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# HPV VACCINE KNOWLEDGE, ATTITUDES, BELIEFS, AND BEHAVIORS

## AMONG COMMUNITY COLLEGE STUDENTS: A SCOPING REVIEW

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### INTRODUCTION

In 2018 it was estimated that 42.5 million people in the United States (U.S.) were infected with cancer-causing HPV types with approximately 13 million new cases of HPV infection diagnosed that year.<sup>1</sup> The majority of new HPV infections occur among adolescents and young adults between the ages of 15 and 25 years.<sup>1,2</sup> Although most individuals clear HPV infections without any lasting effects, HPV infection can lead to genital warts and cancer. Approximately 37,000 new cases of HPV-related cancers occur in the United States annually and over 90% of those cases are caused by high-risk HPV types that could have been prevented by the nine-valent HPV vaccine.<sup>3-5</sup>

Vaccination against HPV has been available for females in the United States since 2006 and males since 2009.<sup>6,7</sup> Currently, vaccination against HPV is recommended for everyone 11 or 12 years of age through 26 years and with shared clinical decision-making for those 27 through 45 years. However, vaccination uptake has been slow in the United States. In 2016, the percentage of adolescents ages 13-17 years in the United States who had received all recommended doses of the HPV vaccine was 43.4%.<sup>8</sup> That percentage has risen slowly year-over-year to 62.6% in 2022 but is well below the Healthy People 2030 goal of 80%.<sup>9</sup> This means

that approximately 37.4% of teens entering college are inadequately protected against HPV. In Mississippi, the percentage of adolescents ages 13-17 years not up-to-date on HPV vaccination is an astonishing 61.5%, meaning a majority of students entering college are not adequately protected.<sup>9</sup>

Multiple factors contribute to low HPV vaccination rates across the U.S. The lack of national HPV vaccination requirements allows states to establish their own requirements.<sup>10</sup> Currently only 4 states have any HPV vaccine requirements for school, with each of those states allowing exemptions for personal beliefs, religious beliefs, or medical reasons.<sup>11</sup> In the absence of HPV vaccination requirements, lack of provider recommendation and parental stigma have been noted as some of the primary barriers contributing to low vaccination rates among adolescents.<sup>12,13</sup> The HPV vaccine has also been the target of much misinformation ranging from adverse effects associated with the vaccine and vaccination requirements, to inefficacy associated with the vaccine.<sup>14</sup> These factors, along with vaccine cost concerns, religious beliefs, and lack of family support, have all contributed to sluggish HPV vaccine uptake among the adolescent population.<sup>15,16</sup>

Although it is proven that HPV vaccination is more effective the earlier it is given<sup>17</sup>, the vaccine can still provide protection for those who have begun having sex. Catch-up vaccination is vital for those who did not receive adequate vaccination as adolescents. College campuses provide opportunities for increasing HPV vaccination rates, particularly in states like Mississippi, where adolescent vaccination rates are below the national average.

It is estimated that 62% of high school graduates enrolled in college directly out of high school in 2021. Total undergraduate college enrollment was approximately 15.4 million nationwide.<sup>18</sup> Approximately 38% of 18 to 24 year-olds in the United States were enrolled in

college.<sup>19</sup> Literature has explored beliefs and behaviors about HPV and vaccination among college students, however this literature is primarily focused on students attending traditional, four-year institutions.<sup>20,21</sup> There are various types of college students with each possessing unique characteristics and pooling all college students into a single population does not take into account their differences. While public, four-year institutions contain the largest proportion of undergraduate students, community college students represent an important segment of college students whose beliefs and behaviors are often understudied in health literature.<sup>22,23</sup>

Currently in the U.S. there are over 1,000 community colleges with over 10.2 million students enrolled in a mix of degree-seeking and certificate programs.<sup>24</sup> Approximately 41% of all undergraduates in the United States are enrolled in community colleges, and there are some known distinctions between students enrolled in community colleges compared with those attending four-year institutions.<sup>25</sup> Community colleges enroll larger percentages of students who are ethnic minorities, from lower socioeconomic background, employed part- or full-time, and who are financially independently compared to students enrolled in traditional, four-year institutions.<sup>23,26</sup> Hispanics make up the largest racial minority group attending community colleges and have seen the greatest increase in attendance in recent years. In 2020, Hispanic students comprised 28% of community college students, which is up from 19% in 2010.<sup>27</sup> In comparison, their share of student enrollment in public, four-year institutions increased from 11% in 2010 to 19% in 2020.<sup>27</sup> Black students made up 12% of community college enrollment, Asian/Pacific Islanders comprised 6%, and Native Americans comprised 1%.<sup>27</sup> Although White students continue to make up the largest group of students attending community college, their percentage has dropped by 10% in recent years.<sup>27,28</sup> Community colleges also enroll a larger proportion of first-generation college students and low-income students compared to other types

of postsecondary institutions.<sup>29</sup> Thirty-two percent of students attending community colleges are first-generation college students.<sup>24</sup> According to data from the Community College Research Center, roughly 65% of student's enrolled in community colleges reported their annual family income below \$50,000 .<sup>25</sup> Additionally, about 55% of community college students are considered financially independent compared to 33% of those students attending public four-year institutions. These characteristics of community college students demonstrate some of their differences when compared to students attending four-year institutions.

Knowing community college students are demographically distinct compared to students attending four-year institutions may also be an indication that they have different educational needs. Limited health behavior research has been conducted among the community college student population to assess their unique needs. A study examining the prevalence and risk factors associated with risky sexual behaviors in community college students found that community college students may be at high risk for poor sexual health outcomes.<sup>22</sup> A systematic review conducted by Pokhrel et al. found 42 published, peer-reviewed health behavior studies conducted among community college students in the U.S. Of those studies, 43% assessed tobacco use.<sup>23</sup> Only eight studies dealt with sexual behaviors. In another article published in the *Community College Journal of Research and Practice*, Habel et al. juxtaposed the rising enrollments of community colleges across the U.S. with the sparse amount of sexual and reproductive health care available for this population.<sup>30</sup> Another systematic literature review examining vaccination campaigns on college campuses did not include any campaigns conducted on community college campuses.<sup>31</sup> A significant research gap exists as it pertains to the sexual health care of the community college population. It is vital to understand the specific needs of community college students as it relates to specifically to HPV and HPV vaccination so tailored,

theory-based interventions can be developed to improve outcomes among this vulnerable population.

The objective of this scoping review is to examine the current literature on knowledge, attitudes, beliefs, and behaviors around HPV and HPV vaccination among community college students in the U.S. in order to map and describe the existing research, summarize what is known about HPV and HPV vaccination, and identify knowledge gaps in literature related to HPV/HPV vaccination to support future research efforts among community college students.

## **METHODS**

The proposed scoping review will be conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews.<sup>32</sup> A preliminary search of MEDLINE, PROSPERO, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* was conducted and no current or underway systematic reviews or scoping reviews on the topic were identified. The protocol will be developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for Scoping Reviews<sup>33</sup> and will be deposited in the University of Mississippi's open access online repository, eGrove.<sup>34</sup>

### **Eligibility Criteria**

Published research involving human subjects attending community colleges in the U.S. focusing on the examination of the knowledge, attitudes, beliefs, and behaviors around HPV and HPV vaccination will be included in this scoping review. Additionally, to be included, the article should be in the English language and available in full-text. Published abstracts without an accessible, full-text manuscript will not be included in this review because they may prohibit the collection of data needed to the answer research questions.

## **Search Strategy**

The search strategy will aim to locate published studies. An initial limited search of PubMed, Embase, PsycINFO, and CINAHL was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy. The search strategy will include Medical Subject Headings (MeSH) terms for human papillomavirus, HPV, vaccine, vaccination, students, community college, and junior college.

The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The reference list of all included sources of evidence will be screened for additional studies.

## **Study/Source of Evidence Selection**

Following the search, all identified citations will be collated and uploaded into the reference management software Zotero and duplicates removed. Following a pilot test, titles and abstracts will then be screened by two or more independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant sources will be retrieved in full and their citation details imported into Zotero. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. Reasons for exclusion of sources of evidence at full text review will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an additional reviewer/s. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a



Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.<sup>33</sup>

## **Data Extraction**

Data will be extracted from papers included in the scoping review by two or more independent reviewers using a data extraction tool developed by the reviewers. The data extracted will include the author's name and publication year; study aims; study design; community college student sample size; characteristics of the study population; study location; HPV vaccination status; HPV screening behaviors; knowledge, attitudes, beliefs, and behaviors about HPV and the HPV vaccine; and funding source. Because the aim of this review is to examine extent of current literature regarding knowledge, beliefs, and behaviors of community college students, specifically, extracted data will include a determination of whether collected data is disaggregated for community college students when multiple other college student types (traditional, four-year students; graduate students; students enrolled in health-related, professional programs) are included in the study. The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, or with an additional reviewer/s. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

## **RESULTS**

Results will be displayed in descriptive tables detailing the variables of interest. Frequency counts and percentages describing the characteristics of the participants; study design;

geographic location; and inclusion of measures of knowledge, attitudes, beliefs, and behaviors pertaining to HPV and HPV vaccination will be utilized to map the existing research, summarize what is known, and identify knowledge gaps among community college students. Insights gained through this review will provide guidance for future HPV research in the community college population.

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## **CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.

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