Gender Differences in HPV Vaccination Rates, Knowledge, and Beliefs among College Students at the University of North Dakota

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Abstract

Background

Human Papillomavirus (HPV) is the most common sexually transmitted infection[1]. Men and women between the ages of 17-24 are especially susceptible to HPV infection.[1] In 2020, 54.5% of University of North Dakota (UND) students reported the completion of the HPV vaccine series.[2] The aim of this study is to apply the Social Cognitive Theory (SCT) constructs to understand HPV vaccine attitudes among college-aged students at the University of North Dakota.

Methods

A total of 241 participants completed the online survey, which began collecting data on October 10, 2022 and asked questions about vaccine history, beliefs, and knowledge regarding HPV. Data was analyzed using descriptive statistics and t-tests.

Results

HPV vaccination rates were significantly higher for female (78.3%) compared to male (63.8%) students (p=0.041). Females correctly answered more knowledge questions about HPV and HPV vaccines compared to males (45.9% and 32.8% respectively; p=0.020). On average, students believed that the HPV vaccine was safe (females= 83.8%; males 82.6%), and effective (females= 82.0%; males= 78.3%). Approximately half of students reported that their friends have received the HPV vaccine (females= 55.5%; males= 50.1%).

Conclusion

These findings suggest that males may seek immunization when they understand how the vaccine protects them. Females had higher rates and stronger knowledge of HPV, which may help contribute to the action of getting vaccinated. Future research should include SCT to develop interventions to increase knowledge and ultimately vaccination rates.

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Methods

Participants

Data was collected from a survey sent to the UND community (students, faculty, and staff) through email. Data was then filtered to students who were between the ages of 18-23 (n=241).

Table 1: Demographic variables

Participants, n	241
Gender, % (n)	
Male	28.2 (68)
Female	71.8 (173)

***Non-binary and transgender identifying students were included in the survey but excluded from this analysis due to inconclusive results caused by small sample size*

Survey

Survey questions included self-report vaccine rate and questions regarding confidence, knowledge, preferred source for information on vaccines, and their family and friends vaccine rate.

Table 2: Survey Measures

Variable	Measure

Vaccine rate (HPV)	• Have you received the HPV (Human Papillomavirus) vaccine series (2 doses)
	  • Yes, I have completed the HPV vaccine series
	  • Yes, I have started, but not completed, the HPV vaccine series
	  • No, I have not started the HPV vaccine series
	  • I don't know

Confidence in safety (of HPV vaccine)	• I am completely confident that the following vaccines (HPV) are SAFE
	  • Strongly disagree
	  • Disagree
	  • Neither agree nor disagree
	  • Agree
	  • Strongly agree

Confidence in effectiveness (of HPV vaccine)	• I am completely confident that the following vaccines (HPV) are EFFECTIVE
	  • Strongly disagree
	  • Disagree
	  • Neither agree nor disagree
	  • Agree
	  • Strongly agree

Knowledge of HPV vaccine**	• Men cannot get HPV.
	  • True
	  • False
	  • I don't know

Report of friends' HPV vaccine rate	• Please rate whether your friends have received the following vaccines (HPV)
	  • Definitely no
	  • No
	  • Not sure
	  • Yes
	  • Definitely yes

***The survey included five more knowledge questions regarding HPV/HPV vaccines*

Results

Figure 1. Comparison of HPV vaccine rate

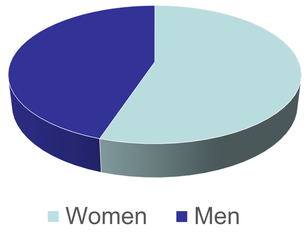

Figure 2. Gender Differences in Vaccine Confidence and Vaccine Safety

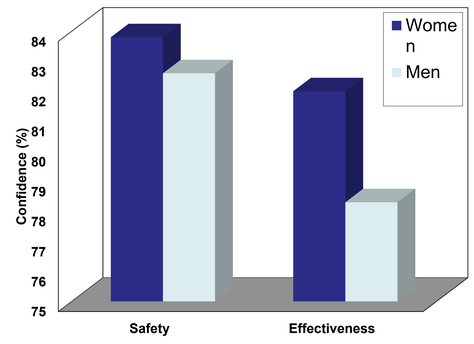

Table 3: Knowledge result

Knowledge question (Q)	Male response correctly answered, % (n)	Female response correctly answered, % (n)	p-value
Q1– Men cannot get HPV.	48.5 (33)	59.0 (102)	**p=0.020***
Q2–HPV is rare.	38.2 (26)	47.4 (82)	**p=0.011***
Q3—HPV can be transmitted through genital skin-to-skin contact.	52.9 (36)	54.3 (94)	p=0.249
Q4—HPV can be cured with antibiotics.	23.5 (16)	39.9 (69)	p=0.99
Q5—Most sexually active people will get HPV at some point in their lives.	16.2 (11)	22.0 (38)	p=0.489
Q6–The HPV vaccine offers protection against most cervical cancers.	20.6 (14)	52.6 (91)	**p=<0.001***

Discussion

Social Cognitive Theory

The Social Cognitive Theory (SCT), "describes the influence of individual experiences, the actions of others, and environmental factors on individual health behavior." [3] Several constructs of the Social Cognitive Theory include:

- "Self-efficacy: the belief that an individual has control over and is able to execute a behavior
- Behavioral capability: understanding and having the skill to perform a behavior
- Observational learning: watching and observing outcomes of others" [3]

The constructs of the SCT help guide experts in not only determining what influences health behaviors and decisions but also assist in guiding behavior change toward positive health outcomes.

In this analysis, the Social Cognitive Theory constructs helped guide an understanding of factors that motivate behaviors of HPV vaccination between genders.

The results found in this analysis are not comprehensive of all the SCT constructs and thus further research is needed in order to understand the influences of SCT on HPV vaccination rates.

Conclusions

Based on pre-survey data, women may be more likely to seek HPV vaccination when:

- They understand how the vaccine protects them
- They are confident in the safety and effectiveness
- They observe behavior from their friends in support of receiving the vaccine

Further research is needed to determine why differences exist between male and female students at the University of North Dakota.

References

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[2] American College Health Association. American College Health Association-National College Health Assessment III: University of North Dakota Executive Summary Spring 2020. Silver Spring, MD: American College Health Association; 2020.

[3] Social Cognitive Theory Model - Rural Health Promotion and Disease Prevention Toolkit. (2018). Retrieved 2023, from https://www.ruralhealthinfo.org/toolkits/health-promotion/2/theories-and-models/social-cognitive

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