



The Association Between Sexual Health Literacy and HPV Risk Perception with Preventive Behaviors Among Medical Students

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ABSTRACT. Human papillomavirus (HPV) is the most prevalent sexually transmitted infection globally and a major cause of various cancers, including cervical cancer. Despite the availability of effective vaccines, HPV vaccination rates remain low, particularly among young adults in Iran. Sexual health literacy (SHL) and risk perception are critical factors influencing preventive behaviors against HPV infection. However, the specific relationship between these constructs and preventive behaviors among medical students in Iran has not been adequately investigated. This study protocol outlines a cross-sectional investigation to examine the association between sexual health literacy and HPV risk perception with preventive behaviors among students in medical, paramedical, public health, nursing, and midwifery programs at Torbat Heydariyeh University of Medical Sciences, Iran. This quantitative descriptive-analytical study will employ a cross-sectional design. A stratified random sampling method will be used to select participants from the target population. Data collection will utilize three validated instruments, the Sexual Health Literacy Questionnaire for Iranian Adults (SHELIA), a HPV Risk Perception Scale adapted from the Health Belief Model constructs, and a Preventive Behaviors Scale specifically developed for HPV. Sample size calculation was performed using Krejcie and Morgan's table, with an estimated sample of 384 participants required to achieve 80% power and a 5% margin of error. Data analysis will be conducted using SPSS version 26 and AMOS version 24, employing descriptive statistics, reliability analysis (Cronbach's alpha), construct validity assessment (confirmatory factor analysis), and hypothesis testing through structural equation modeling (SEM). This study expects to demonstrate significant positive associations between sexual health literacy and HPV risk perception with HPV preventive behaviors. The findings will provide evidence-based data to inform the development of targeted educational interventions aimed at enhancing SHL and risk perception among medical students, ultimately improving HPV prevention outcomes in this critical population who will serve as future healthcare providers © 2026 Published by Public Knowledge Project (PKP).

Keywords: sexual health literacy, HPV risk perception, preventive behaviors, medical students, cross-sectional study, Iran

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Introduction

Human papillomavirus (HPV) represents a significant public health concern globally, with approximately 80% of sexually active individuals contracting the infection at some point in their lives (World Health Organization, 2023). The virus is responsible for approximately 5% of all human cancers, including cervical, anal, oropharyngeal, and other genital cancers (de Martel et al., 2020). While effective prophylactic vaccines exist that can prevent infection from the most oncogenic HPV types, vaccination coverage remains suboptimal in many regions, including Iran (Kabir et al., 2023).

Medical students represent a unique and critical population for HPV prevention research. As future healthcare providers, their knowledge, attitudes, and behaviors regarding HPV prevention will directly influence their clinical practice and patient counseling. Additionally, their own preventive behaviors serve as important indicators of the effectiveness of current medical education regarding sexual health. Despite their professional training, studies have shown that medical students may still exhibit knowledge gaps and suboptimal preventive behaviors regarding HPV (Gheit et al., 2021).

Sexual health literacy (SHL) encompasses the cognitive and social skills that determine an individual's motivation and ability to access, understand, evaluate, and communicate information related to sexual health (World Health Organization, 2010). Risk perception, defined as an individual's subjective assessment of their vulnerability to and the severity of a health threat, has been identified as a crucial determinant of health-related behaviors (Weinstein, 1988). However, the specific relationship between SHL and HPV risk perception with preventive behaviors among Iranian medical students remains inadequately explored.

This study protocol describes a comprehensive investigation designed to address this knowledge gap by examining the association between sexual health literacy and HPV risk perception with preventive behaviors among students in medical, paramedical, public health, nursing, and midwifery programs at Torbat Heydariyeh University of Medical Sciences, Iran. The findings will provide valuable evidence to inform the development of targeted educational interventions and policy recommendations for HPV prevention in this critical population.

Methods

Study Design and Setting

This study employs a quantitative descriptive-analytical cross-sectional design. The research will be conducted at Torbat Heydariyeh University of Medical Sciences, located in the Khorasan Razavi province of Iran. The university serves as the primary center for medical education and healthcare services in the region.

Population and Sampling

The target population includes all undergraduate and graduate students enrolled in medical, paramedical, public health, nursing, and midwifery programs at Torbat Heydariyeh University of Medical Sciences during the academic year 2025-2026. Students who are not sexually active will be included in the study population, as the research focuses on preventive behaviors and attitudes rather than actual infection status.

A stratified random sampling method will be employed to ensure proportional representation from each academic program. The sample size calculation was performed using Krejcie and Morgan's (1970) table for determining sample size from a given population, with a 95% confidence level and a 5% margin of error. Based on the total student population of approximately 2,500 students across all target programs, a minimum sample size of 384 participants is required to achieve adequate statistical power (80%) for detecting moderate effect sizes in the planned analyses.

Data Collection Instruments

Three validated instruments will be used for data collection:

Sexual Health Literacy Questionnaire for Iranian Adults (SHELIA): This 40-item questionnaire measures four dimensions of sexual health literacy: access skills (8 items), reading and comprehension skills (17 items), analysis and evaluation skills (5 items), and application skills (10 items). Items are scored on a 5-point Likert scale ranging from 1 (never) to 5 (always). Total scores range from 40 to 200, with higher scores indicating better sexual health literacy. The questionnaire has demonstrated acceptable reliability (Cronbach's $\alpha = 0.87$) and validity in Iranian populations (Mohammadi et al., 2022).

HPV Risk Perception Scale: This scale was adapted from the perceived susceptibility and perceived severity constructs of the Health Belief Model. The scale consists of 8 items scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Higher scores indicate greater perceived risk of HPV infection. The scale has demonstrated acceptable reliability (Cronbach's $\alpha = 0.82$) in previous studies with Iranian university students (Delshad et al., 2023).

HPV Preventive Behaviors Scale: This 12-item scale measures engagement in specific preventive behaviors related to HPV, including vaccination intention, screening behaviors, and safe sex practices. Items are scored on a 5-point Likert scale (1 = never to 5 = always). Higher scores indicate greater engagement in preventive behaviors. The scale has demonstrated acceptable reliability (Cronbach's $\alpha = 0.79$) in previous research (Kabir et al., 2023).

Data Collection Procedure

Data collection will be conducted over a 3-month period during the academic semester. After obtaining ethical approval from the Institutional Review Board of Torbat Heydaryeh University of Medical Sciences, participants will be recruited through classroom announcements and university email systems. Interested students will be provided with detailed information about the study and asked to provide written informed consent.

Data collection will be conducted through anonymous self-administered questionnaires distributed during scheduled class times to maximize response rates. Research assistants trained in ethical data collection procedures will be present to answer questions and ensure proper completion of the instruments. The estimated time required to complete the questionnaire package is approximately 20-25 minutes.

Data Analysis Plan

Data analysis will be conducted using SPSS version 26 and AMOS version 24 statistical software packages. The analysis will proceed in the following stages:

Data Screening and Cleaning: Missing data patterns will be examined, and appropriate imputation methods will be applied if necessary. Outliers will be identified using standardized scores (z-scores) and Mahalanobis distance, with values exceeding recommended thresholds ($|z| > 3.29$, $p < 0.001$) considered for removal.

Descriptive Statistics: Frequency distributions, percentages, means, and standard deviations will be calculated for all demographic and study variables.

Reliability and Validity Assessment: Internal consistency reliability will be assessed using Cronbach's alpha coefficient for all scales. Construct validity will be evaluated through confirmatory factor analysis (CFA) for each instrument, with acceptable model fit indicated by comparative fit index (CFI) > 0.90 , Tucker-Lewis index (TLI) > 0.90 , root mean square error of approximation (RMSEA) < 0.08 , and standardized root mean square residual (SRMR) < 0.08 .

Hypothesis Testing: The primary hypotheses will be tested using structural equation modeling (SEM) to examine the direct and indirect relationships between sexual health literacy, HPV risk perception, and preventive behaviors. Model fit will be evaluated using the same indices as described for CFA. Path coefficients (B), standard errors, t-values, and p-values will be reported for all hypothesized relationships. Statistical significance will be set at $p < 0.05$.

Ethical Considerations

The study protocol has been reviewed and approved by the Institutional Review Board of Torbat Heydaryeh University of Medical Sciences. Informed consent will be obtained from all participants prior to data collection. All data will be anonymized and stored securely on password-protected computers accessible only to the research team. Participants will be informed of their right to withdraw from the study at any time without penalty. Findings will be disseminated through peer-reviewed publications and presented to university stakeholders to inform educational policy development.

Acknowledgments

The Ethics Committee (EC) ID of Torbat Heydarieh University approved the study (approval ID: [IR.THUMS.REC.1404.022](https://doi.org/10.1016/S2214-109X(19)30488-7)) for thorough review and approval. Finally, the authors express their deep gratitude to all the participants who have generously shared their time and expertise. Without their trust and invaluable contributions, this research would not be possible.

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