Over half (28, 51%) of those that responded to the Follow-up Survey indicated that the documentary "Someone You Love" directly influenced their decision to start the vaccine series. Of those that answered "Yes", (24, 85.7%) were female. Only (7, 13.0%) indicated the documentary did not influence their decision.

DISCUSSION

Current state of HPV vaccination in Georgia

Although Georgia vaccination coverage rates have been improving in the last decade, there is still opportunity for improvement. According to 2016 statistics it is estimated that 67.3% of adolescents in Georgia (aged 13–17) initiated the vaccine series (77.0% female and 58.0% male adolescents) while only 45.6% completed the full series (55.4% female and 36.2% male) (Walker et al., 2017). By 2017 these data points increased indicating incremental improvements. Within Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee), Georgia currently stands 2nd trailing behind North Carolina for 1 dose initiation and vaccine completion among adolescents aged 13 – 17 years old (Walker et al., 2018). While the Center for Disease Control and Prevention (CDC) reporting databases mostly track adolescent vaccination initiation and completion rates to correspond with the newer ACIP recommendations (2 dose if initiated before 15th b-day, 3 doses after), young adults are oftentimes not discussed (Meites, Kempe & Markowitz, 2016). This is increasingly cause of concern

because young adults and collegiate age populations engage in the riskiest of sexual health behaviors and oftentimes have the greatest misconceptions of the disease and need to be vaccinated (Albright & Allen, 2018).

Despite college students falling outside of the recommended age range for best immune response to the HPV vaccine (9 – 12 years old), they do fall within the "catch up" vaccination group (Mehu-Parant et al., 2010). A young adult is categorized within this "catch up" vaccination group if they did not receive the vaccine during the recommended age groups (Silverberg et al., 2018). Data indicates that although the FDA licensed the quadrivalent human papillomavirus vaccine (HPV4) Gardasil in 2006 and bivalent human papillomavirus vaccine (HPV2) Cervarix in 2009 for use in females aged 9 – 26 years, the Advisory Committee on Immunization Practices (ACIP) only recommended routine vaccination for females aged 11 or 12 starting as early as 9; with catchup between 13 through 26 years old (Center for Disease Control and Prevention, 2010; Markowitz et al., 2014). Recommendation for boys aged 13 – 21 were not introduced by the Centers for Disease Control and Prevention (CDC) until 2011, with inclusive recommendations for men aged 22 – 26 if they identified as men who have sex with men (MSM) or had an immunocompromised condition such as human immunodeficiency virus (HIV) (Center for Disease Control and Prevention, 2011; Whitman & Cajigal, 2016). Expanded male recommendations for older males were not established by the FDA until 2015 and adopted by the ACIP until 2019. (Howard, 2019; Immunization Action Coalition, n.d).

Because a large proportion of college age students did not get vaccinated when initial recommendations were published for both males and females, there are benefits such as protection and cancer prevention if vaccinated up to age 26 (Centers for Disease Control and Prevention, 2018). Although there have been several interventions completed to date targeting college age populations, many of these studies used traditional programmatic approaches to changing behavior without tailoring their messages to their complex communication needs (Friedman & Sheppard, 2007; Priest & Knowlden, 2015). According to Hopfer, "communication source may play an even more important role when uncertainty surrounds an advocated health behavior such as a new vaccine" (2012, p.174). When we look at where young adults consume information (novels, magazines, radio, music lyrics, online news content and television) we know that those narrative channels command more attention, change beliefs and are more predictive of changing behavior when compared to traditional platforms such as advertisements, sermons, editorials or billboards (Green & Brock, 2000).

Entertainment Communication Impact on Health

Entertainment -Education or entertainment narrative has emerged as a growing field in communication with greater implications in public health. It is a strategy that embeds persuasive messages within popular media content to improve attitudes, influence awareness, increase knowledge and change behavior (Moyer- Guse, 2008). The literature has cited several benefits to using narratives in media compared to traditional communication channels or approaches. According to Hopper (2012), “the advantages of a narrative over an informational approach include more effectively reaching audiences who are less involved, resistant, have low knowledge about the health issue at hand, or who are in early stages of behavior adoption.” Despite its’ promise, it has more prominently been applied in areas such as HIV prevention, domestic violence, sexual assault/rape and safe sex practices (particularly condom use) (Moyer-Guse,2008; Moyer- Guse & Nabi, 2010)

Since 2014, the "Someone you Love" documentary has been adopted for public screenings in nearly 18 states throughout the United States (Lumiere, Hefti & Staurulakis, 2018). While the documentary shares light on the impact of HPV transmission and its deadly impact, no formal research study has been done to measure its overall impact on behavior change. After watching the documentary in our study, gains pre to posttest scores indicate that overall students in our study felt more at risk for HPV, were confident in their ability to seek out and receive the vaccine and they had a greater intention to start the HPV vaccination series. Despite this however, we did not achieve all of the aims sought out. We hypothesized that females, Caucasians and students who were sexually active would have an increased risk perception, self-efficacy and thus behavioral intention. While there were no statistically significant differences when exploring different variables related to behavioral intention among females, Caucasians and sexually active students, we did see statistically significant differences related to gender (female) for risk perception and race (bi-racial or /multiracial and among Asians) for self-efficacy. The results obtained for risk perception among females in our study is not surprising being that the focus of the documentary stories were 5 women. Seeing themselves as the women, and connecting to the parallels of these women through their journeys allowed for female students to identify with them and thus led to increased risk perceptions. However, because the documentary did not show any of the women being vaccinated (although it did integrate vaccination messages as a prevention strategy) it could have affected female viewers’ confidence in their ability to be vaccinated and thus thwarted their overall behavioral intention. Knowledge of the vaccine is optimal, however viewing someone’s success with initiating and completing the vaccination series could have had an increased impact on vaccination initiation following the viewing session.

Additionally, because the documentary highlighted the lives of 5 women diagnosed with HPV, all racially diverse (White, African American and Asian); the results seen among bi/ multi-racial and Asian participants are not surprising. While Caucasian (white) women have been one of the key priority population groups in the United States for HPV vaccination, we see that there are still key differences among minority women when compared with non -Hispanic white women for prevention strategies such as pap smear screening affecting cervical cancer incidence and mortality rates (Carrasquillo et al, 2018). In the “Someone You Love” documentary the narrative for the minority women compared to non – Hispanic women however differed from what generally occurs in everyday society. Two of the white women died from their cervical cancer diagnosis, while the remaining three women (n=3) were able to beat their diagnosis and thrive as cancer survivors. The use of these testimonials could have in fact empowered women in our study, thus contributing to the results seen.

Limitations and Future Recommendations

Despite its successes, there were some limitations to the study. The first is that although the effect of education entertainment on HPV outcomes was measured, the theoretical framework used was more aligned with public health or behavior change. Additionally, because two of the constructs measured in this study came from the Health Belief Model and behavioral intention was used as a proxy for behavior change, future studies should test all constructs of the Health Belief Model (i.e. perceived benefits and perceived barriers). Currently, studies exploring the effect on persuasion and narratives typically apply the extended elaboration likelihood model (E-ELM) or the entertainment overcoming resistance model (EORM) or heuristics -systematic model (HSM) as their theoretical foundation (Moyer- Guse & Nabi, 2010; Green & Brock, 2000).

Furthermore, transportation (also referred to as immersion), is also measured in entertainment education. This is because when someone is transported, they are less likely to respond negatively to the narrative, they are less likely to counter argue a claim or storyline, they are more likely to redefine their attitudes and beliefs, warranting a convergent process towards behavior change (Green & Brock, 2000). Based upon transportation theory and research on HPV narratives, the film may have been more impactful if it (1) focused on a more diverse group or women that were closer to the viewers’ ages (identification); (2) had less third-person narrative by Vanessa Williams and focused more on the first – person narratives of the women; and (3) included only stories of survivors rather than 2 stories about death from HPV/ cervical cancer. Based on Krueger et al., watching this film where one woman did “everything right” (got regular Paps, knew about HPV, went through all of the treatments)

and still died in the end, may lead viewers to believe less in the screening/treatment process and thus have less self-efficacy around HPV prevention (2007). Future studies should explore the addition of a persuasive model on communication effects as well as measure transportation and immersion.

The study used a pretest/posttest design with all participants exposed to the stimulus and no random assignment. The study also used a convenience sample, which means that the results cannot be generalizable to population groups outside of our sampling parameters. Future studies should explore testing the documentary using an experimental design with a true control or comparison group. This provides more validity concerning the documentary's effectiveness when compared to current educational strategies to inform collegiate students on the need to initiate and complete the HPV vaccine.

There was very high attrition from pretest to post-test (17%) and post-test to the follow-up survey. Upon enrolling in the study, the researchers limited the numbers of seating based upon the capacity of the screening rooms to avoid being at over capacity. However since the screening events were scheduled during the same times at many afternoon course labs, extracurricular events and club meetings, many students did not show up accounting for the high attrition rates seen after completing the pre assessment survey. Despite this however, because each participant had a specific Participant ID number, any pre-test that did not have an accompanying posttest was not included in the data analysis. Future studies should explore varying times in the semester to offer screening events to reduce any potential conflicts. Additionally, not all participants did not complete the follow up survey despite being incentivized with a \$5 gift card. This may have been due to a few reasons (1) the timing of the email to complete the follow up study coinciding with the end of the semester and increased workloads on students (2) the students not seeing the \$5 as enough of an incentive to warrant completing the survey. Therefore, future studies should consider having additional funds to collect that information, or alternate strategies to get a more accurate account of the number of students who have initiated the HPV vaccine following the documentary screening.

While qualitative data was collected from research study participants, the depth of information that could have been captured was limited to an open-ended response area on a survey. To truly measure immediate reactions, the effectiveness of the narrative and storyline focus groups should be facilitated with the target population with segmentation based upon race and gender. To explore what future education – entertainment mediums should consider when tailoring or targeting their communication messages, qualitative studies should also be conducted with priority

subgroups or disparity groups such as sexual minorities (LGBTQ+) and males.

Lastly, while this study measured immediate uptake of the HPV vaccine following the documentary screening and used the behavioral intention measure from the Theory of Planned Behavior (TPB) as a proxy to behavior change, it did not predict long term vaccination completion rates among the college age population. Future studies should track college students from initiation to vaccine series completion to adequately measure intervention success.

CONCLUSIONS

With more young adults streaming television on services like Netflix and watching documentary series, public health should explore using persuasive messaging in media as a tailoring strategy to improve health outcomes and motivate behavior change. Apart from providing information, educational entertainment can also reduce stigma, and promote healthy behaviors. As mentioned in our discussion, we did not achieve the research aims associated with this study. While we hypothesized that females, Caucasian students (all genders) and those who were sexually active will have an increased risk perception for the HPV virus, increased self –efficacy, and increased behavioral intention to receive the HPV vaccine; our results indicated otherwise. In fact, we only obtained statistically significant results for females as it related to risk perception for contracting the HPV virus. Therefore, future research is needed to (a) develop a documentary that highlights the HPV narratives of all persons (diverse population groups) and (c) integrate messages that not only show the health impacts of contracting the HPV virus, but how to enact the necessary steps to prevent and treat (if caught early enough) for that diverse population group. We believe that because the documentary did not include this information on how to go about preventing being diagnosed with HPV related health outcomes (such as genital warts or cancer), it directly impacted viewer's confidence and thus intention to change their behavior. Therefore, apart from the storyline or narration, future education entertainment strategies focused on improving HPV vaccination outcomes, should also consider the quality of the production, the characters used, the extent to which the participant identifies or finds similarity between self and the character, and the level of persuasive messaging included throughout. Additionally, future research should also explore innovative ways (cues to action) to increase post viewing vaccination among the target population, as less than 50% of our sample actually initiated vaccination one month after watching the documentary. By making these changes, future approaches could be successful in achieving positive HPV vaccination and prevention outcomes in a tailored manner for young adults.

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