

# **Awareness of Cervical Cancer Vaccination Among Educated Females: A Bangladeshi Perspective**

By

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A thesis submitted to the School of Pharmacy in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy (Hons.)

School of Pharmacy

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## **Declaration**

It is hereby declared that

1. The thesis submitted is my own original work while completing a degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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## Approval

The project titled “Awareness of Cervical Cancer Vaccination Among Educated Females: A Bangladeshi Perspective” submitted by Sumaiya Akter Taniya (19146052) of Spring, 2019 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

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## **Ethics Statement**

The study does not involve any kind of animal and human trial.

## **Abstract**

In Bangladesh, cervical cancer is the second most prevalent cancer among women, the most frequent risk factor for cervical cancer is the human papillomavirus (HPV). Prevention of this cancer through vaccination and early detection may be influenced by the population's level of understanding, knowledge and acceptance. In this study, a questionnaire survey assessed educated women's understanding and acceptance of cervical cancer and HPV vaccination in Bangladesh. 91 respondents voluntarily participated with a median age of 24+ with minimum educational qualification of higher secondary. Above 80% of the participants heard about cervical cancer but only 32.3% heard about the HPV vaccination. Among all the participants, only 11% have taken the vaccine. However, among the unvaccinated population, 77% are willing to take the vaccine. This study discovered a lack of knowledge on cervical cancer and the HPV vaccine. As a result, awareness programs are urgently needed to raise awareness for early identification and prevention of this cancer.

Keywords: cervical cancer, HPV vaccination, awareness, pap smear test, educated women, Bangladesh

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## List of acronyms

CC	Cervical Cancer
HPV	Human Papillomavirus
EPI	Expanded Programme on Immunization
STDs	Sexually Transmitted Diseases
GAVI	Global Alliance for Vaccines and Immunization
IARC	International Agency for Research on Cancer
VLPs	Virus Like Particles
CDC	Centers for Disease Control and Prevention
Bdt	Bangladeshi taka

# Chapter 1

## Introduction

### 1.1 Cervical Cancer Scenario in Bangladesh

Cervical cancer (CC) is a kind of cancer in which abnormal proliferation of cells develops in the cervix. It is caused by abnormal cell multiplication, which has the ability to infiltrate or disseminate to other parts of the body. According to ICO/IARC Information Centre on Human papillomavirus (HPV) and Cancer, in the year of 2022, there are 58.9 million women in Bangladesh who are at 15 years or above and at risk of having CC (HPV Information Centre, n.d.). CC is the secondarily prevailing illness among the women in Bangladesh and the secondarily prevalent cancer among women between the ages of 15 and 44; even in 2020 it was in the fourth position in the country (Hoque et al., 2020). With 12,000 new cases per year, cervical cancer is the secondarily most frequent malignancy among Bangladeshi women (Bhuiyan et al., 2018). From the current statistics, 8268 women are given a cervical cancer diagnosis each year, and 4971 of them pass away from the condition (HPV Information Centre, n.d.). In contrast to the average incidence rate of ~10 per 100,000 in the developed world, in South Asia, the age-standardized overall occurrence of CC is 18.9 over every 100,000 females. The lack of national cancer registries and the high prevalence of misdiagnosed cases—both of which are known in Bangladesh lead to a massive underestimation of the significance of cervical cancer there, as in other low-resource countries (Denny et al., 2006). Cervical cancer causes around 25% of cancer-related fatalities in women in Bangladesh, according to scant hospital data (Bhuiyan et al., 2018).

## **1.2 Human Papillomavirus (HPV)**

Cervical cancer is linked to HPV infections following HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68 are among the 14 high-risk HPV kinds (Burd, 2003). HPV 16 and 18 strains cause roughly half of all high-grade cervical pre-cancers. So far, over 200 HPV genotypes have been identified, with only the 'high-risk' variants causing CC (Okunade, 2019). HPV strains transmit through sexual contact and are linked to the majority of occurrences of CC. Despite the fact that many women are affected with HPV, during any point in their lives, this infection does not always result in CC. In most cases, this infection resolves on its own. However, for some women, the infection continues, producing premalignant alterations in cervix cells. Cervical screening is the only approach to detect malignant HPV infection since there are no clinical signs. Although the immune system normally eliminates over 90% of HPV infections, chronic infections can raise the risk of CC by leading to the establishment of precancerous lesions, which can eventually lead to cervical cancer over the course of around ten years (Islam et al., 2018). These abnormalities can only be detected by cervical screening because they have no clinical symptoms and can be evaluated and treated utilizing straightforward, efficient outpatient treatments. Due to ignorance about the risk factor which includes the lack of screening, premature marriage, early sexual intercourse, multiparity, STDs, and a poor socioeconomic status, Bangladesh has a widely spread, high incidence of cervical cancer.

## **1.3 HPV Vaccine**

The two best approaches to prevent invasive cervical cancer have been shown to be primary prevention with the help of HPV vaccination as well as secondary prevention by screening (Bhuiyan et al., 2018). A total of 124 nations and territories had national HPV vaccination

programs in place as of December 2019 (Lei et al., 2020). As of 2022, 125 countries incorporate HPV vaccine in standard immunizations for females and 47 countries include it in routine vaccines for boys as well (“The HPV Vaccine: Access and Use in the U.S.,” 2021). It is included on the World Health Organization's (WHO) list of essential medicines and vaccines. Without HPV vaccination, virtually almost the majority of the sexually active individual will be affected with the virus during any time of their life. It can be transmitted even if the infected individual shows no signs or symptoms. The CDC advises that children receive two doses of HPV vaccination between the ages of 11 and 12. However, only around 15% of teenage girls globally had gotten two doses of HPV vaccination in 2019, and that percentage dropped to 13% during the COVID-19 pandemic, according to Dr. Barnabas, who was present at the University of Washington during that time of the KEN SHE research. Presently existing HPV vaccines are made from virus-like particles (VLPs) derived from HPV surface components. VLPs are not infectious because they lack the virus's Genome. They do, however, closely resemble the actual virus, and the anti-VLP responses also work against the natural virus. VLPs have been demonstrated to be extremely resistant, which implies they induce the production of antibodies in the body. And so, the vaccinations are quite effective. The combination of HPV vaccination and cervical screening has been shown to give the best protection against CC. Furthermore, HPV vaccination lowers the chance of acquiring malignancies due to the HPV in locations other than the cervix. Almost in all first world countries, the cervical cancer vaccination is included in their national vaccination schedule. But in Bangladesh, people are yet to know about the vaccination. In Bangladesh, the vaccines are very costly as well as not readily available (Hoque et al., 2020).

## 1.4 Available Vaccines for HPV

In 2006, the first HPV vaccination was made accessible. It is included on the World Health Organization's (WHO) list of essential medicines and vaccines. In poor and middle-income nations, vaccination may be cost-effective. Gardasil 9 is the only HPV vaccination available in the United States as of 2017, as it protects against more HPV types than previous licensed vaccines (the original Gardasil and Cervarix) (“The HPV Vaccine: Access and Use in the U.S.,” 2021).

There are now three kinds (bivalent, 4-valent, 9-valent) of HPV vaccinations in use across the world to block the expansion of cervical cancer. A bivalent vaccination opposite to HPV 16/18 (high-risk HPV type: HR-HPV), a 4-valent vaccine against HPV 6/11 (low-risk HPV type: LR-HPV) and HPV 16/18 (HR-HPV), and a 9-valent vaccine against HPV 6/11 (LR-HPV) and HPV 16/18/31/33/45/52. (HR-HPV) are available (Sultana, 2021). The bivalent and 4-valent vaccines might dismiss 70% of CC cases, while the 9-valent could dismiss almost 90% of instances.

In Bangladesh, several pharmaceutical companies have started to manufacture the cervical cancer vaccine to minimize the rate of this cancer as much as possible. But the cost of the vaccine is very high for the people of low income. Gardasil by Healthcare Pharmaceuticals Ltd requires 2 to 3 doses according to the age of the receiver and each dose costs 5887 bdt (*Gardasil | 0.5 ml/Pre-filled Syringe | Injection | Healthcare Pharmaceuticals Ltd. | Indications, Pharmacology, Dosage, Side Effects and More | MedEx, n.d.*). On the other hand, Papilovax by Incepta Vaccine Ltd requires 3 doses each costing about 2500 bdt (Report, 2022). The expensiveness of each dose of the vaccine can be another reason for the low vaccination rate. If

the government takes initiatives and makes the HPV vaccine one of the Expanded Programme on Immunization (EPI) vaccines, then the people of low income can also be vaccinated.

## **1.5 Effectiveness of HPV Vaccination**

The implementation of this vaccination has drastically changed the global scenario of cervical cancer. In several countries, the rate has decreased as the acceptance of this vaccine increased.

The Australian study (2015) evaluated the frequency of HR-HPV in female individuals who were between 18-24 and 25-35 years among the immunized and pre-vaccine groups (Markowitz et al., 2012). The incidence of vaccine-targeted HPV strains was dramatically decreased in youthful female individuals 9 years following immunization, according to the findings (Machalek et al., 2018).

The Australian trial (2020) looked at the efficacy of a 4-valent vaccination against HPV contamination in 1564 female individuals from 18 to 35. (Median 24 years). The vaccinated group had a 0.7% contamination rate of the vaccine target HPV types, of which that was substantially less than the 5.5% infection rate in the non-immunized population (OR 0.13 95% CI 0.05-0.30) 9-12 years after the vaccination programme was introduced (Shilling et al., 2021).

The longer-term 9-year efficacy of a bivalent vaccination in opposition to the HPV16/18 and 31/45/52 contamination in Japanese female individuals from 25-26 years was recently published (Kurosawa et al., 2022). The vaccinated group had a 0% (0/150) infection rate, while the unvaccinated group had a 5.4% (15/279) infection rate, indicating a noteworthy difference ( $p = 0.0018$ ), and the vaccination efficacy was 100%. The infection rate of cross-protective-type HPV31/45/52 in the vaccinated group was considerably much less than in the non-immunized population (3.3% vs. 10.0%:  $p = 0.013$ ).

## **1.6 HPV Vaccination in Bangladesh**

By mid-2016, 65 nations had included HPV vaccines in their government vaccination programs, the majority of which were in high-income and upper-middle-income settings. However, poor countries bear the majority of the global burden of CC because they have not incorporated HPV vaccination in their national public health policy to prevent and control CC.

In Bangladesh, a bivalent HPV vaccination was registered in 2009, and a qHPV vaccine was registered in 2014. In the year of 2016, The Ministry of Health and Family Planning (MoHFP) launched the HPV vaccination in Bangladesh, with cooperation from the Global Alliance for Vaccines and Immunization (GAVI). GAVI was willing to give funding for the countrywide introduction of HPV vaccine if the new vaccination introduction campaign in Gazipur district was effective (“HPV Vaccine Introduced in Bangladesh,” 2016). But still HPV vaccination is not listed on the scheduled vaccines in Bangladesh (HPV Information Centre, n.d.).

The WHO advises that females should be vaccinated against HPV between 9 and 13 years. In accordance with this, the government had chosen to vaccinate girls of 10 years in primary school (Grade 5) level with two doses of b-HPV vaccine, administered six months apart. The target girls were primarily targeted through the school-based program, with girls who were not in school receiving the immunization through regular EPI sites at the community level. In the year of 2018, the government and Bangabandhu Sheikh Mujib Medical University had initiated steps to build a cc screening program. Additionally, CANSUP, a cancer support ngo, had cooperated with the WHO to help with technical support on cc screening. The program has been carried out effectively in 31 districts and is currently expected to reach all regions in this country. On February 13, 2023, the government announced plans to roll out free HPV vaccines in September



of the year to reduce cervical cancer fatalities (The Financial Express, n.d.). Bangladesh looks to have a window of opportunity to reduce the mortality and morbidity associated with HPV-related CC through the National HPV Vaccination Program.

## **1.7 Rational Behind the Survey**

Certain human malignancies have been related to infection by oncogenic viruses, which are capable of transforming a normal host cell into a malignant cell. (HPV) DNA and viral transforming protein expression are identified in nearly all cervical cancer cells, indicating that this virus plays an essential role in the disease's development. There is evidence that the immune response to cancer cells can play a significant impact in the disease's outcome. The developed HPV preventive vaccination has the potential to cut cervical cancer rates by up to 90% worldwide (*Human Papillomavirus (HPV) Vaccines*, 2021). Yet people are not getting vaccinated. There are more than 200 varieties of cancers present till now among which only a few have vaccines which can dominantly prevent the disease. Cervical cancer is one of them. In Bangladesh, where this cancer stands on the second position causing illness among women. Even now, data has shown very few recognitions. Through this survey, I tried to gather people's perception and their willingness to accept the vaccine to prevent cancer.

## **1.8 Aims and Objectives**

The main goals of this study are to:

1. Investigate the level of understanding about cervical cancer and HPV vaccination among educated women in Bangladesh.
2. To identify the causes of lack of awareness and acceptance of HPV vaccination.
3. To find means by which acceptance of HPV vaccination can be improved in Bangladesh.
4. To find sources of information, and acceptability of HPV vaccination with a view to identifying areas that need greater attention and regulations, which could raise vaccine acceptance among the young educated women in Bangladesh to lower the burden of the disease.

## **Chapter 2**

### **Methodology**

In this project work, a questionnaire-based survey was conducted from November 15, 2022 till January 20, 2023. The survey consisted of an initial structured questionnaire which was distributed in different social medias online as well as in person. Women from diverse backgrounds were targeted through email, various online platforms (different facebook groups, instagram) and in-person utilizing non probability-based purposive sampling. Participants took part in the survey on their free will by clicking on the online link. For in-person survey, verbal consent was taken upon providing complete information on the survey. Questionnaires completed by women with a minimum educational qualification of Higher Secondary School Certificate Examination (HSC) were considered for the survey in order to investigate their understanding and opinion on CC and its vaccination. A systematic self-administered questionnaire with 30 questions was employed. Similar studies were conducted in the year of 2011 (Islam et al., 2018), 2013 (Bhuiyan et al., 2018), 2020 (Hoque et al., 2020) and more in different settings which included an earlier on performed study of a population-based sample of female individuals which was conducted in Bangladesh, was used to create the questionnaire.

The questionnaire was designed based on literature review so that it can fulfill the objectives of this study. In the beginning, some basic questions were asked regarding age, relationship status, educational background, religion, the average of their family's total monthly income, followed by some investigational questions regarding their understanding and opinion about CC and its vaccination queries were also addressed to determine respondents' willingness to accept HPV vaccination. The copy of the questionnaire is attached in the appendix section.

## Chapter 3

### 3.1 Result & Discussion

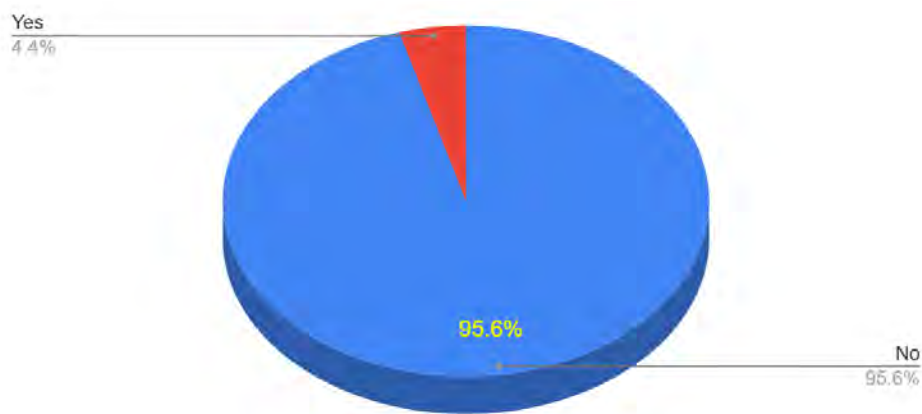
A total of 91 women responded voluntarily to the questionnaire which were distributed online as well as in person. Table 3.1 describes the fundamental demographic features of these women taken from the survey. The average age of research participants was 24 (SD  $\pm 3.6$  years). According to the American Cancer Society, CC is most commonly detected in women aged between 35 to 44, with the median age of detection being 50 (*Cervical Cancer Statistics | Key Facts About Cervical Cancer*, n.d.). It seldom occurs in women under the age of 20. Many older women are unaware that the risk of acquiring this cancer remains as they age, according to the American Cancer Society. Among the participants, 90.1% are located in an urban area and 9.9% are in a rural area; 1.1% have at least a primary level of education, 2.2% have a secondary qualification level, and the majority 96.7% hold at least a bachelor's degree. 69.2% are unmarried and 30.8% are married. Also, the majority of them come from middle-class families.

**Table 3.1.1: Demographic Features of the Respondents**

Feature	Number of the Participants	%
<b>Age (years)</b>		
<20	4	4.4
20–30	83	91.2
>30	4	4.4
<b>Mean age with SD: 24 <math>\pm</math> 3.6</b>		
<b>Religion</b>		
Islam	76	83.5
Hinduism	14	15.4
Non-religious	1	1.1
<b>Body weight (kg)</b>		
31-50	12	13.2
51-60	36	39.6
61-70	18	19.8

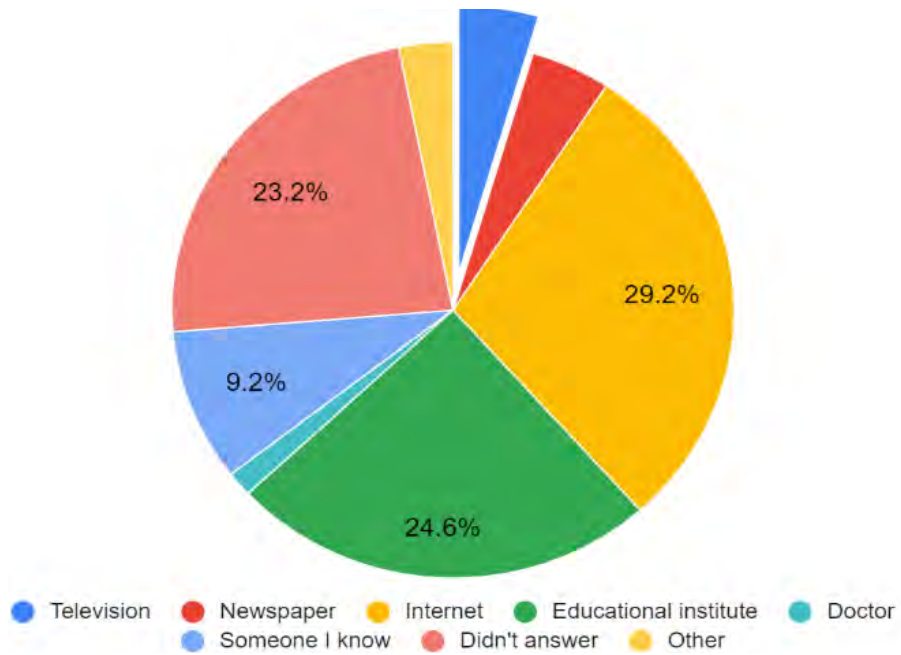
>70	25	27.4
<b>Living place</b>		
Rural	9	9.9
Urban	82	90.1
<b>Educational qualification</b>		
Primary	1	1.1
Secondary	2	2.2
Bachelors and above	88	96.7
<b>Occupation</b>		
Student	57	62.6
Housewife	13	14.3
Job holder	21	23.1
<b>Marital status</b>		
Unmarried	63	69.2
Married	28	30.8
<b>Monthly income (bdt)</b>		
<40,000	17	18.7
40,001–1,50,000	53	58.2
>1,50,000	21	23.1

Among these 91 women, 95.6% have never got pregnant whereas 4.4% have got pregnant for once or more during their lifetime. Having three or more full-term pregnancies increases the risk of CC (*Cervical Cancer Risk Factors | Risk Factors for Cervical Cancer*, n.d.). The 4 women who got pregnant have heard about CC from television, educational institutes and the internet. But none of them know about the Pap Smear test which is one of the major screening tests for CC.

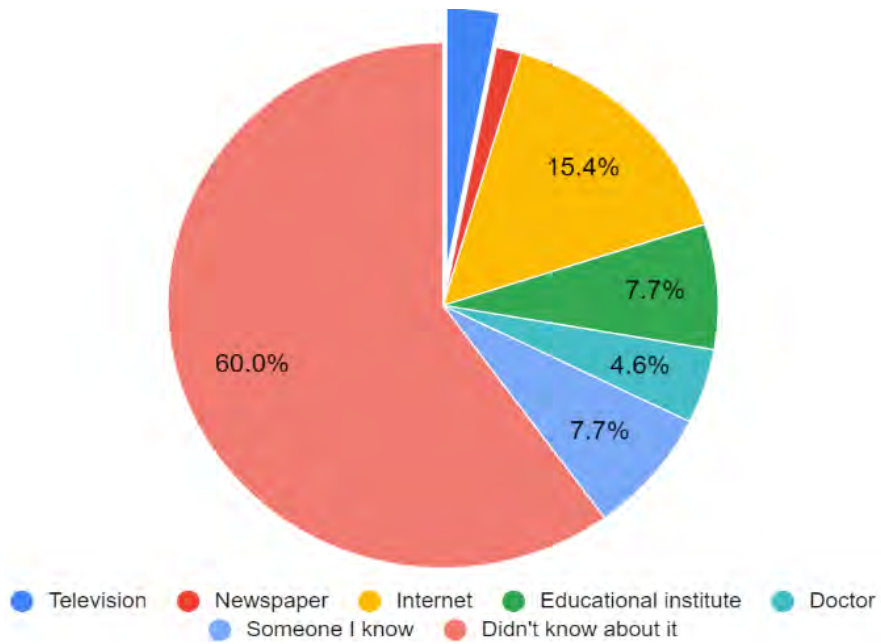


**Figure 3.1.1: Pregnancy among the participants**

Among the 91 women, above 80% of them have heard of cervical cancer. The sources from where they have heard about the cancer are: television (4.6%), newspaper (4.6%), educational institute (24.6%), internet (29.2%), from their doctor (1.5%), and from other sources (3.1%). Also, only 32.3% of the respondents know about the HPV vaccine; 67.7% of participants did not even know that there is a vaccine which can prevent this deadly cancer. Also, the majority of the respondents have heard about the HPV vaccine from the internet (15.4%).



**Figure 3.1.2: Sources of learning about cervical cancer**



**Figure 3.1.3: Sources of learning about HPV vaccine**

About 70.8% of the participants knew that long-term infection with HPV is the main reason for this cancer. Table 3.1.2 shows the knowledge of the 91 females who participated in the survey about the risk factors which cause cc. Table 3.1.3 shows the understanding of the 91 females who participated in the survey about the various symptoms of cc.

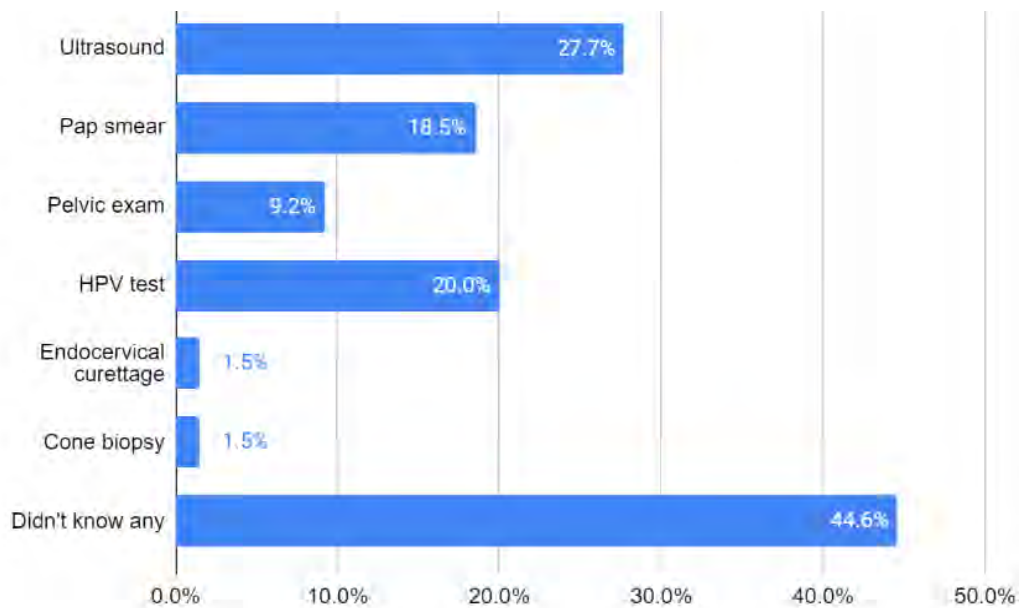
**Table 3.1.2: Understanding of the Risk Factors Causing CC**

<b>Risk Factors</b>	<b>Percentage</b>
HPV infection	27.7%
Multiple sex partners	35.4%
Tobacco use	29.2%
Having given birth to 3+ children	15.4%
Weakened immune system	27.7%
Prolonged use of birth control pills	26.2%
Diet low in fruits and vegetables	12.3%
Family history	27.2%
Didn't know	41.5%

**Table 3.1.3: Understanding of the Symptoms of CC**

<b>Symptoms</b>	<b>Percentage</b>
Unusual vaginal discharge	26.2
Abnormal vaginal bleeding	27.7
Heavier and longer menstrual cycle	30.8
Discomfort while urinating	18.5
Loss of bladder control	13.8
Pain during intercourse	12.3
Constant fatigue	9.2
Pelvic pain	21.5
Unexpected weight loss	9.2
Leg pain	12.3
Didn't know	49.3





**Figure 3.1.4: Understanding of the respondents about the screening methods to detect CC**

Among the 91 participants, approximately 11% have taken the vaccine whereas the rest 89% of them are still unvaccinated. As stated by the participants, the major reason for not taking the vaccine previously is not being aware. About 71% of the participants did not know about the vaccine previously. And 63% of the unvaccinated women who previously knew about the HPV vaccine stated the reason for not taking the vaccine as their doctor did not recommend it. It can be due to the unavailability of the vaccine or any medical history of that respondent. Very few of the respondents were uncertain about the safety of the vaccine. Nevertheless, among the unvaccinated sample population around 77% of them are willing to take the vaccine. And among the 91 participants, 80% of them said they would encourage others to take the vaccine as well. Though most of the women did not know about the vaccine, about 92.3% think that more people need to be aware of the vaccination.

A study conducted in the year of 2011 showed that only 21% of urban women and just 3% of rural women admitted having heard of HPV vaccination to prevent cc (Islam et al., 2018). Furthermore, knowledge of cc, including factors associated with or indications, was not evaluated in that study. Another survey which was conducted in the year of 2011, found significant (81%) knowledge of cc among Bangladeshi women; however, the bulk (74%) of those data were acquired from women living in rural regions and were confined to women over the age of 30 (R. M. Islam et al., 2015). From 2019 to 2020, another cross-sectional evaluation was conducted on the women living in the rural areas in Bangladesh (Banik et al., 2022). Most of the participants who participated in that survey were married (62.8%). Also, the larger population of the participants had poor educational background (64.7%). In that survey, the respondents knowledge about cc differed considerably by education level ( $p < 0.01$ ) with 32.2% of respondents with little education unaware of the disease (Banik et al., 2022). But in this survey, the majority of the participants (96.7%) hold at least a bachelor's degree and 95.6% have never got pregnant. But now, in the year of 2023, the rate of awareness of cc has increased but only 32.3% of the participants know about the HPV vaccination. Also, there is currently little literature on the understanding of HPV and the HPV vaccination among the women living in Bangladeshi.

### **3.2 Findings from the Study**

The study fulfills the objectives which were aimed to be obtained. According to the findings of this study, the level of understanding about CC and HPV vaccination among educated women in Bangladesh is very poor. Although few percent of the participants knew about the cancer, yet the vaccination rate is extremely low. The prime reason behind this is the absence of awareness

among the population. Moreover, the majority of the women did not take the vaccine despite knowing about it. They stated that their doctor did not recommend the vaccine. It can be due to the unavailability of the vaccine, the expensiveness of the doses, their insufficient amount of understanding as well as the contradiction with the receiver's medical history.

However, in this research, we discovered that most of the participants are willing to take the vaccination and interested in encouraging others as well. From this survey, it has been found that the internet can be a great means to spread awareness about cancer as well as the HPV vaccine. Besides, different government as well as private programs can also have a great impact on spreading awareness. The HPV vaccine should be included in the EPI vaccination to reduce the cost and increase the availability. Also, the government can include Pap smear test as a scheduled procedure for the early detection of CC, this can reduce the severity as well as the incidence of cervical cancer. It is consequently essential to provide proper information among the women to increase the awareness and vaccination rate.

### **3.3 Drawbacks**

Though there are major strengths of this study, one of the limitations is that this study was conducted on a very few women having a specific educational background. To know the actual scenario, the study has to be conducted on a greater population, from different educational and socio-economic backgrounds. Also, this survey can be done on the male population. Furthermore, in this study, non probability-based purposive sampling method has been used where candidates were chosen using non-random criteria, meaning that not each person has a chance to be included. This strategy was adopted since the population is small and particular, and the study needs to gather precise knowledge about a specific occurrence rather than drawing

statistical judgments. And so, there is a possibility of selection biases and the result may not stand in for the entire population. Also, the information obtained on HPV vaccination history and pap smears was self-reported, which could be subject to social biases.

## Chapter 4

### Conclusion and Future Perspectives

In this study, efforts were taken to investigate the knowledge on CC and HPV vaccination among Bangladeshi women whose educational qualification is above the level of Higher Secondary. The HPV vaccination saves lives by preventing the majority of cervical cancer occurrences. The prime cost-effective public health step against CC is the vaccination of teenage girls, and it is one of the fundamental pillars of a comprehensive approach to eliminate CC as a public health concern (Swain & Parida, 2018). The other two pillars are screening and treating precancerous lesions, treating cervical cancer patients, and providing palliative care. According to the WHO, by the year of 2019, 100 countries have included cervical cancer vaccines into their national vaccination schedule (*Major Milestone Reached as 100 Countries Have Introduced HPV Vaccine Into National Schedule*, 2019). But Bangladesh is not yet on that list.

From this study, we have found that despite the educational qualification and social-economic background of the participants, the degree of awareness and understanding of CC and HPV vaccination was found to be very low. This highlights the need of launching government and private programs across the country immediately. If the government takes initiatives and makes the HPV vaccine one of the EPI vaccines, then the people of low income can also be vaccinated. Constant technological advancement and proofed approach are essential for improving the standard of healthcare for women diagnosed with CC. Early screening and detection of cervical cancer are critical components for improving the situation in Bangladesh. Bangladesh has enormous hurdles in developing effective and economical cancer programs, particularly for cervical cancer. The hurdles are many, and the most important one is awareness. Furthermore,

there are possible causes that make a woman more susceptible in the development of CC; thus, the authority should intend to ensure complete awareness programmes related to the cancer and the vaccination, make the vaccination available for every community, make the vaccination compulsory for every women, comprehensive sex education as part of basic academic achievement, minimize poverty, enhance the standard of life for women, minimize the violence based on gender, and economically empowering women, all of which will surely contribute to lowering overall cervical cancer mortality.

The possible research path may include participants without any minimum educational level, socio-economic background and age for the better understanding of the scenario. Also, the study can be conducted including male participants as well. Furthermore, a different sampling method can be used to contrast the findings.

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## **Appendix**

<https://forms.gle/GQx6MpVTAA9pxK5SA>