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Study on Awareness, Knowledge, Attitude, and Practice Related to HPV Vaccination among Healthcare Workers

Sunitha V*, Revathy TG, Logeswari BM, Nithya R
Department of Obstetrics and Gynaecology, Sree Balaji Medical College and Hospital, Chennai, India

Abstract

In India, cervical cancer is the second most diagnosed cancer in women. The World Health Organization (WHO) has set ambitious goals known as the 90-70-90 targets to eliminate cervical cancer: achieving 90% HPV vaccination coverage, ensuring 70% of eligible women undergo screening twice their lifetime, and providing treatment for 90% of women diagnosed with invasive and pre-invasive cancer. This study aims to assess awareness levels, evaluate knowledge, and explore current practices regarding HPV vaccination. This cross-sectional study employed an exploratory questionnaire-based survey among 200 healthcare workers at Sree Balaji Medical College and Hospital. There is a significant association ($p = 0.002$) between the type of healthcare worker [clinical (90%) vs. non-clinical (70%)] and their awareness of HPV vaccination. Clinical workers (85%) exhibit a significantly higher positive attitude($p<0.01$) compared to non-clinical workers (60%). The chi-square analysis indicates a significant difference ($p<0.001$) in the practice of regularly recommending or administering HPV vaccination between clinical (70%) and non-clinical (30%) healthcare workers. There is a significant association ($p < 0.001$) between Clinical workers who are likely to possess high knowledge (70%) about HPV and its vaccination compared to non-clinical workers, who predominantly fall into the moderate (52%) or low knowledge (48%) categories. The findings underscore significant knowledge gaps, emphasizing the need for improved counselling on HPV vaccination targets.

Keywords: *Cervical Cancer, HPV Vaccine, HPV Virus.*

Introduction

The second most frequent cancer in Indian women is cervical cancer, which contributes to the global health issue [1]. HPV, the main cause of this malignancy, has also been associated with a range of disorders in both sexes, including precancerous lesions that could become cancer. Healthcare professionals have a critical role in raising knowledge about cervical cancer and acting as vital linkages between communities and healthcare systems. Cervical cancer can be prevented quite well, yet it nevertheless contributes significantly to disease and death in women globally [2]. HIV-positive women have a six-fold higher risk of cervical cancer. This illness causes 20% of maternal cancer fatalities worldwide, disproportionately in younger mothers [3]. Due to differences in access to immunization, screening, and treatment facilities, the burden of cervical cancer is more severe in areas like sub-Saharan Africa, Central America, and Southeast Asia. Poverty and gender prejudices are two socioeconomic factors that aggravate these inequities [4].

Precancerous and cancerous cervical lesions are generally caused by human papillomavirus (HPV) infection, which is primarily spread through sexual contact [5]. Cervarix and Gardasil 9 are two effective HPV vaccines that have shown strong efficacy in preventing

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****Corresponding Author: sunithavarun27@gmail.com***

malignancies associated with HPV [6]. The Indian Academy of Pediatrics recommends these vaccines for females starting as young as nine years old and up to age 26 [7]. Reaching broad vaccination coverage is crucial for creating herd immunity, lowering overall illness rates, and protecting individuals as well. [8]. According to the National Rural Health Mission in India, Accredited Social Health Activists (ASHA workers) are vital advocates for encouraging women to get screened for cervical cancer. This program is a component of the 2016 Operational Framework for Cancer Screening [9].

The Global Strategy for Cervical Cancer Elimination was adopted by the WHO in August 2020 due to the global issue of HPV-related malignancies. They demanded three initiatives to be taken globally to meet the goals by 2030. The aim is to achieve a 90% vaccination rate among girls by the age of 15 through inclusion in the National Immunization Programs (NIP). The NIP is expected to launch in early 2025, according to plans made by the Indian government. By the time they are 35 and 45 years old, 70% of women are to have had high-performance testing. Treatment for 90% of pre-cancer women and effective management for 90% of invasive cancer women are the goals. (WHO HPV vaccine position document, Weekly Epidemiological Record No. 50, 2022, 97, 645–67)

AIM- To examine the awareness, knowledge, attitude, and practices related to HPV vaccination among healthcare workers.

Objectives:

1. Assess the levels of awareness regarding HPV vaccination among healthcare workers.
2. Evaluate their understanding of HPV and its vaccination.
3. Explore the current attitudes towards HPV vaccination.

Materials and Methods

Study Design - Cross-Sectional, Comparative Study

Duration- January to March 2024

Study place - Sree Balaji Medical College And Hospital, Chennai, Tamil Nadu.

Participants – healthcare workers

Sample size calculation

$n = Z^2 p q / d^2$

Z is Normal variate = 1.96

p = prevalence rate = 50%

q=1-p

d is clinical" difference = 7

n = 3.84 x 50 x 50 / 49

=195 samples however 200 samples are required.

100 samples were recruited from clinical participants and 100 from non-clinical participants

Sampling Methods: Convenient Sampling

Study participants: Regardless of cervical cancer screening history, 200 physicians, nurses, allied health workers, assistants, and administrative staff volunteered for the research.

Study tool – Predesigned pretested questionnaire

Data collection tool: A structured questionnaire that was intended to collect data on sociodemographic traits, awareness, knowledge, attitudes, and practices related to HPV vaccination was used to collect the data. Written informed consent was provided by each participant following a detailed description of the study's goals, possible advantages, and confidentiality protocols. The principal investigator meticulously reviewed all collected data, ensuring accuracy by identifying and rectifying any errors.

After completion, the surveys were combined and standardized in Microsoft Excel. To summarize the data, descriptive statistics were calculated and shown as percentages.

Analytical statistics were then applied to investigate correlations and uncover insights

into participants' knowledge and attitudes regarding HPV vaccination.

The study specifically included healthcare workers associated with Sree Balaji Medical College and Hospital, conducting research between January and March 2024. Participants who declined to take part in the study were excluded from the research population.

The purpose of the research is to evaluate healthcare personnel's attitudes and vaccination practices about HPV vaccination, as well as their awareness and understanding of HPV infection and vaccine. With a better understanding of these characteristics, we can spot gaps and create focused interventions to increase HPV vaccination uptake and, eventually, lower the incidence of diseases associated with HPV.

Statistical methods – data collected were entered and analyzed in SPSS version 26. variables were analyzed as the number and percentage of healthcare workers. A chi-square test was performed for statistical significance association among variables. If any value of $p<0.05$ statistical association has been considered significant.

Inclusion Criteria

The research project covered healthcare personnel at Sree Balaji Medical College and Hospital from January to March of 2024.

Exclusion Criteria

Healthcare workers not willing to participate were excluded from the study.

Results

There is a significant association ($p=0.002$) between the type of healthcare worker [clinical (90%) vs. non-clinical (70%)] and their awareness of HPV vaccination [Table 8]. Clinical workers (85%) exhibit a significantly higher positive attitude ($p<0.01$) compared to non-clinical workers (60%) [table 9]. The results of the chi-square analysis show that there is a substantial difference (9, $p<0.001$) between clinical (70%) and non-clinical (30%) healthcare providers in terms of their routine recommendations or administrations of HPV vaccinations [Table 10]. There is a significant association ($p<0.001$) [Table 11] between clinical workers who are likely to possess high knowledge (70%) about HPV and its vaccination compared to non-clinical workers, who predominantly fall into the moderate (52%) or low knowledge (48%) categories [figure 12].

A survey was conducted involving a diverse group of participants categorized by sex, education level, and age. Two hundred healthcare workers, fifty-five per cent female and forty-five per cent male [Figure 1], were split evenly between clinical and non-clinical groups for the survey [Figure 2]. Three age categories were created from the participants' additional stratification: 20–30 years (40%), 30–40 years (33%), and 40 and above (28%) [Table 1].

Table 1. Age Distribution of Patients

Age	Participant	In Percentage
20-30	80	40%
30-40	65	33%
40 and Above	55	28%

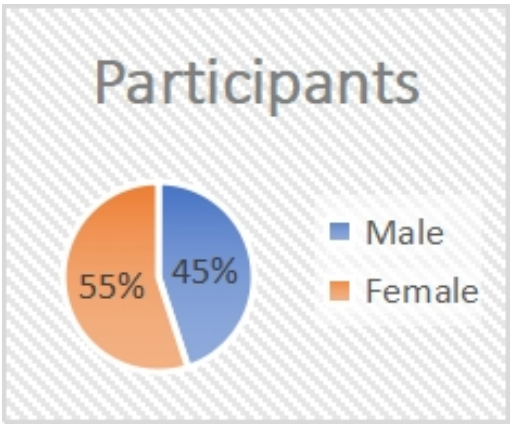

Figure 1. Participants Gender Distribution

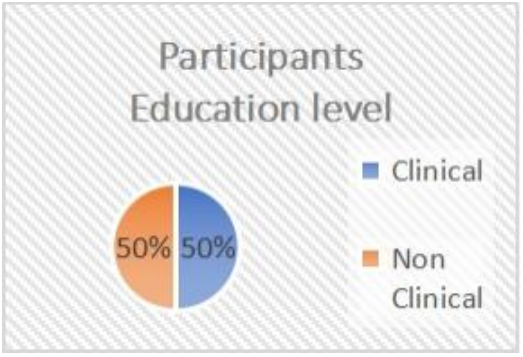

Figure 2. Participants Education Level Classification

Knowledge about HPV Infection

A P-value of 0.02 indicates a significant knowledge gap between non-clinical (42%) and clinical staff (68%) on HPV infectivity in both genders [Table 2]. Healthcare professionals who work in clinical settings (89%) are considerably more aware than those who work in non-clinical settings (61%) that HPV is a sexually transmitted infection (STI), with a statistically significant difference (p = 0.01) [Table 2]. Significant knowledge gaps between non-clinical workers (48%) and clinical staff (61%) [Figure 3] regarding HPV-related genital malignancies other than cervical cancer are evident, with a P-value of 0.01 [Table 2]. Regarding the knowledge that HPV can cause abnormal cervical smears and cancer in women, there is a significant difference (p=0.02) between non-clinical healthcare workers (54%) and clinical healthcare workers (58%) [figure 3]. The significant differences in knowledge between non-clinical and clinical healthcare workers (all p-values≤0.02) [Table 2] underscore the need for targeted educational efforts to enhance HPV-related knowledge among all healthcare professionals.

Table 2. Comparison of Knowledge about HPV Infection

Knowledge about HPV Infection	**Yes (Non-clinical)**	**Yes (Clinical)**	**Yes Total**	**P-value**
Is HPV a STI	61%	89%	75%	0.01
Is HPV common in India	62%	88%	75%	0.01

Are Both men and women infected	42%	68%	55%	0.02
Does Inappropriate sexual relations increase the risk of HPV infection	61%	78%	70%	0.01
Is HPV mostly asymptomatic	42%	52%	47%	0.01
Is there any treatment for HPV infection	50%	70%	60%	0.01
Does “Smoking increase the risk of persistence of HPV and make them cancerous	52%	74%	63%	0.01
Does HPV cause genital warts	39%	49%	44%	0.02
In women, persistent HPV causes abnormal cervical smears and cancer	54%	58%	56%	0.02
HPV causes other genital cancers (penis, anus)	48%	61%	55%	0.01
Does preventing HPV prevent cervical cancer	60%	88%	74%	0.01

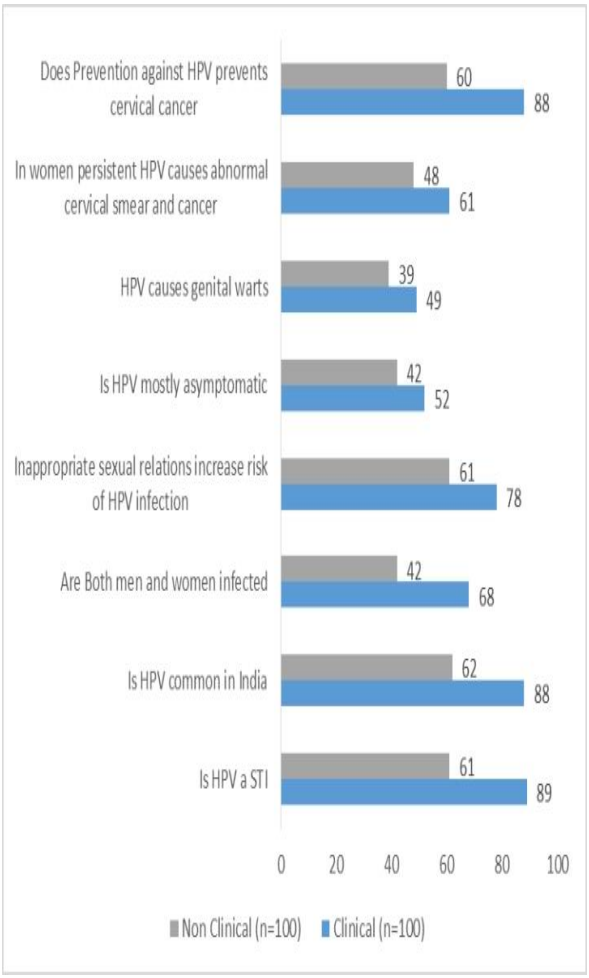

Figure 3. Comparison Knowledge about HPV Infection

Comparison of Attitudes and Beliefs Towards HPV Vaccine

When it came to a willingness to get vaccinated, 38% of non-clinical staff were willing compared to 61% of clinical staff (p=0.01) [Table 3]. These findings suggest a moderate level of awareness and belief in the vaccine's safety and efficacy, with clinical staff showing slightly higher confidence [figure 4]. There's a significant difference (p = 0.02) [Table 3] in the desire for reassurance about the HPV vaccine's efficacy against infection between non-clinical (60%) and clinical (40%) healthcare workers, with non-clinical workers expressing a greater need for reassurance [figure 4]. There's a significant difference (p = 0.01) [Table 3] in concerns about short-term side effects between non-clinical (60%) and clinical (40%) healthcare workers, with non-clinical workers expressing more worry[figure 4]. There is a statistically significant difference (p = 0.01) [Table 3] in knowledge about pregnancy as a contraindication for HPV vaccination between non-clinical (52%) and clinical (64%) healthcare workers [figure 4]. These findings emphasize the importance of tailored education and communication strategies to address specific concerns and improve vaccination acceptance among healthcare professionals.

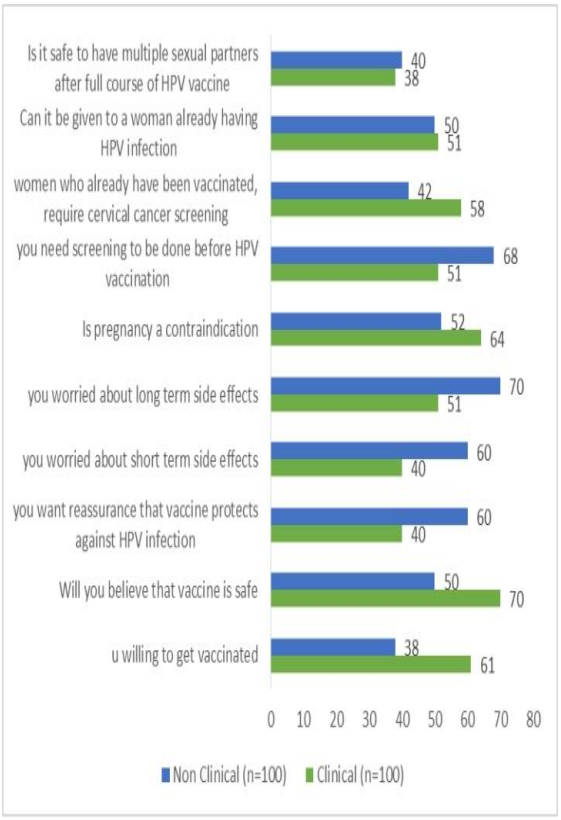

Figure 4. Comparison of Attitudes and Beliefs Towards HPV Vaccine

Table 3. Attitudes and Beliefs Towards the HPV Vaccine

Attitudes and beliefs towards the HPV vaccine	**Yes Non-Clinical**	**Yes Clinical**	**Yes Total**	**P-value**
Are u willing to get vaccinated	38%	61%	50%	0.01
Will you "believe that the vaccine is safe?	50%	70%	60%	0.01
Do you want reassurance that the vaccine protects against HPV infection	60%	40%	50%	0.02
Are you worried about short-term side effects	60%	40%	50%	0.01
Are you worried about long-term side effects	70%	51%	61%	0.01
Is pregnancy a contraindication	52%	64%	58%	0.01
Do you need screening to be done before HPV vaccination?	68%	51%	60%	0.03
Do women who already have been vaccinated, require cervical cancer screening?	42%	58%	50%	0.01
Can it be given to a woman already having an HPV infection	50%	51%	51%	0.01
Is it safe to have multiple sexual partners after the full course" of the HPV vaccine?	40%	38%	39%	0.04

Vaccine Concerns

Among clinical respondents, the highest concern is vaccine efficacy, with 68% indicating this as a major issue compared to 52 % of non-clinical staff (p=0.04) [Table 4]. In contrast, non-clinical respondents have different priorities, with 70% expressing vaccine cost as their primary concern compared to 54% of clinical staff (p=0.02) [Table 4]. This group also has a significant concern about vaccine side effects, with 66% highlighting this issue [figure 5]. These differences highlight varied perspectives between clinical and non-clinical groups regarding the HPV vaccine's side effects, efficacy, cost, and other factors.

Table 4. Vaccination Concerns

Vaccination Concerns	**Yes Clinical**	**Yes Non-Clinical**	**P-value**
Vaccine side effects	52%	66%	0.02
Vaccine efficacy	68%	52%	0.04
Vaccine cost	54%	70%	0.02
Others	38%	58%	0.01

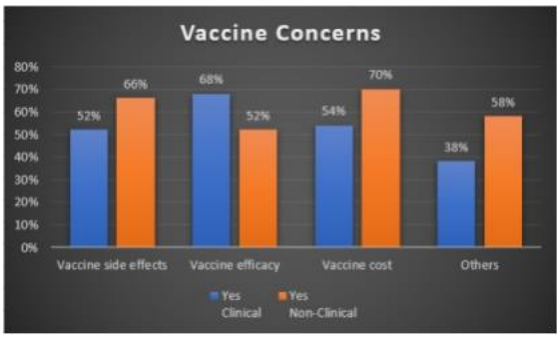

Figure 5. Comparison of Vaccine Concerns

Comparison of Attitudes and Beliefs Regarding Vaccination Policy

When considering which groups should be vaccinated, 56% of clinical respondents believe that both sexes should receive the HPV vaccine, compared to 39% of non-clinical respondents. (p=0.04) [Table 5]. This indicates a stronger support among clinical respondents for gender-inclusive vaccination policies. Regarding the timing of vaccination, 62% of clinical respondents believe that vaccination should occur during school age, whereas only 40% of non-clinical respondents [figure 6] share this view (p=0.04) [Table 5]. This shows that clinical respondents are more inclined to support early vaccination initiatives. This similarity in perspective highlights a broad consensus across both groups on the significance of the HPV vaccine, despite the variations in opinions on specific policy aspects like target groups and timing.

Table 5. Attitudes and Beliefs Regarding Vaccination Policy

Attitudes and beliefs regarding vaccination policy	Clinical (n=100)	Non Clinical (n=100)	p-value
Groups to be vaccinated-Both sex	56	39	0.04
Timing of vaccination-School age	62	40	0.04
The shared decision regarding HPV vaccination	68	70.1	0.03

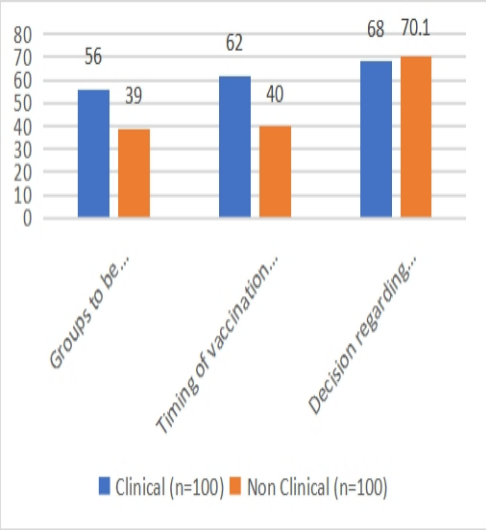

Figure 6. Comparison of Attitudes and Beliefs Regarding Vaccination Policy

Knowledge about Cervical Carcinoma

For the question of whether they have been educated about cervical cancer, 72% of clinical respondents answered affirmatively, compared to 40% of non-clinical respondents [figure 7] (p=0.01) [Table 6]. Clinical personnel (62%), compared to non-clinical workers (41%), are more aware of national cervical cancer screening frequency guidelines (p=0.01) [Table 6]. Clinical workers (68%) exhibit significantly higher awareness (p = 0.04) about the main cause of cervical cancer compared to non-clinical workers (39%) [figure 7].

Clinical workers (81%) demonstrate significantly greater awareness (p = 0.01) than non-clinical workers (52%) regarding the preventability of cervical cancer [Table 6]. This data highlights a significant disparity in cervical cancer knowledge between clinical and non-clinical groups, with clinical respondents consistently demonstrating higher awareness across all queried aspects [figure 7].

Table 6. Knowledge of Cervical Carcinoma

Knowledge of Cervical Carcinoma	**Yes Non-Clinical**	**Yes Clinical**	**Yes Total**	**P-value**
Have you "ever been educated about cervical cancer?	40%	72%	56%	0.01
Is cervical cancer preventable	52%	81%	67%	0.01
Do you know what kind of test is used in cervical cancer screening?	41%	69%	55%	0.03
Do you know the main cause of cervical cancer?	39%	68%	54%	0.04
Do you know that there are national guidelines that recommend cervical cancer screening once every 2 years for women over" 20 years old?	41%	62%	52%	0.01

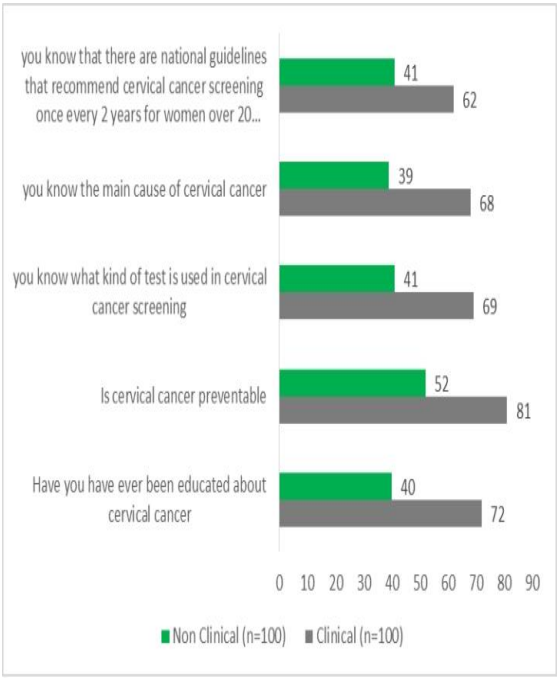

Figure 7. Comparison of Knowledge on Cervical Carcinoma

Obtaining Information on Cervical Cancer

Only 41 per cent of non-clinical respondents said they had ever spoken to someone about cervical cancer, compared to 71% of clinical respondents who said they had (p = 0.01) [Table 7]. Additionally, the data reveals that, in contrast to 32% of non-clinical respondents, 61% [figure 8] of clinical respondents know someone in their immediate vicinity who has had a cervical cancer screening (p = 0.02) [Table 7]. This shows that clinical respondents have a higher personal connection to those who have taken part in cervical cancer screening, in addition to being more likely to talk about cervical cancer [figure 8]. These differences underscore the broader access to and familiarity with cervical cancer information among clinical respondents compared to their non-clinical counterparts [figure 8].

Table 7. Obtaining Information about Cervical Cancer

Obtaining information about cervical cancer	**Clinical (n=100)**	**Non-clinical (n=100)**	**p-value**
Have "you ever talked to anyone about cervical cancer	71	41	0.01
anyone close to you who has undergone cervical" cancer screening	61	32	0.02

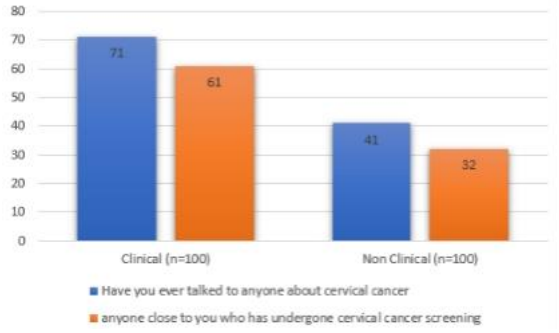

Figure 8. Obtaining Information about Cervical Cancer

Summary Tables with Statistical Values

These tables now reflect the provided knowledge data, categorized knowledge levels, and include chi-square values, degrees of freedom, and significant p-values. Every HPV knowledge item displays a statistically significant difference (P-value < 0.05), suggesting that the variations seen are not likely to be the result of random variation. This statistical significance underscores the need for targeted educational interventions to improve HPV-related knowledge among non-clinical healthcare workers, thereby enhancing overall public health outcomes.

Table 8. Awareness of HPV Vaccination

Category	Clinical (n=100)	Non-Clinical (n=100)	Total (n=200)	Chi-square (χ2\chi^2χ2)	df	p-value
Aware	90 (90%)	70 (70%)	160 (80%)	10.00	1	0.002
Not Aware	10 (10%)	30 (30%)	40 (20%)			

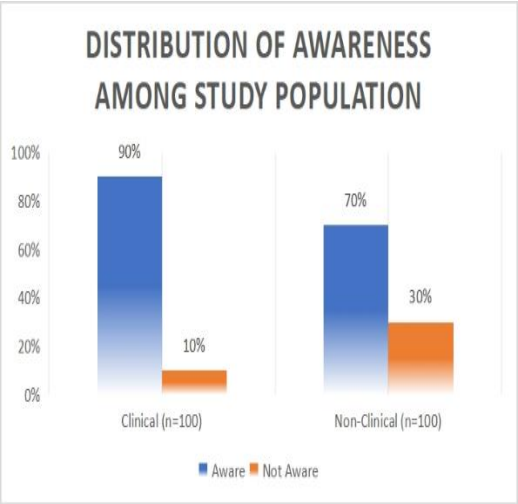

Figure 9. Distribution of Awareness among Study Population

In the study, 90% of clinical participants (n=100) were aware of HPV vaccination, compared to 70% of non-clinical participants (n=100) [figure 9]. Overall, 80% of the total participants (n=200) were aware of HPV vaccination [figure 9]. The difference in awareness between clinical and non-clinical groups was statistically significant, with a Chi-square value of 10.00, 1 degree of freedom, and a p-value of 0.002 [Table 8].

Table 9. Attitude Towards HPV Vaccination

Category	Clinical (n=100)	Non-Clinical (n=100)	Total (n=200)	Chi-square (χ2\chi^2χ2)	df	p-value
Positive Attitude	85 (85%)	60 (60%)	145 (72.5%)	18.46	2	<0.001
Neutral Attitude	10 (10%)	30 (30%)	40 (20%)			
Negative Attitude	5 (5%)	10 (10%)	15 (7.5%)			

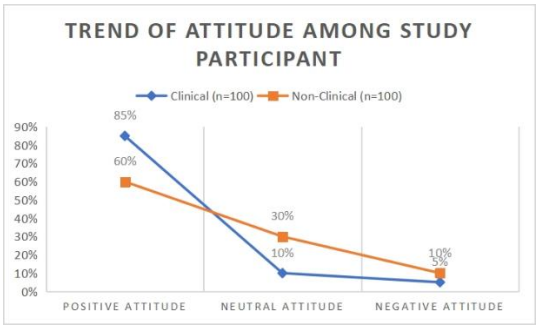

Figure 10. Trend of Attitude among Study Participants

The table shows that 85% of clinical participants (n=100) had a positive attitude towards HPV vaccination, compared to 60% of non-clinical participants (n=100) [figure 10]. Overall, 72.5% of the total participants (n=200) had a positive attitude [table 9]. The difference in attitudes was statistically significant, with a Chi-square value of 18.46, 2 degrees of freedom, and a p-value of less than 0.001 [table 9].

Table 10. Practice of Recommending/Administering HPV Vaccination

Category	**Clinical (n=100)**	**Non-Clinical (n=100)**	**Total (n=200)**	**Chi-square (χ2\chi^2χ2)**	**df**	**p-value**
Regularly Recommend/Administer	70 (70%)	30 (30%)	100 (50%)	24.00	2	<0.001
Occasionally Recommend/Administer	20 (20%)	40 (40%)	60 (30%)			
Never Recommend/Administer	10 (10%)	30 (30%)	40 (20%)			

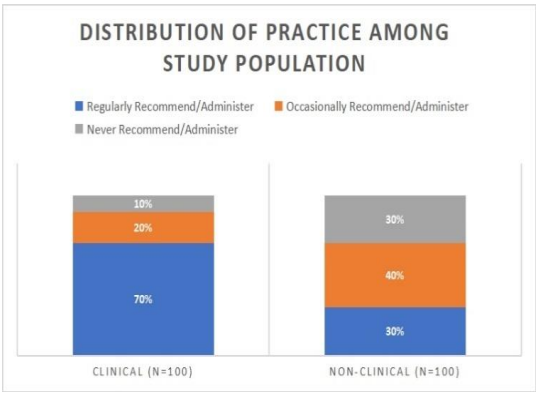

Figure 11. Distribution of Practice among Study Population

The table indicates that 70% of clinical participants (n=100) regularly recommend or administer HPV vaccination, compared to 30% of non-clinical participants (n=100) [figure 11]. In total, 50% of participants (n=200) regularly engage in these practices [table 10]. The difference in practices between clinical and non-clinical groups was statistically significant, with a Chi-square value of 24.00, 2 degrees of freedom, and a p-value of less than 0.001 [Table 10].

Table 11. Knowledge about HPV and its Vaccination

Category	Clinical (n=100)	Non-Clinical (n=100)	Total (n=200)	Chi-square (χ2\chi^2χ2)	df	p-value
High Knowledge	70 (70%)	0 (0%)	70 (35%)	20.00	2	<0.001
Moderate Knowledge	30 (30%)	52 (52%)	82 (41%)			
Low Knowledge	0 (0%)	48 (48%)	48 (24%)			

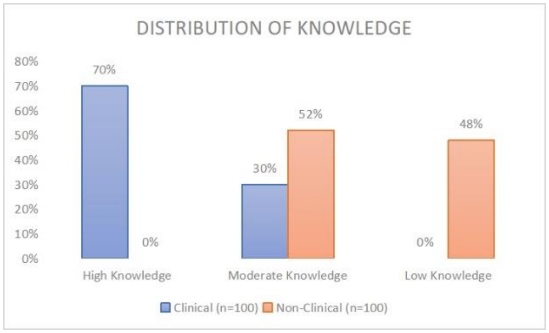

Figure 12. Distribution of knowledge among Participants

Table 11 shows that 70% of clinical participants (n=100) had high knowledge about HPV and its vaccination, while no non-clinical participants (n=100) had high knowledge. Overall, 35% of all participants (n=200) had high knowledge, and 52% of non-clinical participants had moderate knowledge, compared to 30% of clinical participants [figure 12]. Additionally, 48% of non-clinical participants had low knowledge, while no clinical participants had low knowledge [figure 12]. The differences in knowledge levels between clinical and non-clinical groups were statistically significant, with a Chi-square value of 20.00, 2 degrees of freedom, and a p-value of less than 0.001 [Table 11].

Discussion

In our study, There is a significant association (p=0.002) between the type of healthcare worker [clinical (90%) vs. non-clinical (70%)] and their awareness of HPV vaccination [Table 8]. Clinical workers are more likely to be aware of HPV vaccination compared to their non-clinical counterparts. In contrast to earlier studies, the HPV vaccine (21.7%) and HPV awareness (26%) among Malaysian women were found to be low by Al-Dubai et al [10]. This underscores the importance of targeted educational efforts to increase awareness among healthcare workers to improve overall HPV vaccination knowledge and uptake [10].

In our study, The findings highlight notable knowledge gaps, emphasizing the necessity for enhanced counselling regarding HPV vaccination targets. There is a significant association (p<0.001) between Compared to non-clinical workers, who primarily fall into the categories of moderate (52%) or low knowledge (48%), clinical workers are more likely to have high knowledge (70%) regarding HPV and its vaccination [Table 11]. The use of the Theoretical Domains Framework (TDF) to create interventions that assist primary care practitioners in HPV-related practices was highlighted by McSherry et al [11]. This study supports previous findings and demonstrates that primary care physicians and nurses have knowledge gaps as well. Practitioners directly

acknowledged any knowledge gaps in their own words, and their answers to the clinical scenarios likewise revealed these limitations. This framework aids in understanding clinical behaviors and improving healthcare delivery related to HPV. This underscores the importance of targeted education and training programs to enhance HPV-related knowledge among all healthcare professionals, particularly those in non-clinical roles [12].

In our study, non-clinical respondents have different priorities, with 70% expressing vaccine cost as their primary concern compared to 54% of clinical staff (p=0.02) [Table 4]. In an investigation conducted in Kolkata, Basu et al. showed how information and counselling from medical professionals raised the HPV vaccine's acceptance rates [13]. The uptake of vaccines has been hindered by factors like high vaccination costs and anxiety over side effects [13].

In our study, Overall, knowledge levels on various levels of cervical cancer are higher among clinical respondents (70%) compared to non-clinical respondents (43 %)with noticeable knowledge gaps in both groups [Table 6]. Similar to our research, Dabash et al. found that while many medical professionals knew HPV caused cervical cancer, they didn't know the disease's natural course, preventability, how to treat precancerous lesions or stage-appropriate clinical management [14]. Finally, the government must collaborate to enhance health care to minimize cervical cancer. This underscores the importance of understanding and addressing factors influencing vaccine acceptance among different healthcare worker groups to improve vaccination rates and public health outcomes [15].

Healthcare providers are essential in educating patients about HPV, addressing concerns about the safety and effectiveness of vaccination, and recommending vaccination. Their recommendations are pivotal in increasing vaccine acceptance rates [16]. Barriers to effective cervical cancer prevention include lack of awareness, cultural beliefs, cost of vaccination, and fear of side effects. Overcoming these barriers requires multi-faceted approaches, including education, policy changes, and improved healthcare delivery [17].

The research underscores the necessity of educating healthcare workers on HPV infection, cervical cancer risk factors, available screening methods, and the HPV vaccines offered in India, including their efficacy. Addressing misconceptions about HPV vaccination is essential for fostering positive community attitudes toward it [18].

In summary, even though cervical cancer prevention—especially HPV vaccination—has advanced, more work is still needed to close knowledge gaps, increase vaccine uptake, and eventually lower the incidence of cervical cancer [19]. The aforementioned research highlights how crucial focused interventions and alterations to policy are to accomplishing these objectives [20].

Limitation

The present study has the following limitations, Sample size was limited, and It was limited to healthcare workers in Sree Balaji Medical College and Hospital.

Conclusion

Our study revealed that participants' knowledge regarding HPV, cervical cancer, and HPV vaccination was average at best, suggesting a significant need for more comprehensive educational campaigns among healthcare workers and the general population. Despite awareness of HPV vaccines, detailed understanding remains limited. The HPV vaccine is crucial for preventing cervical cancer, but its effectiveness hinges on widespread understanding, acceptance, and knowledge about the vaccine itself. Healthcare professionals are pivotal in educating the public about the vaccine's efficacy and its role in cervical cancer prevention. In conclusion,

targeted educational efforts on HPV and HPV vaccination are urgently required to bridge knowledge gaps and effectively combat this critical healthcare challenge.

Funding

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Conflict of Interest

None declared

Ethical Clearance

The institutional review board has given this study approval.

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