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Research Article

A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme (STP) in Terms of Awareness of Female Students Regarding Human Papillomavirus (HPV) and its Vaccine in a Selected School of New Delhi

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A B S T R A C T

Introduction: Human Papillomavirus (HPV) infection can also cause a number of anogenital malignancies, including head and neck cancers as well as cancers of the anus, vulva, vagina, and penis. Around 70% of all instances of cervical cancers are caused by HPV types 16 and 18. Nowadays, HPV vaccinations that offer defence against HPV 16 and 18 infections may lower the occurrence of cervical and other anogenital malignancies.

Objective: The study aimed to assess the awareness of female students regarding HPV and its vaccine, to assess the efficacy of a Structured Teaching Programme (STP) in increasing their awareness, and to analyse the association of the awareness scores with selected demographic variables.

Method: The conceptual framework for the study was based on the CIPP model developed by Daniel Stufflebeam (1971). The study used a quantitative research strategy with a pre-experimental research design with one group pretest post-test design. A standardised questionnaire was created to test female pupils' awareness. The validity and reliability of the tool were established. Descriptive and inferential statistics were used to analyse data. Purposive sampling was used to get 130 samples.

Results: The study's findings revealed that the majority of the subjects were in the age group of 12-14 years, with 78 (60%) followed by 52 (40%) in the age group of 15-17 years, and the data showed that there was a gain in the post-test modified mean percentage in all content areas, indicating the effectiveness of structured teaching programmes. It was also shown that there is no significant relationship between pre-test and post-test awareness scores and demographic characteristics.

Conclusion: The study's findings demonstrated that structured teaching programmes were successful in improving awareness of the study subjects regarding HPV and its vaccine. Recommendations for future research were proposed for the future based on the findings.

Keywords: Awareness, Assess Effectiveness, HPV, Vaccine, Female Students

Introduction

Due to biological and gender-related differences, being male or female has a significant impact on health. Health is especially essential for women and girls since social inequality harms them in many societies. For instance, women and girls are more susceptible to acquiring HIV/ AIDS. Cervical cancer is reportedly witnessing 604,000 new cases in 2020, making it the fourth most frequent malignancy in women worldwide. In 2020, 342,000 cervical cancer deaths are anticipated, with low- and middle-income countries accounting for almost 90% of those deaths. Cervical cancer has a worldwide high mortality rate (age-standardised rate among women: 13.3% in 2020), which can be reduced through effective interventions at various life stages.[1]

Cervical cancer is mostly brought on by the Human Papillomavirus (HPV), which is vaccine-preventable. Because cervical cancer develops slowly, it can typically be detected and treated before it causes significant issues. Women between the ages of 35 and 44 are most likely to develop it. However, women over 65, particularly those who haven't been getting regular screenings, account for more than 15% of new cases.[2]

There are more than 200 related viruses in the HPV group, some of which are transmitted through oral, anal, or vaginal sex. There are two types of HPV that can be transmitted sexually: low-risk and high-risk. Most low-risk HPVs do not result in disease. Even though, a few low-risk HPV types can cause warts on or around the sexual organs, anus, mouth, or throat.[3]

According to a study by Ramamoorthy et al. on the epidemiology of HPV-related cancers in India, findings from the National Cancer Registry Program, between 2012 and 2016, 28 PBCRs in India observed 415,194 cancer occurrence cases, of which 7.5% (men: 3.3%, women: 11.8%) were across all HPV-related sites.[4] From 2012 to 2019, HBCR results suggested that 64,043 cancer cases were linked to HPV.

According to a co-relational study published in the 2020 Papillomavirus Research Journal by Gozalea1 et al.,[5] a significant decrease in the prevalence of HPV16/ 18 and closely related HPV types was found among sexually active adolescent women following the introduction of HPV vaccination in Argentina.

Fisher et al.[6] carried out a qualitative investigation on the autonomy and information needs of early-age women in the 2018 school-based Human papillomavirus vaccination program. 53 people participated and found that conversation about the HPV virus and its vaccine has the possibility of raising HPV vaccination rates, clarifying young people's healthcare rights and responsibilities, and raising their freedom in consent procedures.

According to GLOBOCAN 2020, cervical cancer is the third most frequent malignancy in India with an annual incidence of 18.3% (123,907 cases) and a fatality rate of 9.1%, according to the National Cancer Registry Program, cervical cancer is responsible for 2–29% of all cancers in women in India.[7]

According to government statistics, approximately 1,23,907 new cases of genital cancer are discovered in India each year and cervical cancer is responsible for 17% of all cancer deaths among women aged 30–69 in India. One in every ninety-five cervical cancer instances is caused by the human papillomavirus (HPV), which is communicated through sexual contact. In India, risk factors include early sexual encounters (and early marriage), many sexual partners, multiple births, smoking, poor hygiene norms, and the existence of sexually transmitted infections.[8]

Davies et al.[9] carried out a qualitative investigation in 40 Australian schools to assess the positive impact of classroom HPV vaccination on guardians' perceptions towards adolescent vaccination. All parents agreed that HPV and HPV vaccination schooling for teenagers should be provided in schools.

A six-year multicenter cohort study done by Muwonge et al.[10] showed the HPV prevalence to be 36.4%. 16 and 31 HPV types were the most prevalent (6.5%). The incidence of HPV 16 infections demonstrates the significance of HPV vaccination in India and its potential impact on women who had been exposed for two to three years was at a lower risk, possibly because they cleared more infections.

Rashid et al. carried out research on the knowledge, awareness, and attitudes of campus pupils in India pertaining to HPV, the HPV vaccine, and cervical cancer.[11] The findings show that training modules and awareness campaigns are needed to supplement the HPV vaccination programme in order to regulate cervical cancer in India.

As a result, the study was conducted to evaluate the impact of STP in terms of female students' awareness of HPV and its vaccine in a selected New Delhi school. Thus it is evident that awareness strategies need to be improved to decrease the incidence of HPV infection.

Methodology

A quantitative research approach with a pre-experimental (one group pre-test post-test) design was used for the study. The research was carried out on 130 female students (12–17 years) from classes 9th and 11th from Khadijatul Kubra Girls Public School, Joga Bai, Jamia Nagar New Delhi. The participants were selected using convenient purposive sampling technique. There were 180 female students in all sections of both classes. As per RAO soft sample size calculator, there should be 123 students out of 180 students with a 95% level of confidence and a margin of error of 5%. So the researcher included all 130 students whose

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parents had signed the consent form. The level of awareness of participants was assessed before the intervention. A structured teaching program was administered on the same day and the level of awareness was assessed after 7 days of STP using a structured awareness questionnaire.

The tool was organised in two sections:

Section I

It consists of eight items designed to collect demographic information from study participants. Age, family monthly income, source of health information, parents' education (father and mother) , parents' occupation (father and mother), ever heard of HPV, and any history of cervical cancer are among the items listed.

Section II-A

It consists of twenty items which include multiple-choice questions (MCQs). Each item has only one correct response.

Section II-B

It consists of ten items. The items are dichotomous with true or false (T/F) option

Ethical Consideration

Approval was obtained from The Jamia Hamdard Institutional Ethics Committee (JHIEC), Delhi, to conduct the study. Permission was taken from the principal of the school in which the study was conducted. Informed consent was also taken from parents/guardians of female students. Assent was not obtained from the students as the school denied it. The authority approved obtaining consent from parents.

Results

Table 1.Frequency and Percentage Distribution of Subjects by Their Demographic Characteristics

N =130

S. No.	Demographic Characteristics	Frequency (n)	Percentage (%)
1.	**Age (in years)**		
	12–14	78	60.0
	15–17	52	40.0
2.	**Family monthly income (in INR)**		
	< 20,000	5	3.9
	20,001–25,000	13	10.0
	25,001–30,000	35	26.9
	> 30,000	77	59.2
3.	**Source of health-related information**		
	Mass media	75	57.7
	Family member	38	29.2
	Health professional	11	8.5
	Peer group	4	3.1
	Teacher	2	1.5
4.	**Father's education**		
	Illiterate	10	7.7
	Primary education	11	8.5
	Secondary education	30	23.1
	Graduate	48	36.9
	Postgraduate	31	23.8
5.	**Mother's education**		
	Illiterate	18	13.9
	Primary education	25	19.2
	Secondary education	41	31.5
	Graduate	37	28.5
	Postgraduate	9	6.9
6.	**Occupation of father**		
	Labourer	1	0.8
	Private employee	42	32.3
	Self-employed	65	50.0
	Government employee	18	13.9
	Unemployed	2	1.5
	Homemaker	2	1.5
7.	**Occupation of mother**		
	Labourer	0	0.0
	Private employee	24	18.5
	Self-employed	7	5.4
	Government employee	2	1.5
	Unemployed	0	0.0
	Homemaker	97	74.6
8.	**Ever heard of HPV**		
	Yes	4	3.1
	No	126	96.9
9.	**Any history of cervical cancer**		
	Yes	0	0.0
	No	130	100.0

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Table 2.Frequency and Percentage of the Female Students by Their Level of Awareness Before and After Administering the Structured Teaching Programme on HPV and its Vaccine

N = 130

Level of Awareness	Score Range	Pre-Test		Post-Test	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Low	0–10	45	34.6	0	0
Moderate	11–20	84	64.6	0	0
High	21–30	1	0.8	130	100

Table 3.Possible Range of Score, Range of Obtained Score, Mean, Mean Difference, Standard Deviation and Z Value of Pre-Test and Post-Test Awareness Scores of Female Students Regarding HPV and its Vaccine

N = 130

Awareness Test	Possible Range of Scores	Range of Obtained Scores	Mean	Mean Difference	Standard Deviation	Z Test
Pre-test	0–30	3–21	11.9	16.9	3.8	49.71*
Post-test	0–30	24–30	28.8		1.2	

Table value of z = 1.96, *Significant at 0.05 level of significance

Table 4.Area Wise Number of Items, Mean, Modified Mean, Modified Mean Percentage, Modified Mean Percentage Gain and Rank Order of Pre- and Post-Test Awareness Scores of the Female Students regarding HPV and its Vaccines

N = 130

Areas Covered	No. of Items	Pre-test			Post-test			Modified Mean % Gain	Rank Order of Modified Mean % Gain
		Mean	Modified Mean	Modified Mean %	Mean	Modified Mean	Modified Mean %		
Female reproductive system	6	2.7	0.45	45	5.9	0.98	98	53	IV
Human papillomavirus and its transmission	8	3.2	0.40	40	7.8	0.97	97	57	II
Sign and symptoms	5	1.9	0.38	38	4.8	0.96	96	58	I
Prevention	6	2.2	0.37	37	5.7	0.95	95	58	I
HPV vaccine	5	1.8	0.36	36	4.6	0.92	92	56	III

Table 5.Fisher's Exact Test Showing Association between Selected Demographic Variables and Pre-Test Awareness Scores of Female Students

N = 130

Selected Variable	Pre-Test Awareness Scores			Fisher's Exact Test p Value
	Low	Moderate	High	
Age in years				
12–14	28	50	0	0.549
15–17	17	34	1	
Family monthly income (in INR)				
< 20,000	2	3	0	0.379
20.001–25,000	7	6	0	
25,001–30,000	12	22	1	
> 30,000	24	53	0	

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Source of health-related information				
Mass media	21	53	1	0.438
Family member	15	23	0	
Health professional	6	5	0	
Peer/ friends	2	2	0	
Teacher	1	1	0	
Father's education				
Illiterate	3	7	0	0.397
Primary education	2	8	1	
Secondary education	12	18	0	
Graduate	19	29	0	
Postgraduate	9	22	0	
Mother's education				
Illiterate	8	10	0	0.799
Primary education	7	18	0	
Secondary education	12	28	1	
Graduate	14	23	0	
Postgraduate	4	5	0	
Father's occupation				
Labourer	0	1	0	0.308
Private employee	11	31	0	
Self-employed	29	35	0	
Government employee	5	13	0	
Unemployed	0	2	0	
Homemaker	0	2	0	
Mother's occupation				
Labourer	0	0	0	0.278
Private employee	9	15	0	
Self-employed	5	2	0	
Government employee	1	1	0	
Unemployed	0	0	0	
Homemaker	30	66	1	
Ever heard of HPV				
Yes	0	4	0	0.319
No	45	80	1	
History of cervical cancer				
Yes	0	0	0	1
No	45	84	1	

p value > 0.05, not significant

The data in Table 5 shows that there was no significant relationship identified between pre-test awareness scores among female students and chosen demographic characteristics, as the resulting Fisher exact 'p' value for all of the above variables was more than the 0.05 level of significance.

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Table 6.Fisher's Exact Test Showing Association between Selected Demographic Variables and Post-Test Awareness Scores of Female Students

N = 130

Selected Variable	Post-Test Awareness Scores			Fisher's Exact Test p Value
	Low	Moderate	High	
Age (years)				
12–14	0	0	78	1
15–17	0	0	52	
Family monthly income (INR)				
< 20,000	0	0	5	1
20,001–25,000	0	0	13	
25,001–30,000	0	0	35	
> 30,000	0	0	77	
Source of health-related information				
Mass media	0	0	75	1
Family member	0	0	38	
Heath professional	0	0	11	
Peer group	0	0	4	
Teacher	0	0	2	
Father's education				
Illiterate	0	0	10	1
Primary education	0	0	11	
Secondary education	0	0	30	
Graduate	0	0	48	
Postgraduate	0	0	31	
Mother's education				
Illiterate	0	0	18	1
Primary education	0	0	25	
Secondary education	0	0	41	
Graduate	0	0	37	
Postgraduate	0	0	9	
Father's occupation				
Labourer	0	0	1	1
Private employee	0	0	42	
Self-employed	0	0	65	
Government employee	0	0	18	
Unemployed	0	0	2	
Homemaker	0	0	2	
Mother's occupation				
Labourer	0	0	0	1
Private employee	0	0	24	
Self-employed	0	0	7	
Government employee	0	0	2	

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Unemployed	0	0	0	
Homemaker	0	0	97	
Ever heard of HPV				
Yes	0	0	4	1
No	0	0	126	
Any history of cervical cancer				
Yes	0	0	0	1
No	0	0	130	

p value > 0.05, not significant

The data in Table 6 shows that there was no significant association found between post-test awareness scores among female students with selected demographic variables as the Fisher exact 'p' value of all the above variables was more than 0.05 level of significance.

Discussion

In the present study, prior to the administration of a structured teaching program, the awareness regarding HPV and its vaccine was low among 45 (34.62%) female students, moderate among 84 (64.62%) students and high for 1 (0.77%) student. After administering a structured teaching and awareness programme, all subjects (100.00%) had a high level of awareness, and none of them had a low or moderate level of awareness. Thus, the study revealed that a structured teaching program was effective in increasing the awareness of female students regarding HPV and its vaccine.

Arunachalam et al. did a descriptive study among adolescent girls to examine the knowledge and attitude regarding HPV among adolescent girls, and the results revealed that the majority of subjects (56.7%) had inadequate knowledge.[12] Only 36.7% of adolescent females had an adequate understanding of HPV, whereas only 6.6% of adolescent girls had adequate knowledge.

In a similar study, Arti and Parwej discovered that the mean pre-test knowledge score in the control group was 2.81.20, and the mean post-test knowledge score was 3.651.81.[13] The experimental group's mean pre-test knowledge score was 3.451.93, and the mean post-test knowledge score was 17.152.76. So, at the 0.05 level of significance, the mean pre and post-test knowledge scores of college ladies in the experimental group differ statistically.

The current study found no statistically significant link between female students and personal demographic factors, with a p value of 1.00, which was greater than the 0.05 level of significance. These findings were congruent with Ibrahim's study, which showed no significant relationship between demographic characteristics and individuals' post-test knowledge levels.[14]

Mary and D'Sa conducted a study on the Evaluation of an Educational Program on Cervical Cancer (EEPCC) for rural women in Mangalore, Southern India, which was similar to the current study. The data analysis revealed that the women's mean post-test knowledge score about cervical cancer was significantly higher than their mean pretest score, indicating that the EPCC was effective in improving the knowledge of rural women about cervical cancer. The association between pre-test knowledge scores and selected demographic variables was calculated using the chi-square test, which revealed that women's pre-test knowledge scores about cervical cancer were independent of all socio-demographic variables. The EPCC was found to be effective in increasing women's knowledge of cervical cancer.

Mathews conducted a study on the effect of a structured teaching programme on cervical cancer knowledge and attitudes among women aged 14 to 30 in a Maharashtra urban community.[16] The study used a quasi-experimental "one group" approach with pre-test and post-test sampling methods. The pre-test/ post-test study found significant differences in knowledge and attitude between the two tests. In the pre-test, 44% of participants had good knowledge and 60% agreed on their attitude. In the post-test, 62% of respondents had very good knowledge and strongly agreed on the attitude questions. The findings show that there is an 18% and 2% difference in knowledge Thus, the results line up with the present study.

Limitations

The study was conducted on a small population (130 female students) which limits the generalisation of findings.

Conclusion

After the introduction of STP, the post-test score showed a significant increase in awareness of female students on HPV and its vaccine. All students had a high level of awareness after the intervention, which showed that the vaccine was effective in increasing awareness among the participants regarding HPV and its vaccine.

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