

# Effectiveness of Pamphlet on Knowledge Regarding Importance of Cervavac Vaccine Among Adolescents in Selected Schools

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## ABSTRACT

Background: Cervavac Vaccine is utilized for the prevention of cervical, vulvar, and vaginal cancers in females. It additionally aids in safeguarding against anal cancer and genital warts in both men and women. The incidence and mortality rates of cervical cancer are highest in low- and middle-income nations. This highlights significant disparities caused by limited access to national HPV vaccination, cervical screening, and treatment services, alongside social and economic factors. Cervical cancer results from a continual infection with the human papillomavirus (HPV). Women with HIV are six times more likely to develop cervical cancer than those without HIV. Vaccination to prevent HPV, along with screening and managing pre-cancerous lesions, are efficient methods to avert cervical cancer and are highly cost-effective. Nations globally are striving to expedite the eradication of cervical cancer within the next few decades, with a consensus on three targets to achieve by 2030. Objectives : To assess knowledge regarding importance of cervavac vaccine among adolescents in selected schools. To evaluate effectiveness of pamphlet in improving knowledge of adolescents regarding importance of cervavac vaccine. To find out association between knowledge score regarding importance of cervavac vaccine among adolescents of selected schools with selected demographic variables. Methods: This study employed a pre-experimental design with one group featuring both pre-test and post-test measures. A sample of 100 adolescents was chosen using the probability simple random sampling method according to the inclusion criteria. This study employed a Structured Knowledge Question. Results: The paired t-test was utilized to compare pretest and posttest mean scores of knowledge about the importance of the Cervavac vaccine among adolescents in the chosen school. The paired t test was conducted with a significance level set at 5% .The average score on the pretest was 9.75, with a standard deviation of 4.17. The average score on the post-test was 15.24, and the standard deviation was 3.01. The paired- test yielded a test statistics value of 10.11 and a p value of 0.00. The p value is below 0.05, therefore reject the null hypothesis. This indicates a notable difference between the knowledge measured in the pretest and that in the post-test. Conclusion: The results of this study highlighted the significance of the Cervavac vaccine among adolescents, demonstrating that awareness of the vaccine's importance is strong in the chosen schools. It shows that the pamphlet successfully enhances the knowledge level of adolescents in chosen schools

**Keywords:** Cervavac vaccine, Pamphlet, Adolescents, Human Papilloma Virus, Cervical Cancer

## INTRODUCTION

HPV vaccines represent a breakthrough in modern medicine, but numerous girls in low- and middle-income nations lack access to them.

-Dr. Christopher Elias

Cervical cancer ranks as the fourth most prevalent cancer among women worldwide, with approximately 660,000 new instances and about 350,000 fatalities in 2022. The highest incidence and mortality rates for cervical cancer occur in low- and middle-income nations. This highlights significant disparities caused by inadequate access to national HPV vaccination, cervical screening, and treatment services. Women living with HIV are 6 times more likely to develop cervical cancer compared to women without HIV. Prophylactic vaccination against HPV and screening and treatment of pre-cancer lesions are effective strategies to prevent cervical cancer and are very cost-effective. Nations globally are striving to hasten the eradication of cervical cancer over the next decades, with a consensus on three objectives to achieve by 2030<sup>1</sup>.

In that year, approximately 94% of the 350,000 fatalities attributed to cervical cancer took place in low- and middle-income nations. Sub-Saharan Africa (SSA), Central America, and South-East Asia have the highest incidence and mortality rates of cervical cancer. Variations in the cervical cancer burden across regions are tied to disparities in access to vaccination, screening, and treatment services, along with risk factors like HIV prevalence and socio-economic determinants, including gender, sex discrimination, and poverty. Women with HIV have a 6-fold increased risk of developing cervical cancer compared to the general population, and it's estimated that 5% of all cervical cancer cases are linked to HIV<sup>2</sup>.

Cervical cancer primarily impacts younger women, leading to 20% of children who experience the loss of their mother to cancer due to this specific type. Human papillomavirus (HPV) is a prevalent sexually transmitted infection that can impact the skin, genital region, and throat. Nearly everyone who is sexually active will contract an infection at some time in their lives, typically without showing symptoms. Typically, the immune system eliminates HPV from the body.<sup>3</sup> Ongoing infection with high-risk HPV can lead to the development of abnormal cells, which may eventually turn into cancer. Untreated persistent HPV infection of the cervix (the lower section of the uterus that connects to the vagina – also referred to as the birth canal) leads to 95% of cervical cancers. Usually, it requires 15–20 years for abnormal cells to develop into cancer, but in women with compromised immune systems, like those with untreated HIV, this progression can occur more quickly, taking just 5–10 years. Factors associated with cancer progression encompass the oncogenic grade of the HPV type, immune system status, existence of other sexually transmitted infections, childbirth number, early age at first pregnancy, use of hormonal contraceptives, and smoking habits. Increasing public understanding of information and services is essential for prevention and control throughout life. Getting vaccinated between the ages of 9 and 14 is an extremely effective method for preventing HPV infection, cervical cancer, and other cancers related to HPV. Starting at age 30 (or 25 for women with HIV), screening can identify cervical disease, which, if treated, helps prevent cervical cancer.<sup>1</sup>

Most people, including those who are depressed, will have access to a locally made vaccine that provides protection against cervical cancer, the second most common cancer affecting women in India, for the first time, according to leading medical experts. India's largest vaccine patron, the Serum Institute of India (SII), is the manufacturer of the Cervavac vaccine. By December of this year, the vaccine should be available, According to SII CEO Adar Poonawalla. Cervavac will enable India to independently manage

the female mortality rate associated with cervical cancer. According to Poonawalla, “the Indian government will incorporate it into the public (vaccination) program within a number of months.”. As the main cause of cervical cancer and a potential cause of other cancers, the vaccine provides protection against the deadly papilloma Contagion. Men and women will be able to purchase it for a cost of around \$20, according to SSI.<sup>4</sup>

HPV is a common virus that infects both men and women. HPV is extremely contagious, especially after sexual activity begins, and most people get infected at some point in their lives. There are numerous varieties of HPV. Certain varieties may result in health issues, such as cancer and genital warts. In addition to cervical cancer, HPV can cause cancers of the vulva, vagina, penis, or anus. Oropharyngeal cancer, which is cancer of the back of the throat, can also result from it. Two of the “low-risk” genotypes, HPV 6 and 11, are responsible for genital warts, a common benign condition of the external genitalia that has a high morbidity rate.<sup>5</sup> About 70% of all cervical cancers are caused by the most prevalent “high-risk” HPV genotypes, HPV 16 and 18. CERVAVAC®, created and produced by Serum Institute of India, is the country’s first domestic and sole gender-neutral HPV vaccine. Like other cervical cancer vaccines, the vaccine frequently causes mild pain, redness, or swelling at the injection site. The advantages of vaccination greatly exceed the risks, and serious side effects are uncommon. For maximum safety and efficacy, it is crucial to follow the suggested immunization schedule and seek advice from medical professionals. Cervavac's accessibility and availability in India are essential for successfully preventing cervical cancer. By adding the cervical cancer vaccine to the national immunization program or launching targeted vaccination campaigns for eligible age groups, the Indian government has taken action to make the vaccine available to the general public. Cervical cancer can be prevented in large part by HPV vaccination. Before people are exposed to high-risk HPV types, we vaccinate them.<sup>6</sup>

Acceptance of HPV vaccination is a critical goal of public health practice in all countries, including India, in order to meet the 90% vaccine coverage target. The purpose of this study is to see if health education may improve early teenagers’ awareness of HPV and acceptance of the HPV vaccine. Region of India, which makes this research extremely beneficial. The public’s lack of awareness and screening regarding cervical cancer is concerning. Given that this condition is avoidable, a significant awareness effort is required. School-based immunization programs are expected to be successful, according to experts. The bulk of cervical cancer deaths globally occur in India, where 80,000 new cases are reported annually. However, for the rollout to be effective, a structural strategy will need to be made to ensure that commercial healthcare facilities and NGOs are included.

Approval of the HPV vaccination is a crucial objective of public health practice in all countries, including India, to reach the vaccination coverage target of 90 percent . The purpose of this study is to determine whether health education could potentially increase young adolescents’ knowledge of HPV and their acceptance of the HPV vaccination. It is concerning that the population has such low levels of knowledge and screening regarding cervical cancer. Because there aren’t many studies to assess educational interventions regarding sensitization of young adolescents regarding HPV and the vaccination against cervical cancer in India, and particularly in the region of India, this study is very helpful. This disease is preventable, so a huge awareness campaign is required. Vaccination campaigns at schools are expected to be successful, according to experts. The bulk of cervix are found in India.<sup>1</sup>

Originally designed as a standard clinical trial in India, the project shifted into a long-term study following .Girls (aged 10–18) who received different vaccine schedules. Because the vaccination program was paused .Mid-way, researchers were able to compare four distinct groups: Three doses: The traditional full

course. Two doses: Received at the recommended 6-month interval. Two doses (default): Received at shorter, non-standard intervals. Single dose: Participants who only received the initial shot. To measure success, researchers tracked the women for about 9 years, testing for persistent HPV 16 and 18. Infections (the two types responsible for 70% of cervical cancers) once the participants married or had children.<sup>7</sup> The Results showed that the level of protection remained remarkably high across all groups, regardless of how many shots they received:

## BACKGROUND

Mervat M. Alsous (2021) and colleagues evaluated the level of knowledge regarding cervical cancer, HPV infection, and HPV vaccination among medical students across six Jordanian universities. Objective: To measure medical students' understanding of cervical cancer and HPV, while identifying their perceptions and the barriers they face regarding vaccination. Methodology: A cross-sectional survey conducted over three months, targeting clinical-level medical students (third to sixth year). Category Data Point participants 504 students (57.7% female, 42.3% male). Knowledge Score Moderate: Average of 21.4/34, Vaccine Awareness Only 40.5% knew the vaccine was available in Jordan. Public Health Support 65.9% supported mandatory vaccination for schoolgirls. The researchers concluded that Jordanian medical students possess inadequate knowledge regarding cervical cancer screening and HPV. However, despite this lack of specific awareness, there is a generally positive attitude toward incorporating the HPV vaccine into national health protocols.<sup>9</sup>

Qualitative study by Shetty et al. (2021) found that Indian healthcare students generally have a positive outlook toward the HPV vaccine, but their actual knowledge varies by gender and field of study. Male students and those in non-medical tracks (nursing/dental) showed lower awareness. The findings suggest that overcoming cost and cultural barriers through professional medical recommendations is key to boosting uptake.<sup>8</sup>

Need for the Study:

Cervical Cancer and the Advent of Cervavac in India. The Current Burden of Disease Cervical cancer remains a critical public health challenge in India, ranking as the third most common malignancy and the second leading cause of female cancer mortality. According to GLOBOCAN 2020 data, India reported over 123,907 new cases (an 18.3% incidence rate) and 77,348 deaths. More recent data from the ICMR-NCRP suggests that by 2023, the estimated number of cases surged to over 3.4 lakh. While the national incidence rate stands at approximately 18 per 100,000, regional disparities are stark; for example, the Papumpare district in Arunachal Pradesh reports an incidence of 27.7, the highest in Asia. A primary concern is late-stage diagnosis, with 60% of cervical cancer cases identified only at a locally advanced stage, significantly hindering survival outcomes. Global Targets and National Gaps the World Health Organization (WHO) has established the 90-70-90 targets for 2030 to place the world on a path toward eliminating cervical cancer (defined as an incidence of <4 per 100,000). To achieve this, countries must ensure: 90% of girls are fully vaccinated with the HPV vaccine by age 15. 70% of women are screened with a high-performance test by age 35 and again by 45. 90% of women identified with cervical disease receive treatment.<sup>11</sup>

India currently falls significantly short of these benchmarks. NFHS-5 data reveals that less than 1% of eligible girls are vaccinated, and fewer than 2% of women have ever undergone screening. Breakthroughs in Prevention: The Role of Cervavac. A turning point in this crisis is the development of Cervavac, India's first indigenous quadrivalent HPV vaccine. Developed through rigorous clinical trials, Cervavac targets

high-risk HPV types (specifically 16 and 18). Its Introduction offers several advantages: Accessibility: As a locally produced vaccine, it reduces reliance on expensive imports. Infrastructure: India plans to integrate HPV testing into the National Cancer Control Programme and Potentially add Cervavac to the National Immunization Schedule. Prevention: Vaccination prior to HPV exposure is the most effective defines against the development of cervical malignancies. Rationale for the Study .The transition from scientific breakthrough to public health success requires more than just clinical availability; it requires accessibility and social acceptance. High mortality in low-to-middle-income countries(LMICs) like India—which bears nearly 80% of the global disease burden—is often exacerbated by myths, lack of awareness, and bureaucratic hurdles.<sup>12</sup>

Effective public awareness campaigns and positive messaging are essential to eradicating the cervical cancer menace. Therefore, the researcher identified a critical need to evaluate and enhance knowledge regarding the Cervavac vaccine among adolescents using an educational pamphlet as a primary intervention tool.

### **RESEARCH QUESTION:**

A good research question forms backbone of good research. As a researcher, application of research approach is needed for this study. Therefore, the research question is-

Will there be effect of Pamphlet on knowledge regarding cervavac vaccine to generate awareness among adolescents of both genders?

### **OBJECTIVES OF THE STUDY**

#### **Primary Objective**

To evaluate effectiveness of pamphlet in improving knowledge of adolescents regarding importance of cervavac vaccine.

#### **Secondary Objective**

To assess knowledge regarding importance of cervavac vaccine among adolescents in selected schools.

To find out association between knowledge score regarding importance of cervavac vaccine among adolescents of selected schools with selected demographic variables

### **HYPOTHESIS**

H0 - There will be no significant difference between score of knowledge regarding importance of cervavac vaccine among adolescents with selected demographic variables.

H1- There will be significant difference between knowledge regarding importance of cervavac vaccine among adolescents with selected demographic variables.

### **OPERATIONAL DEFINITION**

#### **EFFECTIVENESS**

According to Oxford dictionary “ effectiveness” refers to the fact of producing the result that is wanted or intended.<sup>16</sup>

In this study, the effectiveness of pamphlet is being evaluated in terms of its impact on knowledge of adolescents regarding importance of cervavac vaccine.

### **PAMPHLET**

According to Oxford dictionary “ Pamphlet” refers to a small booklet or leaflet containing information or arguments about a single subject.<sup>17</sup>

In this study, Pamphlet is an educational aid to provide knowledge regarding importance of cervavac vaccine among adolescents.

## KNOWLEDGE

According to Oxford dictionary “ Knowledge” refers to facts, information, and skills acquired through experience or education, the theoretical or practical understanding of a subject.<sup>18</sup>

In this study, it refers to the estimation of level of understanding of adolescents regarding the importance of Cervavac vaccine as measured by structured knowledge questionnaire.

## CERVAVAC VACCINE

According to Sinha A, Cervavac Vaccine is used to prevent cervical, vulvar and vaginal cancer in women .It also helps to protect against anal and genital cancer warts in both males and females.<sup>19</sup>

In this study, Cervavac Vaccine which is administered intramuscularly for the prevention of Human Papilloma Virus types.

## ADOLESCENTS

According to Oxford dictionary “ Adolescents” refers to the process of developing from child into an adult.<sup>20</sup>

In this study, it refers to adolescents aged between 14-17 years and studying in selected school .

Health (Awareness of Alternatives)

The Theory: Health is the ability to perceive alternatives and respond to the environment.

The Study: Currently, the adolescents lack knowledge about HPV and the Cervavac vaccine. By providing this information, you are increasing their “health” by giving them the awareness needed to make life-protecting choices.

Pattern (Identifying Needs)

The Theory: Pattern is the unique “fingerprint” of a person’s life (like their voice or movement).

The Study: By using a Structured Knowledge Questionnaire, you are identifying the current “pattern” of the adolescents. This pattern shows a specific gap: a lack of information regarding HPV prevention.

Consciousness (Capacity to Interact)

The Theory: Consciousness is the “informational capacity” of a person—their ability to process and interact with the world around them.

The Study: Using an educational pamphlet acts as a catalyst for expanding consciousness. As the adolescents gain knowledge, their “informational capacity” grows, allowing them to better navigate their health and the healthcare system.

Summary: In the HEC framework, your intervention (the pamphlet) is not just “teaching facts.” It is a way to help adolescents expand their consciousness, recognize their health patterns, and gain the power to choose a healthier future through vaccination.

## Review of Literature

Review of literature is a standard step in research process. A literature review is a thorough and methodical synthesis of academic publications that provide the theoretical and empirical context for a specific research study. “Most satisfying aspect of the literature review is the contribution it makes to the new knowledge,

insight, and general scholarship of the researches. The typical purposes for analysing or reviewing existing literature are to generate research questions to identify what is known and not known about a topic, to identify conceptual or theoretical traditions within the bodies of literature, and to describe methods of enquiry used in other earlier works including their success and shortcomings.<sup>24</sup>

Literature review is defined as a broad, comprehensive, in depth, systemic and critical review of scholarly publication, unpublished printed or audio-visual materials and personal communication. The present study was undertaken to evaluate the effectiveness of pamphlet on importance of cervavac vaccine among adolescents. In this study the literature was collected extensively and organized under the following headings.

- Review of literature related to Cervical cancer incidence rate
- Review of literature related to HPV Vaccination awareness among adolescents
- Review of literature related to Effectiveness of Pamphlet
- Review of literature related to HPV Vaccine effectiveness
- **Review of literature related to Cervical cancer incidence rate**

Krishnamoorthy et al. (2022) analysed international patterns in cervical cancer incidence over a twenty-year period. Focusing on individuals aged 30 to 79, the researchers utilized secondary data from the WHO “Cancer Incidence in Five Continents” database, covering America, Asia, Europe, and Oceania. Methodology and Statistical Analysis. To identify significant shifts in data trends, the authors employed: Joinpoint Regression: Used to calculate the Average Annual Percent Change (AAPC). Age-Period-Cohort Analysis: Used to examine how specific age groups and time intervals influenced cancer rates. Key Findings The investigation revealed a universal decline in cervical cancer cases across all four analysed geographic Regions between 1993 and 2012. Oceania Recorded the most significant overall reduction in incidence. Americas Followed Oceania with the second-highest rate of decline.<sup>25</sup>

Rajeev Kumar Malhotra et al. (2022) analysed historical data and future projections for cervical cancer in Delhi, India. The researchers focused on understanding how incidence rates have changed over time and what the burden of the disease might look like by the year 2030. Methodology: To reach their conclusions, the team utilized several statistical approaches: Data Source: Records from the Delhi Population-Based Cancer Registry spanning 1990 to 2014. Trend Analysis: Join point regression was used to calculate the Age-Standardized Incidence Rate (ASIR). Projections: An Age-Period-Cohort (APC) model using natural cubic splines helped predict future cases. Decomposition: Future case numbers were broken down by three factors: population growth, aging, and specific incidence rates. Incidence Rate (ASIR) Decreased significantly at an annual rate of 2.98% between 1990 and 2014. Median Age at Diagnosis Increased by 4.18 years over the 25-year period, showing a shift toward older diagnoses. Peak Age shift the highest concentration of cases shifted from the 40–44 age group in 1990 to the 60–64 group by 2014.<sup>26</sup>

Mayank Singh et al. (2022) examined cervical cancer trends across India from 1990 to 2019. The primary objective was to evaluate changes in both new cases (incidence) and deaths (mortality) over thirty years to gauge the effectiveness of national prevention and control measures. Methodology & Analysis The researchers utilized state-level data to create spatial and rank maps, illustrating geographical analysis of the disease burden. To quantify these temporal changes, they employed join point regression analysis, calculating the Average Annual Percent Change (AAPC) with 95% confidence intervals for each region. Key Findings. Top Performing States: Jharkhand saw the most significant improvements, with incidence and mortality dropping by 50.22% and 56.16%, respectively, followed closely by Himachal Pradesh. National Trends: On a national scale, the study confirmed a statistically significant decline. Peak Progress:

The most rapid improvements for both metrics were recorded between 1998 and 2005. Conclusion While the downward trend is encouraging, the authors conclude that cervical cancer remains a critical public health challenge in India. They emphasize the urgent need for expanded outreach, advocating Nationwide educational programs targeting parents, youth, and the broader community to strengthen prevention and screening efforts.<sup>27</sup>

PK Dhillon et al. (2011) examined the shifting landscape of female-specific cancers among women aged 30–64 in Mumbai, India. By employing an age-period-cohort (APC) analysis, the researchers were able to distinguish between long-term linear trends (drift) and specific effects tied to birth years or calendar periods. Methodology Metric: The team calculated age-standardized incidence rates to ensure comparability across different Decades. Statistical Tool: They used the Estimated Annual Percent Change (EAPC) derived from the drift parameter to quantify the common linear time trends. Scope: The analysis focused on three primary sites: the breast, cervix, and ovaries. Key Findings :The study revealed three distinct trajectories for these cancers over the three-decade period: Breas Increasing +1.1% (1.0 to 1.3) Significant ,Cervical Decreasing –1.8% (–2.0 to –1.6) Significant Ovarian Stable +0.3% (–0.1 to 0.6)Conclusions Divergent Trends: For both breast and cervical cancer, the APC model provided the most accurate fit for the data, highlighting the influence of generational shifts and period-specific changes. Global Context: While Mumbai’s cancer rates remain low compared to Western nations, the rise in breast Cancer and the decline in cervical cancer mirror trends seen in several other rapidly developing Asian countries.<sup>28</sup>

Deependra Singh (2023) and colleagues analysed global cervical cancer data from 2020 to establish A baseline for the WHO’s elimination initiative. Using the GLOBOCAN 2020 database, the researchers Examined incidence and mortality across 185 countries, categorized by UN regions and Human Development Index (HDI) levels. Key Global Findings (2020)The study reported a significant global burden, though the impact varied drastically by region: Total Figures: Approximately 604,127 new cases and 341,831 deaths occurred worldwide. Average Rates: The global age-standardized incidence was 13.3 per 100,000 women-years, with a mortality Rate of 7.2.Regional Extremes: \* Incidence: Ranged from a low of 2.2 in Iraq to a high of 84.6 in ESwatini. Mortality: Ranged from 1.0 in Switzerland to 55.7 in ESwatini. Hotspots: High incidence rates were particularly noted in Malawi and Zambia (Africa), Bolivia and Paraguay(Latin America), and Fiji and Papua New Guinea (Melanesia).The Socioeconomic Divide The research highlighted a stark “socioeconomic gradient” regarding the disease: Incidence: Countries with a low HDI had three times the incidence rates of those with a very high Dysmotility: The disparity was even more severe for deaths, with rates six times higher in low-HDI nations compared to high-HDI nations. Historical Trends and Outlook While general progress has been made, the trajectory is inconsistent: Progress: Most countries with available long-term data showed a decline in cases. Many high-income Nations saw rates stabilize at low levels around 2005.Concerns: Conversely, incidence actually increased in parts of Eastern Africa and Eastern Europe during the Same period. Conclusion: The study concludes that cervical cancer remains a major global health challenge. Most nations Are still far from reaching the targets set by the WHO elimination initiative, hampered by deep-seated Geographical and economic inequalities<sup>29</sup>.

## **B. Review of literature related to HPV Vaccination awareness among adolescents**

Patrik et al. (2022) investigated strategies to enhance HPV vaccination rates among adolescent girls (ages 9–14) at the Mulago National Referral Hospital in Kampala, Uganda. The researchers specifically sought to Measure the completion rate of the second vaccine dose and identify the factors that lead to either timely

Completion or drop-off. Methodology The researchers employed a retrospective mixed-methods approach, which included: Quantitative analysis: Reviewing clinical charts and folders of eligible patients. Qualitative analysis: Conducting focus group discussions with girls who successfully completed the two-dose Series on schedule. Key Findings of the 201 girls tracked in the study, only 43.3% (87 girls) completed their HPV vaccination on time. The study Identified several distinct drivers and barriers: Facilitators of Success: Strong knowledge regarding HPV infection and the benefits of the vaccine. Positive influence from peers. Direct recommendations from healthcare providers at the facility. Barriers to Complicacy Insufficient information about the virus and the vaccine. Scepticism or fear regarding the vaccine's safety and efficacy<sup>30</sup>.

Seema Kumari et al. (2021) conducted a cross-sectional study in Eastern Uttar Pradesh to evaluate the Awareness, perceptions, and behaviours of adolescent girls regarding cervical cancer and the Human Papillomavirus (HPV) vaccine. Methodology Design: A questionnaire-based, cross-sectional analysis using purposive sampling. Participants: 384 adolescent girls visiting the gynaecological outpatient department (OPD) at a tertiary care Centre. Duration: The data collection spanned one year. Key Findings The study revealed a significant gap between awareness and intent: Low Awareness: Only 8.07% of participants were aware of HPV infections, and a mere 2.08% had prior Knowledge of the HPV vaccine. Financial Barriers: While roughly 36% believed their parents would cover the cost, interest surged to 79.17% if the vaccine were provided free of charge. Positive Outlook: Despite the lack of formal education on the subject, the majority of respondents-maintained A positive attitude toward receiving the vaccination. Conclusion The researchers concluded that while knowledge regarding cervical cancer prevention is currently Inadequate in Eastern UP, there is a high level of vaccine receptivity. The study suggests that incorporating The HPV vaccine into India's National Immunization Program would eliminate cost barriers and significantly Improve uptake<sup>31</sup>.

Jatav et al. (2024) conducted a cross-sectional study in Indore to evaluate the knowledge, attitudes, and Practices (KAP) regarding cervical cancer, Human Papillomavirus (HPV), and the HPV vaccine among schoolgirls in grades 9 through 12. Methodology Timeline & Setting: The research took place between July and December 2022 across various government Schools in Indore. Participants: 120 students from grades 9–12 were enrolled following informed consent. Data Collection: Information was gathered via a pre-tested, semi-structured questionnaire. Analysis: Data was processed using SPSS version 25.0 to identify trends and statistical significance. Key Findings The results indicated a stark contrast between student interest and actual health literacy: Awareness Levels: Only 34.16% of students were aware of cervical cancer, and even fewer (20.83%) had heard Of the HPV vaccine. Awareness was notably higher among older students (11<sup>th</sup> and 12<sup>th</sup> grades). Statistical Significance: A significant correlation was found between a student's grade level and their level of Knowledge ( $p < 0.05$ ). Vaccination Rates: Actual vaccine uptake was extremely low at only 3.33%. Future Intent: Despite low current vaccination rates, there is a high potential for improvement, as 68.96% of Unvaccinated students expressed a willingness to receive the vaccine. Conclusion The study concludes that both knowledge and vaccination rates regarding HPV are critically low among Schoolgirls in this region<sup>32</sup>.

Swain et al. (2018) utilized a quasi-experimental, pretest-post-test design to evaluate the effectiveness of a sensitization program focused on cervical cancer prevention and HPV vaccination among young girls. From an initial pool of 240 participants, 60 girls were randomly selected to undergo the intervention. Preparedness was measured using structured criteria, while vaccination perceptions were assessed via a rating scale. The results, analysed through paired t-tests, revealed statistically significant improvements in

knowledge and vaccination intent. Notably, post-test scores showed substantial gains in identifying symptoms—specifically vaginal bleeding (60%)—and preventive measures, such as avoiding early sexual intercourse(88%). While 86% of participants expressed agreement with the HPV vaccine, 58.33% ultimately received the vaccination. The study concludes that consistent educational interventions are vital for cascading awareness and improving preventive health behaviours among young women<sup>33</sup>.

Seema Grover(2017) and colleagues conducted a cross-sectional study in Faridkot, Punjab, to evaluate the awareness levels of adolescent girls regarding reproductive health, contraception, sexually transmitted diseases (STDs), and the HPV vaccine. findings: Participants: 400 schoolgirls (ages 16–19) in grades 11 and 12. Setting: English-medium schools in Faridkot city. Method: Data was collected via a pre-designed multiple-choice questionnaire. Key Findings The study revealed significant gaps in health literacy among the participants: Reproductive Health: A majority (67%) did not understand the fundamental meaning of reproductive health. Contraception: While 62.5 had knowledge of condoms, knowledge of other methods was Limited's: Awareness was heavily skewed toward HIV/AIDS (70.75%), while fewer than 20% of participants knew about other STDs. There was also a notable lack of knowledge regarding symptoms and transmission routes' Vaccine: Only 17% of the girls know about the vaccine's existence. Perspective: Despite the lack of knowledge, the students maintained a positive attitude toward the introduction of sex education. Conclusion & Recommendations The researchers concluded that the lack of comprehensive knowledge regarding reproductive health and non-HIV STDs is a serious concern<sup>34</sup>.

Shazia Rashid et al. (2016)regarding HPV and cervical cancer awareness among Indian college students. Study Overview: HPV & Cervical Cancer Awareness in India Objective and Methodology: The study aimed to evaluate the levels of knowledge, awareness, and general attitudes toward Human Papillomavirus (HPV), its vaccine, and cervical cancer. Researchers conducted a questionnaire-based survey involving 1,580 undergraduate students (876 males and 684 females) aged 16 to 26. Key Findings The data revealed significant disparities in awareness based on gender and academic background: Gender Gap: Female students demonstrated significantly higher knowledge than males across all categories: Cervical Cancer: 82.45% (Females) vs. lower percentages in males ( $p < 0.001$ ). HPV Awareness: 45.61% (Females). HPV Vaccine: 44.00% (Females). Academic Major: As expected, biology majors showed greater awareness of cervical cancer(81.89%) and HPV (46.58%) compared to their non-biology peers. Statistical Trends: Older female students were 1.2 to 3 times more likely to be knowledgeable than their male counterparts. General Consensus: Despite varying levels of specific knowledge, there was a nearly universal agreement ( $p < 0.001$ ) that girls should receive the HPV vaccination. Conclusion The study concludes that there is an urgent need for targeted educational interventions and public health campaigns<sup>35</sup>.

Krishna Kavita Ramavath(2021) et al. examined the knowledge and perceptions of Human Papillomavirus (HPV) among urban adolescent girls in India. Conducted between April 2009 and March 2010 under the FOGSI "Protecting Young Girls" project, the research targeted 1,000 girls (ages 13–19) across five major cities: Ahmedabad, Cuttack, Lucknow, Gwalior, and Visakhapatnam. Study Methodology The researchers employed a two-stage evaluation process to measure the impact of targeted health education: Initial Assessment: Participants completed a preliminary questionnaire to gauge baseline awareness of cervical cancer and HPV. Intervention: A 20-minute educational session consisting of a health talk and group discussion was provided. Follow-up: A second questionnaire was administered immediately afterward to evaluate the effectiveness of the instruction. Key Findings The study highlighted a significant gap between initial knowledge and the willingness to take preventivemeasures:72% of participants were unaware of

cervical cancer/HPV; 77.2% did not know a virus caused the disease. Impact of Education Post-talk results showed a significant positive improvement in overall awareness and knowledge. Vaccine Acceptance Despite low initial knowledge, 74.4% of the girls expressed a desire to be vaccinated after learning the risks. Conclusion The authors concluded that while urban Indian adolescents are currently poorly informed about HPV a cervical cancer, they are highly receptive to vaccination once provided with the necessary health education<sup>36</sup>.

Abraham Degree et al. (2018) explored the factors influencing whether parents in rural Mysore, India, would accept the Human Papillomavirus (HPV) vaccine for their adolescent daughters. Study Overview Design: Cross-sectional study. Setting: Rural Mysore district, India. Participants: 831 parents of school-aged adolescent girls. Method: Participants completed a validated, self-administered questionnaire regarding their attitudes toward the vaccine. Key Findings The researchers found a high baseline level of acceptance, with 79.9% (664 parents) expressing a willingness to vaccinate their daughters if invited to do so. The study identified several specific "predictors" that either encouraged or discouraged this willingness: Factors Increasing Acceptability Parents were significantly more likely to support vaccination if they: Perceived the vaccine as safe (or: 2.11). Had family support for the decision (or: 2.86). Acknowledged the severity of HPV-related health issues (or: 1.64). Anticipated future risk, such as their daughter eventually becoming sexually active (or: 1.84)<sup>38</sup>.

Sachin Parmar et al. (2016) evaluated awareness of cervical cancer and Human Papillomavirus (HHPV) vaccine acceptance among 300 adolescent girls (aged 16–18) in Central India. The researchers compared students from government and private schools using a semi-structured questionnaire to gauge their medical literacy regarding prevention and transmission. Key Findings: Awareness vs. Knowledge While general awareness of cervical cancer was high, specific knowledge regarding the HPV virus and its prevention remained alarmingly low. Finding General Awareness 85% of students had heard of cervical cancer (90% Private vs. 80% Govt). HPV Awareness Only 43% were familiar with HPV. Prevention 53% knew the cancer is preventable; 55% knew a vaccine exists. Vaccine Availability Over half (54%) were unaware the vaccine is available in India. Screening 50% knew screening methods exist. Conclusion : The authors concluded that even among a literate, school-going population, there is a profound lack of basic knowledge regarding cervical cancer risk factors. The findings suggest that the absence of a robust, active national screening and awareness program contributes to these gaps.<sup>39</sup>

D. Geetha et al. (2022) descriptive study investigated the level of knowledge and the prevailing attitudes toward HPV vaccination among late adolescent girls. The research focused specifically on first-year undergraduate women enrolled in Allied Health Science programs (Physiotherapy, Occupational Therapy, and Optometry) at Sri Ramachandra University. Using a non-probability convenience sampling method, the researchers assessed 122 students through demographic profiling and a structured knowledge questionnaire. Key Findings: Knowledge Gap Despite being enrolled in medical-related health programs, the students exhibited a significant lack of comprehensive understanding regarding the vaccine. Awareness: 68% had heard of the HPV vaccine, while 32% were completely unaware of it. Knowledge Levels: \* 51% possessed inadequate knowledge. 49% possessed moderately adequate knowledge. 0% of the participants reached the "adequate knowledge" threshold. Conclusion: The authors concluded that even among students in health-related disciplines, knowledge regarding HPV is insufficient<sup>40</sup>.

Khushbu Saharan et al. (2022) non-experimental descriptive study, examined the knowledge levels and attitudes of adolescents regarding the Human Papillomavirus (HPV) vaccine. The study utilized a random sampling technique to survey 60 participants aged 13 to 18. Data was collected through a structured

questionnaire and an attitude scale specifically designed to meet the research objectives. Key Findings The results highlighted a significant gap in health literacy among the participants: Insufficient Knowledge: The majority of respondents (56.7%) lacked basic information regarding the vaccine. Moderate Knowledge: Approximately 36.7% demonstrated a "fairly acceptable" level of understanding. Adequate Knowledge: Only a small fraction (6.6%) possessed comprehensive knowledge of the subject. Conclusion The researchers identified a strong correlation between informed adolescents and positive perceptions of the vaccine<sup>41</sup>.

Jaya Kumari et al. (2024) cross-sectional study conducted at a tertiary care hospital investigated the knowledge, attitudes, and practices (KAP) regarding HPV vaccination among 456 adolescent girls in Bihar. The research focused on identifying the specific factors that influence vaccine uptake and awareness in this demographic. Methodology The researchers utilized a questionnaire-based approach targeting girls visiting the outpatient department. The study assessed: General awareness of HPV infections and the vaccine. Personal vaccination status. Willingness to receive the vaccine. Demographic and socioeconomic influencers. Key Findings The study revealed significant barriers to vaccination, primarily driven by a lack of information: Demographics: The average participant was 17.2 years old, typically residing in a rural area and educated up to the 12th grade. Stark Awareness Gap: Only 12.94% were aware of cervical cancer, and a mere 2.63% had ever heard of thump vaccine. Vaccination Rates: Uptake was nearly non-existent; only one participant out of 456 had been vaccinated. Economic Factors: While 74.34% expressed a willingness to get vaccinated if provided for free, there was high uncertainty (69.07%) regarding whether parents would be willing to pay for the series. Information Sources: For the few who were informed, healthcare workers served as the primary source of knowledge. Conclusion The study concludes that awareness of HPV and its vaccine is critically low among adolescent girls in Bihar, resulting in an almost zero uptake rate<sup>42</sup>.

Prabhjot Saini et al. (2023) quantitative study, evaluated the knowledge and attitudes of adolescent girls in Ludhiana, Punjab, regarding the HPV vaccine as a preventive measure against cervical cancer. A secondary goal of the research was the development of "Information, Education, and Communication" (IEC) booklets to bridge the identified knowledge gaps. Methodology The research was conducted at two schools (G.G.S.S.S. Mansoran and S.K.S.S.G.S.S. Sarabhai) using the following parameters: Sample: 200 adolescent girls selected via non-probability convenient sampling. Tools: Data was gathered using a self-structured knowledge questionnaire and an attitude scale. Analysis: Researchers employed both descriptive and inferential statistics to interpret the data. Key Results The data revealed a significant lack of preparation and awareness among the students: Knowledge Levels: Over half of the participants (52.5%) possessed poor knowledge regarding the HPV vaccine (Mean score:  $11.27 \pm 2.94$ ). Attitude: A vast majority (84.5%) maintained a neutral attitude toward the vaccine, suggesting a lack of strong conviction either for or against it. Correlation: Statistical analysis showed no significant correlation between a girl's level of knowledge and her attitude ( $r = 0.005$ ), indicating that simply knowing about the vaccine did not necessarily shift her perspective. Conclusion The study concluded that adolescent girls in this region have below-average knowledge and a largely indifferent attitude toward HPV vaccination<sup>43</sup>.

Anusha Kamath et al. a (2021) cross-sectional observational study conducted study on awareness of HPV infection and vaccination among final-year medical students across Southern and Central India. Given that these students are future healthcare providers, the study aimed to gauge their preparedness to advocate for cervical cancer prevention. Methodology Participants: 354 medical graduates, aged 20 to 24. Sampling: A purposive snowballing technique was used to recruit subjects from various institutions. Data Collection:

Information was gathered via an online Google Forms questionnaire over a two-month period. Key Results While medical students showed higher general awareness than the general public, specific technical knowledge was lacking: Cervical Cancer Awareness: 55.4% correctly identified cervical cancer as the second most common cancer among Indian women, and 83.6% were familiar with its risk factorship Knowledge: Just over half (51.6%) knew the clinical conditions associated with HPV, while 69.2% understood protection methods. Technical Gaps: Despite their medical background, participants showed poor knowledge regarding the specific types of vaccines available in India and the required dosage schedules. Conclusion :The researchers concluded that even among medical professionals, there are significant gaps in vaccine-specific literacy. They recommended that medical school curricula be updated to include more robust training on HPV<sup>44</sup>.

Dewan et al. (2024) observational study, evaluated the awareness levels and attitudes of 490 middle- and high-school students (aged 11–16) in the Gwalior District of Northern India. The research sought to measure their understanding of cervical cancer, HPV infection, and the role of vaccination. Methodology Study Period: July 2023 to December 2023. Data Collection: A self-administered questionnaire was used to gather data, which was then analysed using frequency distributions and chi-square tests ( $P < 0.05$ ). Demographics: The average participant age was 13.67 years, with a sex ratio of 0.52:1 (male to female). Key Results The study highlighted several misconceptions and a general lack of preparedness for vaccination: Awareness Gaps: While 41% had heard of cervical cancer (mostly via mass media), only 36.9% were aware that HPV is its primary cause. Gender Disparity: Interestingly, male students showed significantly higher awareness than females. For instance, 60.1% of males knew HPV causes cervical cancer, compared to only 24.8% of females. Asymptomatic Transmission: Only 12.4% of students understood that a healthy-looking individual could still carry and transmit the virus. Vaccine Willingness: Acceptance was notably low, with only 11.6% of participants expressing a willingness to receive the HPV vaccine. Conclusion The researchers concluded that students in Gwalior have an alarmingly low level of HPV-related literacy<sup>45</sup>.

Sutar Shivani et al. (2024) evaluative study examined the impact of an Information, Education, and Communication (IEC) strategy on the knowledge of HPV vaccination among adolescent girls at P.C. Jabin Science College in Hubballi. Unlike purely descriptive studies, this research aimed to measure the direct effectiveness of educational interventions. Methodology Design: A pre-experimental, one-group pretest/post-test design. Sample: 30 adolescent girls selected via a simple random sampling technique. Tool: A structured knowledge questionnaire administered before and after the intervention. Intervention: The IEC approach, which uses diverse communication channels to spread health information. Key Results The intervention led to a dramatic and statistically significant improvement in the participants' understanding: Baseline (Pre-test): Most subjects (80%) started with only "average" knowledge, while 16% had "good" knowledge and 4% had "poor" knowledge. Post-Intervention (Post-test): After the IEC strategy was implemented, 100% of the participants achieved "good" knowledge scores. Knowledge Gain: There was a calculated 43.01% increase in knowledge scores following the program. Demographic Links: The study found that parental occupation was significantly associated with the girls' baseline knowledge levels. Conclusion :The researchers concluded that the IEC approach is a highly effective tool for enhancing vaccine literacy<sup>46</sup>.

Shweta Lakhera et al. (2024) mixed-methods cross-sectional study investigated the awareness, knowledge, and concerns regarding HPV and its vaccine among school teachers in Shimla, Himachal Pradesh. Recognizing that teachers are pivotal in shaping student health behaviours, the study compared educators

from both government and private institutions. Methodology The researchers employed a dual-approach design: Quantitative: A survey to assess the baseline level of awareness and knowledge. Qualitative: Focus group discussions to identify specific facilitators and barriers to raising awareness and promoting vaccine uptake. Key Results The study revealed a disparity between school types but a universal lack of depth in knowledge: Institutional Comparison: Private school teachers demonstrated significantly higher levels of awareness (CR= 2.39) and knowledge ( $P < .01$ ) regarding HPV compared to government school teachers. Overall Deficiency: Despite the comparative difference, the absolute level of knowledge across both groups was found to be extremely low, which the researchers noted as insufficient for supporting a successful prevention program. Barriers and Facilitators: Focus groups highlighted that while there are significant opportunities to engage teachers as health advocates, current barriers (such as lack of formal training and resources) hinder successful vaccination campaigns. Conclusion :The findings suggest that teachers are an underutilized resource in India's Universal Immunization Programme<sup>47</sup>.

Radhika M et al. (2018) cross-sectional study assessed the awareness and knowledge of HPV vaccination for cervical cancer prevention among 97 final-year medical students at Yene Poya Medical College in Mangalore. The study aimed to evaluate how prepared future physicians are to advocate for this preventive measure. Methodology Design: A questionnaire-based cross-sectional study. Participants: 97 medical students in their final year of training. Analysis: Results were interpreted using percentage-based descriptive statistics. Key Results :The study identified a strong foundation of general knowledge but highlighted specific gaps in practical details: Disease Awareness: 76% of students understood that cervical cancer is preventable, and 80% were aware of the causal link between HPV and the disease. Vaccine Awareness: While 72% knew that vaccines existed, their understanding of the logistics was significantly lower—only 30% knew the cost, and a mere 10% were aware of the vaccine's efficacy rates. Professional Attitude: Despite the knowledge gaps, the majority of students expressed a strong willingness to educate the public and debunk common myths and misconceptions. Conclusion :The researchers concluded that while medical students possess the right attitude for health advocacy, their formal education must be strengthened<sup>48</sup>.

Kate Coursey et al. (2024) mixed-methods study explored the acceptability of "catch-up" HPV vaccinations among emerging adult women (ages 18–26) in rural Mysore, India. This research is particularly significant as it identifies the specific socio-environmental factors that drive or hinder vaccine uptake in rural settings. Methodology The study was conducted between September 2022 and April 2023 using a two-phase approach: Qualitative Phase: Gender-stratified focus group discussions (FGDs) were held in Kannada to identify key attributes associated with the vaccine. Quantitative Phase: A conjoint analysis was performed with 101 women to rank the impact of seven specific attributes on their "Likelihood to Vaccinate" (LTV) across various hypothetical scenarios. Support: All participants received foundational education on cervical cancer and HPV during the study. Key Results The study highlighted a massive gap between initial awareness and potential acceptance: Baseline Awareness: Only 17.9% had previously heard of cervical cancer, and a staggering 2.7% knew of the HPV vaccine. Primary Influencers (LTV): The conjoint analysis revealed that social and financial factors were the strongest predictors of vaccine acceptance: Family Support: The most critical factor (Impact Score: 19.37). Peer Influence: The second most influential factor (Impact Score: 18.01). Cost and Location: Participants showed a strong preference for free vaccines administered at government counterstrike Perception: While the number of doses was less concerning, the perceived risk of acquiring HPV and potential side effects significantly

influenced their decisions. Conclusion :The researchers concluded that while individual knowledge is currently poor, the path to successful vaccination lies in social networks<sup>49</sup>.

Seok Won Jin et al. (2023) study applied the Transtheoretical Model (Stages of Change) to examine how parental knowledge and beliefs influence their readiness to vaccinate their adolescents (aged 11–17) against HPV. The research focused on counties in Tennessee and Mississippi to understand the psychological drivers of the parental decision-making process. Methodology Design: A quantitative, cross-sectional online survey. Sample: 497 parents recruited through convenience sampling. Variables Measured: Sociodemographic data, HPV knowledge, perceived susceptibility, vaccine hesitancy, and the specific "stage of readiness" (ranging from pre-contemplation to action). Statistical Analysis: Binary logistic regression was used to isolate the factors that distinguish parents at higher stages of readiness from those at lower stages. Key Results The study identified three primary psychological predictors that moved parents along the readiness spectrum: Knowledge & Susceptibility: Parents with a higher stage of readiness possessed significantly greater knowledge of the HPV vaccine and a higher perceived risk (susceptibility) of their child contracting the virus. Reduced Hesitancy: Lower levels of vaccine hesitancy were strongly correlated with advanced stages of readiness. Stage-Specific Differences: Even after controlling for sociodemographic factors, these psychological variables remained the strongest indicators of whether a parent was moving toward a positive vaccination decision. Conclusion The researchers concluded that a "one-size-fits-all" approach to vaccine promotion is likely ineffective. Instead, they recommend stage-specific interventions: Early Stages: Focus on increasing basic knowledge and correcting risk perceptions. Later Stages: Focus on reducing specific hesitancy factors and logistical barriers to help parents move into the "action" phase<sup>50</sup>.

Laura Brunelli et al. (2021) observational study examined the disparities in knowledge, awareness, and parental support regarding the HPV vaccine among first-year secondary school students in Udine, Northern Italy. The study specifically aimed to identify gender-based biases that might hinder optimal vaccination coverage. Methodology Design: A quantitative, questionnaire-based observational study conducted between April and May 2018. Participants: High school freshmen, with an emphasis on comparing male and female responses. Analysis: Researchers utilized Chi-Square/Fisher tests and multivariate logistic regression to explore the relationship between sociodemographic factors, knowledge, and actual vaccine uptake. Key Results The findings revealed significant gaps in health literacy and a distinct gender divide: Insufficient Knowledge: Overall knowledge was poor across the sample. Notably, a "worrying" percentage of students mistakenly believed the HPV vaccine was intended to prevent HIV/AIDS. Poor Awareness: Most students were unaware of their own vaccination status and were not included in the decision-making process regarding their immunization. Gender Bias: Female students consistently outperformed males in terms of HPV knowledge, awareness of the vaccine's purpose, and personal engagement with the vaccination process. Decision-Making: More than half of the adolescents reported having no involvement in the deliberation to receive the vaccine, with the choice being handled entirely by parents. Conclusion :The study concluded that HPV vaccination strategies in Northern Italy are affected by gender bias, leaving boys at a particular disadvantage regarding education<sup>51</sup>.

### **C. Review of literature related to Effectiveness of Pamphlet**

Sunita Tata et al. (2019) evaluative study, measured the impact of an educational pamphlet on the knowledge and attitudes of 400 nursing staff members regarding the prevention of H1N1 influenza (Swine Flu) at a tertiary care hospital in Karad. Methodology Design: A pre-experimental, one-group pre-test/post-test design. Sample: 400 nurses selected from a tertiary care setting. Process: \* Day 1: Pre-test assessment

using structured questionnaires for knowledge and attitude. Day 7: Distribution of the educational pamphlet. Post-test: Follow-up assessment using the same tools to measure the gain in scores. Key Results The intervention produced a significant shift in both technical understanding and professional outlook: Knowledge Scores: Pre-test: Only 1% had "good" knowledge, while 97% were in the "average" range and 2% were "poor." Post-test: The "good" knowledge category rose to 27%, and the "poor" category dropped to just one participant. Attitude Scores: Pre-test: 27.2% of nurses held a "good" attitude toward prevention, while 72.7% were "average." Post-test: There was a dramatic improvement, with 97% of participants achieving a "good" attitude score. Conclusion: The researchers concluded that a simple, cost-effective tool like a pamphlet is highly successful in enhancing the clinical readiness of nursing staff<sup>52</sup>.

Ghadge Snehal et al. (2023) quasi-experimental study evaluated the effectiveness of an educational pamphlet in enhancing knowledge about planned parenthood among 60 first-time expectant couples. The study aimed to address the information gap for new parents during their transition into parenthood. Methodology Design: A quasi-experimental, one-group pre-test/post-test research design. Sample: 60 eligible couples recruited via a non-probability purposive sampling technique. Tool: A structured knowledge questionnaire focusing on various aspects of planned parenthood. Statistical Analysis: A paired 't' test was used to compare mean scores, while a Chi-square test examined the association between baseline knowledge and demographic variables. Key Results The intervention led to a statistically significant improvement in knowledge levels: Pre-test Baseline: The average knowledge score was 7.93 (SD  $\pm$  1.33). Post-test Improvement: After exposure to the pamphlet, the average score rose to 12.60 (SD  $\pm$  1.11). Statistical Significance: The paired t-test value of 22.14 (with a p-value of 0.00) confirmed that the knowledge gain was not due to chance but was a direct result of the educational material. Conclusion :The researchers concluded that the use of a pamphlet is an effective and accessible method for improving the knowledge of first-time parents regarding planned parenthood<sup>53</sup>.

K. Priya Thomas et al. (2022) descriptive evaluative study, assessed how an educational pamphlet influenced the understanding of anticoagulation therapy among 50 cardiac patients in Mumbai. The research focused on ensuring patients understand their medication protocols to prevent complications. Methodology Design: A descriptive evaluative approach using a one-group pre-test/post-test research design. Sample: 50 cardiac patients selected through a non-probability convenient sampling technique. Setting: A metropolitan hospital in the Mumbai district. Analysis: The researchers utilized both descriptive and inferential statistics, specifically the paired t-test, to measure the significance of knowledge improvement. Key Results The study demonstrated a marked increase in patient comprehension following the intervention: Knowledge Gain: The average knowledge score rose from a pre-test mean of 12.60 to a post-test mean of 21.26. Statistical Significance: The calculated t-value was 18.877, which significantly exceeded the tabulated value of 2.010 (at a 0.05 level of significance). Effectiveness: The data confirmed that the pamphlet was a highly effective tool for educating patients on the complexities of anticoagulation therapy. Conclusion :The researchers concluded that structured, written educational materials like pamphlets are essential for cardiac patients<sup>54</sup>.

Karim et al. (2020) study, assessed how Information, Education, and Communication (IEC) strategies influenced the knowledge and practices of mothers regarding Measles-Rubella (MR) vaccination in the slum areas of Pune. The study sought to bridge the immunization gap in high-risk urban environments by empowering primary caregivers with accurate health information. Methodology Design: A pre-experimental, one-group pre-test/post-test research design. Sample: 80 mothers of children under the age of 15 living in selected slum communities. Tools: Data was collected using a structured questionnaire for

knowledge and an observational checklist to evaluate vaccination practices. Sampling: A non-probability convenience sampling technique was utilized. Key Results The intervention resulted in statistically significant improvements across both metrics ( $p < 0.05$ ): Knowledge Score 8.48 (2.9) 14.27 (1.64) 15.12 Practice Score 26.36 (4.25) 38.5 The data indicates that prior to the IEC session, mothers had inadequate knowledge and suboptimal practices. After the intervention, scores in both areas rose sharply, demonstrating that the educational program effectively corrected misconceptions and improved the likelihood of proper vaccination adherence. Conclusion The researchers concluded that mothers in urban slums often lack the necessary information to ensure timely MR vaccination<sup>55</sup>.

Sohmat Vanhishikha et al (2022) evaluative study investigated the impact of an educational pamphlet on the awareness of pregnancy health applications among 60 final-year degree students in Bangalore. The study explored how digital health tools can be leveraged to improve maternal health literacy among late adolescent girls. Methodology Design: A quasi-experimental, one-group pre-test/post-test research design. Sample: 60 late adolescent girls from RR Advanced Studies College, selected via a probability sampling technique. Tools: The researchers used a structured knowledge questionnaire to assess baseline and post-intervention understanding. Variables: The study also examined the association between post-test knowledge and sociodemographic factors, such as the participants' dietary habits. Key Results The intervention proved remarkably successful in eliminating knowledge deficits: Baseline (Pre-test): More than half (51.7%) of the participants had inadequate knowledge, 29.9% had moderately adequate knowledge, and only 18.3% were well-informed. Post-Intervention (Post-test): Following the distribution of the pamphlet, 100% of the participants achieved "adequate" knowledge scores. Significance: Statistical analysis showed a significant correlation between dietary habits and knowledge levels, with post-test scores exceeding the critical values required for significance. Conclusion :The study concluded that educational pamphlets are highly effective in introducing adolescent girls to pregnancy health apps.<sup>56</sup>

Sweta Tiwari (2019) pre-experimental study, evaluated how educational pamphlets influenced stress levels and coping mechanisms among 40 nurses at Shri Mahant Indresh Hospital in Dehradun. The research sought to provide clinical staff with practical tools to manage the high-pressure environment of healthcare. Methodology Design: A one-group pre-test/post-test research design. Sample: 40 nurses selected via a non-probability convenient sampling technique. Assessment Tools: Data was collected using a modified four-point rating scale to measure both stress intensity and the frequency of coping strategy use. Analysis: Effectiveness was measured using a paired t-test, while the relationship between stress and coping was determined using the Karl Pearson correlation coefficient. Key Results The intervention demonstrated a dual benefit: significantly reducing psychological strain while simultaneously building resilience. Reduction in Stress: The mean stress score dropped from a pre-test level of 23.35 to a post-test level of 15.85. The calculated t-value (11.149) far exceeded the critical table value of 2.02. Improvement in Coping: The mean score for coping strategies rose from 29.30 to 37.02. Again, the t-value (11.201) indicated a statistically significant improvement ( $p < 0.05$ ). Effectiveness: The study found a clear correlation between the distribution of the pamphlet and the nurses' ability to identify and implement healthier stress-management techniques. Conclusion The study concluded that providing structured, written information via pamphlets is a beneficial and low-cost intervention for hospital settings. By improving knowledge of coping strategies, healthcare facilities can effectively reduce occupational stress among nursing staff, potentially leading to better workplace well-being and patient care.<sup>57</sup>

Neelima Rani Chourasia (2024) study, investigated how an educational pamphlet could improve awareness regarding the negative impacts of excessive mobile phone use among mothers in Bhopal. The

research focused on empowering parents to recognize and mitigate the digital health risks faced by their school-aged children. Methodology Sample: 60 mothers of school-going children living in a selected urban area. Sampling Technique: Non-probability convenient sampling. Tools: Data was gathered using a sociodemographic profile and a self-structured knowledge questionnaire specifically focused on the physical, psychological, and social "ill effects" of mobile devices. Design: A pre-test/post-test framework was used to evaluate the shift in knowledge levels. Key Results The intervention led to a dramatic and statistically significant doubling of knowledge scores: Knowledge Increase: The mean knowledge score surged from a pre-test baseline of 41.6 to a post-test score of 82. Statistical Significance: The calculated t-value of 31.49 was found to be significant at the 0.05 level. Effectiveness: The study confirmed that the pamphlet was an exceptionally effective medium for elevating the literacy of mothers regarding digital safety and child health. Conclusion The researcher concluded that there is a substantial need for parental education in the digital age. Providing mothers with structured information via pamphlets successfully bridged the knowledge gap, potential<sup>58</sup>.

Maryam Olikodi et al. (2023) semi-experimental study compared the effectiveness of the Jigsaw teaching technique against traditional lecture-based methods for training healthcare provider students in basic first aid. The study aimed to identify more engaging and effective pedagogical strategies for medical education. Methodology Design: A semi-experimental, case-control study. Participants: 50 healthcare provider students randomly assigned to either the Case group (Jigsaw method) or the Control group (Traditional lecture method). Duration: Four sessions, each lasting 90 minutes, focused on basic first-aid training. Evaluation: Knowledge was measured using pre- and post-tests to calculate the learning rate in both groups. Key Results The study found that active learning significantly outperformed passive instruction: Demographic Balance: There were no statistically significant differences between the two groups regarding age ( $P=0.678$ ), sex ( $P=0.474$ ), or academic GPA ( $P=0.68$ ), ensuring a fair comparison. Learning Outcomes: The increase in knowledge (the difference between pre- and post-test scores) was significantly higher in the experimental (Jigsaw) group compared to the control group ( $P < 0.001$ ). Pedagogical Impact: The Jigsaw method—where students become "experts" in a specific topic and teach their peers—was confirmed to be a superior tool for information retention and engagement. Conclusion :The researchers concluded that the Jigsaw training method is highly effective for healthcare students, likely due to its collaborative and interactive nature. While the results are promising, the study recommends further large-scale research to establish this method as a standard in medical curricula<sup>59</sup>.

Bhupendra Kumar et al. (2022) quantitative study, evaluated the effectiveness of an information pamphlet in improving the knowledge of 50 primigravida women (first-time expectant mothers) regarding common pregnancy-related complications and their management. Methodology Design: A quantitative, pre-experimental (one-group pre-test/post-test) research design. Sample: 50 primigravida women selected through a purposive sampling technique. Analysis: The researchers used a paired t-test to determine the significance of the intervention, with the level of significance set at 0.05. Key Results The study demonstrated a substantial and statistically significant improvement in maternal health literacy: Score Improvement: The mean knowledge score nearly doubled, rising from a pre-test baseline of 9.14 to a post-test score of 17.34. Adequacy of Knowledge: In the post-test, 78% of participants achieved an "adequate" knowledge level (scoring above 75%), while the remaining 22% reached a "moderate" level. Statistical Impact: The calculated t-value was 17.697, significantly exceeding the table value of 2.00, confirming the pamphlet's effectiveness. Demographic Influences: A significant association was found between knowledge gains and the participants' education, occupation, monthly income, and prior exposure to

health information. Conclusion The researchers concluded that information pamphlets are a vital tool for first-time mothers. Increasing knowledge about pregnancy-related problems is essential not only for the overall growth and health of the fetus but also for significantly reducing preventable maternal complications.<sup>60</sup>

Bahrami et al. (2021) experimental study, compared the effectiveness of two different educational mediums—multimedia and pamphlets—in teaching exercise training to improve the quality of sexual life among postmenopausal women in Quechan. Methodology Participants: 70 postmenopausal women divided into two equal groups (n=35 each). Process: All participants attended an initial 45-minute training session. One group then received follow-up education via multimedia, while the other received pamphlets. Assessment Tools: The researchers used a demographic survey, a quality of sexual life questionnaire, a pelvic floor exercise checklist, and the Brink scale to measure pelvic floor muscle strength. Analysis: Data was evaluated using various statistical tests, including Chi-square, Friedman, t-student, Wilcoxon, and Mann-Whitney tests. Key Results Both interventions led to statistically significant improvements, with neither method proving vastly superior to the other: Multimedia Group: Mean sexual life quality scores rose from 73.15  $\pm$  1.72 to 79.07  $\pm$  11.3 (P=0.024). Pamphlet Group: Mean scores rose from 74.3  $\pm$  9.59 to 80.52  $\pm$  8.27 (P=0.007). Comparison: When comparing the final results of both groups, the researchers found no significant difference in the level of improvement between those who used multimedia and those who used pamphlets. Conclusion the study concluded that both multimedia and pamphlets are equally effective tools for delivering exercise training.<sup>61</sup>

Mamat Mamat et al. (2022) quasi-experimental study explored a unique environmental approach to health education by testing the effectiveness of "point-of-use" pamphlets on the iodized salt consumption and management behaviours of 76 housewives. Methodology Design: A quasi-experimental study featuring an intervention group and a control group. Sample: 76 housewives, divided equally (38 per group). The "Nudge" Intervention: Intervention Group: A pamphlet was attached directly to the kitchen wall or cooking area, serving as a constant visual cue on how to properly process and store iodized salt. Control Group: Received a standard leaflet containing the same information but without the instruction to post it in the cooking area. Duration: The study measured behaviour at baseline (pre-test) and again after a four-month intervention period. Analysis: Data were analysed using logistic regression to determine the Odds Ratio (OR) of behaviour change. Key Results The study found that the physical placement of the educational material significantly influenced behavioural outcomes: Behavioural Shift: There was a notable difference in the proportion of housewives who correctly managed iodized salt in the pamphlet group compared to the leaflet group. Statistical Impact: After controlling for other variables, the Odds Ratio (OR) was 3.37, indicating that those with the pamphlet attached to their kitchen wall were over three times more likely to demonstrate proper salt management than the control group. Environmental Cues: The success of the intervention was attributed to the "reminder effect" of having the information visible at the exact moment the behaviour (cooking) was occurring. Conclusion: The researchers concluded that the location of educational media is just as important as the content itself.<sup>62</sup>

Stawan Chougule et al. (2023) study evaluated the impact of an educational pamphlet on the awareness levels regarding the COVID-19 precaution (booster) dose among 100 residents in urban Pune. The study sought to address vaccine hesitancy and information gaps during the later phases of the pandemic response. Methodology Design: A correlative descriptive research design (though implemented with a pre-test/post-test evaluation of the intervention). Sample: 100 individuals from selected urban areas of Pune city. Sampling Technique: Non-probability purposive sampling. Tools: Data was gathered using a demographic

and clinical profile, along with a knowledge-based questionnaire. Analysis: Descriptive statistics were utilized to compare baseline knowledge against post-intervention results. Key Results The introduction of the pamphlet led to a clear shift in the community's understanding of the booster dose: Baseline (Pre-test): The majority (82%) possessed only "average" knowledge, while 11% had "poor" knowledge, and a small minority (7%) had "good" knowledge. Post-Intervention (Post-test): The "good" knowledge category increased significantly to 36%. The number of participants with "average" knowledge moved to 63%, and the "poor" knowledge category was nearly eliminated, dropping to just 1%. Conclusion The study concluded that the informational pamphlet was an effective tool for improving public knowledge regarding the necessity and timing of the COVID-19 precaution dose.<sup>63</sup>

Chandani Modi et al. (2022) pre-experimental study, evaluated the impact of an educational pamphlet on the knowledge and attitudes of 60 adolescents living with HIV in Gujarat. The research focused on two critical areas of survival: effective home care management and strict adherence to Anti-Retroviral Therapy (ART). Methodology Design: A pre-experimental, one-group pre-test/post-test research design. Sample: 60 adolescents living with HIV, recruited via a non-probability purposive sampling technique. Tools: A three-part assessment tool was used: Section A: Demographic profiling. Section B: A structured knowledge questionnaire. Section C: A Likert scale to measure attitude changes. Analysis: The researchers used paired t-tests to determine the effectiveness of the pamphlet at a 0.05 level of significance. Key Results The study demonstrated that a simple printed pamphlet could significantly shift both the cognitive and emotional perspectives of adolescents managing HIV: Knowledge Gain: The mean score rose from 13.00 (pre-test) to 22.09 (post-test). The calculated t-value of 21.10 far exceeded the critical table value (2.00). Attitude Shift: The mean attitude score improved from 41.58 to 65.25, with a t-value of 13.41, indicating a statistically significant positive change in how adolescents view their treatment and care. Demographic Correlation: The study found that while most demographic factors (religion, education, parental status) had no impact, gender was significantly associated with the baseline (pre-test) knowledge scores. Conclusion the researchers concluded that the pamphlet was a highly successful intervention for increasing knowledge and fostering a more positive attitude toward ART and home care<sup>64</sup>

### **Review of literature related to HPV Vaccine effectiveness**

Kazuko Akutsu et al. (2025) longitudinal intervention study evaluated whether distributing Parent Training (PT) pamphlets during routine health checkups could improve long-term adherence to positive parenting techniques. This study is unique in your collection as it measures behavioural adherence over a two-year period rather than immediate knowledge gain. Methodology Design: A comparative intervention study involving an Intervention Group (received PT pamphlets at the 1.5- year child health checkup) and a Control Group (did not receive pamphlets). Sample: 114 participants (55 intervention, 59 control). Follow-up: Data were collected two years later, during the 3.5-year health checkups, using self-administered questionnaires. Metrics: Researchers assessed adherence to three specific recommended parenting techniques, with a focus on parents who practiced at least two of the three. Key study found that while the pamphlets had a limited impact on the general population, they were highly effective for specific "at-risk" subgroups: General Adherence: In the intervention group, 29.1% adhered to at least two techniques, compared to 24.6% in the control group. However, this broad difference did not reach statistical significance. Subgroup Significance: For parents whose children had developmental concerns (requiring follow-up checks), the pamphlet significantly improved adherence. Specific Technique: Within this follow-up subgroup, there was a significant improvement in the "avoid immediate reactions" approach

compared to the control group. Conclusion The researchers concluded that while simple educational pamphlets may not change behaviour for all parents, they are an effective, low-cost intervention for parents of children with developmental concerns.<sup>65</sup>

Ellingson et al. (2023) analysed 21 studies across multiple databases to determine how age impacts the effectiveness of the Human Papillomavirus (HPV) vaccine. The study's findings are summarized below: Optimal Timing: 17 of the 21 studies concluded that the vaccine is most effective when administered to the youngest age groups. Effectiveness Gap: Ages 9–14: Showed high protection rates, ranging from 74% to 93%. Ages 15–18: Showed significantly more variance and lower potential protection, ranging from 12% to 90%. Conclusion: The data strongly supports "on-time" vaccination, as the vaccine's ability to prevent HPV-related diseases diminishes as the age of the first dose increases<sup>66</sup>.

Markowitz et al. (2018) examined how the number of HPV vaccine doses impacts real-world effectiveness. By filtering 3,787 articles down to 14 high-quality studies, the researchers evaluated outcomes for bivalent and quadrivalent vaccines across three categories: HPV prevalence, anogenital warts, and cervical abnormalities. Key Findings Dose-Response Relationship: Generally, the vaccine was most effective with three doses, followed by two, and then one. Effectiveness by Dose: 3 Doses: All studies showed significant protection. 2 Doses: 11 studies showed significant protection (at various intervals). 1 Dose: 6 studies showed significant protection. The "Buffer Period" Factor: Studies that accounted for a "buffer period" (time allowed for the vaccine to become effective before counting infections) found that the gap in protection between three doses and fewer doses was actually quite small. Confounding Variables: Differences in effectiveness between dose groups often reflected the recipients' prior exposure or behavioural risks rather than just the vaccine itself. Conclusion: While a three-dose regimen consistently provides the highest level of protection, several studies found that two doses can offer comparable results. This research highlights that while the full series is ideal, even partial vaccination provides measurable defines against HPV-related diseases<sup>67</sup>.

Spinner et al. (2019), This 11-year surveillance study evaluated the long-term impact of the HPV vaccine on a community of young women (ages 13–26). The researchers focused on two primary metrics: vaccine effectiveness in those who received the shot and herd protection in those who did not. Key Methodology Researchers analysed four waves of data from hospital and community clinics, using propensity score-adjusted logistic regression to ensure that changes in participant demographics over a decade didn't skew the results. Major Findings The study observed a dramatic shift in both vaccination coverage and viral prevalence: Vaccination Uptake: Rates surged from 0% to over 84% during the study period, with the majority receiving the 4-valent vaccine. Vaccine Effectiveness: Among vaccinated women, the prevalence of vaccine-type HPV plummeted by nearly 81% (falling from 35% to 6.7%). Herd Protection: Even among unvaccinated women, HPV detection dropped by 40% (from 32.4% to 19.4%), proving that high community vaccination rates protect those without immunity. Conclusion the study confirms that a decade after its introduction, the HPV vaccine has significantly reduced the prevalence of the virus<sup>68</sup>.

Rosenblum et al. (2022) study highlights the significant long-term success of the HPV vaccination program in the United States. Here is a rephrased version that maintains the technical accuracy while improving flow and readability: Researchers analysed data from the National Health and Nutrition Examination Survey (NHANES) to evaluate the long-term effectiveness of the quadrivalent HPV vaccine (4vHPV). The study tracked changes in HPV prevalence among sexually active Americans aged 14 to 24, comparing the pre-vaccine era (2003–2006) to subsequent vaccine eras through 2018. Methodology Participants: Sexually experienced males and females (ages 14–24). Data Collection:

Self-collected cervicovaginal and penile swabs were tested for HPV DNA. Key Metrics: Vaccine Impact: Changes in HPV prevalence over time across the general population. Vaccine Effectiveness (VE): Comparison of infection rates between vaccinated and unvaccinated individuals. Calculation: Estimated using the formula:  $(1 - \text{prevalence ratio}) \times 100$ . Key Findings The results demonstrate a dramatic decline in the targeted HPV types, particularly among females. Overall Impact 85% reduction in 4vHPV types Impact (Vaccinated) 90% reduction Impact (Unvaccinated) 74% reduction (indicating strong herd protection) Vaccine Effectiveness Ranged. Conclusion the study concludes that the U.S. vaccination program has been highly successful, showing an increasing impact over time. Notably, the high reduction rate among unvaccinated females (74%) suggests robust herd protection<sup>69</sup>.

Setiawan et al. (2024) meta-analysis, focusing on the clinical implications of simplified HPV dosing schedules. Study Overview: Clinical Efficacy of Single-Dose HPV Vaccination This 2024 systematic review and meta-analysis by Setiawan et al. evaluated whether a single dose of the HPV vaccine provides sufficient protection compared to the standard two- or three-dose regimens. The study synthesized data from a massive cohort of 902,368 vaccinated women. Methodology & Scope The researchers assessed the comparative effectiveness of the one-dose schedule across several critical clinical outcomes: Infection Rates: Prevention of HPV16, HPV18, and overall HPV infections. Pré-cancerous Indicators: Incidence of High-grade Squamous Intraepithelial Lesions (HSIL), Atypical Squamous Cells (ASC-H), and Cervical Intraepithelial Neoplasia (CIN2/3). Key Results The analysis indicates that a single-dose regimen may be as effective as multi-dose schedules. Key findings include: Comparable Protection: One-dose effectiveness appears to be "on par" with two- or three-dose schedules in preventing infection and pre-cancerous lesions. Long-term Immunity: The single dose demonstrated the ability to provide immunogenic protection for at least 8 years of follow-up. Clinical Mitigation: The data showed a significant reduction in both active infections and the development fore-cancerous cervical cells. Conclusion and Future Outlook While the findings strongly support the potential of a single-dose strategy, the authors emphasize a cautious transition: Current Standing: The single dose is a promising tool for expanding vaccine access and simplifying logistics. Need for Data: Further research and longer-term longitudinal studies are required to build a "robust evidence base" before officially changing global recommendations. Strategic Impact: Continued investigation is essential to refine international vaccination strategies and public health policies<sup>70</sup>.

Egemen et al. (2022) emphasizes that the timing of the HPV vaccine is just as critical as the vaccine itself. By analysing NHANES data, the researchers investigated how the age at vaccination impacts its effectiveness and whether racial disparities exist in vaccine uptake. Study Objective: The Importance of "Pre-Debut" Vaccination The study aimed to determine how many women are vaccinated before their first sexual encounter (sexual debut) and how delaying the vaccine affects the prevalence of high-risk HPV types 16 and 18. Effectiveness by Vaccination Timing The data revealed a clear "effectiveness gap" based on when the first dose was administered: Unvaccinated 6% — Post-Debut Vaccination 3% 41% reduction Pré-Debut Vaccination <1% Key Findings on Timing and Uptake <mark id="p\_4"> Missed Windows: While 56% of eligible participants were vaccinated, only 21% received their first dose by age 12 (the ACIP-recommended age). Average Age: The mean age for the first dose was 14.5 years, significantly later than recommended. Debut Status: Among those vaccinated, 41% received their first dose after sexual debut, which significantly limits the vaccine's preventative power. Impact of Delay: Vaccinating by age 12 prevents the majority of lifetime cervical cancers caused by HPV-16/18; however, this protection drops by 25% if vaccination is delayed until age 16. Demographics and Racial Disparities The study assessed

whether race or ethnicity influenced the likelihood of timely vaccination. Overall, the differences were found to be negligible. Timing: Roughly the same proportion of participants across all racial groups (32%–35%) were vaccinated before sexual debut. Core Conclusion :The study reinforces that early vaccination is paramount. While the vaccine remains beneficial after sexual debut, its ability to slash HPV-16/18 prevalence is nearly twice as effective when administered before any potential exposure<sup>71</sup>.

Akimbo et al.(2022)provides a critical synthesis of the economic and logistical challenges surrounding HPV vaccine delivery globally. The study highlights a clear divide between how high-income and low-income regions approach vaccination. Study Scope and Methodology The research team conducted an extensive review of literature from CINAHL Plus, Embase, and PubMed, focusing on the intersection of three factors: Reach: How many people are actually getting vaccinated? Cost: What is the financial burden of these programs? Cost-effectiveness: Is the investment yielding a significant public health return? After screening 773 articles and assessing 251 full-text papers, the authors included 15 high-quality studies in their final analysis. Key Findings: Two Distinct Strategies The review identified two primary archetypes for vaccine delivery based on a country's existing infrastructure: Without National Programs Adoption & Sustainability Utilizing demonstration programs to test how to provide vaccines to adolescents reliably. With National Programs Optimization & Standards Akimbo and colleagues conclude that while the HPV vaccine is a powerful tool, its global success depends on: Tailored Interventions: Moving away from "one-size-fits-all" strategies to programs designed for specific local contexts in LMICs. Evidence-Based Implementation: Future implementation of vaccine programs must be accompanied by rigorous evaluation of their cost-effectiveness. Sustainability: Focus should shift toward making these programs financially viable for the long term, rather than relying on temporary pilot projects<sup>72</sup>.

Kjaer et al.(2021) provides some of the most compelling real-world evidence to date, linking Vaccination directly to a reduction in actual cervical cancer cases, rather than just HPV infections or pre-cancerous lesions. Study Design: A Massive Nationwide Cohort Researchers utilized Denmark's comprehensive national registries to track 867,689 women (aged 17–30)between 2006 and 2019. By treating vaccination status as a "time-varying variable," they could precisely compare the cancer rates of vaccinated women against those who remained unvaccinated. The Role of Age at Vaccination The study stratified results by the age at which the women received the vaccine, revealing that the timing of the shot is the single biggest predictor of its success:≤16 years old 0.14 86% reduction17–19 years old 0.32 68% reduction20–30 years old 1.19 (unadjusted).A unique aspect of this study was how it handled women who may have already had undiagnosed cancer at the time of vaccination (prevalent disease):The 20–30 Age Group: Initially, women vaccinated later in life appeared to have a higher cancer rate (IRR1.19). This is likely because women already concerned about their health or symptoms were more likely to seek out the vaccine. The Buffer Effect: When the researchers applied a 4-year buffer period (discounting any cancer found within4 years of the shot), the IRR for the 20–30 group dropped to 0.85. This suggests that while the vaccine still offers some protection for older women, it cannot reverse a disease process that has already started. Final Conclusion: The Danish data confirms that population-level effectiveness is highest when girls are vaccinated before age<sup>73</sup>.

Martellucci et al. (2021) study shifts the focus to how HPV vaccination impacts real-world clinical outcomes within an organized screening program. By analysing data from the Ferrara Province in Italy, the researchers demonstrated that even "catch-up" vaccinations significantly reduce the risk of abnormal Pap test results. Study Objective: Impact on Cervical Screening Outcomes The study aimed to determine if women who were vaccinated as part of a "catch-up" cohort (after the initial childhood window) saw a

reduction in cervical abnormalities—such as low-grade or high-grade lesions—detected during routine screening. Methodology Design: A retrospective cohort study using administrative health records from 2011–2018. Population: 7,785 women born between 1986 and 1993. Metric: Logistic regression was used to compare the incidence of abnormal cytology (Pap smears) against the number of vaccine doses received (one, two, or three). Key Findings: Effectiveness Across Doses Despite the participants being older (mean age of 27.5), the vaccine showed strong protective effects: Overall Risk Reduction: Women who received at least one dose were significantly less likely to have abnormal screening results, with an Adjusted Odds Ratio (or) of 0.52. This translates to roughly a 48% reduction in risk compared to unvaccinated women. The Power of One Dose: Notably, the reduction in risk remained significant even for women who received only single dose. Consistency: The protective effect was consistent across both the bivalent and quadrivalent vaccines. Proven Durability: The results held steady even when "buffer periods" (1, 6, or 12 months) were applied to ensure the abnormalities weren't already present at the time of vaccination. Conclusion the Italian study provides crucial evidence that HPV vaccination programs remain highly effective when integrated with national screening efforts. It reinforces two major points: Catch-up programs work: Even women vaccinated outside the primary early-childhood window see nearly a 50% reduction in cervical abnormalities<sup>74</sup>.

Nygård et al. (2023) registry-based study offers an expansive look at the real-world impact of the quadrivalent HPV vaccine (bhp) on anogenital warts (AGW) across 2.2 million individuals in Norway. It provides critical data on how age impacts vaccine success and the extent of "herd protection" for men. Study Objectives The researchers aimed to answer three key questions: How effective is the vaccine at preventing the first episode of AGW in females? Does the vaccine prevent a second episode in women who have already been infected? How does a female-only vaccination program affect the risk of AGW in unvaccinated males? Methodology The study tracked birth cohorts from 1975 to 2003 using national registries between 2006 and 2016. Researchers used Cox regression models to calculate Hazard Ratios (HRs), which measure the likelihood of an AGW episode compared to unvaccinated individuals. Key Findings: The Crucial Influence of Age 1. Prevention of First Episode (Females) The vaccine's ability to prevent initial infection was highly dependent on the age at which it was administered. Lower Hazard Ratios indicate higher effectiveness: ≤ 15 years old 0.2 80% reduction in risk 16–17 years old 0.3 70% reduction in risk 18–19 years old 0.5 50% reduction in risk 20–24 years old 1.0 No statistical benefit 25+ years old 1.3 – 2.7. Conclusion The Nygård study reinforces two major clinical realities: Prophylaxis vs. Therapy: The vaccine is a powerful preventative tool if given early (ideally ≤ 15 years old), but it provides no clinical benefit for preventing recurrences once a person has already been infected with those specific HPV types. Broad Public Health Impact: Female vaccination programs are effective enough to lower the disease burdening the male population, even without a direct male vaccination mandate<sup>75</sup>.

## Research Methodology

Research methodology are the techniques researchers use to structure a study to gather and analyse information relevant to research question the two alternatives paradigm corresponds to those different methods for developing evidence a key methodology distinction is between quantitative research which is closely allied with the positivism and qualitative research which is associated with constructive enquiry.<sup>75</sup> This chapter deals with the description of research methodology as research approach, research design, settings of the study, population, sampling, sampling technique, sample size, tool preparation. validity of tool, pilot study, procedure for data collection and the plan of data analysis adopted by the

researcher. This chapter deals with the methodology used by the researcher to study effectiveness of pamphlet on knowledge regarding importance of cervavc vaccine among adolescents in selected schools<sup>76</sup>.

**RESEARCH DESIGN**

The research design is the plan, structure, and strategy of investigations of answering the research question is the overall plan or blue print the researcher selects to carry out their study.<sup>76</sup>In view of nature of the problem and to accomplish the objectives of the study, pre-experimental one grouped-test post-test pre-experimental research design was used to evaluate the effectiveness of pamphlet on knowledge regarding importance of cervavc vaccine among adolescents in selected schools. The study design shows that on first day (day 1): pre-test was given to assess the existing knowledge regarding importance of cervavc vaccine among adolescents in selected schools. The pamphlet was distributed on the same day. On the seventh day (day 7) post-test was conducted to assess the gain in knowledge using the structure knowledge questionnaire. The study design systematically represented is as follow:

SAMPLE	PRE-TEST	INTERVENTION	POST TEST
Adolescents between the age group 14-17 years	Administration of structured knowledge questionnaire on day 1.	Pamphlet was distributed	Administration of structured knowledge questionnaire on the day 07.
	O <sub>1</sub>	X	O <sub>2</sub>

**TABLE NO. III (1) A pre-experimental one group pretest post-test research design**

**KEY:**

**O<sub>1</sub>:** Administration of Pamphlet to assess pretest knowledge regarding importance of cervavc vaccine among adolescents in selected schools on day 01.

**X :** Intervention includes proving information through Pamphlet regarding cervavc vaccine among adolescents in selected schools on day 01.

**O<sub>2</sub> :** Administration of Structured knowledge questionnaire to assess post-test knowledge regarding importance of cervavc vaccine among adolescents in selected schools on day 07.

**SETTING OF THE STUDY**

Setting of Study refers to "Physical location and condition in which data collection takes place in study".<sup>75</sup> The present study was conducted in selected schools.

**VARIABLE OF THE STUDY**

Variables are qualities, properties or characteristics of person, things or situations that change or vary. Chinn and Kramer stated that variables are concepts at different level of abstraction that are concisely declined to promote their measurement or manipulation within study.<sup>75</sup>

These variables are focus of the study or reflected the empirical aspect of the concept being studied: Two types of variables are used in this study. They are:

Independent Variable

An independent variable was a presumed cause or activity that is manipulated or varied by the researcher to create the effect on the dependent variables".<sup>75</sup>

In this study independent variable is Pamphlet on knowledge regarding importance of cervavc vaccine among adolescents.

**Dependent Variable**

A dependent variable is presumed outcome or response due to effect of the independent variable, which researcher wants to predict or explain."<sup>75</sup>

In this study, dependent variable is knowledge regarding importance of cervavc vaccine.

**Demographic Variables**

“ A demographic variable is a variable that is gather by researcher that explain the nature and distribution of the sample used with inferential statistics.”<sup>75</sup>

In this study, demographic variables are Age, Gender, Type of family ,Area of residence , Class, Preexisting knowledge, Source of information, educational qualification.

## **POPULATION**

Population is the sum of all the units in which a researcher is interested. In other words, population is the set of people or entitles to which the result of research is to be generalized.<sup>77</sup>

In the present context of study, the population consist adolescents between the age group of 14-17 years in the selected schools.

**Target population**

"A target population consist of the total group of people or object which are meeting the designed set of criteria of interest of the researcher. Target population is the aggregate of cases about which the researcher would generalize the information".<sup>78</sup>

In the present context of study, the target population were the adolescents between the age group of 14-17years in the selected school.

**Accessible population**

"It is the collection of cases that confirm to designed criteria are also accessible as a sample for a study"<sup>78</sup>

In the present study, the accessible population was adolescents between the age group of 14-17 years of selected schools available at the time of data collection who were meeting inclusion and exclusion criteria listed by investigator.

## **SAMPLING:**

**Sample**

"Sample is a particular collection of participants selected from a larger population to participate in a study."<sup>78</sup>

In the present study comprised of adolescents of selected schools, who fulfilled the inclusion criteria and were present at the time of data collection.

**Sampling Technique**

Sampling techniques is defined as the process of selecting a portion of a population to represent the entire population for study in research.<sup>78</sup>

In the present study, sampling technique used was probability simple random sampling technique

**SAMPLE SIZE**

Sample size means the number of people who participate in a study<sup>78</sup>,

The sample size selected for this study was 100 samples who fulfilled the sampling criteria and who were willing to participate in the study.

**MINIMUM SAMPLE SIZE (N) - ESTIMATION OF POPULATION PROPORTION**

$$n = \frac{Z^2pq}{d^2}$$

<b>P</b>	Your guess of Population P (any value<1)	0.63
<b>Q</b>	1-p	0.37
<b>1-α</b>	Confidence level set by you	0.95
<b>Z</b>	Z value associated with confidence	1.96
<b>D</b>	Absolute precision	0.10
<b>N</b>	<b>Minimum sample size</b>	<b>90</b>

**So, decided to take n = 100**

**SAMPLE SELECTION CRITERIA**

Inclusion criteria: Adolescents who were

1. Between age 14-17 years.
2. willing to participate
3. present at the time of study

Exclusion criteria:

1. Adolescents who had already taken vaccine

**TOOL & TECHNIQUE FOR THE STUDY**

“Tool is a research instruments or device used to measure the concept of interest in a research project that a researcher uses to collect data.”<sup>79</sup>”

In this present study the researcher used a structured knowledge questionnaire to assess the knowledge regarding importance of cervavc vaccine at schools.

**DEVELOPMENT OF THE TOOL:**

**The following steps were carried out in formulating the tool**

1. Related literature via journal, articles, periodicals, books were reviewed.
2. Blue print was prepared.
3. Guidance and consultation of the subject experts were taken and modifications were made accordingly.
4. Establishment of tool.

**Description of the tool:** The tool consisted of 2 sections

**Section A: Socio demographic data**

It consisted of 7 items regarding demographic variables of the selected adolescents to collect the background information of family.

The items included in the demographic variable were age, gender, type of family ,area of residence , preexisting knowledge, source of information, class.

**Section B**

It consisted of 20 items to assess the knowledge of adolescents regarding importance of cervavc vaccine.

Structured knowledge Questions were asked based on the following aspects:

- Meaning of Human Papilloma Virus and how it spreads
- What is Cervax Vaccine
- HPV Cancers in adolescents that Cervax vaccine prevents
- Dosing Schedule of Cervax Vaccine
- Cervax Vaccine role in cancer prevention among adolescents
- Benefits of giving Cervax Vaccine at early age in both boys and girls adolescents
- Myths about Cervax Vaccine
- Availability, cost and efficacy of Cervax Vaccine against HPV Cancer
- Minor Side effects of Cervax vaccine

#### Scoring interpretation :

Structured knowledge questionnaire consisted of 20 questions to assess knowledge regarding importance of Cervax vaccine among adolescents. The structure of the questionnaire was developed into only one section to assess the knowledge of adolescents regarding importance of cervax vaccine. Section B of the questionnaire dealt with objective type (multiple type questions) Items. The scores of the Section B were based on worth of correct answers. The correct responses were given '1' and the incorrect response '0'. Knowledge was graded from poor knowledge to excellent knowledge. In the self-structured knowledge questionnaire for each question, 4 options were given out of which 3 were distracters and with only one correct response. For each correct answer, the score given was 1 and for the wrong answer the score was given D. The highest score was 20.

**TABLE NO. III (2) Tool evaluation criteria for structured knowledge questionnaire**

KNOWLEDGE ASSESSMENT	MARKS
Poor	0-6
Average	7-13
Good	14-20

#### TESTING OF THE TOOL:

The tool prepared for data collection was tested for its feasibility, content validity and reliability.

The researcher found the language of the tool was simple and practicable and the average time taken to complete the questionnaire was 20-25 min.

#### FEASIBILITY OF THE STUDY:

A feasibility of the study is a comprehensive analysis performed to determine the viability of a proposed study. It is designed to identify potential issue and problems that could arise while pursuing the study.

Therefore, the following measures were taken:

#### VALIDITY OF TOOL:

"Validity refers to the degree to which an instrument measures what is supposed to be measuring"<sup>80</sup>

The content validity of the tool was established by in consultation with 19 experts. 8 experts of Obstetrics and Gynaecology Nursing, 1 expert of Physiotherapy, 4 experts of Community Health Nursing, 3 Obstetrics and Gynaecology Doctors, 1 expert of Medical and Surgical Nursing, 2 experts of Preventive

and Community Medicine department. Experts were requested to give their opinions and suggestions regarding relevant, not relevant, and need to modify in each item of the tool. After receiving the opinion from the experts and consultation with guide some modifications were done in demographic variable, options of some questions and wording were reconstructed.

Preparation of the final draft : The final draft of the study was edited by English language expert. The modification or suggestion was incorporated with the final preparation of the tool.

**RELIABILITY OF TOOL**

Reliability is the degree of consistency and accuracy with which an instrument measures the attribute for which it is designed to measure.<sup>80</sup>

1. The reliability of the tool was a major criterion for assessing the quality and accuracy of the tool.
2. The tool was administered to 10 samples of selected adolescents, other than actual place of study . The Split half Karl Pearson formula was used for reliability. The tool was found to be reliable (r=0.85).

**Pearson’s Correlation:**

$$r = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{n\sigma_x\sigma_y}$$

$$\text{Reliability} = \frac{2*r}{1 + r}$$

**TABLE NO. III (3) Reliability sample collection summary**

Pre-Test			Post-Test	
Date (Pre-test)	Present Adolescents	Participants Adolescents (Pre-test)	Date (Post-test)	Adolescents present on (Post-test)
13-11-24	15	10	19-11-24	10

**PILOT STUDY**

Pilot study is a small-scale version to test the plan and method of a research study.<sup>78</sup>

The pilot study was undertaken to assess the feasibility of the planned study, adequacy of the instrumentation and to detect any problem in the proposed methodology.

**Step I:** Researcher obtained permission from competent authority (Principal, RJC Bidco Highschool ,Nashik )

**Step II:** Researcher interacted with adolescents of selected schools & explained about purpose, importance of research study.

**Step III:** Researcher selected total 10 adolescents as per inclusion criteria of the study. Consent and assent form was taken from them on 3 Dec 2024.

**Step IV:** Researcher assessed knowledge regarding importance of cervacc vaccine at school by conducting pre-test on 3 Dec 2024.

**Step V:** Distribution of Pamphlet was done on the same day.

**Step VI:** Post test knowledge score was done after administration of structured teaching programme on the day 7<sup>th</sup> dated on 9<sup>th</sup> Dec 2024

Data analysis was done on data of 10 adolescents by descriptive and inferential statistics. The significant difference between pre-test and post-test was found by using paired t-test. Difference found significant. After conducting pilot study, it was found that the study was feasible and effective. The concerned authority and the samples were found to be co-operative.

**TABLE NO. III (4) Pilot study sample collection summary**

Pre -Test			Post Test	
Date	Present Adolescents	Participating Adolescents	Date	Present Adolescents
3 <sup>rd</sup> Dec 2024	20	10	9 <sup>th</sup> Dec 2024	10

**DATA GATHERING PROCESS**

**Ethical Consideration:**

- Prior to collection of data the researcher obtained permission from competent authority .
- Informed consent was taken from participants to conduct the study.
- The period of data collection commenced on 30 December 2024

**Administration of Tool Pre-Test and planned health teaching**

Data was collected as per following steps:

**Step I:** Researcher obtained permission from competent authority(Principal) of New English School, Madgaon, Nashik school.

**Step II:** Researcher interacted with adolescents of selected schools & explained about purpose, importance of research study.

**Step III:** Researcher selected total 100 adolescents as per the inclusion criteria of the study & consent Taken from them on 28 Dec 2024

**Step IV:** Researcher done assessment of knowledge of adolescents by conducting pre-test on 30 dec 2024 and 31 dec 2024.

**Step V:** Distribution of Pamphlet was conducted on same day of pre-test. After each session pamphlet on importance of cervavc vaccine at schools after pre-test.

**Step VI:** Post-test assessment was done after the administration of structured teaching programme on day 7th dated on 6 Jan 2025 and 7 Jan 2025

**TABLE NO .III (5) Administration of Tool Pre- test**

Sr.no.	Date	Session	Present Participants	No of adolescents
1	30 Dec 2024	Morning+ Afternoon	30+45	25+25
2	31 Dec 2024	Morning+ Afternoon	30+45	25+25

**PROVISION OF PAMPHLET:**

- After each pre-test session, pamphlet was distributed among selected adolescents. The distribution was interactive where adolescents were encouraged to read and come with their own thoughts, opinions , and feedback.

- Distribution was completed within 10 minutes. Doubts were asked by adolescents and it was cleared by the researcher. A post-test was planned on same parents on 7<sup>th</sup> day after distribution of Pamphlet and this was conducted in four sessions as per availability of adolescents.

**TABLE NO. III (6) Administration of tool post-test**

Sr.no.	Date	Session	No of adolescents
1	5 Jan 2025	Morning+ Afternoon	25+25
2	6 Jan 2025	Morning Afternoon	25+25

### PLAN FOR DATA ANALYSIS:

“Descriptive statistics are useful for summarizing empirical information ; inferential statistical which are based on laws of probability provide a means of drawing conclusion about the population from which data was obtained for the sample .”

The data obtained was planned to analyse on the basis of the objectives of the study using descriptive and inferential statistics.

#### Descriptive statistics

- The data was arranged in master sheet.
- Data was presented in tables, graphs and diagrams. The level of knowledge was grouped from poor to good.
- Mean and standard deviation was used to evaluate. The effectiveness of pamphlet on importance of Cervavc vaccine at schools.

#### Inferential statistics

- Inferential statistics consists of techniques that allows to study samples and the make generalization about the population from which they were selected.
- Further statistical significance of the effectiveness of pamphlet method by using 't' test.
- The association between the pre-test knowledge score of adolescents and selected demographic variables was tested using chi-square test.

Analysis is a process of organizing and synthesizing the data in a such a way that research question can be answered and hypothesis tested”.<sup>75</sup>Polit and Hunger

Analysis and interpretation of data is the most important phase of the research process, which involves the computation of the certain measures along with searching for patterns of relationship that exits among data groups. Data collection is followed by the analysis and interpretation of data ,where collected data are analysed and interpreted in accordance with study objectives. Analysis and interpretation of data includes completion , editing ,coding ,classification and presentation of data.

### OBJECTIVES OF THE STUDY

:primary objectives

To evaluate effectiveness of pamphlet in improving knowledge of adolescents regarding importance of cervavc vaccine. .

secondary objectives

To assess knowledge regarding importance of cervavc vaccine among adolescents in selected schools.

To find out association between knowledge score regarding importance of cervavc vaccine among adolescents of selected schools with selected demographic variables.

### **HYPOTHESIS**

H0 - There will be no significant difference between level of knowledge score regarding importance of cervavc vaccine among adolescents with selected demographic variables.

H1 - There will be significant difference between level of knowledge score regarding importance of cervavc vaccine among adolescents with selected demographic variable.

The data collected by the researcher during the data collection from 100 adolescents was analysed as per the objectives of the study and was organized and analysed as per following subheads.

### **SECTION I**

Deals with analysis of demographic data of the adolescents of selected schools in terms of frequency and percentage.

### **SECTION II**

Deals with analysis of data related to assessment of knowledge regarding importance of Cervavc vaccine among adolescents in selected school in terms of frequency and percentage.

Part A – Assessment of pre-test knowledge regarding importance of cervavc vaccine among adolescent

Part B – Assessment of post -test knowledge regarding importance of cervavc vaccine among adolescent

### **SECTION III**

Deals with analysis of data related to the effectiveness of pamphlet on knowledge regarding importance of Cervavc vaccine among adolescents in selected school.

### **SECTION IV**

Deals with analysis of data related to the association between Pre-test knowledge regarding the importance of Cervavc vaccine among adolescents in selected school with selected demographic variables.

### **STATEMENT OF THE PROBLEM**

“Effectiveness of pamphlet on knowledge regarding importance of Cervavc vaccine among adolescents in selected school.”

### **OBJECTIVES OF THE STUDY**

:primary objectives

To evaluate effectiveness of pamphlet in improving knowledge of adolescents regarding importance of cervavc vaccine. .

secondary objectives

To assess knowledge regarding importance of cervavc vaccine among adolescents in selected schools.

To find out association between knowledge score regarding importance of cervavc vaccine among adolescents of selected schools with selected demographic variables.

### **HYPOTHESIS**

H0 - There will be no significant difference between level of knowledge score regarding importance of cervavc vaccine among adolescents with selected demographic variables.

H1 - There will be significant difference between level of knowledge score regarding importance of cervavc vaccine among adolescents with selected demographic variable.

The data collected by the researcher during the data collection from 100 adolescents was analysed as per the objectives of the study and was organized and analysed as per following subheads.

## **SECTION I**

Deals with analysis of demographic data of the adolescents of selected schools in terms of frequency and percentage.

## **SUMMARY, FINDINGS, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS**

This chapter presents brief summary of the study and its significant findings. It also includes the implications and recommendations for further study.

The aim of study was, to assess the effectiveness of pamphlet on knowledge regarding importance of Cervacc vaccine among adolescents from selected school.

The design used for study was pre-experimental, one group pre-test and post-test research design. The study was conducted at selected schools. The Sample size of study was 100 adolescents from selected school.

The reliability of the knowledge tool was determined by using split half method of reliability. The tool was administered to 10 samples. Reliability of the knowledge tool was found to be 0.85.

The pilot study was conducted, to assess the feasibility of the study, determine the appropriate statistical analysis and evaluate practicability of the research. It was found feasible.

## **STATEMENT OF THE PROBLEM**

“Effectiveness of pamphlet on knowledge regarding importance of Cervacc vaccine among adolescents in selected school.”

## **OBJECTIVES OF THE STUDY**

### **PRIMARY OBJECTIVES**

To evaluate effectiveness of pamphlet in improving knowledge of adolescents regarding importance of cervacc vaccine.

### **SECONDARY OBJECTIVES**

To assess knowledge regarding importance of cervacc vaccine among adolescents from selected schools. To find out association between knowledge score regarding importance of cervacc vaccine among adolescents from selected schools with selected demographic variables.

## **HYPOTHESIS**

H0 - There will be no significant difference between pre and post-test level of knowledge regarding importance of cervacc vaccine among adolescents with selected demographic variables.

H1 - There will be significant difference between knowledge regarding importance of cervacc vaccine among adolescents with selected demographic variable.

## **MAJOR FINDINGS OF THE STUDY**

The analysis of demographic data of study samples gave an idea about general characteristics of adolescents of selected school. The following are major findings of study.

## SECTION –I - DEMOGRAPHIC VARIABLES

In the study, according to age of adolescents of selected school, 35% of them were from age group 14-15 years, 41% adolescents were from 15.5-16 years and 24% adolescents were from the 16.5-17 years.

In the study, according to gender of adolescents of selected school, 49% of them were males and 51% of adolescents were females.

According to type of family of adolescents of selected school, 45% of them were from joint families, 53% from the nuclear families and 2% of them were from single parent families.

According to area of residence of adolescents of selected school, 20% of them were from rural residence, 80% from the urban residence and no one adolescents were from the semi-urban residential area.

In the study, to the question do you have Preexisting knowledge on Cervavc Vaccine, 25% of the adolescents of selected school answered as 'yes's and 75% of them answered as 'no'.

According to source of information related to Cervavc Vaccine to adolescents of selected school, 63% of them answered as multimedia, 15% of them answered as newspaper, 19% of them answered as health care personnel and 3% of them answered as relative.

In the study, according to class of adolescents of selected school, 40% of them were from 9th standard, 30% of them answered as 10th standard and 30% of them were from 11th standard.

## SECTION II

### GENERAL ASSESSMENTS OF KNOWLEDGE- PRE & POST TEST

For assessment purpose the total score of knowledge was divided into three groups like poor (0-7 score), average (8-14 score) and good (15-20 score).

Pre Test:

At the time of pretest, assessment of the knowledge regarding importance of Cervavc vaccine among adolescents in selected school, 35% of them had poor, 51% of them had average knowledge and 14% of them had good knowledge.

Average knowledge score at the time of pretest was 9.75 with standard deviation of 4.17. The minimum score of knowledge was 2 with maximum score of 19.

Post Test:

At the time of post-test, assessment of the knowledge regarding importance of Cervavc vaccine among adolescents in selected school, 4% of them had poor, 34% average knowledge and 62% of them had good knowledge.

Post-test score was 15.24 with standard deviation of 3.01. The minimum score of knowledge was 5 with maximum score of 19.

## SECTION-III

### COMPARISON PRE AND POST TEST KNOWLEDGE

The comparisons of pretest and post-test mean of knowledge regarding importance of Cervavc vaccine among adolescents in selected school were done by paired t test.

The paired t test was conducted at 5% level of significance.

The pretest average score was 9.75 with standard deviation of 4.17. The post-test average score was 15.24 with standard deviation of 3.01.

The test statistics value of paired t test was 10.11 with p value 0.00. As the p value less is than 0.05, the null hypothesis is rejected which means there is a significant difference in pretest and post-test knowledge.

Therefore, shows that, pamphlet on knowledge regarding importance of Cervavc vaccine among adolescent in selected school was effective.

**SECTION IV -**

**ANALYSIS OF THE ASSOCIATION BETWEEN KNOWLEDGE SCORES AND DEMOGRAPHIC VARIABLES**

The chi square test was used to see association between knowledge regarding the importance of Cervavc vaccine among adolescents from selected school with selected demographic variables.

"All associations were found at a 5% significance level.

Significant Association:

For the demographic variables gender and types of family, the p value of the association test with pretest knowledge was less than 0.05. That means, the knowledge regarding the importance of Cervavc vaccine among adolescents in selected school was associated with these demographic variables.

This it concludes that, there was significant association of these demographic variables with the pretest knowledge.

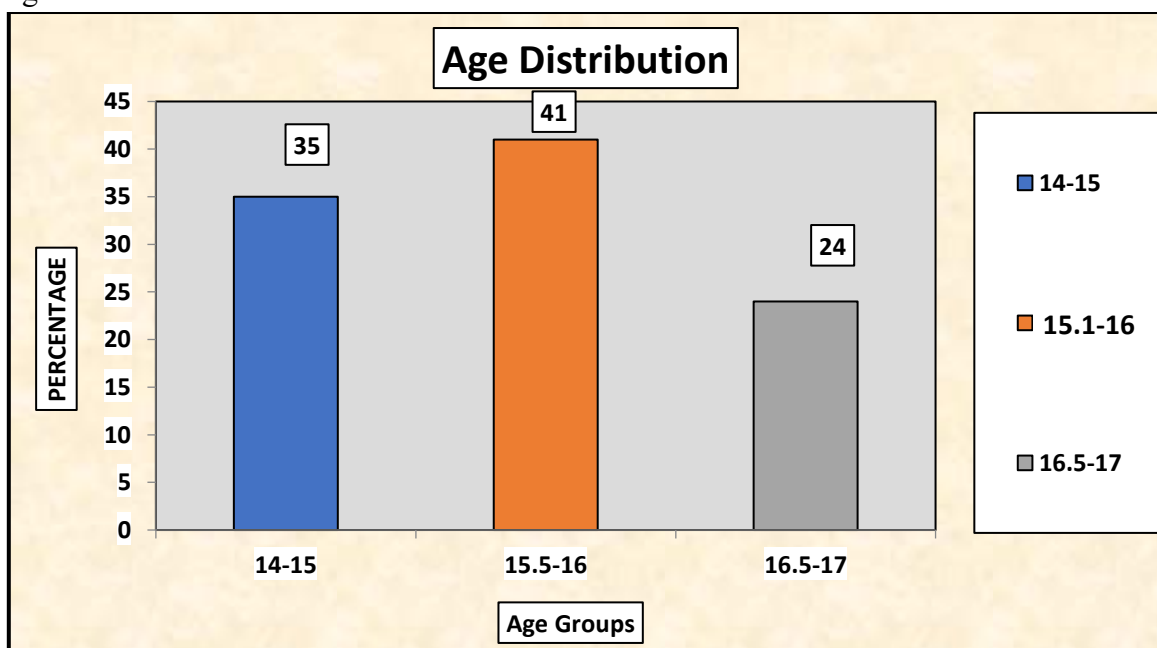
No Significant Association:

For the demographic variables age, area of residence, preexisting knowledge etc., the p value of association test with pretest knowledge was more than 0.05. That means, the knowledge regarding the importance of Cervavc vaccine among adolescents in selected school was not associated with these demographic variables.

Thus, it concludes that, there was no significant association of these demographic variables with the pretest knowledge.

**SECTION I**

Deals with analysis of demographic data of the adolescents of selected schools in terms of frequency and percentage.



**Figure No-IV I. (1) Bar diagram showing percentage wise distribution of age**

The above figure shows that, in the study, according to their age of adolescents of selected school, 35% of them were from age group 14-15 years, 41% adolescents from the 15.1-16 years, 24% adolescents from the 16.1-17 years .

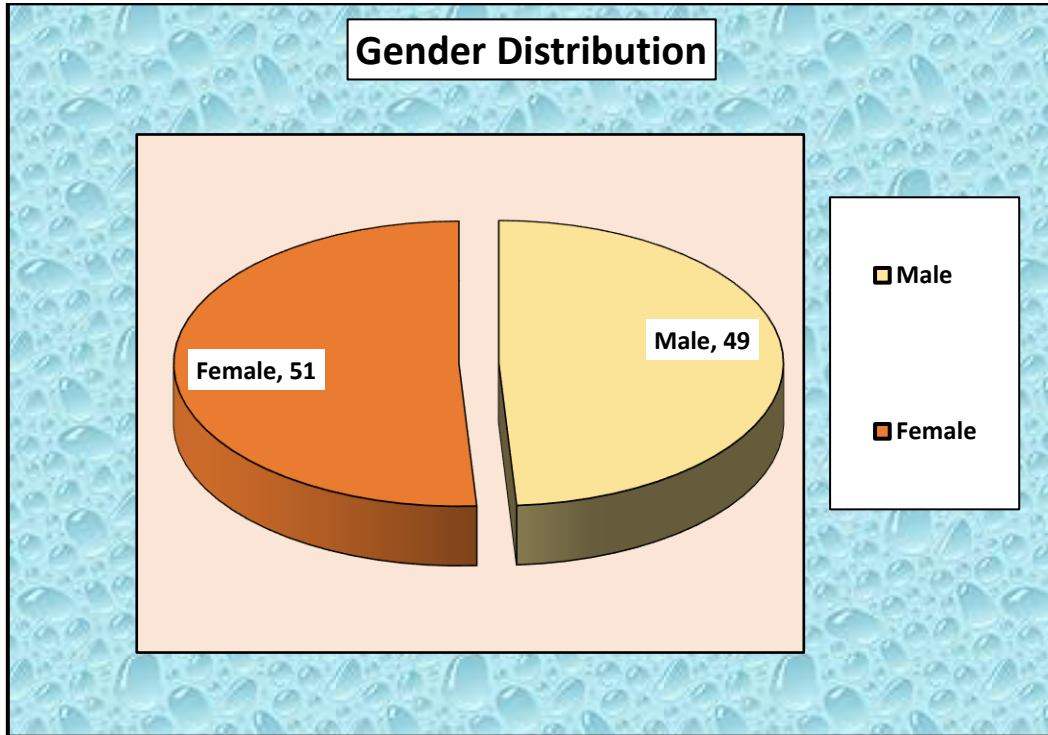


Figure No. -IV I (2) Pie diagram showing percentage wise distribution of age.

The above figure shows that, in the study, according to gender of adolescents of selected school, 49% of them were males and 51% of adolescents were females.

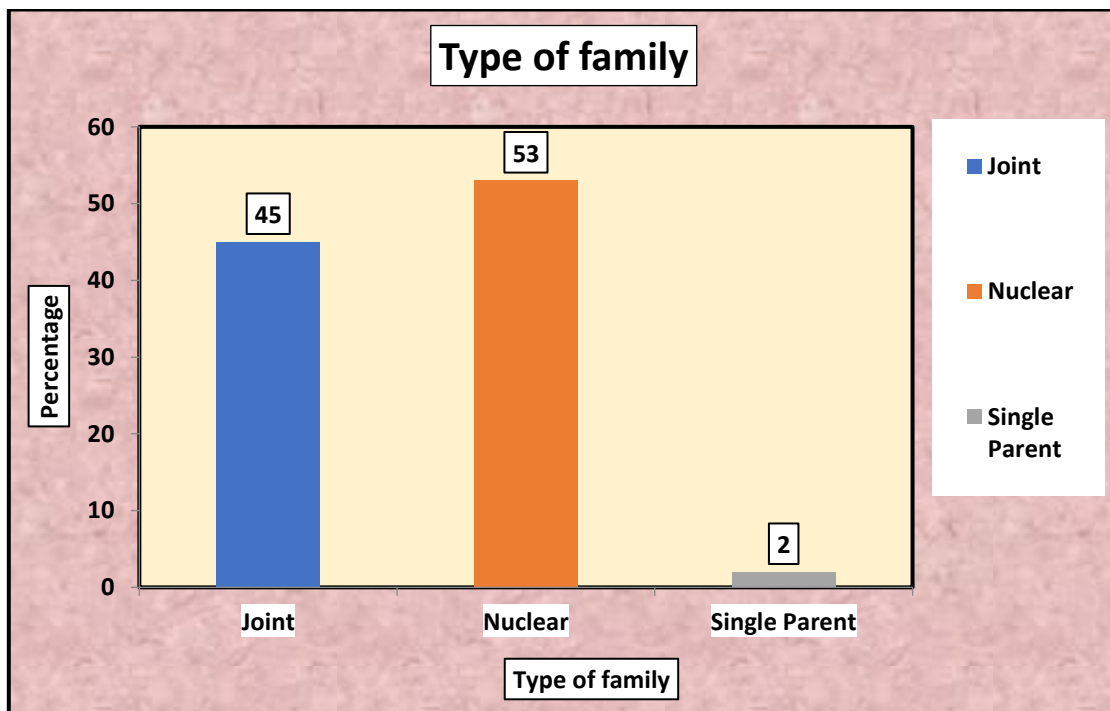


Figure No.- IV I (3) Bar diagram showing percentage wise distribution of type of family

The above figure shows that, in the study, according to type of family of adolescents of selected school, 45% of them were from joint families, 53% from the nuclear families and 2% of them were from single parent families.

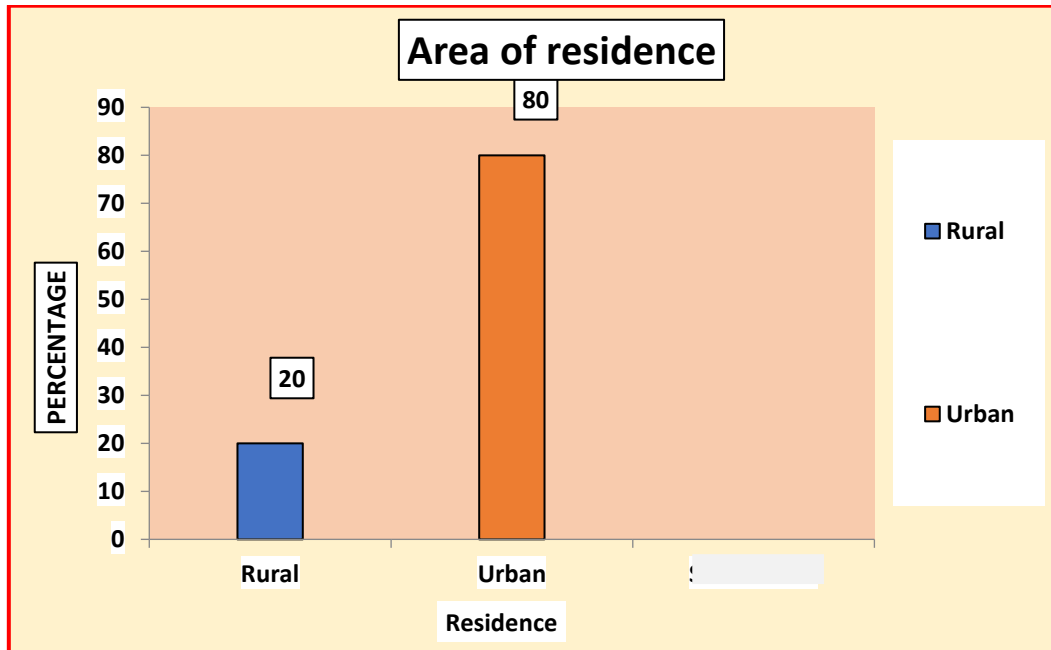


Figure No. IV I (4) Bar diagram showing percentage wise distribution of area of residence

The above figure shows that, in the study, according to area of residence of adolescents of selected school, 20% of them were from rural residence, 80% from the urban residence.

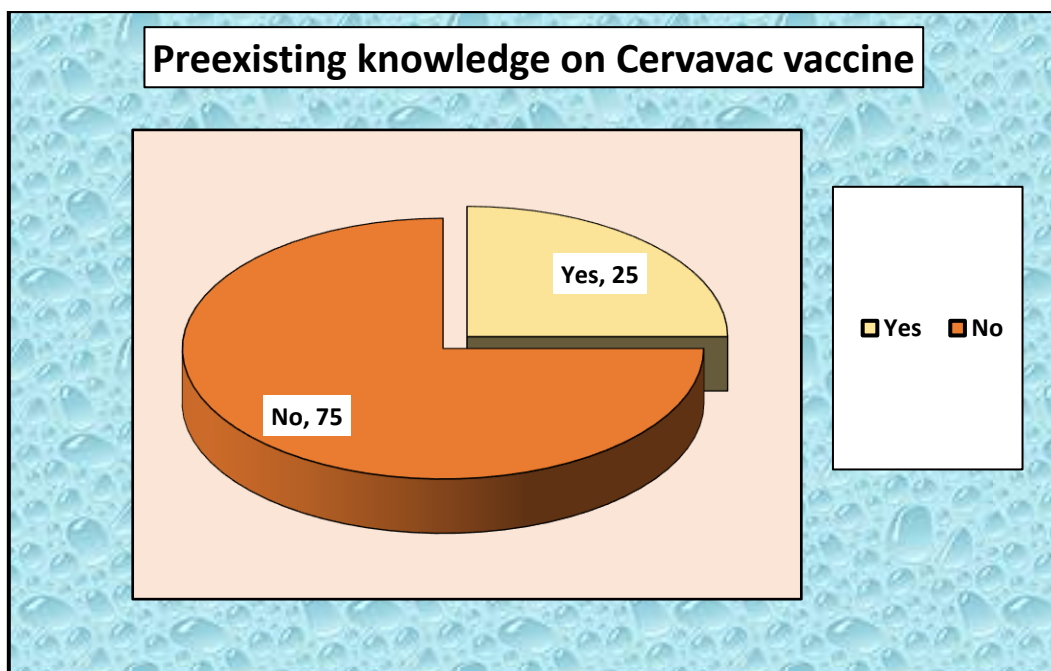
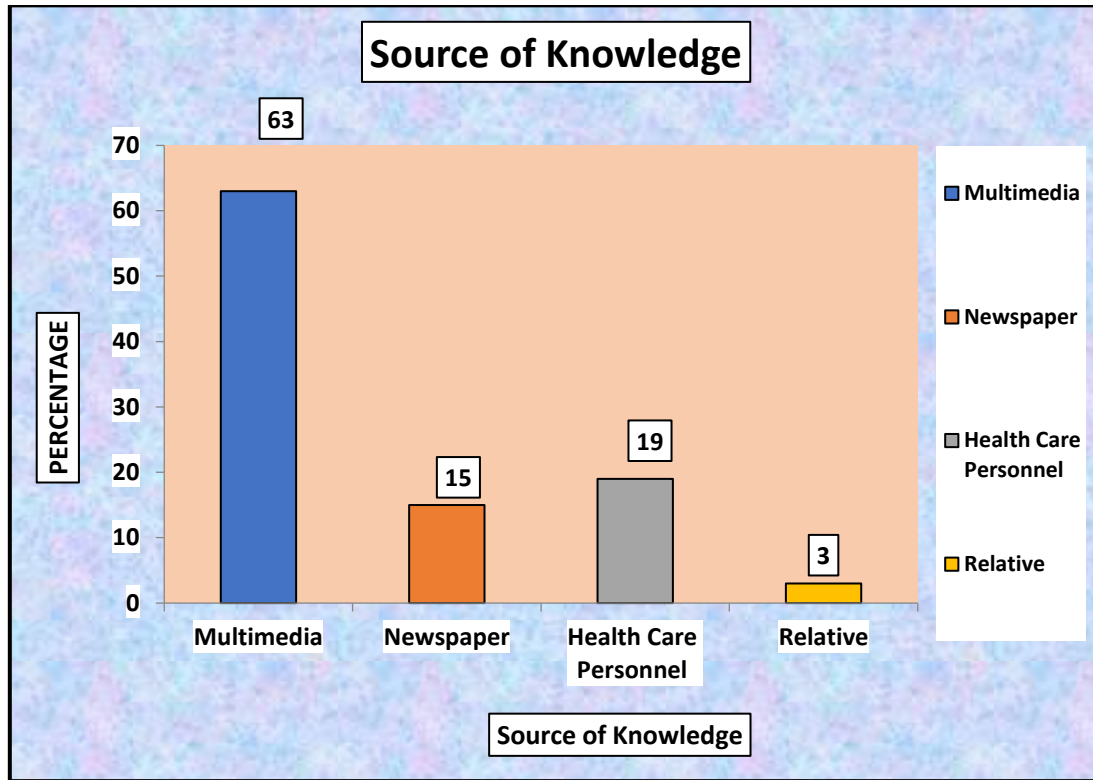
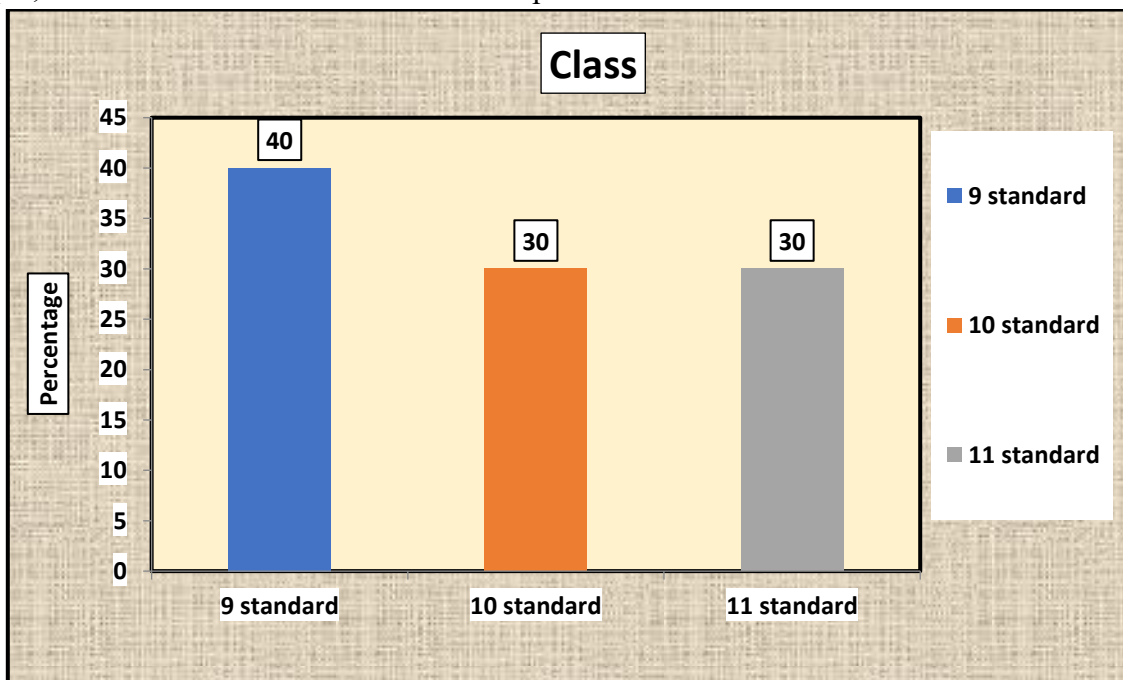


Figure No. IV I (5) Pie diagram showing percentage wise distribution of Preexisting knowledge on cervavac vaccine

The above figure shows that, in the study, to the question do you have Preexisting knowledge on Cervavac Vaccine, 25% of the adolescents of selected school answered as yes and 75% of them answered as no.



**Figure No. IV I (6) – Bar diagram showing percentage wise distribution of source of knowledge**  
 The above figure shows that, in the study, according to source of information related to Cervavac Vaccine to adolescents of selected school, 63% of them answered as multimedia, 15% of them answered as newspaper, 19% of them answered as health care personnel and 3% of them answered as relative.



**Figure No. IV I (7) – Bar diagram showing percentage wise distribution of class.**

The above figure shows that, in the study, according to class of adolescents of selected school, 40% of them were from 9<sup>th</sup> standard and 30% of them answered as 10<sup>th</sup> standard, 30% of them from 11<sup>th</sup> standard .

**SECTION II**

Deals with analysis of data related to assessment of knowledge regarding importance of Cervavc vaccine among adolescents from selected school in terms of frequency and percentage.

Part A : Assessment of Pretest knowledge regarding importance of cervavc vaccine among adolescents.

**Table No. IV .II A.(1) : Assessment of Pretest knowledge regarding importance of cervavc vaccine among adolescents.**

Variable	Groups	Score	Frequency	
			Frequency	Percentage
KNOWLEDGE	Poor	0-7	35	35.00
	Average	8-14.	51	51.00
	Good	15-20.	14	14.00
	Minimum		2	
	Maximum		19	
	Average (SD)		9.75 (4.17)	

The above table shows that, assessment of the knowledge regarding importance of Cervavc vaccine among adolescents in selected school, 35% of them had poor, 51% had average knowledge and 14% of them had good knowledge. Average knowledge score at the time of pretest was 9.75 with standard deviation of 4.17. The minimum score of knowledge was 2 with maximum score of 19.

Part B – Assessment of Post test knowledge regarding importance of cervavc vaccine among adolescents

**Table No. IV .II B (1) : Assessment of Post test knowledge regarding importance of cervavc vaccine among adolescents**

variable	Groups	Score	Frequency	
			Frequency	Percentage
KNOWLEDGE	Poor	0-7	4	4.00
	Average	8-14.	34	34.00
	Good	15-20.	62	62.00
	Minimum		5	
	Maximum		19	
	Average (SD)		15.24 (3.01)	

The above table shows that, assessment of the knowledge regarding importance of Cervavc vaccine among adolescents in selected school, 4% of them had poor, 34% average knowledge and 62% of them had good knowledge. Average knowledge score at the time of post-test was 15.24 with standard deviation of 3.01. The minimum score of knowledge was 5 with maximum score 19.

**SECTION III**

Deals with analysis of data related to the effectiveness of pamphlet on knowledge regarding importance of Cervavc vaccine among adolescents from selected school.

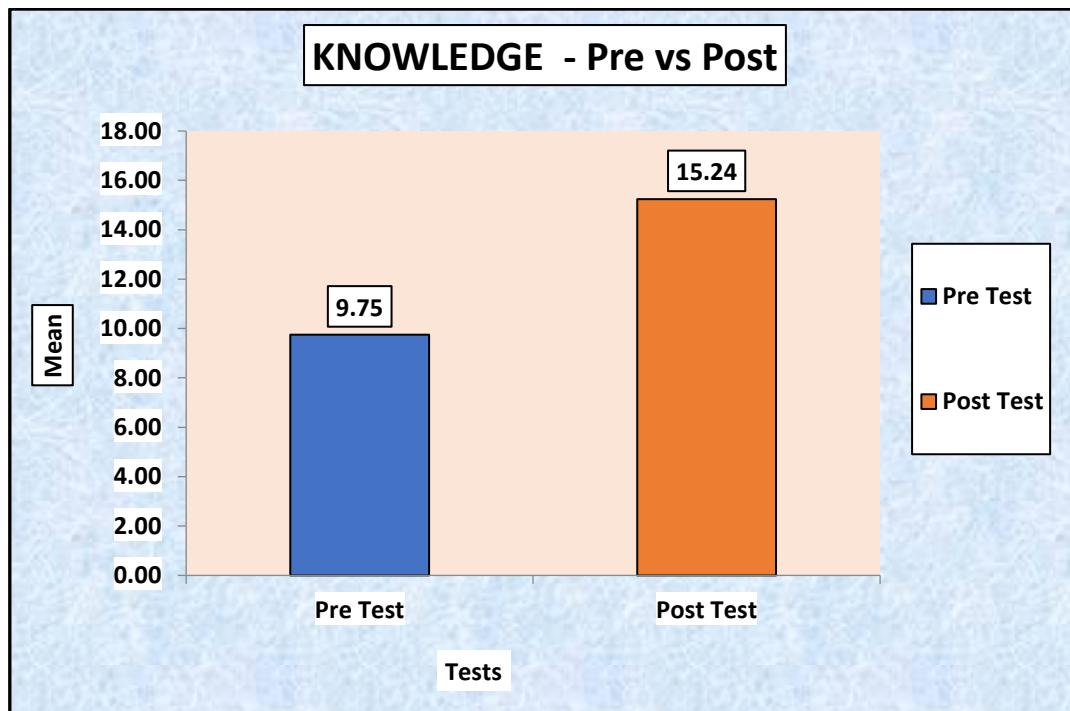
**Table No. IV .III (3) :Comparison of pre and post-test knowledge ( paired t test )**

Group	Frequency	Mean	S.D.	t value	P value
Pre Test	100	9.75	4.17	10.11	0.000
Post Test	100	15.24	3.01		

The comparisons of pretest and post-test mean of knowledge regarding importance of Cervavc vaccine among adolescents in selected school were done by paired t test.

The pretest average score was 9.75 with standard deviation of 4.17. The post-test average score was 15.24 with standard deviation of 3.01.

The test statistics value of paired t test was 10.11 with p value 0.00. As the p value is less than 0.05, the null hypothesis is rejected which means there is a significant difference in pretest and post-test knowledge. Therefore, the pamphlet on knowledge regarding importance of Cervical vaccine among adolescent from selected school was effective.



**Figure no. IV .III (1)- Comparison of the average pre and post-test Knowledge score**

**SECTION IV**

Deals with analysis of data related to the association between Pre-test knowledge score regarding the importance of Cervavc vaccine among adolescents from selected school with selected demographic variables.

**Table 13: Association of Knowledge with demographic variables**

Variable	Groups	KNOWLEDGE - PRE		Chi Square	def.	P value	Significance
		below Md	Above Md				
Age (in years)	14-15	19	16	.83	2	0.65	Not Significant
	15.5-16	26	15				
	16.5-17	13	11				

<b>Gender</b>	Male	34	15	5.12	1	<b>0.024</b>	<b>Significant</b>
	Female	24	27				
<b>Type of family</b>	Joint	33	12	9.66	2	<b>0.008</b>	<b>Significant</b>
	Nuclear	25	28				
	Single Parent	0	2				
<b>Area of residence</b>	Rural	12	8	0.04	1	0.84	Not Significant
	Urban	46	34				
	Semi Urban	0	0				
<b>Preexisting knowledge on Cervavac vaccine</b>	Yes	15	10	0.06	1	0.82	Not Significant
	No	43	32				
<b>Source of Knowledge</b>	Multimedia	37	26	0.79	3	0.85	Not Significant
	Newspaper	9	6				
	Health Care Personnel	11	8				
	Relative	1	2				
<b>Class</b>	9 standards	23	17	0.62	2	0.73	Not Significant
	10 standards	16	14				
	11 standards	19	11				

### CONCLUSION:-

From the study finding it is concluded that the pamphlet was effective in improving knowledge regarding importance of Cervavac vaccine among adolescents in selected school.”

### Limitation

1. The findings of study was restricted to the respondent under study, only from selected schools.
2. The study was restricted to adolescents only.

### Nursing Implementation

#### Nursing Education

The nursing curriculum should consist of knowledge related health information using different methods of teaching Nursing students should be made aware of their role in health promotion and disease prevention in present and future year, which may help in achieving goal of health for Nursing students should be made aware of the importance of educating the regarding importance of Cervavac vaccine among adolescents in selected school.”

Nursing professional at post-graduate level need to develop their skill in preparing health teaching materials according to the community's level of understanding .

#### Nursing Practice

Nursing is a dynamic process, that involves applying scientific body of knowledge and dissemination research findings into practice. Nursing professionals find the application of research knowledge into practice very relevant because it applies across a wide and is useful in various settings. Nursing is a dynamic process; several applications can be drawn from the present study regarding the importance of Cervavac vaccine among adolescents in selected schools. The extended and expanded roles of professional nurses emphasize the importance of Preventive and promotive aspects of health information which can be

effectively communicated through the pamphlet. Nurses have positioned themselves in all areas of community. Hence, nurses should take keen interest in preparing different teaching strategies suitable for the selected hospital.

## RECOMMENDATIONS

The present study revealed that the pamphlet was effective in improving the knowledge of adolescents regarding, the importance of Cervavac vaccine in selected school.

A similar study can be conducted to further improve the knowledge.

A similar study can be conducted using power point presentations or information booklets or self-instruction modules.

This study can be replicated on a larger sample to generalize the findings.

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