

KNOWLEDGE, ATTITUDE AND PRACTICE OF FEMALES AGED 18-50 IN AHMEDABAD FOR CERVICAL CANCER AND ITS PREVENTION

Dissertation Submitted to



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Master of Business Administration (MBA)

in

Hospital and Health Management

By

Archita Srivastava

Under the Supervision and Guidance of

Dr J.P. Singh

2024

Organization Certificate

Date: 19/06/2024

This is to certify that **Dr. Archita Srivastava** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her internship at Healthark Insights during 18th March 2024 to 18th June 2024.



Sincerely,
Amol Pandya
HR Manager
Healthark Insights

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Knowledge, Attitude and Practice of Females Aged 18-50 in Ahmedabad for Cervical Cancer and its Prevention** is the bonafied record of my original research work.

I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Archita

Dr. Archita Srivastava

Date 2/7/24

Certificate from Faculty Guide and School Dean

This is to certify that dissertation titled **Knowledge, Attitude and Practice of Females Aged 18-50 in Ahmedabad for Cervical Cancer and its Prevention** is a record of research work undertaken by Dr. Archita Srivastava in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific and analytical.

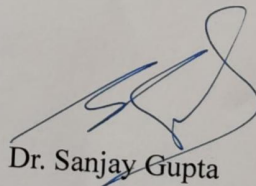
Jagajal Prasad Singh

Dr. JP Singh

Professor

IIHMR University, Jaipur

Date

A handwritten signature in blue ink, appearing to read 'Sanjay Gupta', written over a horizontal line.

Dr. Sanjay Gupta

MBA-HM Dean

IIHMR University, Jaipur

Date

21/07/2024

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Dr Archita Srivastava

MBA Health Management

IIHMR University, Jaipur

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ABSTRACT

Background: Asia holds the burden of almost 60 percent of cervical cancer cases, with India being the leader in mortality and follows China in Incidence. NFHS-5 (2019-2021) revealed that only 2% women in India underwent screening for cervical cancer and the numbers for Ahmedabad were mere 0.2%. Furthermore, the GoI had projected 17,083 existing cases of cervical cancer in Ahmedabad for the year 2023. Given the rising incidence, raising awareness among Ahmedabad's female community has become an imperative task.

Objective: To assess the level of knowledge, attitude, and practice towards cervical cancer, its preventive methods along with to identify barriers to these among females aged 18-50 in Ahmedabad.

Methodology: A cross-sectional survey using an online questionnaire was conducted with 321 respondents to determine knowledge, attitudes, and practices regarding cervical cancer prevention in women aged 18-50 from Ahmedabad, Gujarat. The survey, divided into four sections sociodemographic data, knowledge, attitude, and practice, barriers.

Results: There is a significant gap between awareness and practice among the participants where 83% of participants had knowledge regarding cervical cancer, but only 14% had undergone screening, and merely 15% had taken the HPV vaccination. One of the prominent barriers identified was the lack of recommendations from doctors. Younger women (aged 18-25), those with higher education levels (post-graduates), and those residing in urban areas demonstrated better knowledge and more positive attitudes towards cervical cancer prevention.

Conclusions: The study identified barriers to cervical cancer prevention, including low proactive recommendations from healthcare providers and demographic disparities in knowledge and attitudes. Targeted interventions such as strengthening healthcare provider engagement, tailoring education to specific groups, and using preferred communication channels are necessary. Addressing these gaps will help to improve screening numbers, boost vaccination uptake, and ultimately reduce the burden of cervical cancer.

Keywords: Knowledge, Awareness, Cervical Cancer, HPV vaccine, Cervical cancer Screening

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List of Abbreviations

1. CC – Cervical Cancer
2. CCS – Cervical Cancer Screening
3. HPV – Human Papilloma Virus
4. DNA – Deoxy-ribo Nucleic Acid
5. VIA – Visual Inspection with Acetic Acid
6. WHO – World Health Organization
7. UIP – Universal Immunization Program
8. ICMR – Indian Council of Medical Research
9. DGHS – Director General of Health Services
10. ANM – Auxiliary Nurse Midwives
11. LHV – Lady Health Visitors
12. SN – Staff Nurse
13. SHC – Sub Health Center
14. HWC – Health and Wellness Center
15. PHC – Primary Healthcare Center
16. CHC – Community Health Center
17. DH – District Hospital
18. NCD – Non-Communicable Diseases
19. ASCO – American Society of Clinical Oncology
20. MoHFW – Ministry of Health and Family Welfare

Chapter 1: Introduction

1.1 Background – Global Cancer Burden

Cancer as a disease is marked by the uncontrolled growth of abnormal cells in any part of the body (WHO,2022). National Cancer Institute states that one in five people worldwide is estimated to contract cancer in their lifetime, one in nine men and one in twelve women die of it (Cancer Statistics, 2024)^[1]. GLOBOCAN 2022 reported around 20 Mn cancer cases and 9.7 Mn cancer related deaths worldwide. Fig1.1 shows the distribution of cancers for both sexes with “Lung cancer leading the list in both incidence and mortality” (Bray et al., 2024a).

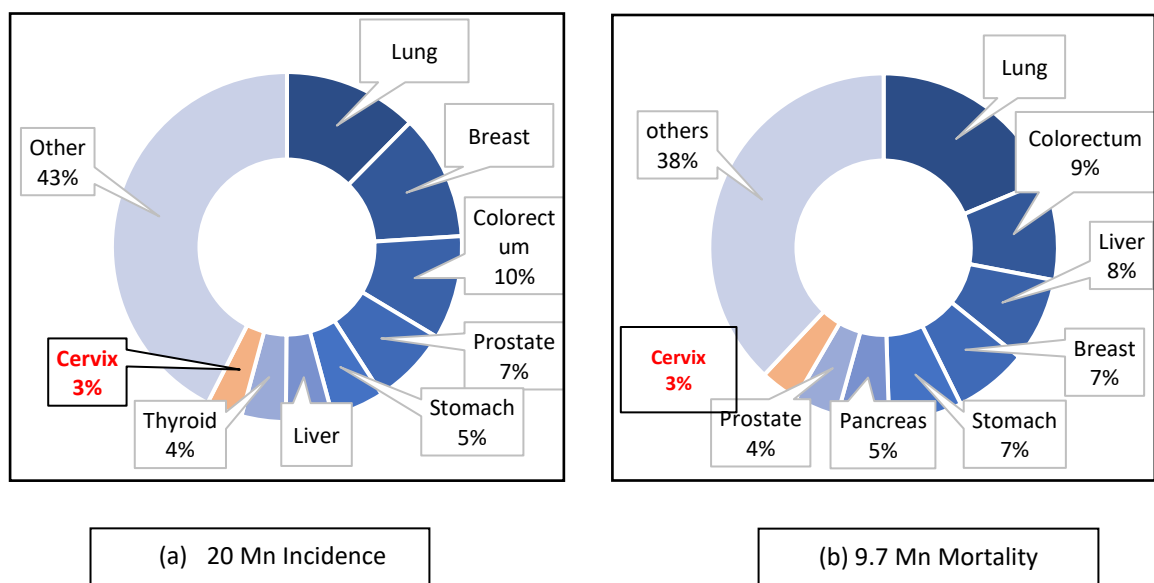


Fig 1.1 Distribution of (a) Incidence and (b) Mortality for the top cancers in 2022 for both sex

Source: GLOBOCON cancer statistics 2022 (Bray et al., 2024b)

Out of 20 Mn newly diagnosed cases and 9.7 Mn deaths in 2022, 9.7 Mn and 4.3 Mn respectively belonged to women. Fig1.2 shows the distribution of cancers in women. Breast cancer is the most commonly diagnosed cancer (23.8%) and the leading cause of cancer death (15%), followed by lung and colorectal cancer for both cancer cases and deaths (Bray et al., 2024a). CC being the 4th commonly diagnosed and also the fourth leading cause of cancer death worldwide.

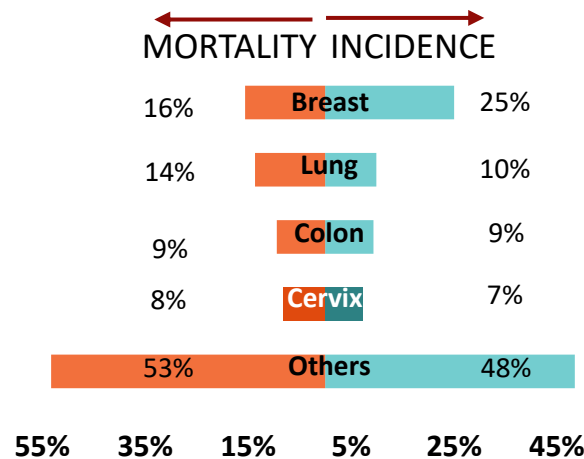


Fig 1.2 Distribution of top most cancers in females (incidence and mortality) (Bray et al., 2024b) Source: GLOBOCON cancer statistics 2022

In developing nations, lifestyle changes, aging populations, and tobacco use have contributed to the increasing prevalence of non-communicable diseases (NCDs), including cancer. This shift highlights the importance of effective policies and advocacy to address this growing health challenge. “Approximately 70 percent of cancer deaths now occur in low- and middle-income countries”(Sloan F A. & Gelband Hellen, 2007).^[2] India, has 60% of all deaths due to NCDs, and alone cancer ranks as second leading cause, with 12 percent of these deaths (*Example of Non Communicable Disease*, 2024).^[3]

The incidence, pathology, and mortality of cancer exhibit geographic variations and these geographic variations in cancer are influenced by socio-cultural behaviors, genetics, environment, lifestyle, and historical context.(Kanavos, 2006).^[4] In 2019, India had reported around 1.2 Mn cancer cases and 0.9 Mn deaths, making it the second largest contributor to the cancer burden in Asia following China (Pti, 2024).^[5]

Asia, has the highest burden of cervical cancer with 58 percent incidence and deaths globally. India has the highest incidence (21%), followed by China (18%). CC is responsible for 40 percent of total deaths (23% in India, 17% in China)(D. Singh et al., 2023).^[6] Along with the escalating incidence of CC in the developing world, India itself is experiencing a huge burden, it becomes important to understand its incidence and mortality trends.

1.2 Burden of Cervical cancer in India

Global Cancer Observatory Report of 2022, reported CC as fourth most common cancer to be diagnosed and also as the fourth leading cause of mortality due to cancer among women, but in India, it is the second most common cancer among females posing a significant public health challenge (Bray et al., 2024a) ^{[7][8]} (Fig 1.3). In India, a woman dies from cervical cancer every eight minutes as CC accounts for ~ 18 percent of cancers among them ^[8]. Additionally, it is reported that one out of every four women who died from cervical cancer globally was from India (Correspondent, 2013). ^[9]

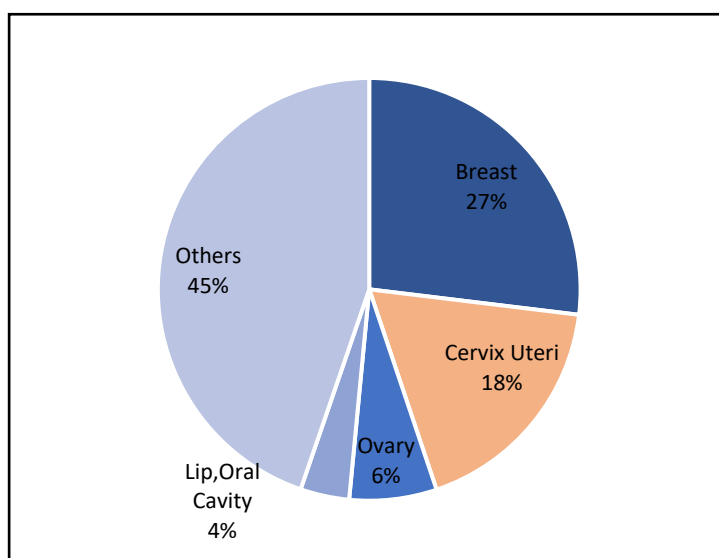


Fig 1.3 Top five most frequent cancers in Females (India)

Source: GLOBOCON cancer statistics 2022

India's National Cancer Control Program relies on cancer registries for crucial incidence data. (Mathur et al., 2020). ^[10] 2020 analysis of National cancer registry programme (NCRP) data revealed breast cancer as the most prevalent, and CC and cancer of ovaries also being commonly reported across PBCRs.

With CC presenting a significant public health challenge, concerted efforts from health and other sectors are required to address effectively (Takiar, 2018). ^[11] In 2020, India had the highest incidence and mortality rates for cervical cancer worldwide, surpassing China (Muthuramalingam & Muraleedharan, 2023). ^[12] In LMICs, delayed diagnosis due to inadequate screening and treatment accessibility has worsened the situation. Effective methods like HPV DNA testing, Pap smear, and VIA are available, but uptake remains low (1.9% in India, 0.2% in Gujarat). ^[13] In India, cervical cancer screening is hindered by societal taboos, resource scarcity (including lack of skilled staff, medical equipment, and lab services), and challenges unique to the local context. Consequently, the screening techniques typically employed successfully in developed nations might not be feasible in

India's setting (Easing the Cervical Cancer Disease Burden in India | Think Global Health, 2023).^[14]

1.3 Cervical Cancer Epidemiology

The risk for cervical cancer varies within a country's female population. In India, there is a demographic of over 511.4 M women who are 15 years or older, all of whom are at potential risk for cervical cancer. (IARC,2023).^[15]

1.3.1 Cause and Risk Factors

Human Papillomavirus (HPV), which is transmitted through sexual contact, is recognized as the primary cause of cervical cancer. ICMR has notified HPV types 16 and 18 to be accountable for approximately 70 percent of all cervical cancer cases globally.(Sreedevi et al., 2015).^[16] Although HPV has been identified as the causative agent, it alone isn't sufficient and requires other contributing factors as covariates in the advancement of the condition(Jeronimo Jose et al., 2016).^[17] Women with HIV have a sixfold increased risk of being diagnosed with CC than those who are HIV-negative (WHO 2020). American Cancer Society considers smoking, long term use of oral contraceptive, multiple full-term pregnancies, becoming sexually active at young age, poor menstrual hygiene and having family history of cancer contributing factors for cervical cancer.

In India, women face a cumulative 2.5 percent lifetime risk and a 1.4 percent cumulative death risk from cervical cancer (Karthigeyan, 2012).^[19] Alarmingly, it's estimated that 6.6 percent of women are believed to be infected with cervical HPV. Inadequate screening facilities and lack of access to affordable quality treatment in less developed countries, resulting in delayed diagnosis worsens the problem(J. Singh et al., 2018a).^[18]

Cervical cancer typically develops early in a woman's life, often during their most active and productive years, with peak incidence between the ages of 30 and 34, and again between 55 and 65 (WHO, 2023). Almost 80 percent of sexually active women will contract genital HPV by the time they reach 50 years old(Karthigeyan, 2012).^[19]

1.3.2 Sign and Symptoms

Cervical cancer is often asymptomatic in initial stages, complicating early detection. Symptoms typically appear only after the cancer has progressed. When symptoms of cervical cancer do appear, they may include:

- Post-coital vaginal bleeding
- Post-menopausal vaginal bleeding

- Intermenstrual bleeding or menstrual periods that are heavier or last longer than usual
- Vaginal discharge that may be bloody, have a foul smell
- Pain in the pelvic region or discomfort during intercourse

1.3.3 Prevention

Prevention strategies are crucial because the disease is often not detected until it has progressed significantly. WHO states vaccination as the primary and screening as the secondary most effective preventive measures for cervical cancer.

1.3.3.1 Screening for Cervical Cancer

Screening and detection of cervical cancer utilize techniques such as Human Papilloma virus DNA testing, Pap smear cytology, and VIA. MoHFW has endorsed VIA for women between 30 to 65 years old, to be conducted every five years (Operational guidelines, 2016) [\[20\]](#). The guidelines suggest that screening for prevalent cancers should be incorporated into the comprehensive primary healthcare services and can take place at PHCs and certain designated SCs. Since its adoption in 2016, widespread implementation of guidelines remains nascent, resulting in delayed diagnosis until symptoms manifest.

The **Global Strategy adopted by WHO** aims to lower the annual incidence of CC cases fewer than 4 per 100,000 women. 90-70-90 target has been set to reach this goal by 2030 (Ghebreyesus & Jakab, n.d.):

90-70-90 target

- To **vaccinate 90** percent of girls with the HPV vaccine by the time they reach age 15
- To **screen 70** percent of women with a high-quality of tests by ages 35 and 45
- To **treat 90** percent of women with cervical disease.

By concentrating on raising HPV vaccination rates, improving cervical cancer screening systems, and guaranteeing that women in developing nations have access to treatment, WHO hopes to achieve this goal.

1.3.3.2 Vaccination for HPV

There are now vaccines against Human Papilloma viruses strain 16 and 18, which show promise in lowering the prevalence of anogenital malignancies, including CC. For primary

prevention, two US FDA approved vaccines **Gardasil** and **Cervarix** have already been present in India for a long time. **Cervavac**^[25], is the first domestically produced quadrivalent HPV vaccine developed by the Serum Institute of India and also in low cost.

Despite the shown safety, tolerability, and effectiveness, these HPV vaccines have shown in preventing CC due to HPV, they are still not included in the Universal Immunization Programme (UIP). Although recommended by many public health specialists only Sikkim has adopted it for standard immunization regimen.

Prognosis

Depending on the size and spread of tumor, CC can be divided into 4 clinical stages(Bhatla et al., 2021)^[26]. In India, more than half (60 percent) of cervical cancer cases are discovered when they have already progressed to a locally advanced stage (Fig 1.4). When detected early, the five-year survival rate stands at 73.2 percent. However, for those diagnosed at a more advanced stage, the prognosis is grim, with a five-year survival rate of only 7.9 percent(Bray et al., 2024a).

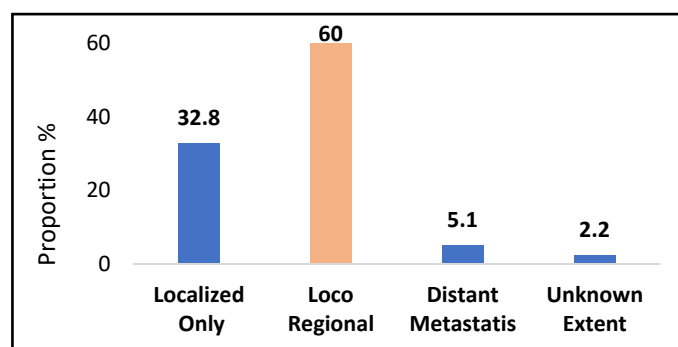


Fig 1.4 Relative proportion (%) of patients according to clinical extent of disease

Source: GLOBOCON cancer statistics 2022

Research Gap

Research results indicate that the majority of cancer research conducted focuses only on knowledge about cervical cancer and its screening methods, with comparatively little attention paid to barriers to avail the services like screening and vaccinations. In India, various research efforts have been made to gauge the awareness of early warning signs and symptoms, as well as the use of different screening techniques such as Pap Smear, Human Papilloma Virus DNA testing, and VIA Studies in this aspect are done in various parts of the country and they show diverse results ranging from poor to good knowledge about cervical cancer. But only a few have been done in the state of Gujarat and even fewer in

City of Ahmedabad. In view of the above context and because of the limited research specifically focusing on the knowledge, attitude and practice towards cervical cancer and its prevention among females aged 18-50 in Ahmedabad. This study aims to fill this gap by providing detailed insights into the local context, which can inform targeted interventions.

1.4 Research Questions

1. What is the level of knowledge about cervical cancer, its risk factors, symptoms, and prevention methods among females aged 18-50 in Ahmedabad?
2. What are the attitude and practice towards cervical cancer screening and its prevention in this population?
3. What barriers do females aged 18-50 in Ahmedabad face in accessing cervical cancer screening and HPV vaccination?

1.6 Objectives

1. To assess the level of knowledge about cervical cancer, its risk factors, symptoms, and prevention methods among females aged 18-50 in Ahmedabad.
2. To understand the attitude and practice towards cervical cancer screening and its prevention among females aged 18-50 in Ahmedabad.
3. To identify the barriers faced by females aged 18-50 in Ahmedabad in accessing cervical cancer screening and HPV vaccination.

Chapter 2: Review of Literature

The review of literature reveals that Indian women, regardless of socio-economic or educational background, generally lack awareness about the risk factors of cervical cancer. There's also no clear link between having knowledge of these risks and actual evidence of their presence. India's health system tends to overlook cervical cancer prevention, awareness, and early detection. Studies focused on community-based awareness are few, especially when compared to those conducted in hospitals. Given the higher mortality rates from cervical cancer in low- and middle-income countries like India, it's vital to focus on raising awareness and prevention measures.

S. No	Title of Study	Author	Publication year & Type of study	Study location & Sample size	Key findings
1.	Cervical ^[18] cancer awareness and HPV vaccine acceptability among females in Delhi	Jyoti Singh, Brototi Roy, Anshu Yadav, Shumaila Siddiqui, Aarzoo Setia, Ramya Ramesh, Kritika Singh	2024 Cross-Sectional Study	New Delhi 450	• A large portion of the respondents (85.11%) knew about cervical cancer. • A similar number (84.6%) were open to getting a Pap test for diagnosis. • Over half (63.14%) approved of the HPV vaccine for their daughters. • Yet, a minimal number were inclined to get the HPV vaccine for themselves.
2.	Factors ^[30] influencing cervical cancer screening among reproductive age group women in India: A multilevel analysis of nationwide survey 2019-2021(Yadav et al., 2024)	Jeetendra Yadava, Nilima c, Siddharth Kaushik, Nutan Kumari(Yadav et al., 2024)	2024 Multilevel analysis of NFHS-5		• CCS is 1.2%, influenced by various socioeconomic elements. • Higher CCS rates are seen in women aged 30-49, those with higher income, and those not using condoms. • Southern states report the highest screening rates. • There's an urgent call for awareness programs and

					widespread information, particularly in North India.
3.	Knowledge, ^[31] attitudes, And barriers to screening For cervical cancer among Women in India(Vora et al., 2020)	K. Vora, L. Mcquatters , S. Saiyed , P. Gupta(Vora et al., 2020)	2020 Review Article		• Routine screening for symptom-free women is largely unrecognized in India. • A significant obstacle to screening is the community's lack of knowledge about CC and HPV prevention and treatment. • Reasons for avoiding screening include cost, perceived risk, fear, and misconceptions.
4.	Knowledge, ^[32] Attitude, & Practice on Cervical Cancer & Screening Among Women in India(Taneja et al., 2021)	Neha Taneja, Bhavika Chawla , Aanchal Anant Awasthi, Kumar Dron Shrivastav, Vinita Kumar Jaggi, and Rajiv Janardhanan(Taneja et al., 2021)	2021 Review Article	19 articles were included in the review based on the eligibility criteria 7688 women were included in the study	• Women's awareness of CC stands at 40.22%. • 32.68% recognize early marriage as a risk factor, while 23.01% identify early sexual activity initiation as a risk. • The most reported symptoms are intermenstrual bleeding (30.75%) and foul-smelling discharge (28.86%). • Knowledge, attitudes, and practices concerning CCS are at 20.31%, 43.64%, and 13.22% respectively.
5.	Knowledge, ^[33] Attitude and Practices on Breast and Cervical Cancer Screening Methods Among Female Employees at the Gujarat Cancer and Research Institute,	Nishu Dhingra , Pariseema Dave , Bijal Patel(Dhingra et al., 2023)	2023 Cross-Sectional Study	Ahmedabad 174	• Knowledge of Pap smear was present in 91.2% of the more educated and 50% of the less educated group. • 64.6% had never undergone a Pap smear, and only half of those tested did so in the last 5 years.

	Ahmedabad(Dhinga et al., 2023)				A positive attitude towards Pap smear acceptance was seen in 82.14% of participants.
6.	Knowledge ^[28] and Awareness about Cervical Cancer amongst Physiotherapist of Ahmedabad(Pandya & Mukhi, 2020)	Margi Pandya, Sadhana Mukhi(Pandya & Mukhi, 2020)	2020 Cross-Sectional Study	Ahmedabad 100	About 60-70% of participants displayed a good understanding of risk factors, vulnerability, symptoms, prevention, and screening methods for CC.
7.	Knowledge, ^[34] Awareness and Attitude on HPV, HPV Vaccine and Cervical Cancer among the College Students in India(Rashid et al., 2016)	Shazia Rashid, Satyanarayana Labani, Bhudev C. Das(Rashid et al., 2016)	2016 Cross-Sectional Study	Amity University Uttar Pradesh, NOIDA 1580 (684 girls and 876 boys)	- A survey of 1580 students showed that girls were more knowledgeable about CC (82.45%), HPV (45.61%), and HPV vaccines (44%) than boys. - There was a lack of knowledge regarding specific HPV types and vaccines. - Biology majors had greater awareness of cervical cancer (81.89%) and HPV (46.58%) compared to non-biology majors. - Female students, regardless of their major, had higher awareness levels than male students. - There was a unanimous agreement among students that girls should be vaccinated against HPV.
8.	Perception of Human ^[35] Papillomavirus Infection, Cervical Cancer and HPV Vaccination in North Indian Population(Hussain et al., 2014)	Showket Hussain, Vilas Nasare, Malasha Kumari, Shashi Sharma, Mohammad Aijaz Khan, Bhudev C. Das, Mausumi	2014 Cross-Sectional Study	North India 2500	- Awareness of HPV and CC was low (15%) among students and their parents. - Urban females had higher awareness than males, with a common belief that

		Bharadwaj(Hussain et al., 2014)			HPV only causes CC in women. • Only 13% of those aware of cervical cancer and HPV were open to receiving the HPV vaccine. • Parents were twice as likely to consent to HPV vaccination for their daughters compared to their sons.
9.	Prevalence of Cervical ^[36] Cancer Screening and Awareness among Women in an Urban Community in South India(Reichheld et al., 2020)	Alyse Reichheld, Pavan Kumar Mukherjee, Sajitha MF Rahman, Kirubah V. David and Ruby Angeline Pricilla(Reichheld et al., 2020)	2020 Cross-Sectional Study	Vellore, Tamil Nadu 1033	• Only 14.3% of women had a pelvic exam at least once, and 7.1% had undergone CCS. • Married women under 18, non-Hindu, and those from higher socioeconomic backgrounds were more likely to be screened. • Single women did not participate in screening. • A majority (84.6%) had poor knowledge about CC, 10.3% had moderate knowledge, and 5.1% had good knowledge. • Women 41 years old or younger were more knowledgeable about CC
10.	Socio ^[37] Demographic and Reproductive Risk Factors for Cervical Cancer(Thulaseedharan et al., 2012)	Jissa V Thulaseedharan, Nea Malila, Matti Hakama, Pulikottil O Esmy, Mary Cheriyan, Rajaraman Swaminathan, Richard Muwonge, Rengaswami Sankaranarayanan(Thulaseedharan et al., 2012)	2012 Cohort Study	Dindigul, Tamil Nadu 30,958	• Older age, multiple pregnancies, and lack of education significantly increase the risk of cervical cancer (CC). • Education is a key factor among sociodemographic and reproductive determinants of CC in areas with limited resources. • Enhancing public awareness,

					education, and living standards could significantly reduce the high incidence of CC in India. • These insights underscore the need for public health policies that boost awareness and the implementation of CC screening programs.
11	Awareness, ^[38]attitude, and practice towards cancer cervix prevention among rural women in southern India(Ghosh et al., 2024)	Supriti Ghosh, Sneha D. Mallya, Sanjay M. Pattanshetty, Deeksha Pandey, Veena G. Kamath, Shama Prasada Kabekkodu, Kapaettu Satyamoorthy, Ranjitha S. (Ghosh et al., 2024)	2024 Cross-Sectional Study	Udupi, Karnataka 1100	• 67% had previously heard of “cervical cancer,” and 47.9% knew it is preventable. • Poor genital hygiene (41.4%) and early sexual activity (35.4%) were commonly identified as risk factors. • Only 35.7% had adequate awareness of cervical cancer screening (CCS), linked to age, education, employment, and socioeconomic status. • Despite 99% showing a positive attitude towards CCS, this did not reflect in actual screening practices.
12	Socio-^[39]Demographic and Behavioral Risk Factors for Cervical Cancer and Knowledge, Attitude and Practice in Rural and Urban Areas of North Bengal, India(Raychaudhuri & Mandal, 2012)	Sreejata Raychaudhuri, Sukanta Mandal(Raychaudhuri & Mandal, 2012)	2012 Cross-Sectional Study	North Bengal 133	• High prevalence of risk factors: 37.2% multiparity, 82% early marriage, 83.3% cloth use during menstruation, 5.4% condom use, 15.8% oral contraceptive pills (OCP), and 65.6% early first intercourse. • Low awareness levels: 3.6% about CC causes, 6.3% signs and symptoms (S&S), 3.6% prevention, 9.5%

					PAP test, and 14.5% HPV vaccine. • Chi-square tests show significant differences between rural and urban residents in terms of number of children, menstrual hygiene practices, family cancer history, and awareness of CC causes. • Education level significantly affects knowledge, attitudes, and practices (KAP) regarding CC in urban areas but not in rural areas.
13.	Cervical [40]cancer screening Current knowledge & practice among women in a rural population of Kerala(Amin Quereshi & Kurian, n.d.)	Aswathy, S., Quereshi, Mariya Amin; Kurian, Beteena; Leelamoni, K.(Amin Quereshi & Kurian, n.d.)	2012 Cross-Sectional Study	Ernakulam District, Kerala 809	• 74.2% are aware that CC can be detected early by screening. • 89.2% are unaware of any risk factors for CC • Only 6.9% of the 809 women studied had been screened. • One third wish to be screened but haven't due to various reasons. • Knowledge barriers (51.4%) include lack of symptoms awareness, Pap test ignorance, and perceived necessity. • Resource constraints (15.1%) involve time and financial limitations. • Psychosocial hurdles (10.2%) consist of disinterest and fear of the procedure

Chapter 3: Methodology

We conducted a descriptive cross-sectional study using a structured self-administered online questionnaire with women aged 18-50 residing in Ahmedabad city of India. The study employed a convenience sampling method, utilizing the snowballing technique, in which participants who fulfilled the inclusion criteria were continuously recruited until the desired sample size was reached.

3.1 Sample Size

The sample size for this study is estimated using the formula

$$n = \frac{Z^2 p(1 - p)}{d^2}$$

We assume the prevalence of awareness to be 50% as there were no estimates available at the research location. The calculation was based on the following assumptions: expected proportion: 0.5, margin of error: 0.05, with the z value for the 95% confidence interval: 1.96. The sample size calculated for this study was 384. Total of 340 women responded to questionnaire out of which 19 were incomplete hence they were not included in analysis making the sample size used for this study to be 321.

3.2 Inclusion criteria

- Females aged between 18-50 years of age residing in Ahmedabad, Gujarat.

Exclusion criteria

- Women with mental health issues or cognitive disabilities that could interfere with their comprehension and ability to answer the survey questions.
- Those unwilling to participate or unable to provide informed consent.
- Participants who have received formal medical education or work in healthcare professions, as their knowledge and awareness may significantly differ from the general population.

3.3 Study tool

The study tool used is a structured questionnaire prepared by consulting the existing literature. The questionnaire was divided into four sections

- a) Demographic information of participants
- b) Knowledge about Cervical Cancer and Screening and HPV Vaccination
- c) Perception/ Attitude Towards Cervical Cancer Screening and HPV Vaccination
- d) Barriers To Cervical Cancer Screening and HPV Vaccine

The demographic portion of the survey was designed to gather personal data such as age, educational background, marital status, employment status, age at first marriage, number of offspring, and living area. The following sections aimed to evaluate the participants' awareness about cervical cancer, its risk factors, causes, and prevention strategies including screening and immunization. Additionally, it looked into their attitudes towards cancer, screening, vaccination, and their practices regarding these preventive measures.

Women participants were asked whether they were aware of cervical cancer, screening methods and the presence of vaccination to prevent the disease. They were also asked how important it is for them to prevent cervical cancer. Using closed-ended questions, they were asked to describe their knowledge of cause and risk factors of cervical cancer.

Existing literature was consulted while preparing the questionnaire. The study tool was distributed and responses were collected via online mode using Google forms at platforms like WhatsApp and Facebook.

3.5 Scoring criteria

Knowledge Assessment: The study assessed awareness regarding key information pertaining to cervical cancer, its screening processes, and the uptake of HPV vaccination. The questionnaire posed queries such as: “Are you aware of cervical cancer, its causative factors, the role of the Human papillomavirus (HPV) in causing cervical cancer, the importance of screening in early detection, familiarity with the HPV vaccine, and its effectiveness in preventing cervical cancer, genital warts, and other HPV-related cancers?” It also inquired about known risk factors for cervical cancer, including multiple sexual partners, early initiation of sexual activity, high parity, extended use of oral contraceptives, inadequate menstrual hygiene, a family history of cancer. Correct responses were awarded one point each, while incorrect ones received no points. The average of total score for each individual was calculated. Respondents who had score more than or equal to the average

of total sample score were considered to have sufficient level of knowledge. In this case it was **0.4**

Attitude: In the research, women's perspectives were assessed through five specific inquiries, allowing for binary answers of "Yes" or "No". A "Yes" denoted a positive viewpoint and was assigned a value of 1, whereas a "No" indicated a negative viewpoint and was assigned a value of 0. The collective attitude of the participants was used to calculate the average score for each individual. Respondents who had score more than or equal to the average score of total samples were considered to have positive attitude. In this case it was **0.9**

Practices: The evaluation of practices among women was conducted through two questions. The questions asked were: Have you ever undergone a Pap smear test? Have you received the HPV vaccination? And if so, did you complete the vaccination course? The possible answers were "Yes" or "No". Correct practices were awarded a point, while incorrect ones received no points. The collective practice of the participants was used to calculate the average score for each individual. Respondents who had score more than or equal to the average score of total samples were considered to have acceptable practice. In this case it was **0.5**

3.6 Data Management and Analysis

The collected data were first refined and structured using Microsoft Excel before being imported into the Statistical Package for Social Sciences (SPSS) version 27 for further examination.

- Descriptive statistics will summarize demographic information and levels of knowledge and awareness.
- Chi-square tests will be used to examine associations between demographic variables and knowledge levels.

3.7 Ethical Considerations

- Participation in the study was voluntary, and participants had the right to withdraw at any stage without penalty.
- Measures were taken to safeguard the privacy and confidentiality of participants' personal information.
- No personal information was collected, and responses were kept confidential.

Chapter 4: Results

4.1 Sociodemographic Characteristics of Respondents

A Total 321 females participated in study by completing the questionnaire. The analysis was carried out to find the social demographic characteristics of the respondents. The results are presented in **table 4.1**

The sociodemographic characteristics of the 321 female respondents shows a predominantly young and educated group with almost half (48.6 percent) of the participants belonged to age group of 25-36, and 53 percent had postgraduate degree. The majority of participants are employed (55.8%) and reside in urban areas (80.7%). In terms of marital status, 54.8% are married or have been married, with 91.0% of these marriages occurring at age 18 or older. Additionally, 66.4% of respondents have two or more children.

These findings suggest that the sample comprises mostly young, educated women with substantial family responsibilities, predominantly from urban settings. This demographic profile may influence their knowledge and awareness levels regarding health issues, including cervical cancer.

Table 4.1: Social Demographic characteristics of the respondents [n = 321]

CHARACTERISTICS	PERCENTAGE
Age of Respondent	
18-25	24.0
26-35	48.6
36-45	14.6
46-50	12.8
Education	
Non-Graduate	14.3
Graduate	32.7
Post-Graduate	53.0
Occupation	
Student	24.6
Employed	55.8
Homemaker	19.6
Marital Status	
Never Married	45.2
Married or Ever Married	54.8
Age at Marriage (n=176)	
Less than 18	9.0
18 or more than 18	91.0
No of Children	
0 or 1	33.6
2 or more	66.4
Type of Locality	
Rural	19.3
Urban	80.7

4.2 Knowledge on Cervical Cancer.

Table 4.2 shows the univariate analysis of knowledge level of women in Ahmedabad.

The knowledge level of the 321 female respondents about cervical cancer indicates that less than half (45.5%) possess sufficient knowledge about the disease, while a majority (54.5%) lack adequate information. Despite this, a significant 83.8% have heard of cervical cancer, showing general awareness of the disease. When it comes to understanding the causes, 56.1% of respondents are aware of what causes cervical cancer. Awareness of the HPV vaccine is relatively high, with 65.1% having heard about it. Additionally, 69.2% of respondents recognize that screening can aid in the early detection of cervical cancer, highlighting a positive outlook towards preventive measures.

Table 4.2 Respondents' knowledge about cervical cancer [n = 321]

Knowledge variable	Number (Percentage)
Knowledge score	
Sufficient	146 (45.5%)
Insufficient	175 (54.5%)
Heard about cervical cancer	
Yes	269 (83.8%)
No	52 (16.2%)
Cause of Cervical Cancer	
Yes	180 (56.1%)
No	141 (43.9%)
Heard about HPV vaccine	
Yes	209 (65.1%)
No	112 (34.9%)
Will Screening help in Detection of Cervical Cancer	
Yes	222 (69.2%)
No	99 (30.8%)

The sources of information about cervical cancer among the respondents reveal that the media is the most prevalent source, with 60% of the respondents citing it as where they first heard about the disease. Friends and family also play a significant role, with 34% of the women receiving information from these personal connections. A small proportion, 3%, of respondents are unsure where they first learned about cervical cancer. This distribution underscores the importance of media in disseminating health information, while also highlighting the role of personal networks in spreading awareness. The results have been presented in **Fig 4.1**.

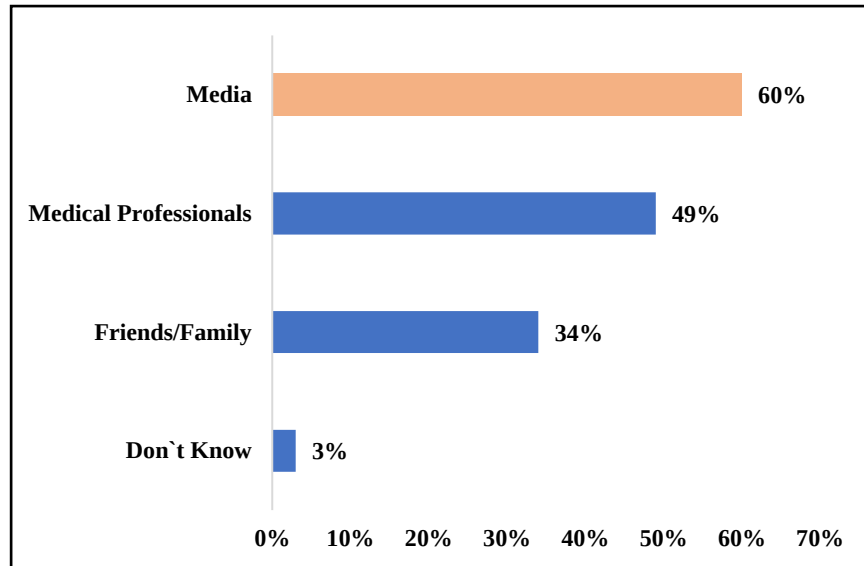


Fig 4.1 Source of information for cervical cancer

(Total >100% because of multiple choice)

Table 4.3 illustrates the knowledge of cervical cancer symptoms, risk factors, and preventive methods among the 269 respondents who were aware of cervical cancer. Regarding risk factors, 64.3% identified HPV infection as a primary risk factor, followed by poor menstrual hygiene (53.5%) and having multiple sexual partners (49.1%). Other notable risk factors included a family history of cancer (40.5%), cigarette smoking (21.2%), prolonged use of oral contraceptives (18.6%), and sexual intercourse at an early age (17.1%).

When it comes to symptoms, 46.8% recognized foul-smelling discharge as a symptom of cervical cancer. Bleeding between periods and after sexual intercourse were both identified by 36.8% of respondents. Other symptoms noted included severe backache and lower abdominal pain (35.7%), post-menopausal bleeding (30.9%), and unexplained weight loss (28.3%).

For preventive methods, a significant majority (71.4%) were aware that vaccination against HPV could prevent cervical cancer. Regular screening was recognized by 58.4% as a preventive measure. Additionally, avoiding multiple sexual partners (42.0%), quitting smoking (22.3%), and avoiding early sexual intercourse (22.3%) were also acknowledged as preventive strategies. The percentages exceed 100% due to multiple responses from the participants.

Table 4.3 Knowledge about symptoms, risk factors and preventive methods among respondents [n=269]

		Number (Percentage)
Risk factors of cervical cancer	Cigarette Smoking	57 (21.2%)
	HPV infection	173 (64.3%)
	Multiple sexual partners	132 (49.1%)
	Sexual intercourse at early age	46 (17.1%)
	Prolonged use of oral Contraceptives	50 (18.6%)
	Family history of cancer	109 (40.5%)
	Poor menstrual hygiene	144 (53.5%)
Symptoms of cervical cancer	Bleeding In between periods	99 (36.8%)
	Foul smell discharge	126 (46.8%)
	Bleeding after sexual intercourse	99 (36.8%)
	Unexplained weight loss	76 (28.3%)
	Severe backache and lower abdominal pain	96 (35.7%)
	Post Menopausal bleeding	83 (30.9%)
Preventive Methods	Vaccination against HPV	192 (71.4%)
	Regular screening	157 (58.4%)
	Avoid multiple sexual partners	113 (42.0%)
	Avoid early sexual intercourse	60 (22.3%)
	Quit Smoking	60 (22.3%)

The sum of percentage is >100 because of multiple responses.

Association between Sociodemographic Characteristics and Knowledge Score.

Table 4.4 shows the association between sociodemographic characteristics and the knowledge score of cervical cancer among women residing in Ahmedabad. For age, younger respondents (18-25 years) had a higher percentage of sufficient knowledge (61.0%) compared to older age groups, with the percentage of sufficient knowledge decreasing as age increases: 26-35 years (48.1%), 36-45 years (31.9%), and 46-50 years (22.0%). The chi square value is 20.853 and $p < 0.001$, indicating a statistically significant relationship. In terms of education, non-graduates and graduates had similar distributions of sufficient knowledge (45.7% and 43.8%, respectively). Post-graduates showed a slightly higher

percentage of sufficient knowledge at 46.5%. Occupation also showed a significant association with knowledge scores (chi-sq value 23.858 and $p < 0.001$). Students had the highest percentage of sufficient knowledge (63.3%), followed by employed respondents (45.8%), while homemakers had the lowest (22.2%). Regarding locality, urban residents had a higher percentage of sufficient knowledge (46.7%) compared to rural residents (40.3%).

Marital status revealed that never married women had a higher percentage of sufficient knowledge (52.4%) compared to married or ever married women (39.8%). The number of children showed a significant association with knowledge scores (chi-sq value 8.269 and p value 0.024). Women with two or more children had a higher percentage of sufficient knowledge (51.2%) compared to those with one or no children (34.3%).

Overall, younger age, student status, never married and having two or more children were associated with higher knowledge scores on cervical cancer.

Table 4.4 Association between sociodemographic characteristics and knowledge score

			Total Knowledge Score		Pearson Chi Square Value	P Value
			Insufficient	Sufficient		
Age of respondent*	18-25	Number Percentage	30 39.0%	47 61.0%	20.583	<0.001
	26-35	Number Percentage	81 51.9%	75 48.1%		
	36-45	Number Percentage	32 68.1%	15 31.9%		
	46-50	Number Percentage	32 78.0%	9 22.0%		
Highest education of respondent	Non-graduate	Number Percentage	25 54.3%	21 45.7%	0.186	0.911
	Graduate	Number Percentage	59 56.2%	46 43.8%		
	Post-Graduate	Number Percentage	91 53.5%	79 46.5%		
Occupation of respondent*	Student	Number Percentage	29 36.7%	50 63.3%	23.858	<0.001
	Employed	Number Percentage	97 54.2%	82 45.8%		
	Homemaker	Number Percentage	49 77.8%	14 22.2%		
Type of locality	Rural	Number Percentage	37 59.7%	25 40.3%	0.826	0.364
	Urban	Number Percentage	138 53.3%	121 46.7%		
Marital Status**	Never Married	Number Percentage	69 47.6%	76 52.4%	5.123	0.024
	Married or Ever Married	Number Percentage	106 60.2%	70 39.8%		

No. of Children**	0 or 1	Number Percentage	71 65.7%	37 34.3%	8.269	0.004
	2 or more	Number Percentage	104 48.8%	109 51.2%		
*p value <0.001						
**p value <0.05 but >0.001						
Percentage mentioned are column percentage						

4.3 Attitude towards Screening and Vaccination.

Table 4.5 presents the respondents' attitudes toward cervical cancer. The analysis reveals that 60.4% of respondents have a positive attitude towards cervical cancer, while 39.6% exhibit a negative attitude. A significant majority (64.2%) would recommend cervical cancer screening to others, and an even larger proportion (88.2%) would recommend the HPV vaccine. When it comes to personal health actions, 71.3% of respondents stated they would get the HPV vaccine if recommended by their doctor. Additionally, just over half (52.6%) believe that the HPV vaccine is safe and effective. Furthermore, a substantial majority (79.8%) consider preventing cervical cancer to be very important, compared to 20.2% who do not see it as important.

Overall, these findings suggest that most respondents have a positive attitude towards cervical cancer prevention and are inclined to recommend and receive vaccinations, although there is still a significant portion of the population that harbors doubts about the safety and efficacy of the HPV vaccine.

Table 4.5 Respondents' attitude about cervical cancer [n = 321]

Attitude variable	Number (Percentage)
Attitude Score	
Positive	194 (60.4%)
Negative	127 (39.6%)
Recommend screening to others	
Yes	206 (64.2%)
No	115 (35.8%)
Recommend vaccine to others	
Yes	283 (88.2%)
No	38 (11.8%)
Get vaccine if recommended by doctors	
Yes	229 (71.3%)
No	92 (28.7%)
HPV vaccine is safe and effective	
Yes	169 (52.6%)
No	152 (47.4%)
Importance of preventing cervical cancer	
Very important	256 (79.8%)
Not important	65 (20.2%)

Association between Sociodemographic Characteristics and Attitude Score

Table 4.6 explores the association between sociodemographic characteristics and attitude scores towards cervical cancer among women in Ahmedabad. The results indicate that younger women, specifically those aged 18-25, are more likely to have a positive attitude (72.7%) compared to those aged 36-45 (34.0%) and 46-50 (39.0%). This trend highlights a significant association between age and attitude score (chi-sq value 30.101 and $p < 0.001$).

Education level also appears to influence attitudes. Women with post-graduate education exhibit a notably positive attitude (67.6%) compared to non-graduates (39.1%), suggesting a statistically significant relationship (chi-sq value 12.670 and p value 0.002). Furthermore, occupation affects attitude, with students showing the highest positive attitude (78.5%), while homemakers are the least positive (30.2%) (chi-sq value 35.454 and $p < 0.001$). Locality type impacts attitudes as well, with urban women more likely to have a positive attitude (64.9%) compared to rural women (41.9%) (chi-sq value 11.000 and $p < 0.001$). Marital status is another influential factor; never married women have a more positive attitude (72.4%) compared to married or ever-married women (50.6%) (chi-sq value 15.868 and $p < 0.001$). Additionally, women with two or more children tend to have a more positive attitude (68.5%) than those with one or no children (44.4%) (chi-sq value 17.408 and $p < 0.001$).

Overall, younger age, higher education levels, being a student, living in urban areas, being never married, and having more children are associated with more positive attitudes towards cervical cancer prevention and awareness.

Table 4.6 Association between sociodemographic characteristics and attitude score of cervical cancer among women residing in Ahmedabad

			Total Knowledge Score		Pearson Chi-Square Value	P Value
			Negative	Positive		
Age of respondent*	18-25	Number Percentage	21 27.3%	56 72.7%	30.101	<0.001
	26-35	Number Percentage	50 32.1%	106 67.9%		
	36-45	Number Percentage	31 66.0%	16 34.0%		
	46-50	Number Percentage	25 61.0%	16 39.0%		
Highest education of respondent**	Non-graduate	Number Percentage	28 60.9%	18 39.1%	12.670	0.002
	Graduate	Number Percentage	44 41.9%	61 58.1%		
	Post-Graduate	Number	55	115		

		Percentage	32.4%	67.6%		
Occupation of respondent*	Student	Number Percentage	17 21.5%	62 78.5%	35.454	<0.001
	Employed	Number Percentage	66 36.9%	113 63.1%		
	Homemaker	Number Percentage	44 69.8%	19 30.2%		
Type of locality*	Rural	Number Percentage	36 58.1%	26 41.9%	11.000	<0.001
	Urban	Number Percentage	91 71.7%	168 64.9%		
Marital Status*	Never Married	Number Percentage	40 27.6%	105 72.4%	15.868	<0.001
	Married or Ever Married	Number Percentage	87 49.4%	89 50.6%		
No. of Children*	0 or 1	Number Percentage	60 55.6%	48 44.4%	17.408	<0.001
	2 or more	Number Percentage	67 31.5%	146 68.5%		
*p value <0.001						
**p value <0.05 but >0.001						
Percentage mentioned are column percentage						

4.4 Practice towards Prevention

Table 4.7 illustrates the practice of cervical cancer preventive methods among the respondents. The analysis reveals that less 35.8% of the respondents had acceptable practice for prevention of cervical cancer, more than half (64.2%) exhibited unacceptable practices. The analysis also showed that both screening and vaccination were practiced by less than one-fifth (14% and 15.3 % respectively). Majority of the respondents neither had screening (86%) nor had the vaccination (84.7%) to prevent against cervical cancer.

Fig 4.7 Respondents' practice towards cervical cancer [n = 321]

Practice variable	Number (Percentage)
Practice Score	
Acceptable	115 (35.8%)
Unacceptable	206 (64.2%)
Undergone screening	
Yes	45 (14.0%)
No	276 (86.0%)
Taken HPV vaccination	
Yes	49 (15.3%)
No	272 (84.7%)

Association between Sociodemographic Characteristics and Practice Score

Table 4.8 shows the association between socio-demographic characteristics and acceptable practice. The results indicate that younger women in age group of 18-25 and 26-35 are most likely to have acceptable practice (43%). This highlights a significant association between age and practice score (chi-sq value 21.636 and $p < 0.001$).

In terms of education the acceptable practice percentage increases with the increase in education level, with highest among the postgraduates (43.5 %) and lowest among the non-graduates (17.4%) suggesting a statistically significant relationship (chi-sq value 12.071 and p value 0.002). Occupation also showed a significant association with practice scores (chi-sq value 19.787 and $p < 0.001$). Students had the highest percentage of the acceptable practice score (51.9%) followed by the employed respondents (35.8%), while homemakers had the lowest (15.9%).

Locality type also impacts the practice, with 38.6% of respondents residing in urban area had acceptable practice compared to the 24.2% of those residing in rural areas (chi-sq value 4.522 and p value 0.033). Marital status reveals that never married women had higher percentage of acceptable practice (45.5%) compared to married or ever married women (27.8%) (chi-sq value 10.805 and p value 0.001). The number of children showed significant association with practice scores (chi-sq value 16.910 and $p < 0.001$). Women with 2 or more children had higher percentage of acceptable practice (43.7%) compared to those with one or no children (20.4%).

Overall, younger age, higher education levels, being a student, living in urban areas, being never married, and having more children are associated with more acceptable practice towards cervical cancer prevention.

Table 4.8 Association between sociodemographic characteristics and practice score of cervical cancer among women residing in Ahmedabad

			Total Knowledge Score		Pearson Chi- Square Value	p Value
			Unacceptable	Acceptable		
Age of respondent*	18-25	Number Percentage	44 57.1%	33 42.9%	21.363	<0.001
	26-35	Number Percentage	88 56.4%	68 43.6%		
	36-45	Number Percentage	41 87.2%	6 12.8%		
	46-50	Number Percentage	33 80.5%	8 19.5%		
Highest education of respondent**	Non- graduate	Number Percentage	38 82.6%	8 17.4%	12.071	0.002
	Graduate	Number Percentage	72 68.6%	33 31.4%		
	Post- Graduate	Number Percentage	96 56.5%	74 43.5%		
Occupation of respondent*	Student	Number Percentage	38 48.1%	41 51.9%	19.787	<0.001
	Employed	Number Percentage	115 64.2%	64 35.8%		
	Homemaker	Number Percentage	53 84.1%	10 15.9%		
Type of locality**	Rural	Number Percentage	47 75.8%	15 24.2%	4.522	0.033
	Urban	Number Percentage	159 61.4%	100 38.6%		
Marital Status**	Never Married	Number Percentage	79 54.5%	66 45.5%	10.805	0.001
	Married or Ever Married	Number Percentage	127 72.2%	849 27.8%		
No. of Children*	0 or 1	Number Percentage	86 79.6%	22 20.4	16.910	<0.001
	2 or more	Number Percentage	120 56.3%	93 43.7%		
*p value <0.001						
**p value <0.05 but >0.001						
Percentage mentioned are column percentage						

4.5 Barriers to cervical cancer screening and HPV vaccine uptake

Women who had never undergone screening (276) and those who have not taken the vaccination (272), questions were asked regarding the reasons or barriers they had. (Fig 4.2, Fig 4.3) The test or the vaccine not being recommended by the doctor was cited by majority of the respondents (63.4% and 67.3%). Having no awareness regarding the screening (11.6%) and vaccination (14%) also appeared as a barrier. 11.6% women also considered not having a family history of cancer as a reason for not being screened for cervical cancer. With 5.9% women mentioned the reason for not having vaccine was their concern about cost. This distribution highlights the importance of prevention methods to be promoted by doctors and also the role of IEC materials to spread awareness.

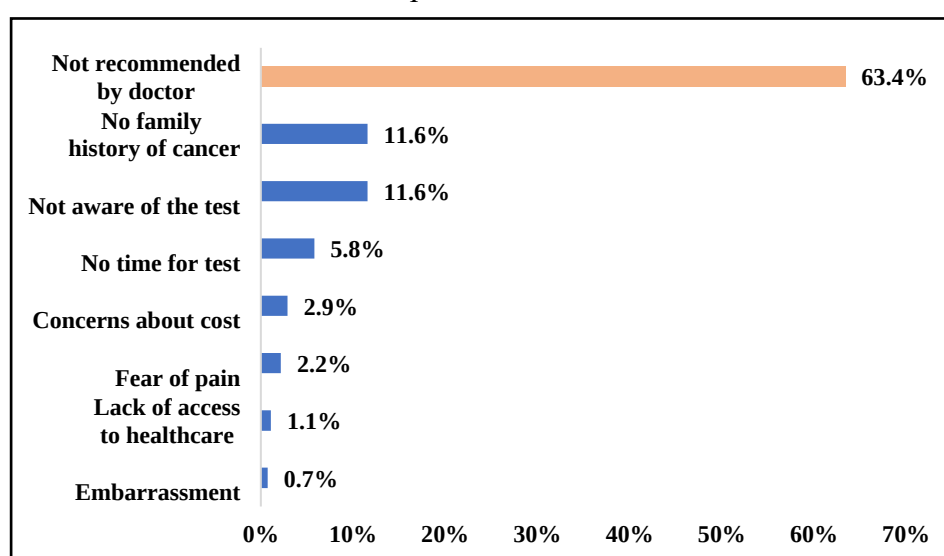


Fig 4.2 Barriers to screening stated by respondents (Total<100 due to multiple responses)

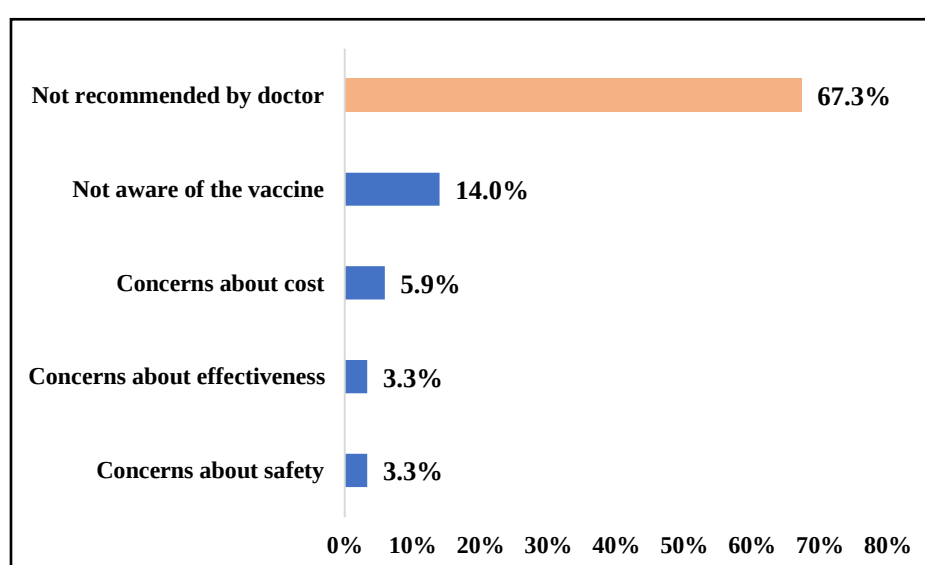


Fig 4.3 Barriers to HPV vaccination (Total<100 due to multiple responses)

While the analysis revealed lack of awareness as one the major reason that prevented women to have acceptable practice towards cervical cancer, when asked about motivation to undergo screening or have the vaccine, majority (82%) women had a preference to receive the information directly from medical professionals followed by educational institutes (56%). While media and government were the least required source with 10% and 7% respectively.

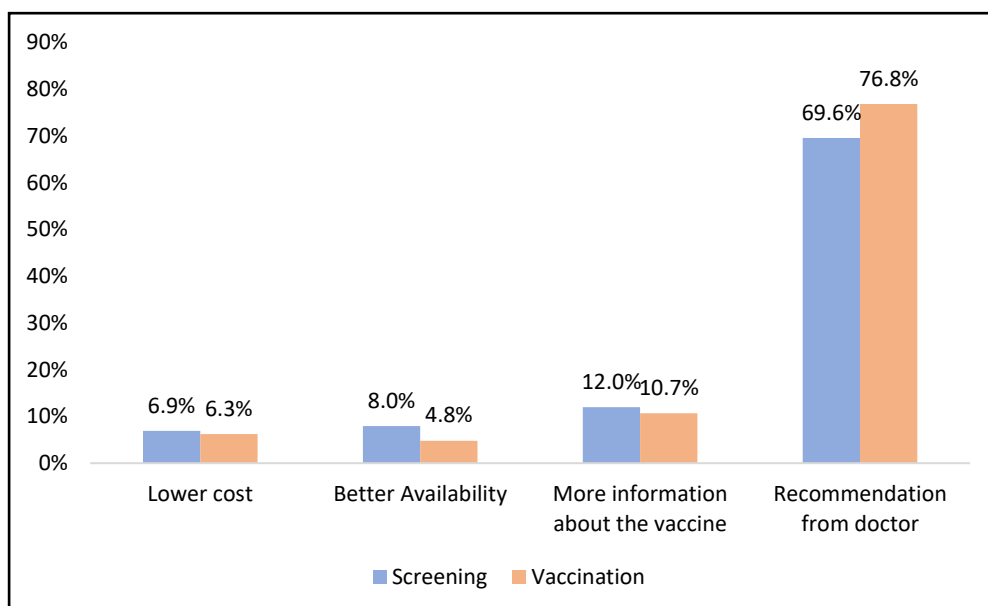


Fig 4.4 Preferred mode of information dissemination among women respondents from Ahmedabad (total >100% because of multiple responses)

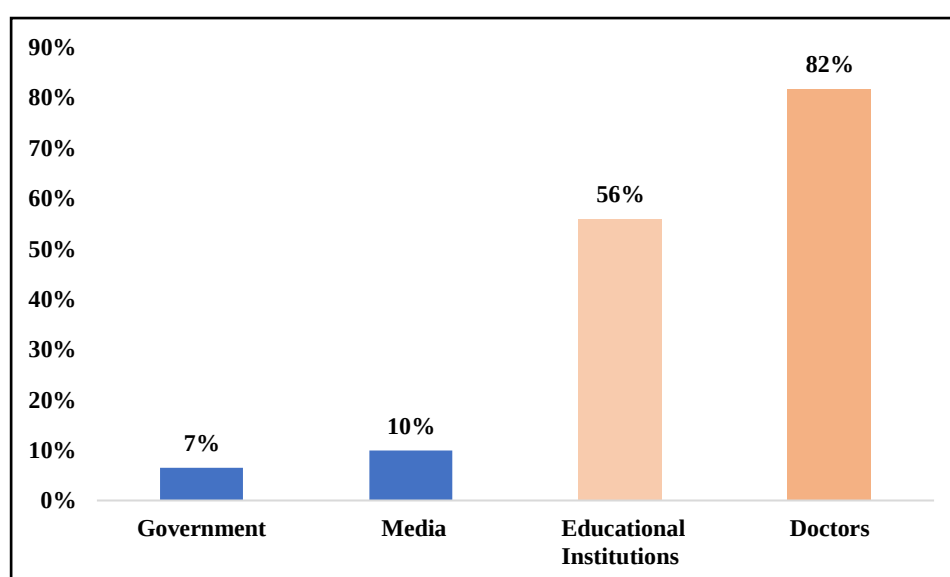
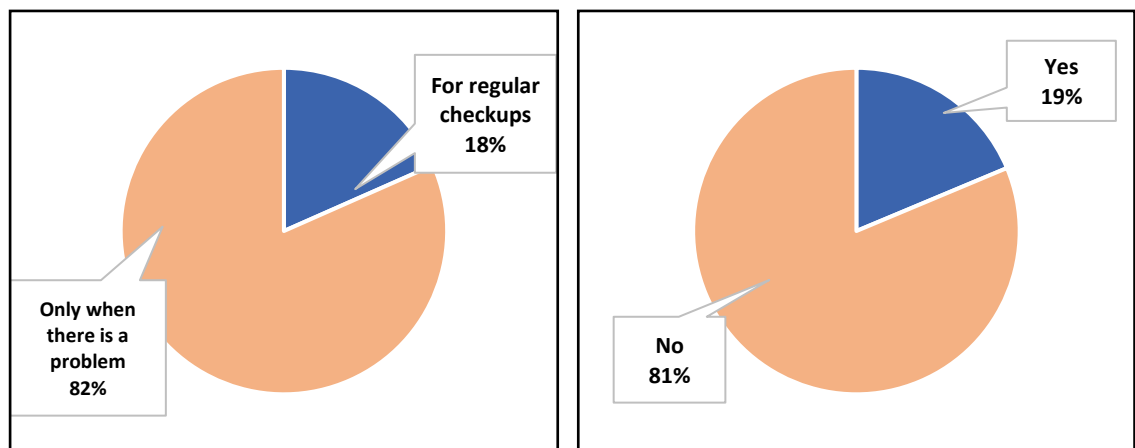


Fig 4.5 Motivation for women have screening or vaccination (total >100% because of multiple responses)

The majority of respondents mentioned recommendation from doctor as the main motivation. Majority (82%) women revealed that they visited gynecologist only when they have a problem compared to 18% women who had visited for regular checkups.

This highlights the importance of general physicians at promoting awareness regarding cervical cancer as only 19% of women were suggested by physicians to have the vaccine compared to 81% women, whom the physician never suggested.



(a) When women go to Gynecologist

(b) Whether general physician suggested Screening or Vaccination

Fig 4.7 (a) Reasons why women visit Gynecologist (b) Percentage of women who were advised by physician to get screened

Chapter 5 – Discussion

To combat cervical cancer effectively, it's crucial to advance awareness and practices that will boost medical protocols, such as screening for cervical cancer and immunization. Education, awareness towards its screening and vaccination could lead to an increase in early reporting of symptoms and better survival rates among women. Studies have shown that a lack of awareness about cancer is linked to delayed diagnosis and increased death rates. Therefore, it's crucial to educate at-risk women to recognize early symptoms, seek timely medical advice, and undergo thorough treatment. The journey towards educational initiatives begins with a clear understanding of women's current awareness levels, their attitudes towards cancer, and the factors that influence their knowledge and practices regarding early detection and prevention methods.

The findings from this study highlight several critical points regarding women's KAP, and also the barriers related to CCS and HPV vaccination in Ahmedabad. Firstly, the study reveals a significant gap between awareness and action among the participants. While a substantial majority had heard about CC and understood the importance of screening and vaccination, the actual uptake of these preventive measures was low. Irrespective of the knowledge score being 83% only 14% had undergone screening for cervical cancer and 15% had taken the vaccination.

Lack of Proactive recommendations from the medical professionals was one of the identified barriers for large number of women, it was indicated by low percentages of women undergoing screening as well as women not taking vaccination. This highlights the important role played by medical professionals in health behaviors of individuals. Efforts should be taken in order to improve the advocacy by medical professionals to bridge the gap between knowledge and practice.

In addition, the study also highlighted the disparities that occurs across socio-demographic factors. Younger women (aged 18-25), those with higher education levels (post-graduates), and those residing in urban areas had sufficient knowledge and more positive attitudes towards the prevention of cervical cancer. Compared to, older women, with lower education levels (non-graduates), and from rural areas tend to have lower levels of awareness and more negative attitudes. These differences suggest that targeted educational campaigns for each demographic should be carried out to increase the knowledge and the tendency to convert that knowledge into practice with more positive attitude.

The study also found the preferred sources of information among the participants, with most of them referring to medical professionals followed by educational institutions in providing the information. This highlights the importance of leveraging medical professionals as a source of information and recommendations delivery point for the cervical cancer prevention. With highlights the importance of leveraging medical professionals as a source of information and recommendations delivery point for the cervical cancer prevention. With increase and enhanced trainings of healthcare professionals on having communication skills and importance of preventive care can significantly increase the rate and number of screening and vaccination by many folds among women.

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Conclusion

The study has identified certain barriers and challenges among the women such as lack of recommendations from medical professionals and demographic disparities between knowledge and attitude of women, it also provides direction for targeted and tailored interventions. By strengthening the healthcare provider engagement, tailored educational efforts focusing on specific demographic group of women, and also enhancing the awareness by preferred source of information's can increase the awareness and prove to be critical steps towards prevention of cervical cancer in Ahmedabad and similar areas. Addressing the identified gaps, will possibly increase the screening and vaccination rates among the women and hence, will ultimately reduce the burden of Cervical cancer.

Chapter 6 – Recommendations

To increase the prevention of cervical cancer and improve the health outcomes among the women certain recommendations on the basis of findings from the study on knowledges, awareness, practice towards cervical cancer and its preventive methods in Ahmedabad can be implemented.

1. **Enhance Healthcare Provider Engagement:** Medical professionals were the most preferred option for respondents to gain knowledge regarding cervical cancer. Hence,
 - *Training and Education:* Regular training sessions to be provided for healthcare providers, particularly gynecologists and general physicians, on the importance of cervical cancer screening and HPV vaccination. Emphasize effective communication strategies to encourage proactive recommendations during routine visits and to promote HPV vaccination along with routine immunization among the younger population either by communicating with patient or their parent.
 - *Clinical Guidelines:* Although operational framework for screening has been introduced since 2016, still its implementation is in nascent stage. Implement Standardized clinical guidelines to be implemented that prompts healthcare providers to discuss CCS and vaccination with all eligible women during their visits. Encourage providers to recommend these preventive measures based on age, risk factors, and health history.
2. **Targeted Educational Campaigns:**
 - *Demographic Specificity:* Tailored educational materials and campaigns addressing the specific knowledge gaps and attitudes identified among different demographic groups (e.g., younger women, those with lower education levels, rural residents). Utilize local languages, culturally sensitive messaging, and accessible formats (such as digital media and community events) to reach diverse audiences effectively.
 - *School and College Initiatives:* Half of the respondents (50%) presented their interest in receiving the information from the educational institutions. Partnering with the educational institutes can help to include cervical cancer educations into school curriculum. Organizing open discussions with students about preventive methods and focusing on early detection and importance of taking vaccinations while stressing upon the regular visit to health professionals.

3. **Community Outreach and Partnerships:**

- *Engage Community Leaders:* Involving the community leaders, local organizations to leverage their influence in spreading awareness and knowledge among the population regarding cervical cancer prevention. Their influence on people can be utilized to promote healthy behaviours and discard the myths and misconceptions about screening and vaccination. Conducting workshops for community and healthcheckup camps, introducing culture sensitive IEC materials and having social media campaigns will play a pivotal role in raising awareness.
- *Mobile Clinics and Outreach Programs:* Mobile health clinics and outreach camps in the less accessible and underserved areas should be conducted to involve the rural communities. They can be provided with free or subsidized cost treatment and detection along with vaccination.

4. **Improving Access and Affordability:**

- *Healthcare Accessibility:* The accessibility to facilities offering cervical cancer screening should be improved by introducing effective policies. Insurance or low cost services should be utilized wherever possible.
- *Public-Private Partnerships:* Developing a partnership with private organizations, government can introduce the initiative in widespread areas catering to large number of people. NGOs network can be utilized to expand the service delivery and increase the rate of screening and vaccine adoption.

5. **Monitoring and Evaluation:**

- *Data Collection:* A robust system should be established for M&E of screening and vaccination programme. Data can be collected by age, education, locality or other relevant factors to assess the progress and identify the barriers present.
- *Feedback Mechanisms:* Feedback mechanism will play a pivotal role by gathering insights from the women. They can share their experiences in regards to screening and vaccination services (availability, cost). These can be further utilized to improve the service quality and address the concerns reported to improve the services accordingly.

By implementing these recommendations, stakeholders can work towards reducing the burden of CC in Ahmedabad by increasing awareness, promoting positive health behaviors, and ensuring equitable access to preventive healthcare services. These efforts are crucial in achieving early detection, improving treatment outcomes, and ultimately saving lives from this preventable disease.

5.2 Limitations

This study provides a preliminary understanding of the knowledge, attitudes, and practices related to cervical cancer among women in Ahmedabad. However, due to the cross-sectional nature of the research and the use of convenience sampling, causality cannot be inferred, and the results may not be generalized. It's noteworthy that while knowledge is highlighted as crucial, higher awareness doesn't necessarily equate to improved health outcomes in Indian women. Socio-economic status notwithstanding, there's evidence indicating that follow-up after abnormal cervical cancer screenings is less likely among women, potentially due to fear, stigma, or distrust in the healthcare system. Additionally, the study's participant demographic lacked a substantial number of elderly women, likely because the survey was distributed via smartphones and computers, which are less used by this age group. While the research sheds light on awareness and practices concerning cervical cancer screening, it fails to delve into why many women remain uninformed. Future research should extend into rural regions where two-thirds of India's population lives and where healthcare services are often inadequate.

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Annexures

CERVICAL CANCER AWARENESS TOOL- QUESTIONNAIRE

This study is being conducted to understand cervical cancer awareness and practices among women residing in Ahmedabad state. Against every question, different options are provided. In some questions multiple options can be selected, the indication is given with each of the question. Kindly select the option which you feel is the correct answer according to you.

No personal information will be collected, and your responses will be kept confidential.

Your participation is voluntary and greatly appreciated.

Thank you for responding and for your time.

1. What is your current age?
 - a. 18 – 25
 - b. 26 – 35
 - c. 36 – 45
 - d. 46 – 50
2. What is your highest education?
 - a. Primary school
 - b. Secondary school
 - c. Higher Secondary
 - d. Graduation
 - e. Post graduation
3. What is your occupation?
 - a. Student
 - b. Employed
 - c. Homemaker
 - d. Other
4. What is your marital status
 - a. Never married
 - b. Married
 - c. Divorced/separated
 - d. Widowed
5. How many children do you have?
 - a. 0
 - b. 1
 - c. 2
 - d. 3 or more
6. What is your place of residence?
 - a. Rural
 - b. Urban
7. Have you ever heard of cervical cancer?
 - a. Yes
 - b. No
8. From where did you heard about cervical cancer? (Multiple options allowed)
 - a. Media
 - b. Medical professional
 - c. Family/friends

- d. Don't know
 - e. Others
9. Do you know what causes cervical cancer?
- a. Yes
 - b. No
10. Do you know what are the risk factors that can cause cervical cancer? (Multiple Options allowed)
- a. Cigarette Smoking
 - b. HPV infection
 - c. Poor menstrual hygiene
 - d. Multiple sexual partners
 - e. Multiple pregnancies
 - f. First sexual intercourse at early age
 - g. Prolonged use of oral contraceptives
 - h. Family history of cancer
 - i. Don't know
 - j. Others
11. When do you prefer to visit your Gynecologist?
- a. For regular checkups
 - b. Only when there is a problem
12. Has your Doctor (not Gynecologist) ever suggested you to get vaccination or get screened for cervical cancer?
- a. Yes
 - b. No
13. Do you know what are the common symptoms of Cervical Cancer? (Multiple Options allowed)
- a. Bleeding in between periods
 - b. Foul smell discharge
 - c. Bleeding after sexual intercourse in women
 - d. Unexplained weight loss
 - e. Severe back ache and lower abdominal pain
 - f. Post menopausal bleeding
 - g. Don't Know
 - h. Others
14. Do you know how cervical cancer can be prevented? (Multiple Options allowed)
- a. Vaccination against HPV
 - b. Regular screening
 - c. Avoid multiple sexual partners
 - d. Avoid early sexual intercourse
 - e. Quit smoking
 - f. Don't Know
 - g. Other
15. Does anyone in your family or friend circle has Cervical cancer?
- a. Yes
 - b. No
16. Do you think screening will help in early detection and prevention of cervical cancer?
- a. Yes
 - b. No
17. Have you ever undergone cervical cancer screening by any method? (Pap Smear test or Visual inspection by acetic acid VIA)
- a. Yes

- b. No
- 18. If No, What are the reasons for not undergoing Screening for cervical cancer? (multiple options allowed)
 - a. Not recommended by doctor
 - b. Not aware of the test
 - c. Fear of pain
 - d. Embarrassment
 - e. Concerns about cost
 - f. Lack of access to healthcare
 - g. No time for test
 - h. No family history of cancer
 - i. Other
- 19. What would make it easier for you to undergo screening for cervical cancer? (multiple options allowed)
 - a. Recommendation from doctor
 - b. More information about the test
 - c. Lower cost
 - d. Better Availability
 - e. Others (please specify)
- 20. If yes, how often do you get a Pap Smear Test or Visual inspection with acetic acid (VIA)?
 - a. Every year
 - b. Every 2 years
 - c. Every 3 years
 - d. Got only once
- 21. Why did you get Pap Smear or VIA Test? (Skip if you have not undergone screening for cervical cancer)
 - a. Recommended by doctor
 - b. Routine checkup
 - c. Concerns about cervical cancer
 - d. Other
- 22. How do you felt about getting a Pap Smear or VIA test? (Skip if you have not undergone screening for cervical cancer)
 - a. Comfortable
 - b. Nervous
 - c. Embarrassed
 - d. Other
- 23. Would you recommend the women around you to undergo screening for cervical cancer?
 - a. Yes
 - b. No
 - c. Don't know
- 24. Have you ever heard about HPV vaccine before?
 - a. Yes
 - b. No
- 25. Do you think HPV vaccine is safe and effective
 - a. Yes
 - b. No
 - c. Don't know
- 26. Select the options according to you what is HPV vaccine used for? (Multiple Options allowed)
 - a. Prevent cervical cancer
 - b. Prevent genital warts

- c. Prevent other cancers caused by HPV
 - d. Don't Know
 - e. Other
27. Have you taken the HPV vaccine?
- a. Yes
 - b. No
28. If yes, have completed the course of vaccine
- a. Yes
 - b. No
 - c. Don't remember
29. Does anyone in your family or friend circle has taken the HPV vaccine?
- a. Yes
 - b. No
30. Would you recommend girls/women around you to get vaccine in time?
- a. Yes
 - b. No
31. According to you who should get the HPV vaccine (multiple choice allowed)
- a. Girls and Women aged 9-26
 - b. Boys and men aged 9-26
 - c. Women aged 27-45
 - d. Men aged 27-45
 - e. Don't know
 - f. Other
32. Would you get the HPV vaccine if it was recommended by your doctor?
- a. Yes
 - b. No
33. What are the reasons you have not taken the HPV Vaccine? (multiple options allowed)
- a. Not recommended by doctor
 - b. Not aware of the vaccine
 - c. Concerns about safety
 - d. Concerns about effectiveness
 - e. Concerns about cost
 - f. Other
34. According to you who should be responsible for providing information about the HPV vaccine? (multiple options allowed)
- a. Doctors
 - b. Educational Institutions
 - c. Government
 - d. Media
 - e. Others
35. What would make it easier for you to get the HPV vaccine? (multiple options allowed)
- a. Recommendation from doctor
 - b. More information about the vaccine
 - c. Lower cost
 - d. Better availability
 - e. other
36. How important it is for you to prevent cervical cancer?
- a. Very important
 - b. Not very important

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