

A Study to Assess The Knowledge and Attitude Regarding HPV Vaccine Among Female Employees Working at Selected Educational Institution, Greater Noida, Uttar Pradesh

Ms. Abi Perying¹, Mr. Ashraf Ali¹, Mr. Joshua Samuel¹, Ms. Nima Drema Chukla¹, Ms. Ria Sharma¹, Ms. Soumya Thomas ¹ Ms. Helena Nongmeikapam^{2*}

¹BSc Nursing Student, Sharda School of Nursing Science and Research, Sharda University.

^{2*} Assistant Professor, Sharda School of Nursing Science and Research, Sharda University.

***Corresponding Author:** Ms. Helena Nongmeikapam

*Assistant Professor, Sharda School of Nursing Science and Research, Sharda University.
Helena.nongmeikapam@sharda.ac.in

Abstract: The cervix is a part of female reproductive system where the cervical cancer develops. Human Papilloma virus (HPV), a sexually transmitted disease is the major cause of cervical cancer (99%) globally. Most cases of cervical cancer can be prevented with primary (HPV vaccine) and secondary (screening for and treating precancerous lesions) prevention strategies. Globally cervical cancer has been ranked fourth as the most causative factor of female mortality. Around 604000 new cases have been reported every year in which India contributes 20% in it. In developed countries, by early screening 50-60% of cervical cancer has been reduced. The purpose of the study is to assess the knowledge and attitude regarding HPV vaccine among female employees working at selected educational institution. A cross sectional survey design was adapted for the research study, self-structured questionnaire was prepared to gather data the knowledge and attitude towards HPV vaccination and was distributed to 60 female employees working in Sharda University. Data analysis was done using the Likert scale. The result shows that majority (65%) had knowledge about causes of cervical cancer, half of the participants (50%) knew about the detection of cervical cancer (45%) agrees that young girls should be vaccinated, majority (50%) of the participant agrees that cervical cancer is very common, half of the participants agrees (45%) HPV is life threatening, and majority (30%) that they are susceptible to receive vaccination. The result indicates that participants had significant knowledge about the issues but there are few areas that needs to be educated.

Keywords – HPV, cervical cancer, female mortality, screening.

INTRODUCTION

The cervix is a part of female reproductive system where the cervical cancer develops. Human Papilloma virus (HPV), a sexually transmitted disease is the major cause of cervical cancer (99%) globally. Many at around 311000 women has lost their lives to the disease in 2018. ^[1]

There are over 200 types of Human Papilloma Virus. The genotype that spreads through sexual intercourse are broadly classified into low risk and high risk. Nearly all people who are sexually active irrespective of the gender are susceptible to HPV infection [2]. Majority of the infections is successfully controlled by our immune system but if left untreated it can cause cancer. High risk type i.e., HPV -16 and 18 are accounted for major (70%) cause of cervical cancer [3]. The time period between the onset of symptoms and primary infection is 15-20years. The Indian women are mainly suffering from infection from HPV-16 and 18. HPV is a communicable disease it can be transferred from one person to another by touching and from pregnant mother to fetus through placenta [4]. Screening test such Pap Smear test are done to check the presence of HPV in the body even though symptoms are not present. the main aim of screening test is to detect the disease in early stage and provide treatment accordingly ^[5-10]

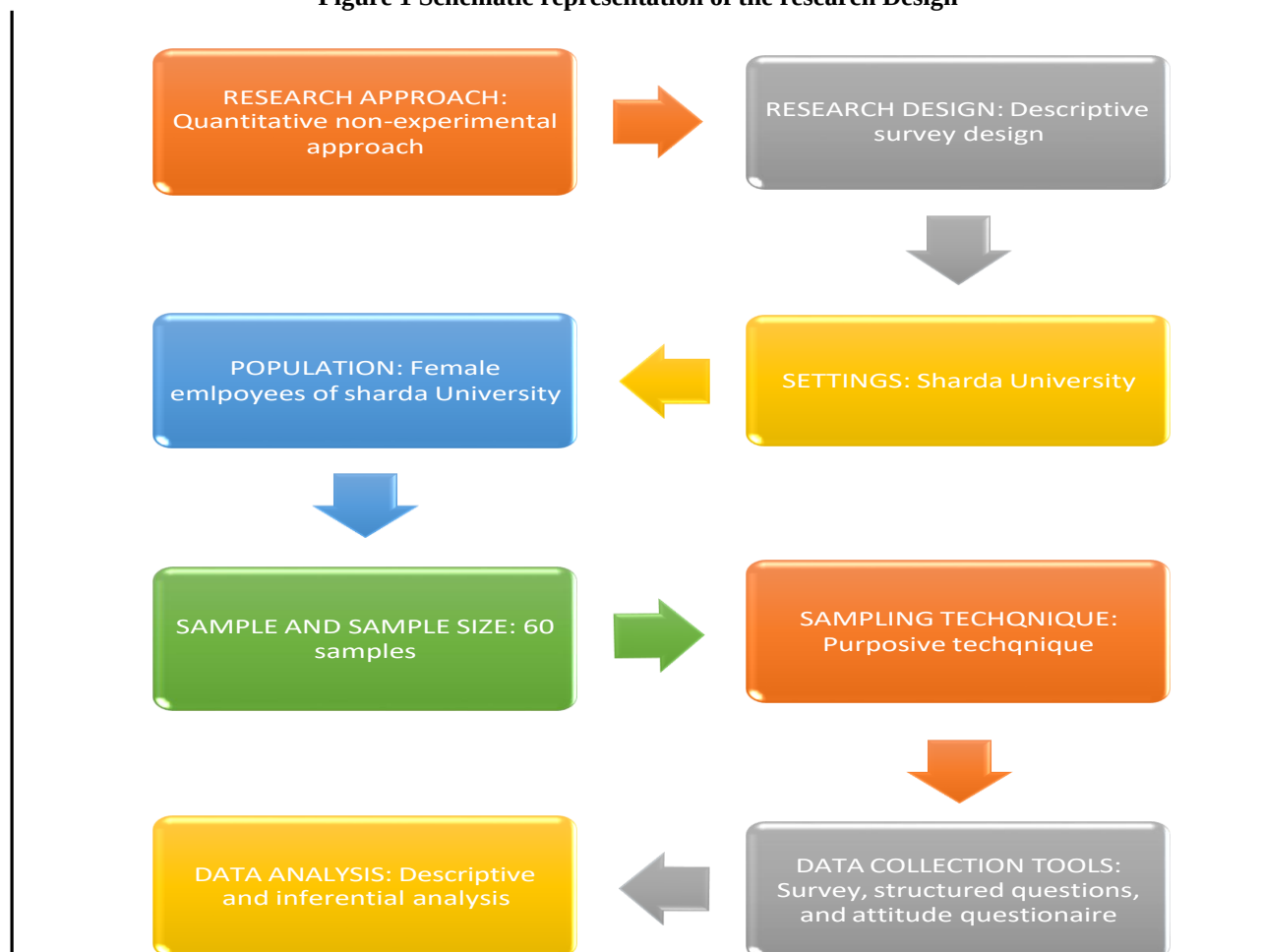
Currently there is no specific cure for HPV infection. But there is topical ointment available used to treat genital warts such as salicylic acid, trichloroacetic acid. Surgical procedure like hysterectomy, laser surgery, cryotherapy, radiotherapy is opted when not cured by medication. Three vaccines that is Gardasil, Cervarix, and Gardasil 9 are available in the market to provide protection and boost our immune system against HPV infection especially from the genotype HPV 16 and 18. As mentioned there is no cure therefore we can take few preventive measures such avoiding multiple sexual partner, use condoms, avoid smoking, and vaccinating oneself. ^[1-13]

MATERIALS AND METHODS

In order to assess female employees' knowledge and attitudes on vaccination, a cross-sectional research approach was utilized, with a particular focus on the Human Papillomavirus (HPV) vaccine. This study, which took place between April and May of 2024 at Sharda University, focused on female employees who were not medical professionals. A convenience non-probability sampling strategy was used to choose participants for the study based on their availability and willingness

to participate. This approach made it easier to choose sixty female employees and offered a workable way to collect data in the allotted period. Figure (1) shows the schematic presentation of the methodology .

Figure 1 Schematic representation of the research Design



A self-structured questionnaire was created in order to get the required data. This instrument, which consisted of multiple-choice questions and a Likert scale, was used to gather information about participants' knowledge about HPV and the HPV vaccine as well as their opinions about its efficacy and safety. It also allowed participants to share any reservations they may have had about getting the shot. The survey was designed to gather in-depth data on the participants' attitudes and knowledge, offering insightful information about the possible influences on their vaccination choices. Utilizing a self-structured questionnaire guaranteed that the information gathered was pertinent to the target audience at Sharda University and particular to the study goals vaccination choices. Utilizing a self-structured questionnaire guaranteed that the information gathered was pertinent to the target audience at Sharda University and particular to the study goals.

RESULT

According to the study, the data presented shows that majority (65%) had knowledge about the causes of cervical cancer, half of the participants (50%) knew about detection of cervical cancer, approximately (55%) of displayed a great amount of knowledge on the type HPV, and majority (45%) of the participants has received health education about HPV. Also, the study shows that majority of (45%) agrees that young girls should be vaccinated, majority (50%) of the participant agrees that cervical cancer is very common, half of the participants agrees (45%) HPV is life threatening, and majority (30%) that they are susceptible to receive vaccination.

knowledge level of female employees regarding HPV and the HPV vaccine

This section presents the results of a survey assessing the knowledge of female employees at Sharda University about Human Papillomavirus (HPV) and cervical cancer. The results indicate varying levels of awareness across different areas related to the disease, including causes, symptoms, prevention, and treatment. Below is a brief breakdown of the findings:

Table1 Knowledge on Cervical Cancer Awareness

Question	Answer Choices	Most Common Answer	Percentage (%)
Q1. What is the most common cause of cervical cancer?	a) HPV, b) Smoking, c) Family history, d) Age	a) HPV	65.70%
Q3. Which of the following is a symptom of advanced cervical cancer?	a) Irregular periods, b) Vaginal bleeding after intercourse, c) Pelvic pain, d) All of the above	d) All of the above	63.30%
Q6. What is the most common type of cervical cancer?	a) Squamous cell carcinoma, b) Adenocarcinoma, c) Small cell carcinoma, d) Basal cell carcinoma	a) Squamous cell carcinoma	50.10%
Q7. How is cervical cancer typically treated?	a) Surgery, b) Radiation therapy, c) Chemotherapy, d) All of the above	d) All of the above	60.70%
Q9. What is the estimated number of new cervical cancer cases in India every year?	a) 50,000, b) 100,000, c) 150,000, d) 200,000	b) 100,000	44.90%
Q11. What age group is most affected by cervical cancer in India?	a) 20-30, b) 30-40, c) 40-50, d) 50-60	b) 30-40	36.90%
Q12. What percentage of cervical cancer cases in India are linked to HPV infection?	a) 50%, b) 65%, c) 80%, d) 95%	c) 80%	47.50%
Q23. What is the most common type of cervical cancer?	a) Adenocarcinoma, b) Squamous cell carcinoma, c) Adenosquamous carcinoma	b) Squamous cell carcinoma	47.50%
Q33. Does a virus called HPV cause cervical cancer?	a) Yes, b) No, c) Not sure	a) Yes	60.70%

Table 1 A survey on cervical cancer awareness among female employees at Sharda University revealed that 65.7% correctly identified HPV as the leading cause of cervical cancer, with 63.3% recognizing symptoms like vaginal bleeding and pelvic pain as signs of advanced cancer. The most common type of cervical cancer, squamous cell carcinoma, was known by 50.1%, and 60.7% understood that treatment typically involves surgery, radiation, and chemotherapy. Additionally, 44.9% estimated 100,000 new cases occur annually in India, with 36.9% identifying the 30-40 age group as most affected. While 47.5% knew that 80% of cervical cancer cases are linked to HPV, 60.7% correctly confirmed that HPV causes the disease.

Table 2 Knowledge on Human Papilloma Virus

Question	Answer Choices	Most Common Answer	Percentage (%)
Q17. What is HPV?	a) Human protein virus, b) Human papillomavirus, c) Highly preventable vaccine, d) Hyperactive pathogenic virus	b) Human papillomavirus	63.30%
Q18. HPV is broadly classified into how many groups?	a) 6, b) 2, c) 5, d) 4	c) 5	29.10%
Q19. HPV is mainly classified into?	a) High-risk HPV, b) Low-risk HPV, c) Medium-risk HPV, d) Both a and b	d) Both a and b	34.30%

Q22. Which is the main gene of HPV that causes cervical cancer?	a) HPV-16, b) HPV-18, c) HPV-31, d) Both a and b	d) Both a and b	52.80%
Q24. Which type of HPV is most commonly associated with cervical cancer?	a) HPV-6, b) HPV-11, c) HPV-16, d) HPV-18	c) HPV-16	39.70%
Q25. Which type of HPV is responsible for causing most cases of genital warts?	a) HPV-6, b) HPV-11, c) HPV-16, d) HPV-18	c) HPV-16	37%

Table 2 describes A survey on HPV awareness among female employees at Sharda University showed that 63.3% correctly identified HPV as the human papillomavirus, with 34.3% recognizing that HPV is classified into both high-risk and low-risk types. Regarding the genetic link to cervical cancer, 52.8% knew that HPV-16 and HPV-18 are the main strains responsible. HPV-16 was also recognized by 39.7% as the type most associated with cervical cancer, and 37% correctly identified it as the strain causing most cases of genital warts. Additionally, 29.1% knew that HPV is broadly classified into five groups.

Table 3 knowledge Prevention and Screening of Cervical Cancer

Question	Answer Choices	Most Common Answer	Percentage (%)
Q2. What is the best method for early detection of cervical cancer?	a) PET scan, b) Pap smear, c) Mammogram, d) Blood test	b) Pap smear	52.80%
Q4. How can cervical cancer be prevented?	a) Getting vaccinated against HPV, b) Using condoms, c) Quitting smoking, d) All of the above	d) All of the above	52.80%
Q5. At what age should women start getting regular Pap smears?	a) 18, b) 21, c) 25, d) 30	b) 21	39.60%
Q14. What is the primary method of cervical cancer screening in India?	a) Mammogram, b) Pap smear, c) MRI, d) Ultrasound	b) Pap smear	63.40%
Q21. Diagnostic test for HPV?	a) Colposcopy and acetic acid test, b) Biopsy and pap smear, c) DNA test, d) All of the above	d) All of the above	37%
Q37. What is the recommended age for women to begin receiving screening for cervical cancer?	a) 18, b) 28, c) 25, d) 16	a) 18	35%

The above table revealed that 52.8% correctly identified Pap smears as the best method for early detection, with 63.4% recognizing it as the primary screening method in India. Regarding prevention, 52.8% understood that a combination of vaccination, condom use, and quitting smoking can help prevent cervical cancer. The majority (39.6%) knew that women should begin regular Pap smears at age 21, although 35% mistakenly believed screening should start at age 18. For HPV diagnostics, 37% recognized a combination of tests, including colposcopy, biopsy, and DNA testing, as valid methods.

Table 4 Knowledge on HPV Vaccine and Misconceptions

Question	Answer Choices	Most Common Answer	Percentage (%)
Q27. What is a key message in health education regarding the HPV vaccine's impact on public health?	a) The vaccine eliminates the need for regular cancer screenings, b) It only benefits individuals with high risk of HPV, c) It contributes to herd immunity, d) It is ineffective if administered after age 30	c) It contributes to herd immunity	39.60%
Q28. In addition to cervical cancer, which other health condition is associated with	a) Diabetes, b) Cardiovascular disease, c) Genital warts, d) Oropharyngeal cancer	c) Genital warts	55.40%

persistent high-risk HPV infections?			
Q29. Can cervical cancer be caused by genital warts?	a) Yes, b) No, c) Not sure	b) No	36.90%
Q30. Does malaria cause cervical cancer?	a) Yes, b) No, c) Not sure	b) No	47.80%
Q35. Is cervical cancer the primary cause of cancer-related death among women?	a) Yes, b) No, c) Not sure	a) Yes	50.10%

A survey on HPV vaccine knowledge and common misconceptions among female employees at Sharda University found that 39.6% correctly understood the HPV vaccine contributes to herd immunity, while 55.4% associated high-risk HPV infections with genital warts. Regarding misconceptions, 36.9% knew genital warts do not cause cervical cancer, and 47.8% correctly stated that malaria does not cause cervical cancer. Additionally, 50.1% believed that cervical cancer is the primary cause of cancer-related deaths among women. These findings highlight both awareness and gaps in understanding around the HPV vaccine and cervical cancer risks.

These results highlight areas of both strong knowledge (HPV as a cause, the role of screening) and gaps, such as misconceptions about risk factors, symptoms, and HPV vaccine effects. It suggests the need for further education and awareness, particularly around HPV screening guidelines, prevention strategies, and clearing up common misconceptions about the disease.

Attitude level of female employees regarding HPV and the HPV vaccine

Table 5 percentage of Attitude towards regarding HPV and the HPV vaccine

Question	Answer Choices	Most Common Answer	Percentage (%)
Q1. Based on my lifestyle, I believe I am susceptible to HPV infection and must get the vaccine.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Strongly disagree	24.60%
Q2. I believe contracting the HPV virus is serious and life-threatening.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Agree	43.40%
Q3. You can easily come into contact with the human papillomavirus (HPV).	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Agree	40.80%
Q4. It is important for young girls to receive the HPV vaccine.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Agree	39.20%
Q5. Cervical cancer is curable.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Strongly agree	47.10%
Q6. Vaginal bleeding is an obvious sign of cervical cancer.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Neutral	27.20%
Q7. Itchiness in the vaginal area is a sign of cervical cancer.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Neutral	24.00%
Q8. Cervical cancer is a common cancer in women in India.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Agree	48.50%
Q9. Screening can help in early detection of cervical cancer.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Agree	49.30%
Q10. Three doses of the HPV vaccine ensure maximum protection.	Strongly disagree, Disagree, Neutral, Agree, Strongly agree	Strongly disagree	24.60%

The survey results indicate varying attitudes among female employees at Sharda University toward HPV vaccination and cervical cancer awareness. While 24.6% strongly disagree that their lifestyle makes them susceptible to HPV and requires vaccination, 43.4% agree that contracting HPV is serious and life-threatening. A notable 40.8% believe it's easy to come into contact with HPV, and 39.2% think it's important for young girls to receive the vaccine. Regarding cervical cancer, 47.1% strongly agree that it is curable, though 27.2% are neutral on whether vaginal bleeding is an obvious sign, and 24.0% are neutral about itchiness as a symptom. The majority (48.5%) agree that cervical cancer is common among women in India, and 49.3% believe screening helps in early detection. However, only 23.4% agree that three doses of the

HPV vaccine provide maximum protection, with 24.6% strongly disagreeing. These findings suggest a mix of awareness and uncertainty regarding HPV and cervical cancer.

DISCUSSION

The findings from this survey on HPV vaccination and cervical cancer awareness among female employees at Sharda University reveal significant insights, reflecting both informed perspectives and notable gaps in knowledge. These results align with broader studies on HPV awareness and vaccine uptake in similar populations and regions, offering opportunities for targeted educational interventions.

Firstly, 43.4% of respondents agreed that HPV is serious and life-threatening, while 40.8% recognized how easily HPV can be contracted. These figures highlight an overall awareness of HPV's risks, consistent with studies conducted in similar demographic settings. For example, a study by Koc and Yildirim (2022) in Turkey found that 56.7% of participants were aware of HPV's link to cancer, yet misconceptions about the mode of transmission were prevalent, mirroring the confusion seen in our study, where only 25.8% of participants expressed neutrality regarding ease of transmission [14]. This reflects the need for comprehensive educational programs focusing on the modes of HPV transmission.

Interestingly, only 39.2% of respondents agreed on the importance of vaccinating young girls against HPV, which may indicate gaps in the understanding of vaccination benefits. This hesitancy aligns with studies in India and other developing countries, where vaccine uptake has been low due to cultural and societal factors. In a study by Patel et al. (2020), it was found that while 70% of mothers were aware of the HPV vaccine, only 42% were willing to vaccinate their daughters, citing concerns about safety and efficacy [15]. This indicates the need for better communication strategies that emphasize the vaccine's role in preventing cervical cancer without encouraging negative assumptions.

When considering cervical cancer curability, a strong 47.1% of participants agreed that the disease is curable, though 27.2% were neutral regarding the clear signs of cervical cancer such as vaginal bleeding. A similar lack of clarity was found in a 2018 study by Gupta et al., where a significant portion of Indian women were unsure of the early signs of cervical cancer, despite understanding the disease's severity [16]. This highlights a gap in early detection knowledge, even among educated populations, stressing the importance of campaigns that not only emphasize screening but also teach women to recognize early symptoms.

Screening awareness was moderately high, with 49.3% agreeing that screening can help in early detection. This is supported by a study by Singh et al. (2019) that showed increased awareness of Pap smears in urban areas of India, although actual screening rates remain low due to fear and stigma. Similar to our findings, Singh's study concluded that while women understand the importance of screening, practical barriers often prevent them from undergoing the test [17]. Efforts must focus on normalizing regular screening and reducing barriers related to cost, stigma, and access to healthcare facilities.

Finally, there was a noticeable divide on the effectiveness of the HPV vaccine regimen, with only 23.4% agreeing that three doses provide maximum protection and 24.6% strongly disagreeing. This confusion is consistent with studies that demonstrate misinformation about the vaccine schedule and its long-term benefits. Research by Dempsey et al. (2021) highlights that incomplete vaccination schedules or uncertainty about the dosing requirements often undermine the vaccine's efficacy [18]. Clearer messaging around the necessity of completing the HPV vaccine series is essential to ensure optimal protection rates.

CONCLUSION

This study highlights both promising levels of awareness about HPV and cervical cancer among Sharda University employees, as well as critical areas for improvement. Supporting studies show similar trends in HPV-related knowledge gaps, particularly in the context of vaccine hesitancy, early symptom recognition, and screening uptake. To address these gaps, sustained public health campaigns and educational interventions tailored to local cultural contexts are vital. These efforts will help combat misinformation and promote preventive behaviors that could significantly reduce cervical cancer incidence and mortality in India.

Conflict of Interest-Nil

Funding- Nil

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