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Original Research

Race-specific trends in HPV vaccinations and provider recommendations: persistent disparities or social progress?



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ABSTRACT

Objectives: Although racial and ethnic differences in HPV vaccination initiation are well established, it is unclear whether these disparities have changed over time. The role of health provider recommendations in reducing any racial and ethnic inequalities is also uncertain. This study addresses these gaps in the literature.

Study design: Repeated cross-sectional design.

Methods: Using data from the National Immunization Survey-Teen (2008–2013), we estimated a series of binary logistic regressions to model race-specific trends in (1) provider recommendations to vaccinate against HPV and (2) HPV vaccine initiation for males ($n = 56,632$) and females ($n = 77,389$).

Results: Provider recommendations to vaccinate and HPV vaccination uptake have increased over time for adolescent males and females and across all racial and ethnic groups. Among girls, minority youths have seen a sharper increase in provider recommendations and HPV vaccination uptake than their White counterparts. Among boys, minority teens maintain higher overall rates of HPV vaccine uptake, however, Hispanics have lagged behind non-Hispanic Whites in the rate of increase in provider recommendations and HPV vaccinations.

Conclusions: Our results suggest that racial and ethnic disparities in provider recommendations and HPV vaccinations have waned over time among males and females. While these trends are welcomed, additional interventions are warranted to increase overall rates of vaccination across race, ethnicity, and gender.

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Human papillomavirus (HPV), which can cause cervical cancer, genital warts, and other anogenital cancers, is the most common sexually transmitted infection in the USA.^{1,2} Strains

of HPV are responsible for 99.7% of cervical cancer cases. Cervical cancer, the second most common malignant disease among women in the USA, is responsible for approximately

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4000 deaths per year.^{3,4} Over 25% of females between the ages of 14 and 59 years are infected with at least one strain of HPV.^{5,6} The virus is also prevalent among sexually active males.⁷ Recent estimates suggest that oral HPV infection, the cause of a subset of oropharyngeal squamous cell carcinomas (OSCCs),⁸ is more common in men than women.⁹ In 2006, a vaccine was approved for use among females between the ages of 9 and 26 years.¹⁰ HPV vaccine guidelines were later extended to males in October 2009, with a routine vaccination recommendation beginning in October 2011.¹¹

Research suggests that cervical cancer screening, diagnosis, treatment, and survival vary widely according to sociodemographic characteristics.^{12,13} African American and Hispanic women exhibit higher rates of cervical cancer than their non-Hispanic White counterparts.^{14,15} Rather than reducing social disparities in HPV infection and cervical cancer mortality, the HPV vaccine could potentially increase racial and ethnic disparities if the vaccine is unequally distributed in the population. African American and Hispanic females appear to be less likely than non-Hispanic Whites to have initiated^{16–19} and completed^{17,20–22} the three-dose HPV vaccine series. Although social differences in HPV vaccination uptake among boys have been understudied, there is some evidence to suggest that non-Hispanic White parents are less likely to have vaccinated their sons than parents of other racial and ethnic groups.^{23,24}

Receiving a recommendation from a health provider to vaccinate against HPV is a key predictor of receiving the vaccine.^{25–27} Drawing on the fundamental cause theory of health disparities, Polonijo and Carpiano (2013)²¹ find important social inequalities in both HPV vaccine knowledge and receipt of a health provider's recommendation to vaccinate. Fundamental cause theory postulates that health inequalities emerge and persist in society because of the unequal distribution of health-beneficial resources. Those who are more socially advantaged in terms of knowledge, money, status, and social connections tend to have greater access to health-promoting innovations.²⁸ Although fundamental social cause theory was initially applied to understanding socio-economic disparities in health, race and ethnicity are strongly associated with access to resources and have thus been theorized to have similar effects on health.²⁹ Consistent with this theoretical perspective, Polonijo and Carpiano (2013)²¹ find that racial/ethnic minority parents are less likely to know about the HPV vaccine. Furthermore, African Americans are less likely to receive a recommendation from a health professional to vaccinate their daughters.

While recent longitudinal studies of females suggest that rates of vaccine uptake have increased across racial and ethnic groups,^{30,31} it remains unclear whether racial and ethnic disparities in HPV vaccination uptake have changed over time. It is possible that while all racial and ethnic groups are increasing vaccination, some racial and ethnic groups are increasing at faster or slower rates than other groups. Increasing disparities in HPV vaccination may forecast increasing racial and ethnic disparities in cervical cancer, and consequently may inform screening programs and other interventions. Conversely, decreasing disparities in HPV vaccination uptake may indicate that recent public health interventions focused on minority youths, particularly African American females,³² have been effective.

There is some concern that racial and ethnic trends in provider recommendations remain unexplored. While research has noted both gender and racial and ethnic variations in receiving a recommendation to vaccinate,^{21,26} scholars have yet to examine whether these disparities have changed since the introduction of the vaccine. Scholars also have yet to examine whether racial and ethnic trends in HPV vaccination uptake are explained by variations in provider recommendations. Understanding the mediating role of provider recommendations may inform new interventions focused on eliminating remaining disparities in HPV vaccination. If racial and ethnic variations in vaccination are driven by variations in provider recommendations, this would suggest that public health interventions should focus on health-care providers, rather than adolescents and their parents.

In this paper, we use data collected from a large, nationally representative sample of parents of adolescent children to examine racial and ethnic trends in HPV vaccination uptake and provider recommendations. Specifically, we address the following research questions:

- 1) Have HPV vaccination uptake and health provider recommendations increased over time among Black, Hispanic, and non-Hispanic White adolescent girls and boys?
- 2) Do trends in HPV vaccination uptake and health provider recommendations vary by race and ethnicity among adolescent girls and boys?
- 3) To what extent are the gender- and race-specific trends in HPV vaccination uptake explained by variations in provider recommendations?

Given gender differences in the timing of the HPV vaccination recommendation,^{9,10} as well as previous research noting gender differences within racial and ethnic groups in vaccination initiation,^{24,30} all analyses are presented separately for males and females.

Methods

Data

Our study employs data from the 2008–2013 National Immunization Survey-Teen (NIS-Teen). The National Center for Immunization and Respiratory Diseases and the National Center for Health Statistics collected the telephone survey data from a random digit sample of parents of adolescent children.³³ The NIS-Teen survey implemented a dual-frame sampling design with independent landline and cell phone samples. Response rates for these samples averaged 56.4% and 23.1%, respectively. The primary aim of the NIS-Teen is to estimate vaccine coverage for adolescents aged 13–17 years based on parental reports. Within recruited households, the parent or guardian who reported knowing the most about the adolescent's health was administered a survey asking about the child's vaccine history. With only a few rare exceptions (e.g. emancipated minors), teens under 18 must have parental consent in order to receive the HPV vaccine. Thus, parental reports are preferable for this age group.

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