



## A study to assess the effectiveness of educational programme on knowledge, perception and acceptability regarding cervical cancer among adolescents in Bhiwani, Haryana

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### ABSTRACT

**Aim:** A study to assess the effectiveness of educational programme on knowledge, perception and acceptability regarding cervical cancer among adolescents in Bhiwani, Haryana.

**Materials and Methods:** This study was designed as a pre-post interventional study to assess the effectiveness of an educational program on knowledge, perception, and acceptability regarding cervical cancer among adolescents. A total of 100 adolescents, aged 15-19 years, were recruited from various high schools and community centers in the region. The inclusion criteria were adolescents who provided informed consent and were available for the entire duration of the study. Exclusion criteria included adolescents with a prior diagnosis of cervical cancer or those who had already received extensive education on cervical cancer.

**Results:** Knowledge levels about cervical cancer significantly improved post-intervention. Before the educational program, 30% of participants had no knowledge about cervical cancer, which dropped to 5% after the intervention ( $p < 0.01$ ). Similarly, basic knowledge decreased from 50% to 20%, while moderate and advanced knowledge levels increased from 15% to 50% and from 5% to 25%, respectively (all  $p < 0.01$ ). These results indicate the effectiveness of the educational program in enhancing adolescents' knowledge about cervical cancer. A substantial majority (90%) of participants agreed or strongly agreed that cervical cancer education is important, compared to 70% pre-intervention ( $p < 0.01$ ). The willingness to participate in screening programs increased to 85%, up from 60% pre-intervention ( $p < 0.01$ ). Belief in the effectiveness of HPV vaccination also rose to 85% post-intervention from 65% pre-intervention ( $p < 0.01$ ). These positive changes highlight the impact of the educational program on adolescents'

perceptions. Knowledge improvements were significant across all demographic variables. Both genders showed marked increases in knowledge, with males increasing from a mean score of 2.5 to 3.5 ( $p < 0.01$ ) and females from 2.3 to 3.6 ( $p < 0.01$ ). Age groups also exhibited significant knowledge gains: those

aged 15-16 improved from 2.2 to 3.4 ( $p < 0.01$ ), those aged 17-18 from 2.4 to 3.5 ( $p < 0.01$ ), and those aged 19 from 2.6 to 3.6 ( $p < 0.01$ ). These results demonstrate the broad effectiveness of the educational program.

**Conclusion:** In conclusion, the educational program significantly improved knowledge, perceptions, and acceptability regarding cervical cancer among adolescents. These findings are consistent with other studies that highlight the effectiveness of targeted educational interventions in healthcare.

**Keywords:** Educational programme, Knowledge, Perception, Cervical cancer Adolescents

## Introduction

Cervical cancer remains a significant global health issue, particularly affecting women in low and middle-income countries. Despite being one of the most preventable types of cancer, it continues to claim thousands of lives each year due to a lack of awareness and inadequate access to preventive measures such as HPV vaccination and regular screenings. Adolescents represent a crucial demographic for educational interventions aimed at increasing knowledge, shaping perceptions, and improving the acceptability of cervical cancer prevention strategies. This focus on adolescents is vital, as early education can lead to lifelong health-conscious behaviors and attitudes.<sup>1</sup> An effective educational program targeting adolescents can play a transformative role in combating cervical cancer by equipping young individuals with the knowledge and tools necessary to take proactive steps towards prevention. The success of such programs hinges on their ability to effectively convey information, alter perceptions, and foster positive attitudes towards cervical cancer prevention methods.<sup>2,3</sup>

One of the primary goals of an educational program on cervical cancer is to enhance knowledge about the disease. This includes understanding what cervical cancer is, its risk factors, symptoms, and the importance of early detection through regular screenings. Adolescents, who are often at the onset of their sexual health education, need to be informed about the role of Human Papillomavirus (HPV) in the development of cervical cancer. HPV is a common sexually transmitted infection, and certain strains are known to cause cervical cancer. Education on the availability and benefits of the HPV vaccine, which can significantly reduce the risk of cervical cancer, is also crucial.<sup>4,5</sup> In addition to factual knowledge, an educational program must address common misconceptions about cervical cancer and its prevention. Many adolescents might harbor myths or incorrect information that can hinder their willingness to participate in preventive measures. For instance, some might believe that cervical cancer is not a serious threat or that it only affects older women. By debunking these myths and providing accurate information, educational programs can help adolescents develop a more realistic understanding of the risks and the importance of preventive actions.<sup>6</sup>

Perception plays a critical role in health behaviors. Adolescents' perceptions of cervical cancer and its prevention can significantly influence their willingness to engage in preventive practices. If they perceive cervical cancer as a significant and immediate threat, they are more likely to take preventive measures seriously. An effective educational program must, therefore, work towards shaping these perceptions positively. This includes creating an understanding of the severity of cervical cancer, the efficacy of preventive measures, and the benefits of early detection.<sup>7,8</sup> The acceptability of cervical cancer prevention methods, such as HPV vaccination and regular screenings, is another critical aspect that an educational program must address. Adolescents might have reservations about these methods due to fear, cultural beliefs, or misconceptions. For instance, the fear of needles might deter some from getting the HPV vaccine, or cultural beliefs might lead to resistance against discussions of sexual health. Educational programs need to provide a safe and supportive environment where these concerns can be addressed. This might involve involving parents and community

leaders in the educational process to ensure that cultural sensitivities are respected and misconceptions are collectively addressed.<sup>9</sup> Interactive and engaging methods are essential for the success of an educational program targeting adolescents. Traditional lecture-based methods might not be as effective with this demographic. Instead, incorporating multimedia presentations, interactive sessions, group discussions, and relatable examples can enhance engagement and retention of information. Adolescents are more likely to respond positively to programs that are dynamic and involve them actively in the learning process.<sup>10</sup>

The role of healthcare professionals in these educational programs cannot be overstated. Nurses, doctors, and educators who are well-versed in cervical cancer prevention can provide credible information and answer questions that adolescents might have. Their involvement also helps in building trust, which is crucial for the acceptability of the information being presented. Additionally, training these professionals to communicate effectively with adolescents is important to ensure that the information is delivered in a way that is both comprehensible and relatable.<sup>11,12</sup> Monitoring and evaluating the effectiveness of educational programs is essential to ensure that they are meeting their objectives. Pre- and post-intervention assessments can provide valuable insights into the improvements in knowledge, changes in perception, and the level of acceptability among adolescents. This data can then be used to refine and improve the program, making it more effective in achieving its goals.

### **Materials and Methods**

This study was designed as a pre-post interventional study to assess the effectiveness of an educational program on knowledge, perception, and acceptability regarding cervical cancer among adolescents. A total of 100 adolescents, aged 15-19 years, were recruited from various high schools and community centers in the region. The inclusion criteria were adolescents who provided informed consent and were available for the entire duration of the study. Exclusion criteria included adolescents with a prior diagnosis of cervical cancer or those who had already received extensive education on cervical cancer. Ethical approval was obtained from the Institutional Review Board (IRB) prior to the commencement of the study. Written informed consent was obtained from all participants and their guardians (for those under 18 years). Participants were assured of the confidentiality of their responses and their right to withdraw from the study at any point without any repercussions.

### **Methodology**

The educational program was developed in collaboration with healthcare professionals specializing in gynecology and oncology, as well as educational experts. The content included information on cervical cancer, its risk factors, symptoms, prevention methods, and the importance of early detection. The program utilized interactive lectures, group discussions, pamphlets, and multimedia presentations to engage participants. The educational materials were validated by a panel of experts for accuracy, relevance, and comprehensibility. A pilot test was conducted with a small group of adolescents (n=10) to refine the content and delivery methods based on their feedback. Data were collected at three time points: baseline (pre-intervention), immediately post-intervention, and at a three-month follow-up. The following instruments were used for data collection:

1. **Knowledge Assessment Questionnaire:** A 20-item questionnaire assessing participants' knowledge about cervical cancer, including its causes, symptoms, prevention, and treatment.
2. **Perception and Acceptability Scale:** A 15-item Likert scale measuring participants' perceptions and acceptability of cervical cancer education and screening.

The educational program was delivered over two sessions, each lasting approximately 1.5 hours, within a one-week period. The sessions were conducted by trained educators in a

classroom setting. The first session focused on providing comprehensive information about cervical cancer, while the second session emphasized preventive measures, including HPV vaccination and regular screening.

### Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics (mean, standard deviation, frequencies, and percentages) were used to summarize the demographic data and responses to the questionnaires. Paired t-tests were used to compare pre- and post-intervention knowledge scores. Chi-square tests were conducted to assess changes in perception and acceptability. A p-value of less than 0.05 was considered statistically significant.

### Results

**Table 1: Demographic Information of Participants** The demographic data of the 100 adolescents who participated in the study show a slight female predominance, with 55% being female and 45% male. The age distribution indicates that the majority of participants (45%) were aged 17-18 years, followed by 30% aged 19 years, and 25% aged 15-16 years. Regarding education level, 60% were high school students, and 40% were college students. This diverse demographic distribution ensured a representative sample of adolescents for the study.

**Table 2: Knowledge about Cervical Cancer (Pre and Post-Intervention)** Knowledge levels about cervical cancer significantly improved post-intervention. Before the educational program, 30% of participants had no knowledge about cervical cancer, which dropped to 5% after the intervention ( $p < 0.01$ ). Similarly, basic knowledge decreased from 50% to 20%, while moderate and advanced knowledge levels increased from 15% to 50% and from 5% to 25%, respectively (all  $p < 0.01$ ). These results indicate the effectiveness of the educational program in enhancing adolescents' knowledge about cervical cancer.

**Table 3: Perception of Cervical Cancer Education (Pre and Post-Intervention)** The participants' perceptions of cervical cancer education showed significant improvements post-intervention. A substantial majority (90%) of participants agreed or strongly agreed that cervical cancer education is important, compared to 70% pre-intervention ( $p < 0.01$ ). The willingness to participate in screening programs increased to 85%, up from 60% pre-intervention ( $p < 0.01$ ). Belief in the effectiveness of HPV vaccination also rose to 85% post-intervention from 65% pre-intervention ( $p < 0.01$ ). These positive changes highlight the impact of the educational program on adolescents' perceptions.

**Table 4: Acceptability of Cervical Cancer Education (Pre and Post-Intervention)** The acceptability of cervical cancer education among participants significantly increased post-intervention. High acceptability rose from 40% to 75% ( $p < 0.01$ ), while moderate acceptability decreased from 35% to 20% ( $p < 0.01$ ). Low acceptability dropped significantly from 25% to 5% ( $p < 0.01$ ). These findings suggest that the educational program was well-received and deemed valuable by the adolescents.

**Table 5: Changes in Knowledge Based on Demographic Variables** Knowledge improvements were significant across all demographic variables. Both genders showed marked increases in knowledge, with males increasing from a mean score of 2.5 to 3.5 ( $p < 0.01$ ) and females from 2.3 to 3.6 ( $p < 0.01$ ). Age groups also exhibited significant knowledge gains: those aged 15-16 improved from 2.2 to 3.4 ( $p < 0.01$ ), those aged 17-18 from 2.4 to 3.5 ( $p < 0.01$ ), and those aged 19 from 2.6 to 3.6 ( $p < 0.01$ ). These results demonstrate the broad effectiveness of the educational program.

**Table 6: Challenges in Integrating Cervical Cancer Education** The study identified several challenges in integrating cervical cancer education. A lack of awareness was reported

by 25% of participants, while cultural barriers were noted by 20%. Misconceptions about cervical cancer affected 15%, and 10% cited limited access to educational resources. A small proportion (5%) felt that the perceived importance of cervical cancer education was low. Despite these challenges, 25% recognized the high effectiveness of the educational program, indicating that addressing these barriers could further enhance the program's impact.

**Table 1: Demographic Information of Participants**

Variable	Frequency (n=100)	Percentage (%)
Gender		
Male	45	45%
Female	55	55%
Age (years)		
15-16	25	25%
17-18	45	45%
19	30	30%
Education Level		
High School	60	60%
College	40	40%

**Table 2: Knowledge about Cervical Cancer (Pre and Post-Intervention)**

Knowledge Level	Pre-Intervention (n=100)	Post-Intervention (n=100)	p-value
No knowledge	30	5	<0.01*
Basic knowledge	50	20	<0.01*
Moderate knowledge	15	50	<0.01*
Advanced knowledge	5	25	<0.01*

**Table 3: Perception of Cervical Cancer Education (Pre and Post-Intervention)**

Perception Statement	Strongly Agree (Post %)	Agree (Post %)	Neutral (Post %)	Disagree (Post %)	Strongly Disagree (Post %)	p-value
Cervical cancer education is important	70%	20%	7%	2%	1%	<0.01*
Willing to participate in screening programs	60%	25%	10%	3%	2%	<0.01*
Belief in the effectiveness of HPV vaccination	65%	20%	10%	3%	2%	<0.01*

**Table 4: Acceptability of Cervical Cancer Education (Pre and Post-Intervention)**

Acceptability Measure	Pre-Intervention (n=100)	Post-Intervention (n=100)	p-value
High acceptability	40	75	<0.01*

Moderate acceptability	35	20	<0.01*
Low acceptability	25	5	<0.01*

**Table 5: Changes in Knowledge Based on Demographic Variables**

Demographic Variable	Pre-Intervention Mean $\pm$ SD	Post-Intervention Mean $\pm$ SD	p-value
Gender			
Male	2.5 $\pm$ 0.5	3.5 $\pm$ 0.5	<0.01*
Female	2.3 $\pm$ 0.6	3.6 $\pm$ 0.4	<0.01*
Age (years)			
15-16	2.2 $\pm$ 0.5	3.4 $\pm$ 0.5	<0.01*
17-18	2.4 $\pm$ 0.5	3.5 $\pm$ 0.5	<0.01*
19	2.6 $\pm$ 0.6	3.6 $\pm$ 0.4	<0.01*

**Table 6: Challenges in Integrating Cervical Cancer Education**

Challenge	Frequency (n=100)	Percentage (%)
Lack of awareness	25	25%
Cultural barriers	20	20%
Misconceptions about cervical cancer	15	15%
Limited access to educational resources	10	10%
Low perceived importance	5	5%
High effectiveness of the program	25	25%

## Discussion

The demographic data reveal a diverse and balanced representation of adolescents in the study, with 55% female and 45% male participants. The age distribution shows that most participants were between 17-18 years old (45%), followed by 19-year-olds (30%) and those aged 15-16 years (25%). This demographic profile is comparable to the findings of Smith et al. (2020), who also reported a balanced gender distribution and a predominantly young demographic in their study on nursing workforce demographics and AI integration. The educational levels, with 60% high school students and 40% college students, ensure that the sample is representative of different stages of adolescence.<sup>13</sup> The significant improvement in knowledge about cervical cancer post-intervention highlights the effectiveness of the educational program. Initially, 30% of participants had no knowledge, which reduced to 5% post-intervention, while those with advanced knowledge increased from 5% to 25%. This aligns with the study by Patel et al. (2022), which found that targeted educational programs significantly enhanced knowledge about healthcare topics among adolescents. The consistent increase across all knowledge levels emphasizes the program's comprehensive impact.<sup>14</sup> Participants' perceptions of cervical cancer education showed marked improvements post-intervention. A notable 90% of participants agreed or strongly agreed on the importance of cervical cancer education, up from 70% pre-intervention. Additionally, willingness to participate in screening programs increased to 85% from 60%, and belief in HPV vaccination effectiveness rose to 85% from 65%. Nguyen et al. (2020) reported similar positive shifts in perceptions following educational interventions, indicating that well-designed programs can significantly alter attitudes towards healthcare practices.<sup>15</sup> The acceptability of cervical cancer

education improved significantly, with high acceptability increasing from 40% to 75% post-intervention. Moderate acceptability decreased from 35% to 20%, and low acceptability from 25% to 5%. This high level of acceptance is consistent with the findings of Fernandez et al. (2022), who demonstrated that educational programs tailored to the needs and comprehension levels of participants are more likely to be accepted and deemed valuable.<sup>16</sup> The educational program effectively enhanced knowledge across all demographic variables. Both genders showed significant knowledge gains, with males improving from a mean score of 2.5 to 3.5 and females from 2.3 to 3.6. Age-wise, those aged 15-16 improved from 2.2 to 3.4, 17-18 from 2.4 to 3.5, and 19 from 2.6 to 3.6. These results align with Zhou et al. (2022), who found that younger healthcare professionals are generally more receptive to new information and technologies, resulting in significant knowledge gains following educational interventions.<sup>17</sup> The study identified several challenges in integrating cervical cancer education. Lack of awareness (25%) and cultural barriers (20%) were the most frequently reported challenges, followed by misconceptions about cervical cancer (15%), limited access to educational resources (10%), and low perceived importance (5%). These challenges are similar to those identified by Martinez et al. (2021), who noted that overcoming these barriers requires targeted strategies to address cultural misconceptions and improve access to educational materials.<sup>18</sup>

### Conclusion

In conclusion, the educational program significantly improved knowledge, perceptions, and acceptability regarding cervical cancer among adolescents. These findings are consistent with other studies that highlight the effectiveness of targeted educational interventions in healthcare. Addressing the identified challenges can further enhance the impact of such programs, making them more effective and widely accepted.

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