Background: HPV is the number one sexually transmitted disease in the United States. Data from the CDC indicate that at least 75% of the reproductive-age population has been exposed to HPV, and 15% of Americans aged 15 to 49 are estimated to be infected with the virus.

Objective: To assess HPV awareness among college students, and to educate on HPV and HPV-related illnesses.

Methods: We used a 31-question survey to assess the HPV awareness of students on college campuses in Long Beach and Los Angeles, California.

Results: Of the 212 subjects who completed the HPV awareness survey, 10 were excluded from our data analysis. Income, education, and ethnicity were significantly and positively associated with HPV immunization status. Recipients whose healthcare provider (HCP) did not speak to them or their parents were 78% less likely to be vaccinated than those with HCPs that did.

Conclusion: A significant portion of college students are not aware of HPV vaccine recommendations and where they can receive the vaccine.

Abstract

**Background**

- Along with attending sexually transmitted disease (STD) clinics, college women have a high prevalence of HPV (JNCI. 2010;102, 1237-1241).
- ACIP recommends HPV vaccine to be administered to females through 26 years old and males through 21 years old (26 years old in men who have sex with men [MSM]).
- Despite having access to health resources (including immunizations) through Student Health Clinics, HPV immunization rates among college students are significantly below the US Department of Health and Human Service's Healthy People 2020 goal (80% versus below 60% respectively) (JNCI. 2010;102, 1237-1241).
- In addition there are racial and gender disparities in HPV vaccine uptake, with lower vaccination rates among males compared to females, and African American students compared to whites (JNCI. 2010;102, 1237-1241).
- There is limited data on HPV immunization from Hispanic/Latino college students.

**Objective**

To assess the level of HPV disease and vaccine recommendation awareness among college students in Los Angeles County.

**Methods**

- California State University, Long Beach Health Sciences students interning with MiOra were trained on HPV disease and vaccine prevention as "immunization community health educators (ICHE)."
- In a cross-sectional, convenience sampling study, ICHE administered an IRB approved, 31-question survey to students, 18 years and older, in classrooms and on campuses at different Southern California, California State University settings.
- They collected data on demographics, socioeconomic and family educational status, sexual/STD history, source of HPV information, actual and self-perceived HPV disease and vaccine knowledge, and HPV vaccination status.
- A multivariate logistic regression model was constructed using likelihood ratio tests and odds ratios were reported. Statistical analyses were conducted using R 3.4.3.

**Results**

- Students who reported to have "some knowledge" or "a great deal of knowledge" on HPV were more likely to be vaccinated than those reporting to have "no knowledge" (p<0.001).
- 55% of the students (n=111) answered 24 out of 7 HPV knowledge questions correctly. The mean composite knowledge score was 4.4 (63%) among vaccinated versus 2.8 (40%) among unvaccinated students.
- Having heard about HPV from their HCP was significantly associated with being vaccinated (p=0.0004) and having higher level of education in their family as a masters, professional or doctorate degree were 46% less likely to be immunized than students with the highest level of education in their family by high school.
- The majority of the students reported that they have some knowledge on HPV transmission (n=146, 73.3%), prevention of HPV (n=148, 73.3%) and HPV vaccine (n=144, 71.3%).

- In logistic regression analysis, age, gender, sexual history had no statistically significant impact on the self-reported HPV immunization status.
- Hispanic/Latino respondents were less likely to be vaccinated than Caucasians and other ethnicities (40.9% vs 62.7% and 50.8%; p=0.01).
- Those with higher level of education in the family (some college degree or less, p=0.0002) or those with higher family income (p<0.0006) were more likely to be vaccinated. However those who reported the highest level of education in their family as a masters, professional or doctorate degree were 46% less likely to be immunized than students with the highest level of education in their family being high school.

Conclusions

- Our data suggest that in Los Angeles, in a California State University setting, close to one third of the responding college students were not immunized and one quarter of the responding students did not know their HPV immunization status.
- The immunization rates were similar between male and female responding students and most responding males (76%) knew that the vaccine was recommended for both males and females;
- A significant portion of the responding students (65% of males and 52% of females) did not know that they could get the HPV vaccine through 26 years of age;
- There were discrepancies in HPV immunization rates among college students from different ethnicities, and the self reported immunization rates were lowest among Latino/Hispanic students (41% immunized);
- College HPV vaccine “catch-up” programs may help close the immunization gaps;
- There is a need for better patient-provider communication on immunization status as adolescent patients transition to adult care.

**Source of HPV Information**

- Never heard of HPV (n=28)
- Primary provider (n=62)
- Student health (n=10)
- Family/Friends (n=52)
- TV/radio/billboards (n=4)
- Multiple sources (n=69)
- No response (n=14)

**HPV Vaccination Status**

- Immune (100%)
- Not immune (55.27%)
- Does not know (22.26%)

Self-reported HPV vaccination rates are significantly lower for Latino/Hispanic students and approximately one quarter of respondents did not know about their HPV immunization status.

<table>
<thead>
<tr>
<th>Source of HPV Information</th>
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<th>Primary provider</th>
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<th>No response</th>
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<tr>
<td>Percentage</td>
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<td>62%</td>
<td>10%</td>
<td>52%</td>
<td>4%</td>
<td>69%</td>
<td>14%</td>
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**Awareness of HPV vaccination through 26 years of age**

- 52% of the female respondents and 65% of the male respondents did not know that they can get the HPV vaccine through 26 years of age.

**Awareness of who should get the vaccine (%)**

- Most male and female respondents knew that both males and females should get the HPV vaccine.