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ORIGINAL ARTICLE

Assess the Knowledge and Attitude Regarding Human Papillomavirus Infection and Vaccination among Adolescent Girls of Uttar Pradesh

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ABSTRACT

Although HPV infection is a major cause of cervical cancer, adolescents in developing nations still have low levels of awareness and vaccination coverage. The current descriptive study evaluated the attitudes and knowledge of adolescent girls in Uttar Pradesh about HPV infection and vaccination. There were 240 participants in all, 52 of whom received vaccinations. Descriptive and inferential statistics, such as Pearson's correlation, were used to analyze the data. The results showed that 58.3% had a positive attitude and 52.5% had good knowledge. Increased awareness greatly increases vaccine acceptance, as evidenced by the strong positive correlation ($r = 0.89$, $p < 0.001$) that was found.

KEYWORDS: *HPV, Adolescent Girls, Vaccination, Knowledge, Attitude, Prevention of Cervical Cancer, Health Education, School-Based Awareness, Public Health.*

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INTRODUCTION

One of the most prevalent viral infections in the world and a major contributor to cervical cancer in women is human papillomavirus (HPV) infection. About 662,000 new cases and 350,000 deaths from cervical cancer were reported in 2022, making it the fourth most common cancer worldwide.[1] Cervical cancer is still a major public health issue, especially in developing nations, even though it is preventable. When widely used, the HPV vaccine, a tried-and-true preventive method, could significantly lower the incidence of cancers linked to HPV. Acceptance, availability and awareness of the vaccine are still significant barriers.[4]

In India, cervical cancer is the second highest number of new cases amongst women in the country contributing almost 20% to the global burden. Data from GLOBOCAN 2022 indicates that India annually registers >120,000 new cervical cancer cases and 77,000 deaths.[13] Barriers to vaccination There has been low knowledge about HPV, social stigma around reproductive health and inadequate integration of the HPV vaccine into routine immunization schedule leading to a limited uptake of HPV vaccine. Acknowledging this deficiency, the government of India formally endorsed the inclusion of HPV vaccination for girls 9–14 years old in its Universal Immunization Programme (UIP), with CERVAVAC being considered for large-scale immunizations.[4]

BACKGROUND OF THE STUDY

These attitudes and behaviours which are developed in adolescent stage, are also the main determinants of society attitudes towards health and disease prevention. Effective vaccination programs and educational campaigns rely on knowledge of adolescent girls' perceptions and understanding of HPV infection and vaccination. Higher knowledge levels are strongly associated with positive attitudes toward vaccination, as shown in studies in India and other countries. Yet with these findings, Indian teenagers still know surprisingly little about it, particularly in rural and semi-urban regions.[2] This study aimed to understand the awareness and attitude of adolescent girls from Uttar Pradesh in prevention against HPV and vaccination, to help India's cervical cancer elimination program.[3] Its goals were to find areas where people need more education and to promote health literacy that helps people stay healthy. [1]

AIM

To determine knowledge gaps and understand the relationship between knowledge and attitudes to enhance effective HPV prevention and vaccination strategies, this

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study aims to evaluate the attitudes and knowledge of adolescent girls in Uttar Pradesh regarding HPV infection and vaccination.

OBJECTIVE

To determine the knowledge and attitudes of adolescent girls in Uttar Pradesh about HPV infection and vaccination.

REVIEW OF LITERATURE

To determine how knowledgeable and receptive school-age girls are to the HPV vaccine, Sharma and Kaur (2021) conducted descriptive research in Delhi. According to their results, 67% of survey respondents had a favourable opinion of HPV vaccine, and 58% of respondents knew enough about it. The study demonstrated that school-based awareness initiatives may educate teenagers about cervical cancer prevention. These results are in line with the current study's finding that knowledge and attitude regarding HPV vaccination are positively correlated. In a study published in 2022, Das *et al.* examined the awareness and readiness of teenage girls in South India to receive HPV vaccination. Only 42% of them wanted to be vaccinated, although two-thirds had some knowledge if it. They argued miscommunications and parent concerns were to blame for their reticence. These findings support recent evidence which emphasised the importance of ongoing health education and awareness to counteract sociocultural stereotypes.[2] Paul *et al.* (2020), in a multicentric study conducted in India, found an obvious correlation between knowledge and acceptance of the HPV vaccine. Adolescents with more knowledge were much more likely to have a positive attitude toward vaccination. The remarkably high positive correlation of the new study ($r = 0.89$, $p < 0.001$) compares extraordinarily well with this correspondence.[6]

Wamai *et al.* (2018) explored the knowledge and attitude of Kenyan women on HPV being vaccinated. When healthcare workers have been able to share their knowledge, they found that customers are much more likely to be interested in being vaccinated.[5] This is how important community-based health education should be for every Indian at this point in time. Under World Health Organization's global strategy that started last year, 90% of people should have received the HPV vaccination by 2030.[15] The aim is to eliminate cervical cancer. This research makes the contribution to this global effort by illustrating the importance of educating Indian teens about HPV and seeking their consent for vaccine in backing up long term results.[7]

RESEARCH METHODOLOGIES

The aim of this study was to assess the knowledge and attitudes towards HPV infection and vaccination among adolescent girls in Uttar Pradesh. the population and sample sizes.[9] The study population comprised adolescent girls studying in intercollegiate institutions aged between 10 and 21 years. 52 of the 240 study participants were females who had been vaccinated against HPV.

Moral Concerns

Descriptive research was done in the adolescent girls of Uttar Pradesh to assess their knowledge and attitude towards HPV infection, vaccination. the sample size and the population size. The evaluands were primarily adolescent girls in the age range of 10–21 years that were students at intercollegiate schools. Among the 240 girls in the trial, 52 had been vaccinated previously against HPV. Participation in study: Girls attending particular schools from age 10-21. Students enrolled in the study who consented to inclusion.[10]

DATA COLLECTION

The self-administered questionnaire employed to collect data in the present study was designed following an extensive literature review and some previous research about HPV infection/vaccination. The toolkit was designed to ascertain as much information about the participants including demographic and knowledge of HPV extent, attitudes towards being vaccinated. The questionnaire consisted of three parts.

Section I included questions about, for example, age, number of years of education and family income, as well as whether or not the person had been previously vaccinated against HPV. In Section II, people were asked questions to determine their knowledge about HPV infection and how it is transmitted, what prevents them from getting infected, why they should get vaccinated against it. Part III included a self-created measure of attitude designed to identify how participants felt about getting the HPV vaccine and their opinions regarding the use of HPV vaccine in stopping cervical cancer.

A panel of 14 experts in the field did a review that ensure data accuracy, understandability and utility. The right people at the participating school and college approved data collection before commencement. The research was conducted in five intercollege of Uttar Pradesh selected from 5 cities so that the adolescent population were well represented.

The questionnaires were made available in Hindi and English to be more easily understood. The forms explained to prospective participants what the study was, what the aims were and how to keep their information confidential - and how to consent before the study began. The approach to data collection was planned and adhered to the ethical code. This ensured that anyone who participated did so willingly, and no names were revealed.

OBSERVATION AND RESULTS

Researchers investigated the knowledge and attitudes concerning HPV infection and vaccination among 240 adolescent females from selected intercollege in Uttar Pradesh.

Table 1: Distribution of Participants According to Demographic Variables.

Demographic Variable	Category	Frequency (f)	Percentage (%)
Age (Years)	10–13	98	40.83
	14–17	88	36.67
	18–21	54	22.50
Educational Status	Class 7–9	174	72.50
	Class 10–12	66	27.50
Monthly Family Income (₹)	₹15,000–₹30,000 (Poor)	45	18.75
	₹31,000–₹45,000 (Moderate)	135	56.25
	< ₹46,000 (Mild)	60	25.00

Table 2: Distribution of Participants According to Knowledge Regarding HPV.

Knowledge Level	Frequency (f)	Percentage (%)
Good Knowledge	126	52.50
Fair Knowledge	78	32.50
Poor Knowledge	36	15.00

Table 3: Distribution of Participants According to Attitude Toward HPV Vaccination.

Attitude Level	Frequency (f)	Percentage (%)
Positive Attitude	140	58.33
Moderate Attitude	97	40.41
Negative Attitude	9	3.75
Total	240	100.00

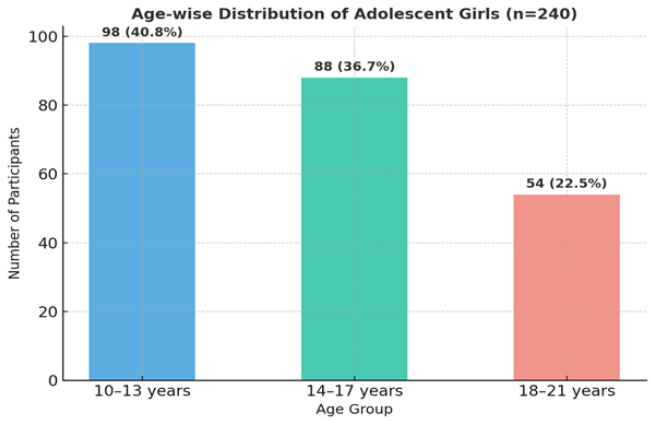

Figure 1: Age- wise distribution

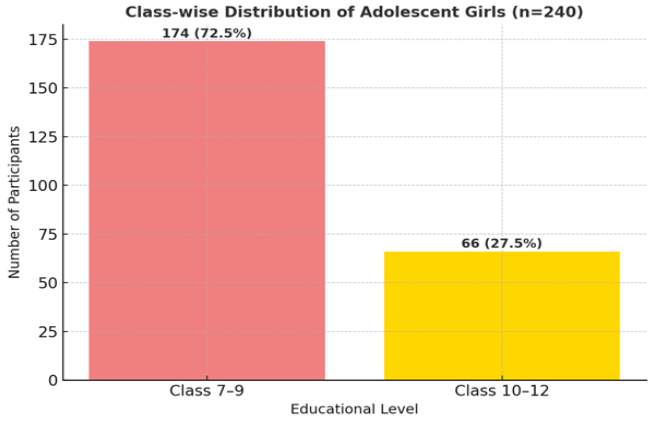

Figure 2: Class-wise distribution.

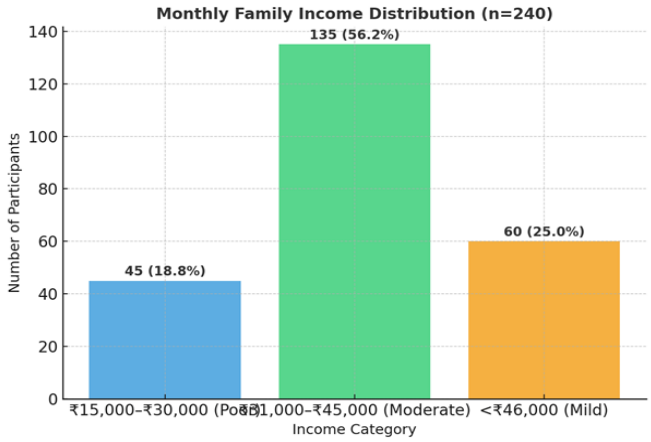

Figure 3: Monthaly income distribution.

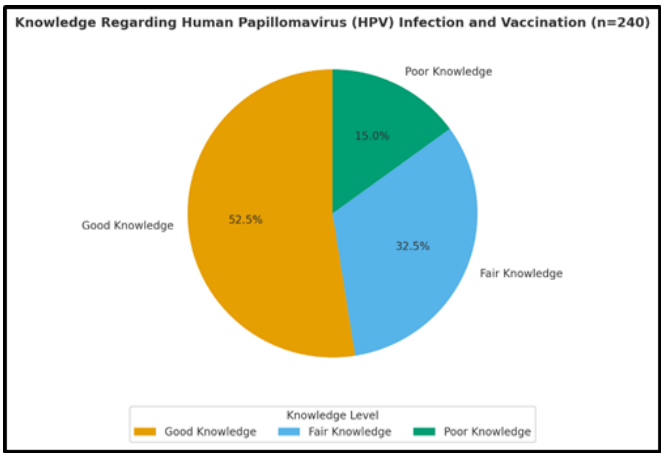

Figure 4: Knowledge -wise distribution.

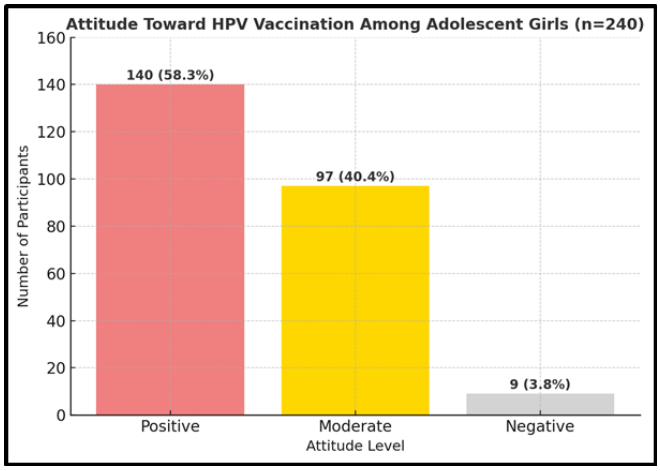

Figure 5: Attitude-wise distribution.

Demographic Factors

The demographic analysis of 240 adolescent girls from Uttar Pradesh revealed that the largest age group was 10–13 years (40.83%), succeeded by 14–17 years (36.67%) and 18–21 years (22.50%). This shows that most of the people who took part were in their early teens. This is a good time to start teaching them about HPV infection and vaccination. The majority of the respondents (72.50%) were in grades 7–9, and the rest (27.50%) were in grades 10–12. This means that most of them were probably middle school students who didn't know much about sexual and reproductive health. The socioeconomic profile showed that 18.75% of the people who took part were in the low-income group (₹15,000–₹30,000/month), 56.25% were in the middle-income group (₹31,000–₹45,000/month), and 25% were in the high-income group (below ₹46,000/month). The results indicate that the sample primarily comprised young adolescents from moderate-income families, highlighting the necessity of implementing school-based educational interventions to improve HPV awareness and vaccination acceptance.

Knowledge Regarding HPV

The survey found that 52.50% of 240 youth girls understood a lot about HPV infection and vaccination, 32.50% had some understanding, and 15.00% had little knowledge on these matters. That meant that more than half of the participants recognized that HPV was associated with cervical cancer and had been vaccinated to help prevent it. But there was much that a lot of people still didn't know about how to stop it, how it spreads or when you can get the shot. Findings suggest that school-focused structured health education and awareness campaigns are also required to support adolescent's girls to know more about HPV vaccination and able to make healthy decisions.

Attitude Towards HPV Vaccine

The study's findings revealed that 58.33% of the adolescents had a positive attitude, and 40.41% showed a moderate attitude, with only 3.75% reporting they held a negative view about receiving the HPV vaccine among 240 teenage girls in this study. Virtually all of the participants knew that getting vaccinated was the best way to protect themselves against getting HPV and cervical cancer. That means they knew it and were willing to consider it. Nonetheless, a substantial number were undecided or reluctant from ignorance and fear of discrimination, as well as societal prejudices. The relationship ($r = 0.89$, $p < 0.001$) between knowledge and attitude was positively strong, implying girls with higher levels of knowledge were more likely to have favorable beliefs on the receipt of HPV vaccine.

Association of Knowledge and Perception towards HPV Infection and Vaccination among Adolescent Girls who had Received the Vaccine (n = 52)

The association between knowledge and attitude towards Human Papillomavirus (HPV) infection and vaccination was tested in 52 adolescent girls, vaccinated hv information regarding Pearson's correlation coefficient (r). There was a strong positive relation found between level of knowledge and attitude toward HPV vaccination ($r = 0.89$, $p < 0.001$); denoting that an increase in the knowledge level affected significantly the attitude towards HPV vaccination).

Three-quarters of vaccinated individuals (n = 39) had good knowledge, whereas nearly one-fifth (17.3%, n = 9) face fair and less than one-tenth (<7.7%, n = 4) moderate level of knowledge with respect to HPV and its vaccine for prevention. Similarly, 73.1% (n = 38) of the respondents had a favourable attitude, 23.1% (n = 12) had a neutral attitude, and only 3.8% (n = 2) had an unfavourable attitude about receiving HPV vaccination. The strong statistical association suggests that increasing knowledge about HPV and its vaccine is integral to influencing positive health-related seeking behaviour. These observations underscore the need to advocate for school-based health education and adolescent-specific mass literature interventions that would enhance knowledge and perception towards HPV vaccination as one of the primary prevention strategies against cervical cancer.

STATISTICS STATICAL ANALYSIS

The gathered data were systematically organized, tabulated, and scrutinized employing both descriptive and inferential statistical techniques. Descriptive statistics, including frequency and percentage distribution were used to describe the demographic variables, knowledge levels and attitudes of teenage girls towards HPV infection/vaccination. They were also presented in tables, bar charts, and pie charts to help the data set become easier to understand and enable comparison between different results. We used Pearson's correlation coefficient (r) for inferential statistics to examine the association of knowledge and attitudes

towards HPV vaccination among those already immunized adolescent girls. A *p-value* of less than 0.05 was considered as statistically significant. All statistical analyses were performed using version 25.0 of the Statistical Package for the Social Sciences (SPSS). Results have been interpreted using correlation, frequency and percentage and findings had established meaningful conclusions on association between knowledge and attitudes towards HPV vaccination.

DISCUSSION

The findings of the study indicate that there has been an increase in learning about HPV infection and vaccination among teenage girls in Uttar Pradesh, however knowledge gap is very high, no intention for vaccine was reported. 5 of people who took it knew a lot about human papillomavirus and how to prevent acquiring an infection with the virus via vaccination. The very high and significant positive interconnection between knowledge and attitude ($r = 0.89$, $p < 0.001$) underscore the importance of educational programs. This relationship implies that greater attention is associated with a larger percentage of people who say they will get vaccinated.[9]

These results are in line with the results found in study conducted by Sharma and Kaur, 2021 where about 67% of Delhi school girls had attitude mostly for vaccination and only 58 had sufficient knowledge about HPV. They found out that school-based exposure programmes are useful in instilling good habits among girls. Das *et al.* (2022) signifies that only 42% of South India teenage girls expressed intention to receive HPV vaccine while, 64% had some knowledge about it.[3] Other barriers such as parent non-cooperation and public misconception are also evident for semi-urban and rural subjects in this study.[17]

The results are also consistent with Paul *et al.* (2020) who reported a significant association between acceptance and knowledge of HPV vaccination in Indian adolescent.[6] Their findings suggest the better informed a young person was about the vaccine, the more likely they were to hold positive attitudes – strengthening the robust relationship identified in this study. Wamai *et al.* (2018) also observed that health education interventions greatly improved Kenyan women's vaccine knowledge and willingness to vaccinate.[5] These global studies show just how powerful (or not) education can be in getting people to change their health-related behaviors and stay well.[12]

On the topic of HPV and cervical cancer, we found only 48% adolescent girls had ever heard of them in Urban Lucknow study by Agrawal and Misra (2021).[9] Low ivaccination rates were the fault of communication.in between parenu, adolescen19 and doctors, they found. The present study with a larger sample from five cities in Uttar Pradesh confirms their findings that preceeding characters such as socio-economic status and education have direct bearing on awareness and attitudes. Bhattacharjee and Banerjee (2022) among people in West Bengal, Saha and Raychaudhuri (2023) among residents of Kolkata reported that general public were to some extent aware of HPV and its vaccine on one hand; while on the other they felt the need for more information about these. That is, there are information vacuums across the nation — but not resistance.[8]

The WHO's targets for "elimination" of cervical cancer globally by 2030 set a standard that 90 percent of girls should have had all the HPV jabs they need before reaching fifteen. This study supports this goal and for the first time provides empirical evidence that successful HPV education in an academic setting is essential.[15] There's an opportunity to turn that knowledge into disease-preventing actions with "friendlier" teen health programs, involving parents more and offering better training for school nurses and teachers.[13]

The findings of the study point to a need for public education on outbreaks situations and that receiving information about HPV vaccines, would be the best way to promote access.

Addition of HPV information in schools under the school health programme and awareness creation in community through local campaign will definitely reduce the burden of cervical cancer in India.[14]

CONCLUSSION

Results indicate that adolescent girls are gaining knowledge and awareness about both HPV infection and vaccine, yet disparities in knowledge gaps and emotional responses to HPV vaccination persist. 58.3 percent said that they would be interested in receiving an HPV vaccine.[11] Furthermore, more than half of respondents (52.5%) had knowledge that HPV to be an infectious agent, was communicable and had vaccination available. To be sure, people who have more knowledge are more likely to say they're willing to get vaccinated and also available to do so.[17]

This was evidenced by a high positive correlation ($r = 0.89$, $p < 0.001$) between attitude and knowledge. However, due to sociocultural barriers, lack of health education programs in schools and limited parental support, many teenagers remain ill-informed. The findings suggest a clear need for increased health counseling among teens, education about HPV in schools and programs designed to increase awareness.[16] School nurses, teachers and community health workers all can help change minds and advocate for vaccination as a form of cervical cancer prevention. India aims to eliminate cervical cancer by 2030. The Universal Immunization Program can do this by ensuring that all, regardless of how much money they have, are able to access the HPV vaccine.[18] If you want to stop cervical cancer forever, the most effective action you can take is to give correct information to young girls.

Conflict Of Interest

The author declared no conflict of interest in this study.

Acknowledgement

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Full Form of Abbreviation

- **HPV** – Human Papillomavirus
- **r** – Pearson's Correlation Coefficient
- **p-value / p** – Probability Value
- **SPSS** – Statistical Package for the Social Sciences
- **WHO** – World Health Organization
- **et al.** – *et alia* (and others)
- **CDC** – Centers for Disease Control and Prevention
- **ICMR** – Indian Council of Medical Research
- **GLOBOCAN** – Global Cancer Observatory
- **UIP** – Universal Immunization Programme
- **r** – Pearson's Correlation Coefficient
- **p** – Probability Value (p-value)
- **₹** – Indian Rupee

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