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Research Article

Effectiveness of a Self-Instructional Module on Knowledge Regarding HPV Vaccination among Undergraduate Girls: A Pre-Experimental Study

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A B S T R A C T

Introduction and Aim: Human papillomavirus (HPV) infection is a well-established etiological factor for cervical cancer, which continues to contribute significantly to cancer-related morbidity and mortality among women in developing countries. Although HPV vaccination is an effective preventive measure, awareness regarding vaccination remains inadequate among young females. The present study aimed to evaluate the effectiveness of a self-instructional module (SIM) on knowledge regarding HPV vaccination among undergraduate girls.

Materials and Methods: A pre-experimental one-group pre-test post-test design was employed. The study was conducted among 100 undergraduate girls selected through non-probability purposive sampling from a selected college in Jalandhar, Punjab. Data were collected using a self-structured knowledge questionnaire. Following the pre-test, a self-instructional module on HPV vaccination was administered. The post-test was conducted on the third day. Data were analysed using descriptive and inferential statistics.

Results: The mean pre-test knowledge score was 13.87 ± 2.67, which increased to 22.80 ± 2.50 in the post-test, showing a mean difference of 8.93. The calculated paired t value (28.492) was statistically significant at $p < 0.001$, indicating a significant improvement in knowledge following the intervention.

Conclusion: The self-instructional module was found to be effective in significantly improving knowledge regarding HPV vaccination among undergraduate girls. Educational interventions can play a vital role in enhancing HPV vaccine awareness and supporting cervical cancer prevention.

Keywords: Human Papillomavirus, HPV Vaccination, Self-Instructional Module, Undergraduate Girls, Knowledge

Introduction

Human papillomavirus (HPV) is one of the most prevalent sexually transmitted infections worldwide and is strongly associated with the development of cervical cancer. Persistent infection with high-risk HPV types, particularly HPV-16 and HPV-18, accounts for approximately 70% of cervical cancer cases globally. Cervical cancer remains a major public health concern and is the fourth most common cancer among women worldwide, with approximately 660,000 new cases and 350,000 deaths reported in 2022.[1] In India, cervical cancer contributes significantly to cancer-related morbidity and mortality, with one woman dying from the disease approximately every 8 minutes.[2] Despite being largely preventable through HPV vaccination and regular screening, awareness and uptake of preventive measures remain inadequate, particularly among young women.

HPV vaccination has emerged as an effective primary preventive strategy against cervical cancer and other HPV-related diseases. Despite the availability of safe and effective vaccines, vaccination uptake in India remains suboptimal. Limited awareness, misconceptions, and the absence of structured educational initiatives have been identified as major barriers. Undergraduate girls constitute an important target population for HPV vaccination awareness, as early education can positively influence vaccine acceptance and long-term preventive behaviours.

Self-instructional modules (SIMs) are cost-effective educational tools that promote independent learning and have been shown to improve health-related knowledge. In this context, the present study was undertaken to assess the effectiveness of a self-instructional module in enhancing knowledge regarding HPV vaccination among undergraduate girls.

Materials And Methods

Study Design and Setting:

A quantitative pre-experimental one-group pre-test post-test design was adopted. The study was conducted at a selected undergraduate college in Jalandhar, Punjab.

Study Population and Sample:

The study population comprised undergraduate girls aged 18–26 years. A total of 100 participants were selected using non-probability purposive sampling.

Inclusion Criteria:

Undergraduate girls aged 18–26 years who were willing to participate and available during the period of data collection.

Tool and Technique:

Data were collected using a self-structured knowledge questionnaire consisting of 30 multiple-choice items related to HPV infection, transmission, prevention, and vaccination. Each correct response was awarded one mark, with a maximum possible score of 30.

The reliability of the self-structured knowledge questionnaire was established using the split- half method. Karl Pearson's correlation coefficient was computed, and the Spearman–Brown prophecy formula was applied. The reliability coefficient was found to be r = 0.70, indicating acceptable reliability of the instrument.

Intervention:

A self-instructional module on HPV vaccination was administered immediately after the pre-test.

Data Collection Procedure:

Pre-test knowledge assessment was carried out using the structured questionnaire, followed by administration of the self-instructional module. Post-test assessment was conducted on the third day using the same questionnaire.

Ethical Considerations:

Ethical approval was obtained from the Institutional Ethical Committee. Written informed consent was obtained from all participants prior to data collection.

Statistical Analysis:

Data were analysed using descriptive and inferential statistics. A paired t-test was used to assess the effectiveness of the intervention, and the chi-square test was employed to determine associations between knowledge scores and selected socio-demographic variables.

Results

A total of 100 undergraduate girls participated in the study. The majority of participants (71%) were aged 21–23 years. Most belonged to nuclear families (79%) and were unmarried (62%). Nearly half of the participants (46%) reported having prior information regarding HPV vaccination.

Pre-test Knowledge Regarding HPV Vaccination

In the pre-test assessment, the mean knowledge score regarding HPV vaccination was 13.87 ± 2.67 out of a maximum score of 30, with a mean percentage score of 46.23%. The majority of participants (70%) demonstrated below-average knowledge, while 30% had an average level of knowledge. None of the participants achieved a good knowledge score in the pre-test assessment (Table 2).

Area analysis revealed that the highest mean percentage score was observed in the domain of introduction and

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concept of HPV and cancer (60.2%), whereas the lowest score was noted in screening and transmission of HPV infections (39.0%) (Table 3).

Post-test Knowledge Regarding HPV Vaccination

Following the administration of the self-instructional module, a substantial improvement in knowledge was observed. The mean post-test knowledge score increased to 22.80 ± 2.50, with a mean percentage score of 76%. More than half of the participants (51%) attained a good level of knowledge, while the remaining 49% demonstrated an average level of knowledge. None of the participants had below-average knowledge in the post-test assessment (Table 2).

Area-wise post-test analysis showed improvement across all domains, with the highest mean percentage score recorded in introduction and concept of HPV and cancer (83.2%), followed by prevention and complications of HPV infections (76.41%) (Table 3).

Comparison of Pre-test and Post-test Knowledge Scores

Comparison of mean pre-test and post-test knowledge scores revealed a mean difference of 8.93, which was statistically highly significant ($t = 28.492$, $p < 0.001$), indicating the effectiveness of the self-instructional module in improving knowledge regarding HPV vaccination among undergraduate girls (Table 2).

Association Between Pre-test Knowledge and Socio-demographic Variables

The association between pre-test knowledge levels and selected socio-demographic variables was analysed using the Chi-square test. No statistically significant association was found between pre-test knowledge scores and variables such as age, religion, type of family, marital status, parental education, monthly family income, family history of cervical cancer, history of HPV infection, or prior exposure to information regarding HPV vaccination ($p > 0.05$) (Table 4).

Table 1.Socio-demographic characteristics of undergraduate girls

(N = 100)

Variable	Category	n	%
Age (years)	21–23	71	71.0
	24–26	29	29.0
Religion	Hindu	44	44.0
	Sikh	56	56.0
Type of family	Joint	21	21.0
	Nuclear	79	79.0
Marital status	Married	38	38.0
	Unmarried	62	62.0
Education of father	Secondary	43	43.0
	Senior secondary	57	57.0
Education of mother	Illiterate	6	6.0
	Primary	68	68.0
	Secondary	6	6.0
	Senior secondary	15	15.0
	Graduate & above	5	5.0
Monthly family income (₹)	20,001–30,000	80	80.0
	≥30,001	20	20.0
Prior information	Yes	46	46.0
	No	54	54.0

Table 2.Comparison of pre-test and post-test knowledge scores regarding HPV vaccination

Knowledge assessment	Mean ± SD	Mean (%)
Pre-test	13.87 ± 2.67	46.23
Post-test	22.80 ± 2.50	76.00
Mean difference	8.93	—

Maximum score = 30
Statistically highly significant at $p < 0.001$

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Table 3.Area-wise comparison of pre-test and post-test knowledge scores regarding HPV vaccination

(N = 100)

Area	Items	Pre-test	Post-test	t-value
Introduction & concept	5	3.01	4.16	12.582*
Risk factors & symptoms	4	1.88	3.02	13.009*
Screening & transmission	4	1.56	2.63	10.951*
Prevention & complications	17	7.41	12.99	72.761*

Maximum score = 30

Statistically significant at $p < 0.001$

Table 4.Association Between Pre-Test Knowledge And Selected Socio-Demographic Variables

(N = 100)

Variable	χ^2	p-value	Significance
Age	1.20	0.273	NS
Religion	0.10	0.751	NS
Type of family	0.128	0.720	NS
Marital status	0.49	0.483	NS
Father education	0.0017	0.967	NS
Mother education	0.37	0.984	NS
Income	0.28	0.596	NS
Family history	1.34	0.559	NS
HPV history	0.138	0.710	NS
Prior info	2.75	0.097	NS

NS = Not significant at $p > 0.05$

Discussion

The present study assessed the effectiveness of a self-instructional module in improving knowledge regarding HPV vaccination among undergraduate girls. The findings demonstrated a significant improvement in knowledge following the educational intervention, indicating the usefulness of structured educational strategies in promoting awareness of HPV vaccination.

Baseline assessment revealed that the majority of participants had inadequate knowledge regarding HPV vaccination prior to the intervention. The mean pre-test knowledge score was low, and most participants demonstrated a below-average level of knowledge. This finding highlights the existing knowledge gap among undergraduate girls, despite HPV vaccination being a well-established preventive measure against cervical cancer. Similar observations have been reported by Khan et al., who identified insufficient baseline knowledge regarding HPV infection and vaccination among healthcare personnel before educational intervention. These findings suggest that lack of awareness is a widespread issue across different populations and educational backgrounds.

Following the administration of the self-instructional module, a marked improvement in knowledge was observed. The mean post-test knowledge score increased significantly, with more than half of the participants attaining a good level of knowledge. This improvement underscores the effectiveness of self-instructional modules as a cost-effective and learner-centred educational approach. Comparable results were reported by Khan et al., who observed significantly higher post-test knowledge scores after a planned teaching programme on HPV and its vaccine.

The comparison between pre-test and post-test knowledge scores revealed a statistically significant mean difference, confirming the effectiveness of the intervention. The observed improvement in knowledge is consistent with findings reported by Banerjee et al., who demonstrated a significant increase in awareness regarding cervical cancer prevention and HPV vaccination following an educational programme. The consistency of findings across studies strengthens the evidence supporting educational interventions as an effective strategy to enhance HPV vaccine awareness.

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Analysis of the association between baseline knowledge and selected socio-demographic variables revealed no statistically significant relationship. Variables such as age, religion, type of family, marital status, parental education, family income, family history of cervical cancer, and prior exposure to information regarding HPV vaccination did not influence baseline knowledge levels. These findings are in agreement with those reported by Naregal et al., who found no significant association between socio-demographic factors and knowledge levels regarding HPV vaccination. This suggests that inadequate awareness is not confined to specific demographic groups, emphasising the need for universal educational interventions. The observed improvement in knowledge may be attributed to the structured and self-paced nature of the self-instructional module, which allows learners to assimilate information effectively according to their individual learning needs. Additionally, the clarity and simplicity of the content may have enhanced comprehension and retention.

Overall, the findings of the present study indicate that self-instructional modules are an effective educational tool for improving knowledge regarding HPV vaccination among undergraduate girls. Incorporating such educational interventions into academic settings may contribute to increased awareness, positive attitudes towards vaccination, and ultimately, prevention of cervical cancer.

Conclusion

The self-instructional module was found to be effective in improving knowledge regarding HPV vaccination among undergraduate girls. Incorporation of structured educational programmes within academic institutions may contribute to improved awareness and support cervical cancer prevention efforts.

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