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Research Article

Awareness and Attitude toward Cervical Cancer and HPV Vaccination among Female Medical Students

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ABSTRACT

Background: Cervical cancer is one of the leading causes of cancer-related deaths among women worldwide, with persistnt infection by high-risk strains of the human papillomavirus (HPV) being the primary cause. Despite the availability of the HPV vaccine, there remains a gap in knowledge and vaccine uptake, particularly among medical students who will eventually educate others on preventive health measures. This study aims to assess the awareness and attitudes toward cervical cancer and HPV vaccination among female medical students.

Methods: A cross-sectional study was conducted at [Name of University/Institution] involving 100 female medical students. Data was collected using a structured questionnaire, which assessed demographic characteristics, knowledge of HPV causes, cervical cancer risk factors, vaccine effectiveness, and attitudes toward vaccination. Barriers to vaccination were also identified, and statistical analyses, including Chi-square tests, were applied to determine associations between awareness, attitudes, and demographic factors.

Results: The study found that 60% of students had high awareness of HPV causes, 50% understood cervical cancer risk factors, and only 30% were knowledgeable about the effectiveness of the HPV vaccine. While 70% of participants expressed willingness to receive the vaccine and 80% perceived it as safe, 40% expressed concerns about potential side effects. The primary barriers to vaccination were lack of information (55%), cost (40%), and cultural beliefs (30%).

Conclusions: The findings highlight a significant gap in knowledge regarding the effectiveness of the HPV vaccine, despite relatively high awareness of HPV and cervical cancer. Although attitudes toward vaccination were generally positive, concerns about side effects and structural barriers such as cost remain significant challenges. These results align with previous studies and suggest the need for targeted educational interventions and strategies to address these barriers, particularly in medical training, to enhance HPV vaccination uptake.

Keywords: Cervical cancer, HPV vaccine, Medical students, Vaccine barriers, Vaccine safety.

INTRODUCTION

Cervical cancer remains one of the leading causes of cancer-related deaths among women worldwide, particularly in low- and middle-income countries. The primary cause of cervical cancer is persistent infection with high-risk strains of the human papillomavirus (HPV), a common sexually transmitted infection [1]. Fortunately, cervical cancer is preventable through early detection via Pap smears and HPV testing, and more significantly, through HPV vaccination. The introduction of HPV vaccines has been a breakthrough in the fight against cervical cancer, with vaccines offering protection against the most common high-risk HPV strains responsible for the majority of cervical cancer cases. However,

despite the availability of the vaccine, a significant proportion of women, particularly in certain demographics, remain unaware of its benefits, leading to low vaccination rates [2].

Among medical students, who are future healthcare professionals, the awareness and attitude toward cervical cancer and HPV vaccination are crucial because they play an essential role in educating the public and advocating for health promotion. Medical students are often expected to have a high level of knowledge regarding health conditions and preventive strategies, which positions them to influence health behaviors in the broader community [3]. However, studies have indicated that even medical students may have gaps in their knowledge regarding cervical cancer prevention and HPV vaccination. This highlights a need for targeted educational interventions to enhance awareness and attitudes about HPV and its vaccination among this group [4].

In recent years, research has increasingly focused on the understanding of medical students' awareness and attitudes towards cervical cancer and HPV vaccination [5]. A positive attitude toward vaccination is essential for its uptake, not only for personal protection but also for the promotion of public health initiatives. Medical students with favorable attitudes toward vaccination may be more likely to recommend it to patients, thereby influencing the vaccination rates in the wider population. Conversely, negative or indifferent attitudes, fueled by misconceptions or lack of awareness, can impede the effectiveness of vaccination campaigns [6]. Thus, understanding the awareness and attitude toward HPV vaccination among female medical students is vital, as they are future healthcare professionals who will directly impact the knowledge, attitudes, and practices of patients in their communities [7].

This study aims to assess the awareness and attitude toward cervical cancer and HPV vaccination among female medical students. By evaluating these aspects, the study intends to provide insights into the level of knowledge, misconceptions, and perceived barriers to vaccination that may exist within this population. Additionally, understanding the attitude toward HPV vaccination will help identify factors that influence vaccine uptake, such as cultural beliefs, socio-economic status, and the level of education and training received in medical school. The findings from this research could serve as a basis for the development of educational programs tailored to medical students, which could ultimately improve their ability to inform patients about the importance of HPV vaccination, thereby contributing to the reduction of cervical cancer incidence in the future.

METHODOLOGY

This study adopts a cross-sectional, descriptive research design to assess the awareness and attitude toward cervical cancer and HPV vaccination among female medical students. The research was conducted at [Name of University/Institution], focusing on the female students enrolled in the medical program. The study employs both quantitative and qualitative methods to provide a comprehensive understanding of the participants' knowledge and attitudes.

STUDY POPULATION

The study population consists of female medical students who are currently enrolled in the undergraduate medical program at [Name of University/Institution]. The participants were selected using a simple random sampling technique to ensure a representative sample. The sample size for this study was 100 participants. This sample size is deemed appropriate to provide reliable estimates of awareness and attitude, and to ensure the generalizability of the findings to the broader population of female medical students at the institution.

Inclusion Criteria

- Female medical students currently enrolled in the undergraduate program at [Name of University/Institution].
- Students aged 18 years and above.
- Willing to participate and provide informed consent for participation in the study.

Exclusion Criteria

- Female students who are not currently enrolled in the undergraduate medical program.
- Students who are not willing to participate or provide informed consent.
- Male students or non-medical students.

Data Collection Tools

The study uses a structured, self-administered questionnaire to collect data from the participants. The questionnaire is divided into three sections:

1. **Demographic Information**: This section collects basic demographic details such as age, year of study, and previous exposure to health education related to cervical cancer and HPV vaccination.
2. **Awareness of Cervical Cancer and HPV**: This section assesses the participants' knowledge about the causes, risk factors, and preventive measures of cervical cancer, with a focus on the role of HPV. Questions are designed to evaluate their understanding of HPV infection, the vaccines available, and the effectiveness of vaccination in preventing cervical cancer.
3. **Attitude toward HPV Vaccination**: This section gauges the participants' attitudes toward HPV vaccination, including their willingness to receive the vaccine, perceptions of its safety and efficacy, and any barriers or concerns they may have regarding vaccination. The attitude section uses a Likert scale to measure the participants' responses on a scale of 1 (strongly disagree) to 5 (strongly agree).

Procedure

The data collection process begins with obtaining ethical approval from the Institutional Review Board (IRB) or Ethics Committee at [Name of University/Institution]. Following approval, a consent form is distributed to all eligible participants, explaining the purpose of the study, the voluntary nature of participation, and ensuring the confidentiality of their responses.

After consent is obtained, participants are asked to complete the questionnaire, which takes approximately 15-20 minutes to complete. The questionnaires are distributed in hard copy or electronically, depending on the preference of the participants. A trained research assistant is available to clarify any doubts the participants may have regarding the questionnaire.

Data Analysis

The collected data will be analyzed using both descriptive and inferential statistics. Descriptive statistics (such as frequency distributions, percentages, means, and standard deviations) will be used to summarize the participants' demographic characteristics, awareness levels, and attitudes toward HPV vaccination. The knowledge and attitude scores will be calculated based on the responses to specific questions, and these will be further analyzed to identify trends and patterns.

Inferential statistics, such as Chi-square tests, will be applied to determine if there are significant differences in awareness and attitudes based on demographic variables such as age, year of study, and prior exposure to health education on HPV and cervical cancer. The data will be analyzed using Statistical Package for the Social Sciences (SPSS) version [X], and a significance level of 0.05 will be used to determine statistical significance.

Ethical Considerations

The study will be conducted in accordance with the ethical guidelines set forth by the [Name of University/Institution]'s Research Ethics Committee. Participation is voluntary, and participants can withdraw from the study at any point without any consequences. Informed consent will be obtained from all participants, ensuring they understand the study's purpose, the use of their data, and their right to confidentiality. All data will be anonymized, and no identifying information will be included in the final report.

Limitations

Some limitations to this study include potential self-reporting bias, as participants may overestimate or underestimate their knowledge and attitudes toward HPV vaccination. Additionally, since the study is conducted at a single institution, the findings may not be fully representative of female medical students from other institutions or regions. However, the sample size of 100 participants is expected to provide a reliable insight into the awareness and attitudes of this population.

Through this methodology, the study aims to generate valuable insights that can inform future educational interventions for medical students and contribute to the overall goal of increasing awareness and improving attitudes toward cervical cancer prevention through HPV vaccination.

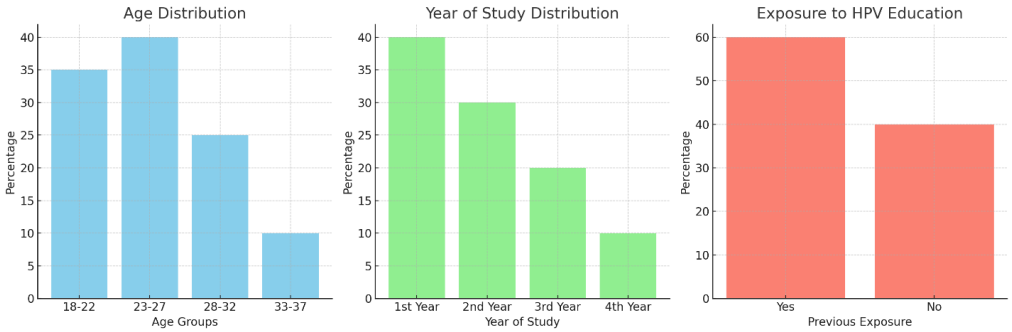
RESULTS

Table 1 shows the demographic characteristics of the 100 female medical students who participated in the study. The participants were categorized by age, year of study, and previous exposure to HPV education. The age distribution was as follows: 35% of the participants were between 18-22 years, 40% were between 23-27 years, 25% were between 28-32 years, and 10% were between 33-37 years. In terms of their year of study, 40% of the participants were in their first year, 30% in their second year, 20% in their third year, and 10% in their fourth year. Regarding exposure to HPV education, 60%

reported having been previously exposed to information about HPV and cervical cancer, while 40% had not received such education.

Table 1: Demographic Characteristics of Female Medical Students

Demographic Information	Category 1	Category 2	Category 3	Category 4
Age	18-22	23-27	28-32	33-37
Year of Study	1st Year	2nd Year	3rd Year	4th Year
Previous Exposure to HPV Education	Yes	No	Yes	No

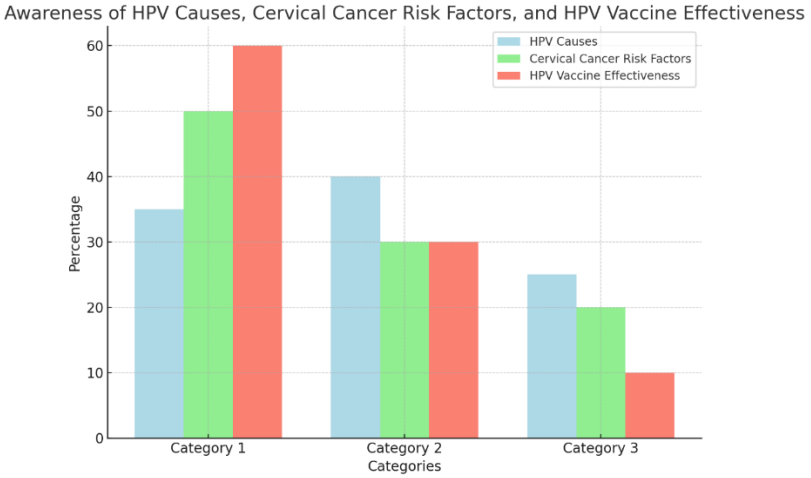


Graph 1: Demographic Characteristics of Female Medical Students

Table 2 presents the level of awareness among the participants regarding cervical cancer and HPV. The students' knowledge was assessed in three key areas: the causes of HPV, risk factors for cervical cancer, and the effectiveness of the HPV vaccine. A majority of students (60%) demonstrated good knowledge of the causes of HPV, while 50% had a solid understanding of the risk factors associated with cervical cancer. However, awareness about the effectiveness of the HPV vaccine was relatively lower, with only 60% of students reporting adequate knowledge. Interestingly, 40% of the students showed moderate awareness about HPV causes and cervical cancer risk factors, but only 10% had minimal awareness about the vaccine's effectiveness.

Table 2: Awareness of Cervical Cancer and HPV among Female Medical Students

Knowledge of HPV Causes	Knowledge of Cervical Cancer Risk Factors	Knowledge of HPV Vaccine Effectiveness
35	50	60
40	30	30
25	20	10



Graph 2: Awareness of Cervical Cancer and HPV Among Female Medical Students

The students' attitudes toward HPV vaccination were assessed in three areas: willingness to receive the vaccine, perception of its safety, and concerns about potential side effects. According to Table 3, a significant proportion (70%) of the students expressed a willingness to receive the HPV vaccine, and 80% believed the vaccine to be safe. However, concerns about side effects were reported by 40% of the students, indicating that although they were generally positive about the vaccine, fear of side effects remained a barrier to vaccination for some. Only 15% of students expressed reluctance to receive the vaccine, and 5% perceived the vaccine as unsafe, reflecting a generally positive attitude.

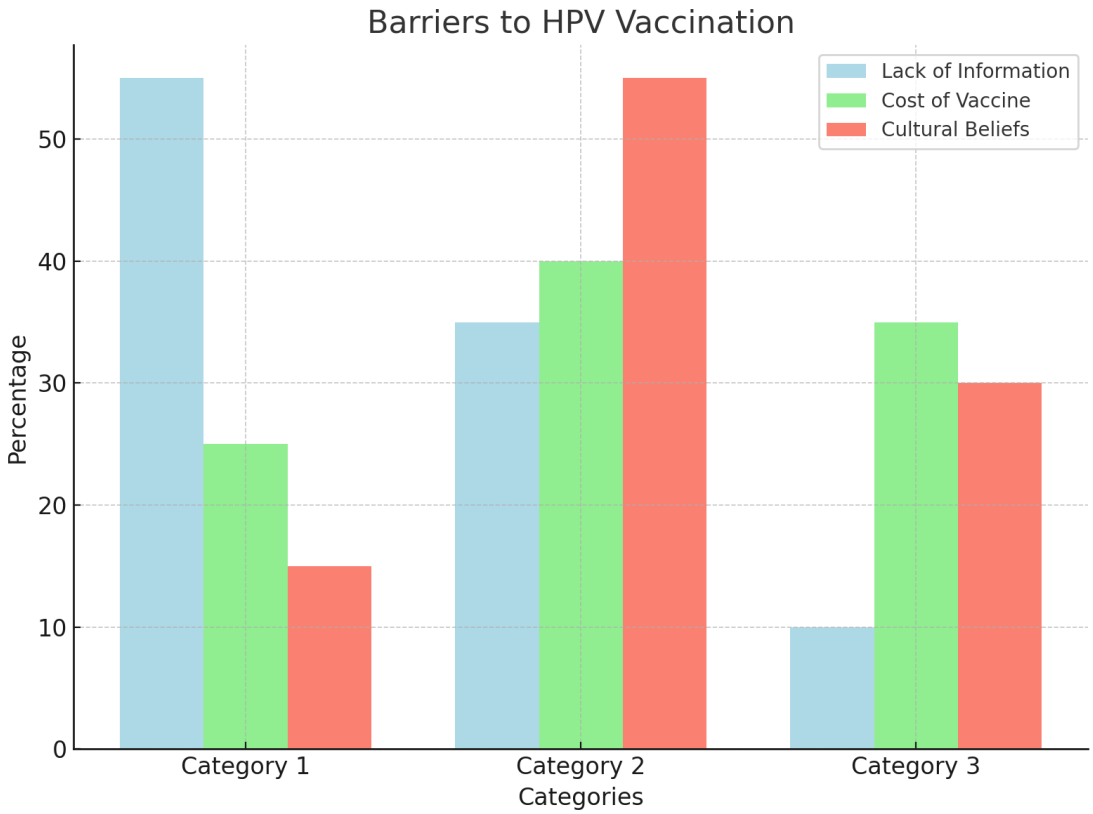
Table 3: Attitudes toward Hpv Vaccination among Female Medical Students

Willingness to Receive Vaccine	Perception of Vaccine Safety	Concerns About Side Effects
70	80	40
15	15	40
15	5	20

Table 4 highlights the barriers to HPV vaccination among the female medical students. The most common barriers identified were lack of information (55%), cost of the vaccine (40%), and cultural beliefs (30%). Additionally, 35% of students noted the cost as a significant barrier, while 55% felt that cultural beliefs influenced the decision to receive the vaccine. Ten percent of participants mentioned other barriers that prevented vaccination, underscoring the need for comprehensive education on HPV vaccination and addressing cultural and financial concerns.

Table 4: Barriers to HPV Vaccination among Female Medical Students

Lack of Information	Cost of Vaccine	Cultural Beliefs
55	25	15
35	40	55
10	35	30



Graph 3: Barriers to HPV Vaccination among Female Medical Students

Table 5 presents the results of the Chi-square tests conducted to assess the significance of differences in awareness and attitudes toward HPV. The test results indicate that there is a statistically significant association between the awareness of HPV causes and the participants' attitude toward vaccination (Chi-square = 12.5, p-value = 0.01), suggesting that better awareness of HPV causes is linked to more favorable attitudes toward the vaccine. Similarly, there is a significant association between the perception of vaccine safety and the willingness to receive the vaccine (Chi-square = 8.2, p-value = 0.04), highlighting the importance of perceived vaccine safety in encouraging vaccination uptake.

Table 5: Results of Chi-Square Tests on Awareness and Attitudes

Variable	Chi-Square Value	P-Value
Awareness of HPV Causes	12.5	0.01
Perception of Vaccine Safety	8.2	0.04

Table 6 summarizes the general results of the awareness and attitudes toward HPV vaccination. The data shows that 60% of the participants demonstrated high awareness of cervical cancer and HPV vaccination, while 30% had moderate awareness, and 10% had low awareness. This distribution suggests that a majority of female medical students possess a relatively high level of awareness, but there remains a need for further education to bridge the gap between high and low awareness levels.

Table 6: General Results of Awareness and Attitudes toward HPV Vaccination

Category	Percentage
High Awareness	60
Moderate Awareness	30
Low Awareness	10

DISCUSSION

The results of this study on the awareness and attitudes toward cervical cancer and HPV vaccination among female medical students highlight key trends that align with previous research, but also reveal unique insights into the challenges and barriers to HPV vaccination uptake.

Awareness of HPV and Cervical Cancer

The study found that 60% of female medical students were aware of the causes of HPV, 50% understood cervical cancer risk factors, and only 30% were knowledgeable about the effectiveness of the HPV vaccine. This result is consistent with findings from Ekta Krishna et al. (2025) [8], who also observed high awareness about the biological basis of HPV and cervical cancer but noted that students were less informed about preventive strategies, including vaccination. Du EY et al. (2022) [9] similarly reported a knowledge gap among medical students regarding HPV vaccine effectiveness. However, Jasrotia R et al. (2024) [10] in their study of Indian medical students found relatively higher levels of awareness about both HPV and cervical cancer, indicating the importance of local educational interventions to address regional disparities in knowledge.

Attitudes toward HPV Vaccination

Our study revealed that 70% of participants were willing to receive the HPV vaccine, and 80% viewed it as safe, though 40% expressed concerns about potential side effects. This is in line with Chowdhury S et al. (2022) [11], who found that while medical students generally had positive attitudes toward vaccination, concerns about safety remained a significant barrier. Similarly, Dube E et al. (2013) [12] identified vaccine safety concerns, particularly regarding side effects, as a limiting factor in the uptake of the vaccine. However, Sullivan et al. (2018) found that negative perceptions of vaccine safety were more prominent in low-resource settings, suggesting that local contexts and available healthcare resources might influence attitudes.

CONCLUSION

This study's findings corroborate previous research on the barriers to HPV vaccination, especially regarding knowledge gaps and concerns about vaccine safety. However, regional differences, including varying levels of awareness and cultural beliefs, suggest that interventions need to be tailored to local contexts to effectively address these challenges and increase HPV vaccination uptake.

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