Human Papillomavirus Vaccination and the Impact on Sexual Activity among Kentucky University Students

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PROBLEM & BACKGROUND

- Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the United States with approximately fourteen million Americans contracting new infections every year (NFID, 2021).
- Adolescents and young adults between the ages of 15 and 25 have the highest prevalence of HPV (Dempsey, 2008). Approximately 84.6% of women and 91.3% of men will acquire HPV by the age of forty-five in the United States (Chesson, Dunne, Hariri, & Markowitz, 2014).
- HPV infections can cause anogenital warts and cancers of the cervix, vagina, vulva, penis, anus, and oropharynx (CDC, 2021). HPV is responsible for more than 90% of anal and cervical cancers, 70% of vaginal and vulvar cancers, 60% of penile cancers, and potentially 60-70% of oropharynx cancers (CDC, 2022).

PURPOSE & SIGNIFICANCE

Purpose

- The primary purpose of the study is to determine if HPV vaccination influences risky sexual behaviors in young adult undergraduate students.
- The secondary purpose of this study is to assess the knowledge, attitudes, and beliefs of HPV and the HPV vaccine among undergraduate students.

Hypothesis

- There will be no differences in risky sexual behaviors of students who are vaccinated against HPV versus those who are not vaccinated against HPV.

Significance

- Kentucky has the highest HPV-related cancer burden in the United States, so it is important to measure knowledge, beliefs and attitudes, and vaccination status of Kentucky college students to create targeted cancer prevention strategies for this population.

METHODS

Participants

- 82 undergraduate male and female students enrolled in a regional Kentucky university participated.
- Participants aged 18 to 23 years were asked to complete an online survey using Qualtrics.

Survey

- *HPV Vaccine and Sexual Activity;* 32-item survey was created by the researchers based upon existing surveys from the CDC.
- Questions consist of yes/no, true/false, multiple choice, and Likert style format questions
- 10 items assessed HPV knowledge such as prevalence of HPV, signs and symptoms of HPV, and transmission of HPV.
- 5 questions asked beliefs and attitudes regarding HPV vaccine efficacy and risk for HPV and included questions regarding the HPV vaccine's ability to prevent HPV-related cancers, safety of the HPV vaccine, and personal risk of contracting HPV.
- 7 questions assess sexual history and current sexual practices such sexual orientation, sexual identity of sexual partners, and condom/barrier use during sexual activity.
- 5 questions measured vaccination status including number of HPV vaccine doses received, if a healthcare provider has recommended the HPV vaccine, and if unvaccinated participants would be interested in receiving the HPV vaccine.
- 5 demographic variables including age, gender, race, and year in school are included.
- The survey was distributed through in-person and online recruitment.

Data Analysis

- Descriptive statistics, Chi-Square, and Fisher's Exact Test were used for statistical analysis using SPSS and Excel.
- P-value was set at 0.05 with a confidence level of 95% for this analysis.

Figure 1. Gender Demographics

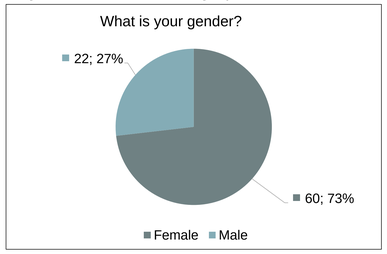
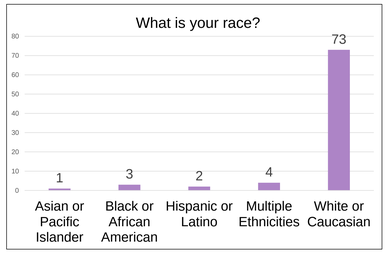
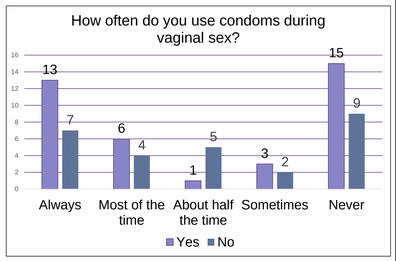
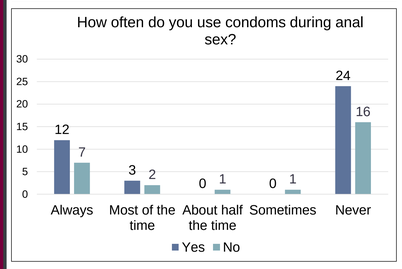


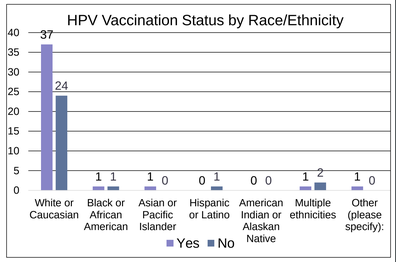
Figure 2. Race Demographics



Figures 3-6. Condom Usage and HPV Vaccination by Race







Figures 7-10. Chi-Square Tests and Total Knowledge Score

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.677[a]	1	.031		
Continuity Correction[b]	2.888	1	.089		
Likelihood Ratio	5.074	1	.024		
Fisher's Exact Test				.063	.043
Linear-by-Linear Association	4.455	1	.035		
N of Valid Cases	21				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.33.
b. Computed only for a 2x2 table

Figure 3.1 Fisher's Exact Test for condom use during oral sex.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.176[a]	1	.278		
Continuity Correction[b]	.547	1	.460		
Likelihood Ratio	1.178	1	.278		
Fisher's Exact Test				.321	.230
Linear-by-Linear Association	1.143	1	.285		
N of Valid Cases	35				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.43.
b. Computed only for a 2x2 table

Figure 3.2 Fisher's Exact Test for condom use during vaginal sex.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.017[a]	1	.897		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.017	1	.897		
Fisher's Exact Test				1.000	.640
Linear-by-Linear Association	.016	1	.899		
N of Valid Cases	24				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.88.
b. Computed only for a 2x2 table

Figure 3.3 Fisher's Exact Test for condom use during anal sex.

Total Knowledge score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	1.2	3.7	3.7
	3.00	4	4.7	14.8	18.5
	4.00	7	8.2	25.9	44.4
	5.00	6	7.1	22.2	66.7
	6.00	8	9.4	29.6	96.3
	7.00	1	1.2	3.7	100.0
	Total	27	31.8	100.0	
Missing	System	58	68.2		
Total		85	100.0		

Figure 3.4 Total Knowledge Table for HPV and HPV vaccine questions.

RESULTS & DISCUSSION

- 108 students opened the survey; 66 responses were utilized in this study.
- 42 responses were excluded due to the participant not being 18-23 years of age, not being enrolled as an undergraduate student, or for not having completed the survey.
- 73% (n=53) were female, 27% (n=13) were male.
- 59% (n=39) reported having received at least one dose of the HPV vaccine, 41% (n=27) reported having never received at least one dose of the HPV vaccine.
- Fisher's Exact Test was used to determine if there was a relationship between HPV vaccination status and condom use during sexual activity. Fisher's Exact Test (p=0.063 for oral, p=0.321 for vaginal, p=1.0 for anal) do not indicate a significant association between HPV vaccination and condom use during oral, vaginal, or anal sex.
- Total Knowledge Score was calculated for 9 HPV and HPV vaccine knowledge questions. 1.2% (n=1) answered 2 correctly, 4.7% (n=4) answered 3 correctly, 8.2% (n=7) answered 4 correctly, 7.1% (n=6) answered 5 correctly, 9.4% (n=8) answered 6 correctly, 1.2% (n=1) answered 7 correctly, and 0% answered 8 or all 9 correctly.
- H1: No statistical significance (p>0.05) between HPV vaccination status and condom use during oral, vaginal, or anal sex.
- Limitations to this study included unfinished surveys or missing survey responses, respondents not meeting the age or undergraduate status criteria, low participation rates, and time restrictions.

IMPLICATIONS & CONCLUSIONS

- HPV vaccines did not encourage risky sexual behavior in those who receive at least one dose.
- White/Caucasians were more likely to receive the HPV vaccination compared to other races.
- There is a need for greater sexual health education for college students to improve understanding of the HPV vaccine and its efficacy in protecting individuals against HPV since knowledge scores were overall low.
- Further HPV vaccine education is needed for all college students and should especially target minority populations to encourage HPV vaccine uptake.
- Research should be conducted on larger college undergraduate populations to get a more accurate understanding of the influence of HPV vaccines on condom use during sexual activity.

REFERENCES

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