

Apr 25th, 9:00 AM - 10:00 AM

# The Effect of the Human Papillomavirus Vaccine on Fertility Rates in Adolescent and Young Adult Aged Men and Women: A Systematic Review

Heidi Hohmann  
hhohmann@carroll.edu

Follow this and additional works at: <https://scholars.carroll.edu/surf>

Part of the [Community Health and Preventive Medicine Commons](#), [Health and Medical Administration Commons](#), and the [Women's Health Commons](#)

---

Hohmann, Heidi, "The Effect of the Human Papillomavirus Vaccine on Fertility Rates in Adolescent and Young Adult Aged Men and Women: A Systematic Review" (2019). *Carroll College Student Undergraduate Research Festival*. 52.  
<https://scholars.carroll.edu/surf/2019/all/52>

This Event is brought to you for free and open access by Carroll Scholars. It has been accepted for inclusion in Carroll College Student Undergraduate Research Festival by an authorized administrator of Carroll Scholars. For more information, please contact [tkratz@carroll.edu](mailto:tkratz@carroll.edu).

# The Effect of the Human Papillomavirus (HPV) Vaccine on Fertility Rates: A Systematic Review

Heidi Hohmann, Department of Health Sciences.  
Carroll College, Helena, Montana.

## Introduction

Seventy-nine million Americans, or one in four, are infected with Human Papillomavirus (HPV) (Figure 3). HPV is the main cause of genital warts and cervical cancers. The HPV vaccine is thought to have affected fertility of men and women through reduced sperm motility and reduced pregnancy rates (1). Current U.S. vaccination rates have been low compared to other countries: 20% of 13-17 year olds receive all three HPV doses; however, Australia and the United Kingdom have 75-80% vaccination rates (2). Understanding this connection can raise awareness of the HPV vaccine and can stop the spread of HPV; thus, lowering the rates of cervical cancers and genital warts.

## Methods

- PubMed database
- Key words: “adolescents,” “young adults,” “HPV vaccine,” “human papillomavirus vaccine”, “cervical cancer vaccine” “fecundity,” and “fertility” were used.
- 8 studies were included (Figure 1)

1) Wise, D.L., Pauley, C.J., Micheal, B., & Wolf, J.J. (2010). Lack of effects on male fertility from a quadrivalent HPV vaccine in sprague-dawley rats. *Birth Defects Research*, 89, 376-381. DOI: 10.1002/bdrb.20259.

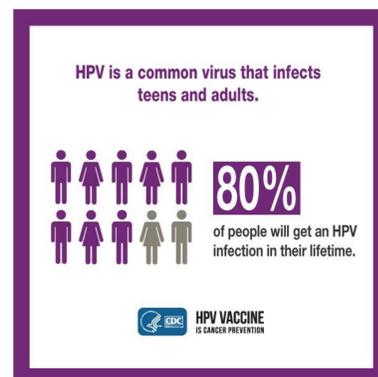
2) Nelson, B. (2010). Lagging HPV vaccination rates dampen outlook in US. *Cancer Cytopathology*. DOI: 10.1002/cncy.20086

3) McInerney, K.A., Hatch, E.E., Wesselink, A.K., Mikkelsen, E.M., Rothman, K.J., Perkins, R.B., & Wise, L.A. (2017). The effect of vaccination against human papillomavirus on fecundability. *Paediatric and Perinatal Epidemiology*, 31, 531-536. DOI: 10.1111/ppe.12408

4) Garolla, A., DeToni, L., Bottacin, A., Valente, U., Ponce, M.D.R., Nisio, A.D., Foresta, C. (2018). Human papillomavirus prophylactic vaccination improves reproductive outcome in infertile patients with HPV semen infection: a retrospective study. *Scientific Reports*, 8, 1-10. DOI: 10.1038/s41598-018-19369-z

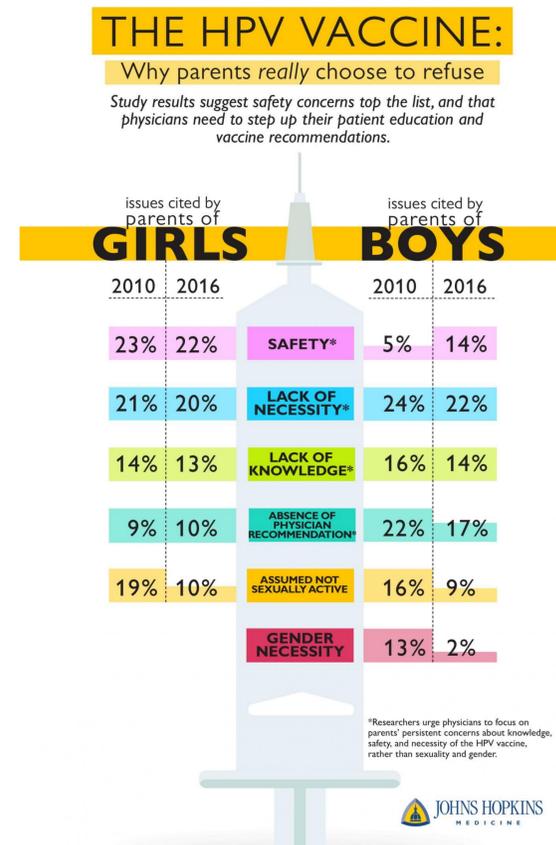


Figure 1: Process for identifying and including articles in the systematic review.



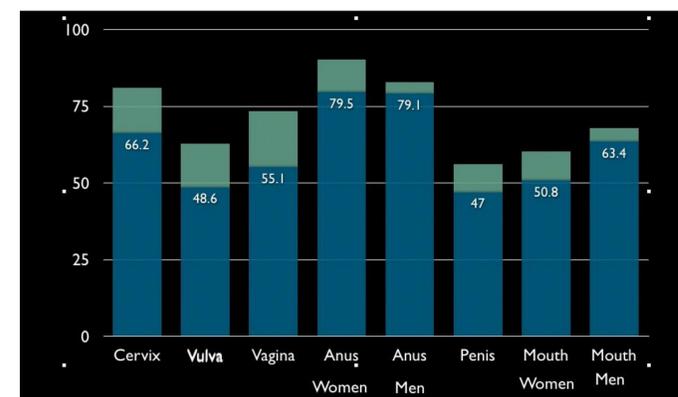
<https://www.cdc.gov/hpv/infographics/vacc-six-reasons.html>

Figure 3: Graphic showing how common HPV is.



<https://hub.jhu.edu/2018/10/24/why-parents-refuse-hpv-vaccine/>

Figure 2: Graphic showing percentages and reasons why some parents refuse the HPV vaccine.



<https://drjengunter.wordpress.com/2015/05/08/the-importance-of-the-hpv-vaccine-in-one-graphic-really/>

Figure 4: Percentage of cancers caused by HPV types 16/18 (dark blue) that are covered by the HPV vaccine currently.

## Results

- The HPV vaccination has no negative effects on fertility rates of men and women.
- Six out of eight studies concluded that there were no negative effects on fertility rates of men and women after HPV vaccine exposure.
- One study concluded that the HPV vaccination increased fertility rates among women with a history of sexually transmitted infections (3).
- Another study found that the HPV vaccination increased male fertility rates by making the semen cells in infertile men, more motile (4).

## Public Health Implications and Recommendations

- Current vaccination treatments should not change; however, the HPV vaccine should be promoted more among women with a history of sexually transmitted infections and infertile men.
- The HPV vaccination provides a protective barrier for young men and women.
- Future studies should include cohort generations and further research needs to be conducted to come to a more concrete conclusion.

## Acknowledgements

I would like to thank the Carroll College Health Sciences Department and Katie Wagner for her continued positivity and support in my career and education goals.