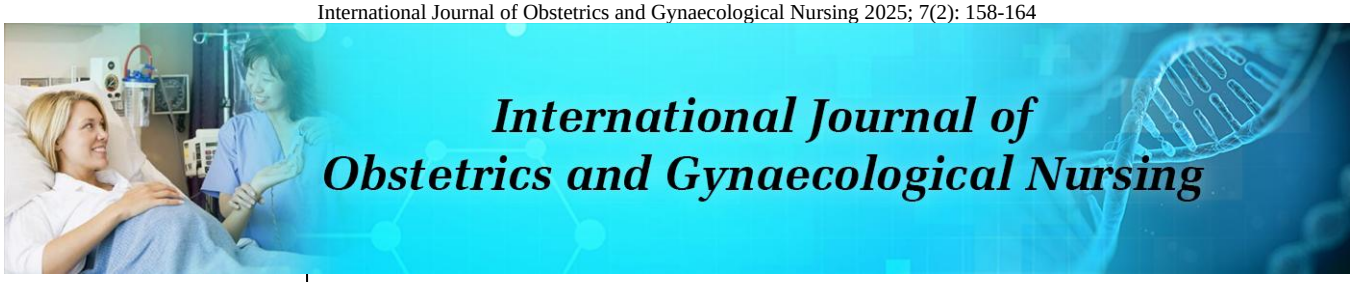

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An experimental study to evaluate the effectiveness of planned teaching programme on knowledge regarding HPV vaccination among undergraduate students of selected colleges at Bhuj- Kutch, Gujarat

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Abstract
Background: Cervical cancer is the second most common cancer in women worldwide, mainly caused by Human Papilloma Virus (HPV) the most common sexually transmitted infection, affecting about 80% of sexually active individuals. HPV is linked to cancers of the cervix, throat, mouth, anus, penis, and vagina. Prevention includes HPV testing, vaccination, and use of barrier methods.
Methodology: assess knowledge regarding HPV vaccination among undergraduate students, A Quantitative research approach with pre-experimental design one group pre-test and post-test was adopted for this study on 60 undergraduate students of selected colleges age between 17-25 years. Using non – probability purposive sampling technique. The Data were collected with a self-structured questionnaires and variable include Age, Marital status, Place of residence, Family history of any cancer, Types of lifestyle, Age of Menarche, Received HPV vaccination, and Sources of information. Following the pre-test, structured teaching programme was administered and post-test was conducted. The obtained data was analysed in terms of the objectives and hypothesis using descriptive and inferential statistics technique.
Results: Results showed that in the pre-test, only 1.67% had adequate knowledge, 13.33% moderately adequate, and 85% inadequate knowledge. In the post-test, 48.33% had adequate knowledge, 43.33% moderately adequate, and only 8.33% inadequate knowledge. The mean knowledge score increased from 6.88 (SD=4.35) to 20.13 (SD=4.83), with a mean difference of 13.25. The obtained *t* value (19.24) was statistically significant at $p<0.05$, indicating the intervention significantly improved knowledge; hence, the null hypothesis was rejected.
Conclusion: structured teaching programme helps undergraduate students to take proper knowledge regarding HPV vaccination**.**

Keywords: Evaluate, effectiveness, planned teaching programme, knowledge, HPV vaccination, undergraduate students

Introduction
"The journey of thousands of miles begins with a step."

Lao Tzu
Vaccination protects against many deadly diseases by stimulating immune responses. Human Papilloma Virus (HPV) is the most common STI and is linked to cancers of the cervix, throat, anus, penis, and vagina. HPV vaccines like Gardasil 9 are highly effective, especially when administered before exposure. WHO recommends routine HPV vaccination as part of national immunization programs, which can reduce cervical cancer deaths by up to two-thirds. Despite its effectiveness, awareness and uptake remain low, highlighting the need for education on HPV vaccination among young adults.

Objectives of the Study
- To assess the pre-test and post-test level of knowledge regarding the HPV vaccination among undergraduate students.
- To evaluate the effectiveness of the planned teaching program regarding the HPV vaccination among undergraduate students.

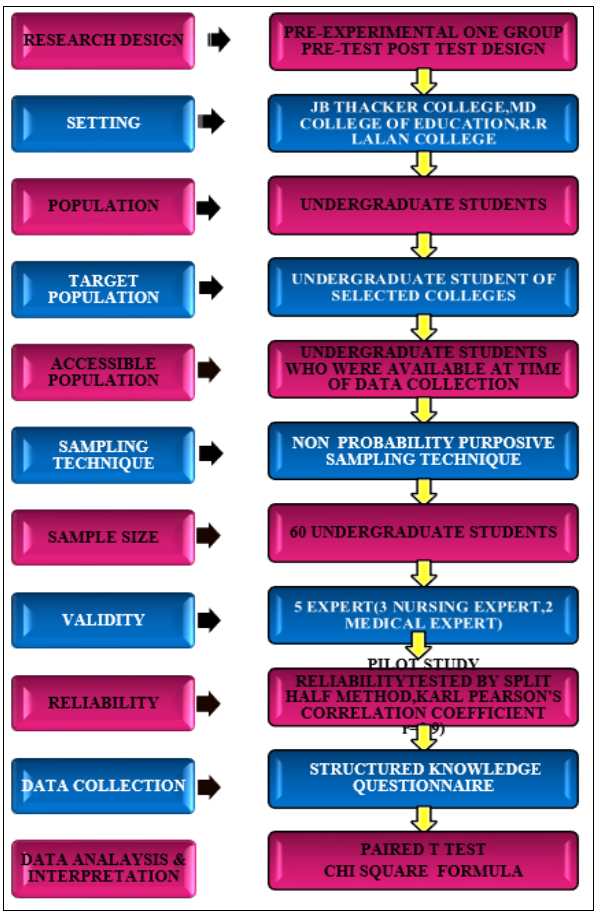
- To find the association of pre-test knowledge score with the selected demographic variables.

Hypothesis of the Study

Research Hypothesis

- **H_1**: There is a significant difference between the pre-test and post-test knowledge score regarding the HPV vaccination among undergraduate students.
- **H_2**: There is a significant association with the pre-test knowledge score regarding HPV vaccine for cervical cancer among undergraduate students and the demographic variables.

Research Method Logy



Data analysis and interpretation

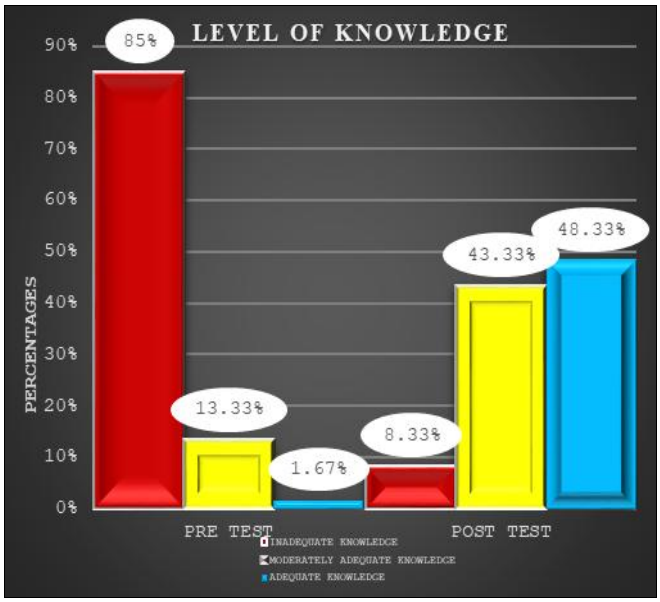
Section I (a)

Level of Knowledge

Table 1: Frequency and percentage distribution of pre-test and post-test knowledge scores regarding HPV vaccination among undergraduate students in selected colleges of Bhuj-Kutch, Gujarat. [N=60]

Sr.No.	Level Of Knowledge	Pre-test		Post-test	
		Fr.	%	Fr.	%
1	Adequate knowledge	1	1.67	29	48.33
2	Moderately adequate knowledge	8	13.33	26	43.33
3	Inadequate knowledge	51	85	5	8.33

Interpretation: During the pre-test, the majority of students, 85% (51), demonstrated inadequate knowledge. 13.33% (8) showed moderately adequate knowledge, while only 1.67% (1) had adequate knowledge. In the post-test, there was a marked improvement: 48.33% (29) of students achieved adequate knowledge, 43.33% (26) had moderately adequate knowledge, and only 8.33% (5) remained in the inadequate category [4].



Section – I (b)

Demographic Variables

Table 2: Frequency and percentage distribution of demographic variables of undergraduate students among selected colleges of Bhuj-Kutch, Gujarat. [N=60]

Sr. no.	Demographic Variables	Frequency(fr)	Percentage (%)
1	**Age**		
1.1	17-19 Years	16	26.67%
1.2	19-21 Years	40	66.67%
1.3	21-23Years	3	5%
1.4	23-25Years	1	1.67%
2	**Marital status**		
2.1	Single	56	93.33%
2.2	Married	2	3.33%
2.3	Window	1	1.67%
2.4	Divorced	1	1.67%
3	Place of Residence		
3.1	Urban	14	23.33%
3.2	Rural	46	76.67%
4	Family history of any cancer		

4.1	Yes	3	5%
4.2	No	57	95%
5	Types of lifestyle		
5.1	Sedentary lifestyle	22	36.67%
5.2	Healthy lifestyle	29	48.33%
5.3	Active lifestyle	6	10%
5.4	Unhealthy lifestyle	3	5%
6	Age of Menarche		
6.1	10-11 years	35	58.33%
6.2	11-12 years	15	25%
6.3	12-13 years	9	15%
6.4	13-14 years	1	1.67%
7	Received HPV vaccination		
7.1	Yes	4	6.67%
7.2	No	56	93.33%
8	Sources of information		
8.1	Internet media	30	50%
8.2	Print media	17	28.33%
8.3	Parents	7	11.67%
8.4	Health personnel	5	8.33%
8.5	other	1	1.67%

Graphical Presentation

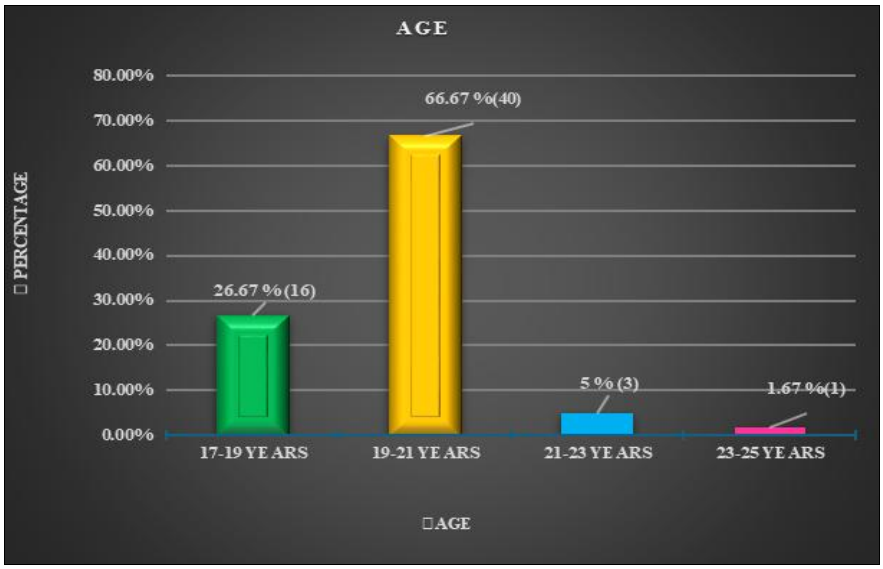


Fig 1: Age distribution of undergraduate students.

Most undergraduate students were aged 19–21 years (66.67%, 40), followed by 17–19 years (26.67%, 16), 21–23 years (5%, 3), and 23–25 years (1.67%, 1).

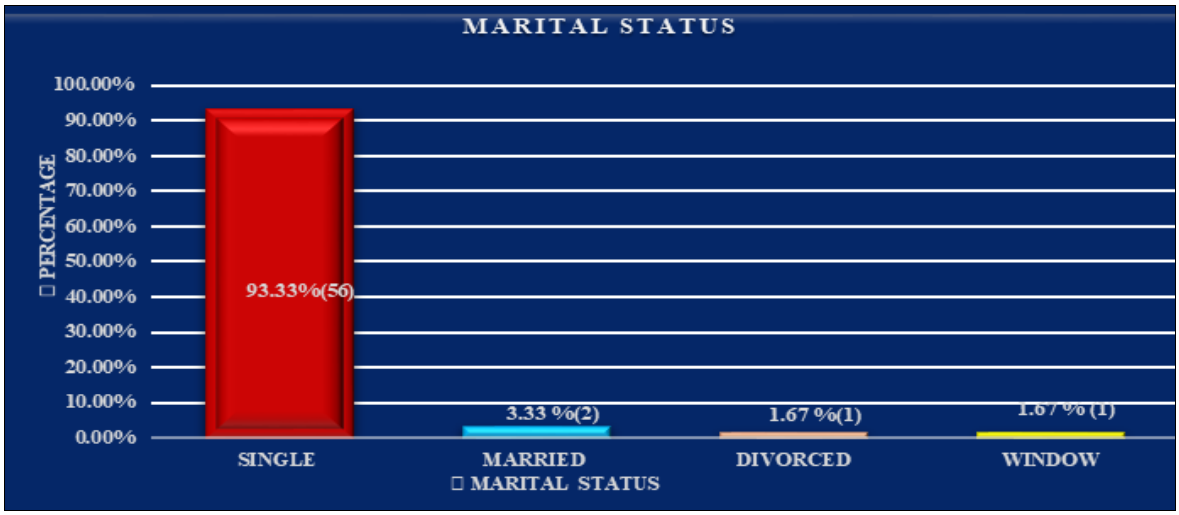


Fig 2: Marital status distribution of undergraduate students

Majority of students were single (93.33%, 56), while married (3.33%, 2), divorced (1.67%, 1), and window (1.67%, 1) were fewer.

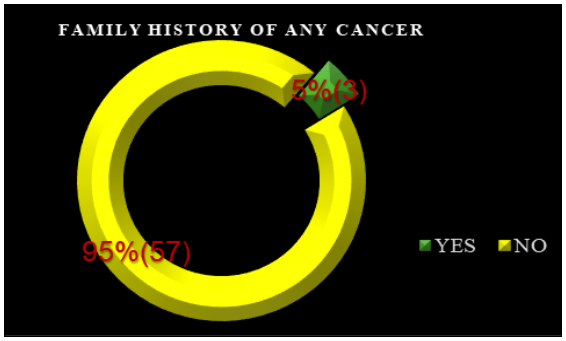


Fig 3: Family history of cancer among undergraduate students5% (3) had a family history, 95% (57) had none.

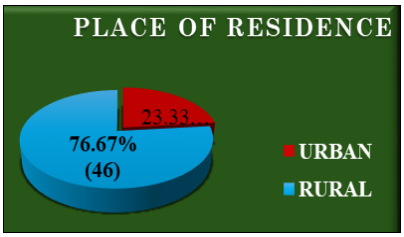


Fig 4: Place of residence of undergraduate students - Urban: 23.33% (14), Rural: 76.67% (46).

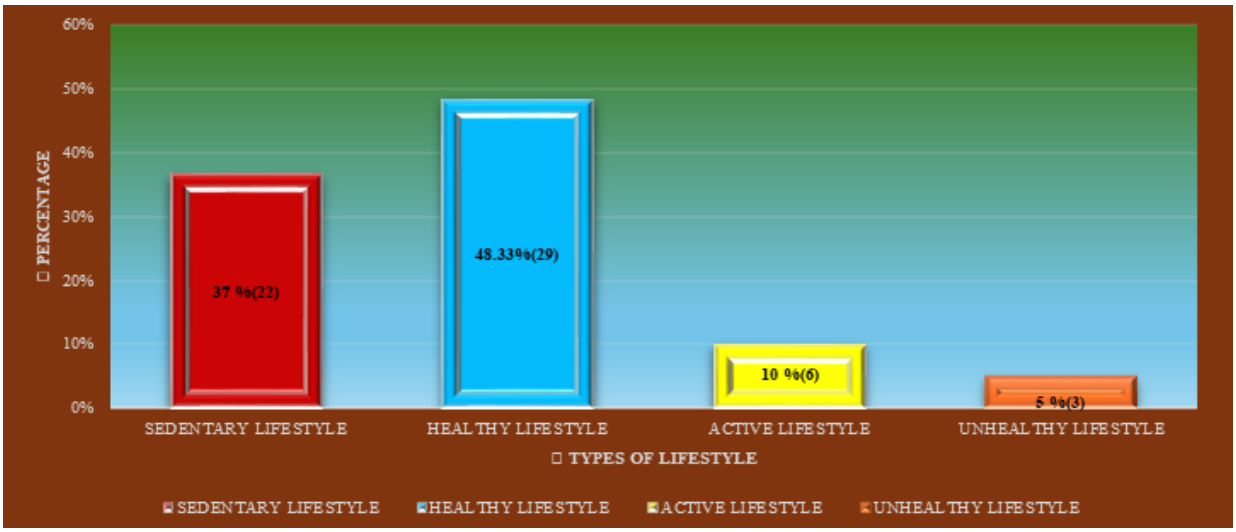


Fig 5: Types of lifestyle among undergraduate students, Sedentary: 36.67% (22), Healthy: 48.33% (29), Active: 10% (6), Unhealthy: 5% (3).

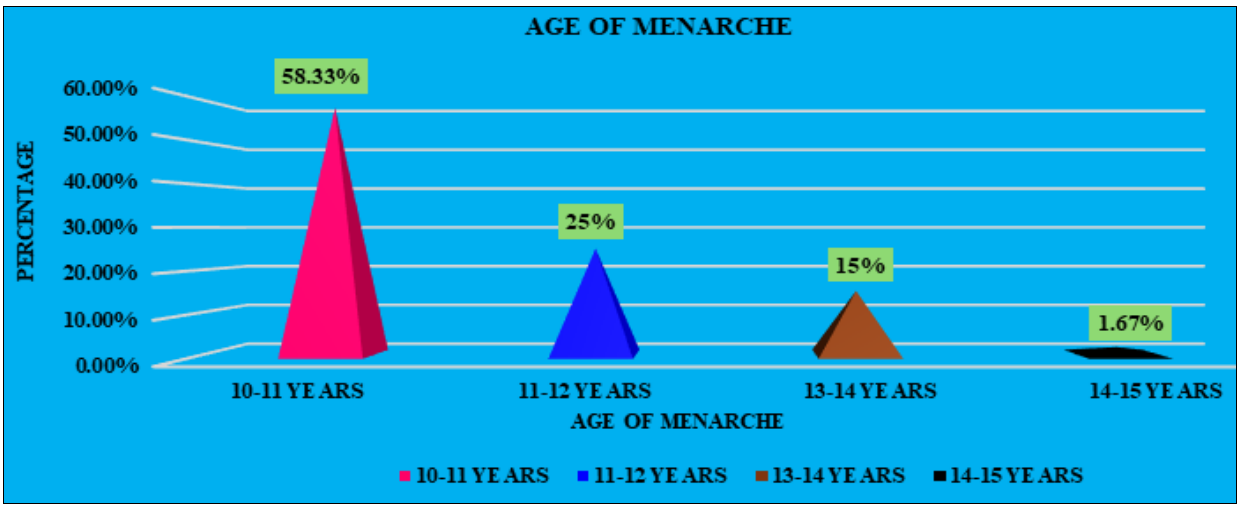


Fig 6: Age of menarche among undergraduate students, 10–11 years: 58.33% (35), 11–12 years: 25% (15), 12–13 years: 15% (9), 13–14 years: 1.67% (1).

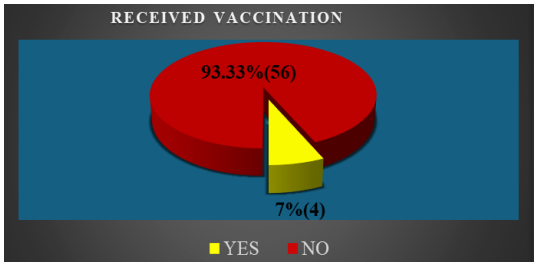


Fig 7: HPV vaccination status of undergraduate students, Not received: 93.33% (56), Received: 6.67% (4).

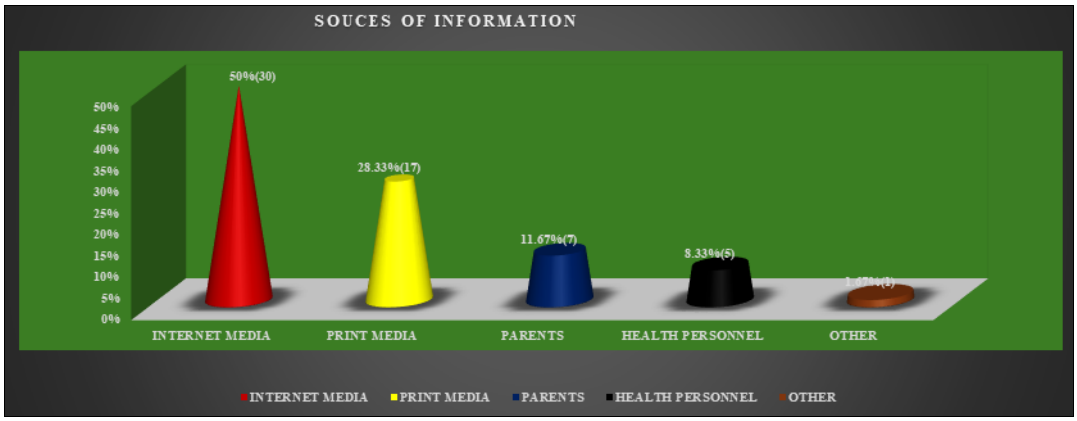


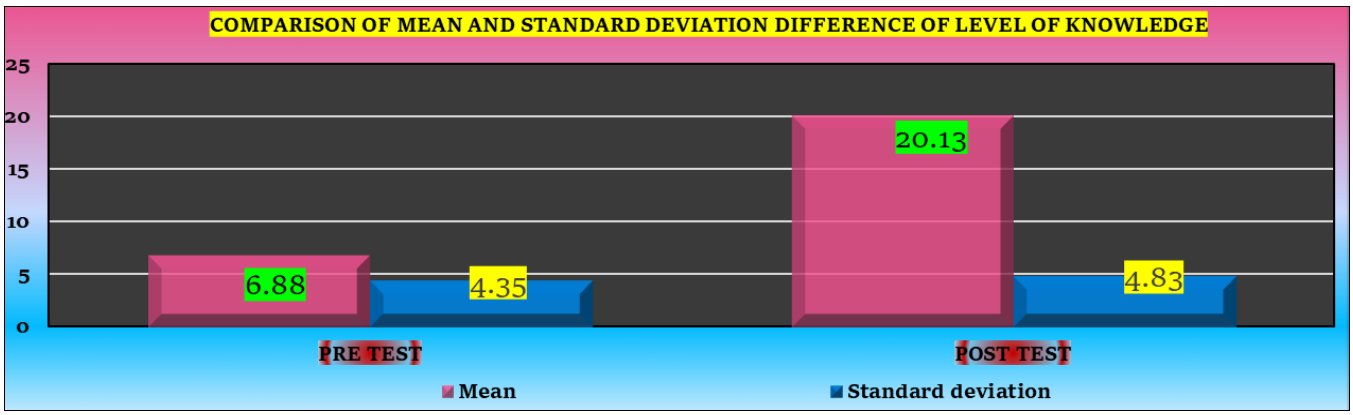
Fig 7: Sources of information among undergraduate students, Internet: 50% (30), Print media: 28.33% (17), Parents: 11.67% (7), Health personnel: 8.33% (5), Other: 1.67% (1).

Section-II

Table 3: Comparison of pre-test and post-test knowledge scores on HPV vaccination to show the effectiveness of the planned teaching program among undergraduate students in selected colleges of Bhuj-Kutch, Gujarat.

Level of knowledge	Mean	Mean difference	Sd	Value of "t"
Pre-test knowledge score	6.88	13.25	4.35	t = 19.24 df=59 p=3.46 p<0.05
Post-test knowledge score	20.13		4.83	

The pre-test mean knowledge score was 6.88 (SD = 4.35) and the post-test mean was 20.13 (SD = 4.83), with a mean difference of 13.25. The obtained *t*-value (19.24) is significant at $p<0.05$ (df = 59, table value = 3.46), indicating a significant improvement in knowledge regarding HPV vaccination among undergraduate students after the teaching programme.



Section – III

Table 4: Association Between the pre-test knowledge score regarding the HPV vaccination with their Demographic variables among undergraduate students in selected colleges. [N=60]

Sr No	Demographic Variables	Inadequate Knowledge		Moderately Adequate Knowledge		Adequate Knowledge		Chi Square x2
		Fr.	%	Fr.	%	Fr.	%	
1	**Age**							x^2 =72.05* *df = 6 p = 12.05 p<0.05*

	17-19 years	10	16.66	6	10	0	0	*Significant*
	19-21 years	39	65	1	1.67	0	0	
	21-23 years	2	3.33	1	1.67	0	0	
	23-26 years	0	0	0	0	1	1.67	
2	**Marital Status**							x^2 =72.31 * *df = 6 p= 12.59 p<0.05 Significant*
	Single	50	83.33	6	10	0	0	
	Married	0	0	2	3.33	0	0	
	Divorced	1	1.67	0	0	0	0	
	Window	0	0	0	0	1	1.67	
3	**Place of Residence**							x^2 =11.78* *df = 2, p = 5.99 p< 0.05 Significant*
	Urban	8	13.33	5	8.33	1	1.67	
	Rural	43	71.67	3	5	0	0	
4	**Family History of Any Cancer**							x^2 = 7.78* *df = 2, p = 5.99 p< 0.05 Significant*
	Yes	1	1.67	2	3.33	0	0	
	No	50	83.33	6	10	1	1.67	
5	**Types of Lifestyle**							x^2 =24.68 * *df = 6 p = 12.59 p< 0.05 Significant*
	Sedentary	36	60	0	0	0	0	
	Healthy	9	15	8	13.33	1	1.67	
	Active	4	6.67	0	0	0	0	
	Unhealthy	2	3.33	0	0	0	0	
6	**Age of Menarche**							x^2 =53.96 * *df = 6 p= 12.59 p<0.05 Significant*
	10-11 years	35	58.33	0	0	0	0	
	11-12 years	15	25	0	0	0	0	
	12-13 years	1	1.67	7	11.66	1	1.67	
	13-14 years	0	0	1	1.67	0	0	
7	**Received Vaccination**							x^2 =14.98* *df = 2, p = 5.99 p< 0.05 Significant*
	Yes	2	3.33	1	1.67	1	1.67	
	No	49	81.67	7	11.66	0	0	
8	**Sources of Information**							*x2 =31.44 * df = 8 p = 15.51 p<0.05 Significant*
	Internet	30	50	0	0	0	0	
	Print media	15	25	2	3.33	0	0	
	Parents	4	6.67	3	5	0	0	
	Health Personnel	2	3.33	2	3.33	1	1.67	
	Others	0	0	1	1.67	0	0	

Chi-square analysis showed significant associations between pre-test knowledge scores on HPV vaccination and variables such as age (χ^2=72.05, df=6), marital status (χ^2=72.31, df=6), place of residence (χ^2=11.78, df=2), family history of cancer (χ^2=7.78, df=2), type of lifestyle (χ^2=24.68, df=6), age at menarche (χ^2=53.96, df=6), received HPV vaccine (χ^2=14.98, df=2), and sources of information (χ^2=31.44, df=8), all significant at p<0.05. Since calculated χ^2 values were higher than the table values, the null hypothesis was rejected, confirming significant associations.

Discussion

5.1 Major Findings of the Study

Demographic variable

"Among the participants, 26.67% (16 students) were aged 17–19 years. Most students (93.33%, n = 56) were unmarried, and 76.67% (46 students) resided in rural areas. Additionally, 95% (57 students) reported no family history of cancer, while nearly half (48.33%, 29 students) followed healthy lifestyle practices. Menarche occurred between 10–11 years for 58.33% (35 students) of participants, and 93.33% (56 students) had not received HPV vaccination. The internet served as the main source of information for 50% (30 students) of students."

Level of knowledge

The study results indicate a remarkable improvement in knowledge levels following the planned teaching programme. In the pre-test, only 1.67% (1) of undergraduate students had adequate knowledge, 13.33% (8) had moderately adequate knowledge, and the majority, 85% (51), had inadequate knowledge regarding HPV vaccination. In contrast, the post-test findings reveal that 48.33% (29) of students achieved adequate knowledge, 43.33% (26) demonstrated moderately adequate knowledge, and only 8.33% (5) remained in the inadequate category. This substantial shift in knowledge levels demonstrates the effectiveness of the planned teaching programme in enhancing awareness among the participants. The results also successfully address and satisfy the first objective of the study, which aimed to assess knowledge of undergraduate students on HPV vaccination.

Effectiveness of Planned Teaching Programme on pre-test and post-test knowledge score regarding the HPV Vaccination.

The study results indicate a considerable improvement in knowledge scores after the intervention. The mean pre-test score was 6.88 (SD = 4.35), while the mean post-test score increased to 20.13 (SD = 4.83). The mean difference of 13.25 clearly demonstrates a marked enhancement in the participants' knowledge regarding HPV vaccination after receiving the planned teaching programme. The obtained t-value (t = 19.24) was found to be **s**tatistically significant at p<0.05 level (df = 59, table value = 3.46), which indicates that the improvement in knowledge was not due to chance but as a direct result of the educational intervention. These findings confirm the effectiveness of the planned teaching programme in increasing awareness and understanding among the participants.

Association between the pre-test knowledge score with demographic variable

There was a significant association between the pre-test knowledge score and various demographic variables. The highest association was observed with marital status (χ^2 = 72.31) and age (χ^2 = 72.05), indicating that both factors play a crucial role in influencing awareness levels. Similarly, variables such as age of menarche (χ^2 = 53.96) and sources of information (χ^2 = 31.44) also demonstrated a strong relationship, suggesting that early biological factors and the mode of information delivery significantly affect knowledge regarding HPV vaccination. Place of residence (χ^2 = 11.78), types of lifestyle (χ^2 = 12.59), and family history of any cancer (χ^2 = 7.78) showed a moderate association, reflecting the role of environmental and hereditary factors. Additionally, received vaccination of HPV (χ^2 = 14.98) revealed that prior exposure to vaccination campaigns contributes to better knowledge scores. These findings highlight the importance of tailoring educational interventions according to specific demographic factors to enhance awareness effectively.

Further Recommendation

- Conduct similar studies with larger samples to generalize findings among undergraduate students.
- Undertake descriptive and cross-sectional studies to assess knowledge and preventive practices across different age groups, including adolescents and young adults.
- Perform comparative studies across colleges to evaluate knowledge and attitudes regarding HPV vaccination.
- Implement structured teaching programs to improve awareness and understanding of HPV vaccination.
- Carry out longitudinal studies to examine long-term effects of educational interventions on knowledge retention and vaccine uptake.
- Explore barriers and facilitators affecting HPV vaccine acceptance among students, parents, teachers, and guardians.
- Conduct community-based studies to assess perceptions and acceptance of HPV vaccination, emphasizing the role of parents and guardians in adolescent health decisions.
- Integrate HPV-related health education into school and college curricula in collaboration with health authorities to enhance awareness and preventive practices.

Conclusion

The present study aimed to evaluate undergraduate students' knowledge of HPV vaccination in selected colleges of Bhuj–Kutch, Gujarat. The pre-test results indicated limited awareness among students, underscoring the need for structured educational interventions. Following the implementation of the planned teaching program, post-test scores showed a marked improvement, demonstrating the effectiveness of the intervention. These results suggest that the teaching program was both practical and successful in bridging the knowledge gap. The study highlights the importance of ongoing health education for young adults, who are key to preventing HPV-related diseases. Additionally, this approach can be adapted as a model for similar educational initiatives in other regions to enhance awareness and vaccination uptake.

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Not available

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

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