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Knowledge, perceptions, and predictive factors of HPV vaccination among university students

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Background. Human papillomavirus (HPV) infection is one of the most common sexually transmitted infections and is associated with a wide range of diseases. Despite the availability of effective vaccines, vaccination coverage remains suboptimal. This study aimed to assess knowledge, attitudes, and determinants of HPV vaccine uptake and vaccination intention among university students.

Materials And Methods. A cross-sectional observational study was conducted among 270 students at the University of Catania to collect sociodemographic and behavioral information and to assess participants' knowledge and attitudes toward HPV vaccination. Data were analyzed using the KNIME Analytics Platform, integrating descriptive statistics, logistic regression, and cluster analysis to identify determinants of vaccination intention and behavioral profiles.

Results. Overall, approximately two-thirds of female students had been vaccinated, compared with one-third of male students. Vaccine uptake was more common among students from medium-to-high socioeconomic backgrounds, with more than 75% of vaccinated participants coming from families in which at least one parent had completed secondary or higher education. Knowledge of the association between HPV and cervical cancer exceeded 90%, whereas awareness of HPV-related diseases other than cervical cancer was approximately 40–45%. Logistic regression identified confidence in the HPV vaccine and trust in health authorities as the strongest predictors of vaccination intention, whereas low perceived risk and reliance on natural immunity emerged as the main barriers. The model showed good predictive performance, with an accuracy of 73% and an area under the receiver operating characteristic curve (AUC) of 0.78. Cluster analysis identified three distinct student profiles: informed and supportive, informed but hesitant, and skeptical/poorly informed.

Conclusions. HPV vaccine uptake and vaccination intention were primarily influenced by trust-related factors rather than by knowledge alone. Gender- and socioeconomic-related disparities also persisted, highlighting the need for targeted interventions aimed at improving HPV vaccination coverage.

References. Li W, Jin Y, Li X, Jin M. Human papillomavirus and vaccine knowledge, willingness, and uptake among university students: a systematic review and meta-analysis. BMC Public Health. 2025;25(1):4268. Malik S, Mock KO, Martillotti R, Caravella G, Zhou X, Mbamelu M, Scarbrough KH. HPV vaccines among university students: understanding barriers and facilitators of vaccine uptake. Vaccines. 2024;12(12):1385. Tobaiqy M, Alghamdi A, Alshammari F, et al. A systematic review of human papillomavirus vaccination: challenges, barriers and strategies for improving vaccine uptake. Vaccines (Basel). 2024;12(7):746.