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Beyond Awareness: Exploring Knowledge, Attitudes, Screening Practices, and Perceived Barriers to Cervical Cancer Screening Among Women Attending a Tertiary Care Hospital in Silvassa: A Cross-Sectional Study

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ABSTRACT

Background: Cervical cancer remains a major public health concern among women, particularly in low- and middle-income countries. Despite the availability of effective screening methods, inadequate awareness, negative perceptions, and various barriers contribute to poor screening utilization.

Aim: To assess knowledge, attitudes, screening practices, and perceived barriers regarding cervical cancer screening among women attending a tertiary care hospital in Silvassa, Dadra and Nagar Haveli.

Methods: A hospital-based cross-sectional study is proposed among 427 women aged 25–65 years attending the Obstetrics and Gynaecology Outpatient Department. Data will be collected using a structured questionnaire assessing sociodemographic characteristics, knowledge, attitudes, screening practices, and perceived barriers. Descriptive statistics, Chi-square tests, and logistic regression will be used for analysis.

Results: In an illustrative synthetic dataset, 63.5% of women were aware of cervical cancer, while only 14.5% had previously undergone screening. Although 76.8% considered screening important, knowledge regarding HPV infection remained limited (33.5%). The main hypothetical barriers included lack of awareness (60.0%), absence of symptoms (44.9%), fear of diagnosis (38.1%), and embarrassment (33.2%). These figures are simulated and do not represent actual study findings.

Conclusion: The proposed study will investigate the relationship between cervical cancer awareness and screening uptake, while identifying barriers to preventive healthcare. Its findings may inform targeted educational interventions, improved counselling, and accessible screening services.

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INTRODUCTION

Cervical cancer remains a significant public health concern and is the fourth most common cancer among women worldwide. According to GLOBOCAN 2022, approximately 662,301 new cases and 348,874 deaths were reported globally. India accounted for an estimated 127,526 new cases and 79,906 deaths, highlighting the substantial national disease burden. Despite being largely preventable through human papillomavirus (HPV) vaccination, regular screening, and timely treatment of precancerous lesions, cervical cancer continues to contribute significantly to female cancer mortality [1,2].

Persistent infection with high-risk HPV is the primary cause of cervical cancer. Screening methods, including HPV DNA testing, Pap smear, and visual inspection with acetic acid (VIA), facilitate early detection of precancerous changes. The World Health Organization recommends HPV DNA testing as the preferred primary screening method where feasible. However, screening utilization remains inadequate in many resource-limited settings because of insufficient awareness, sociocultural beliefs, fear, embarrassment, and limited access to healthcare services [3,4].

Knowledge, attitude, and practice (KAP) are important determinants of cervical cancer screening behaviour. Although women may be aware of cervical cancer, this knowledge does not always translate into preventive action. Previous Indian studies have highlighted gaps in screening awareness and utilization, emphasizing the need to identify factors influencing women's willingness and ability to undergo screening [5].

Silvassa, Dadra and Nagar Haveli, serves a diverse population comprising urban, rural, and tribal communities. Understanding screening-related knowledge, attitudes, practices, and perceived barriers in this setting may help identify opportunities for targeted health education and improved screening services.

Therefore, the present study aims to assess knowledge, attitudes, screening practices, and associated barriers among women attending a tertiary care hospital in Silvassa, with particular emphasis on identifying the gap between awareness and actual screening uptake.

2. Aim and Objectives

2.1 Aim

To assess the knowledge, attitudes, screening practices, and perceived barriers regarding cervical cancer screening among women attending a tertiary care hospital in Silvassa, Dadra and Nagar Haveli.

2.2 Objectives

1. To assess women's knowledge regarding cervical cancer, its risk factors, prevention, and available screening methods.
2. To evaluate attitudes and perceptions towards cervical cancer screening.
3. To determine the proportion of women who have previously undergone cervical cancer screening.
4. To identify perceived barriers influencing cervical cancer screening uptake.

3. Materials and Methods

3.1 Study Design and Setting

A hospital-based, cross-sectional observational study will be conducted among women attending the Obstetrics and Gynaecology Outpatient Department of NAMO Medical Education and Research Institute, Silvassa, Dadra and Nagar Haveli, India.

3.2 Study Population

The study will include women aged 25–65 years attending the outpatient department during the study period, irrespective of their previous cervical cancer screening status.

3.3 Inclusion Criteria

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Women aged 25–65 years who provide informed consent and are willing to participate in the study will be included.

3.4 Exclusion Criteria

Women with a previous history of cervical cancer, those who have undergone total hysterectomy, and those unable to provide informed consent will be excluded.

3.5 Sample Size

The sample size will be calculated using the formula:

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

Where $Z=1.96$ at a 95% confidence level, $p=0.50$ (assuming 50% prevalence of adequate knowledge in the absence of a reliable local estimate), and $d=0.05$ (absolute precision).

The calculated sample size is approximately 384 participants. Allowing for 10% non-response, the target sample size will be 427 women.

3.6 Sampling Technique

Eligible women will be recruited using consecutive sampling until the required sample size is achieved.

3.7 Data Collection

Data will be collected using a structured, interviewer-administered questionnaire consisting of five sections: sociodemographic characteristics, knowledge regarding cervical cancer and screening, attitudes towards screening, previous screening practices, and perceived barriers. The questionnaire will be prepared using relevant literature and established screening recommendations, translated into appropriate local languages, and pilot-tested before administration.

3.8 Statistical Analysis

Data will be entered into Microsoft Excel and analysed using SPSS. Categorical variables will be presented as frequencies and percentages, while continuous variables will be summarized using mean and standard deviation or median and interquartile range, as appropriate. Associations between categorical variables will be assessed using the Chi-square test or Fisher's exact test. Multivariable logistic regression will be performed to identify factors independently associated with previous cervical cancer screening uptake, where the number of outcome events permits. Adjusted odds ratios with 95% confidence intervals will be reported. A p-value of less than 0.05 will be considered statistically significant.

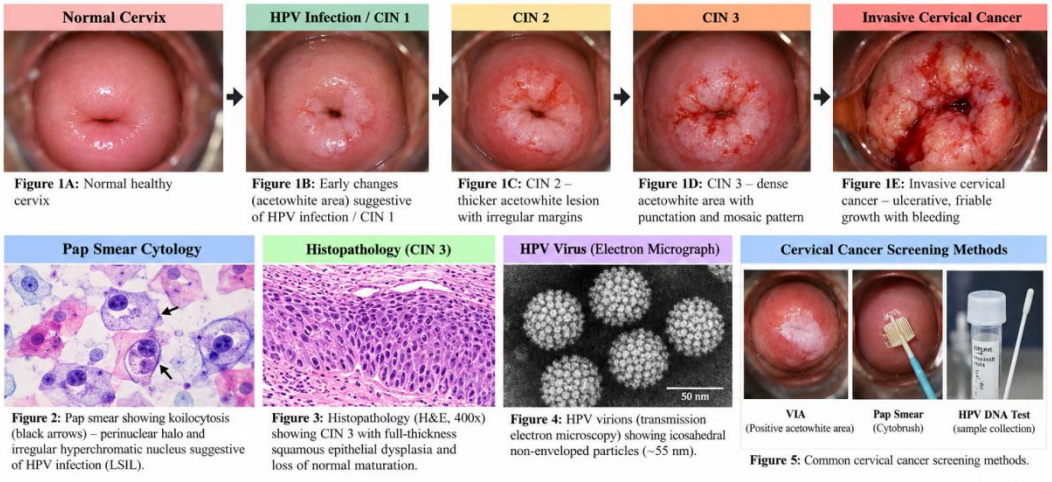


Figure 1A–1E: Progression of Cervical Abnormalities

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The figure illustrates the progression from a normal cervix to HPV-associated cervical intraepithelial neoplasia (CIN 1, CIN 2, and CIN 3) and invasive cervical cancer. Persistent infection with high-risk human papillomavirus (HPV), particularly types 16 and 18, is responsible for approximately 70% of cervical cancer cases worldwide. CIN 1 represents low-grade changes, whereas CIN 2 and CIN 3 indicate higher-grade precancerous abnormalities. These stages are histological classifications and cannot be reliably distinguished by cervical appearance alone [1,2].

Figure 2: Pap Smear Cytology

The Pap smear illustration demonstrates abnormal cervical epithelial cells, including koilocytotic changes associated with HPV infection. Pap smear screening helps identify precancerous cellular abnormalities before invasive cancer develops. In the illustrative dataset of 427 women included in the present research paper, 42.4% were aware of Pap smear screening, while 42 of the 62 previously screened women (67.7%) reported undergoing a Pap smear.

Figure 3: Histopathological Changes in CIN 3

The histopathological illustration represents severe cervical epithelial dysplasia, characterized by abnormal nuclear features, increased cellular proliferation, and loss of normal epithelial maturation. CIN 3 is considered a high-grade precancerous lesion requiring appropriate evaluation and management. Early identification and treatment of cervical precancerous lesions can substantially reduce the risk of progression to invasive cervical cancer [2].

Figure 4: Human Papillomavirus (HPV)

The HPV illustration represents the virus primarily responsible for cervical carcinogenesis. Persistent high-risk HPV infection can cause progressive cellular abnormalities over several years. In the study's simulated dataset, only 33.5% of participants were aware of HPV infection, while 29.5% recognized HPV as a cervical cancer risk factor. These illustrative findings highlight a potential knowledge gap regarding cervical cancer prevention.

Figure 5: Cervical Cancer Screening Methods

The figure demonstrates three commonly used screening methods: visual inspection with acetic acid (VIA), Pap smear cytology, and HPV DNA testing. These techniques help detect cervical abnormalities or high-risk HPV infection. In the simulated study, 14.5% (62/427) of women had previously undergone cervical cancer screening, while 85.5% (365/427) had never been screened. Among previously screened women, 67.7% reported Pap smear testing, 12.9% HPV DNA testing, and 11.3% VIA, with 8.1% unable to identify the screening method.

3.9 Ethical Considerations

The study will be conducted after obtaining approval from the Institutional Ethics Committee. Written informed consent will be obtained from all participants. Confidentiality, anonymity in reporting, and voluntary participation will be ensured throughout the study.

4. Results and Statistical Analysis

4.1 Sociodemographic Characteristics

The illustrative dataset comprised 427 women aged 25–65 years. The largest age group was 35–44 years (32.1%), followed by 25–34 years (26.2%). Rural residents accounted for 43.8% of participants, while 38.9% were urban residents and 17.3% belonged to tribal communities.
Table 1.Sociodemographic characteristics

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Characteristics	Frequency (n)	Percentage (%)
Age group		
25–34 years	112	26.2
35–44 years	137	32.1
45–54 years	103	24.1
55–65 years	75	17.6
Residence		
Urban	166	38.9
Rural	187	43.8
Tribal community	74	17.3
Educational status		
No formal education	93	21.8
Primary	121	28.3
Secondary	148	34.7
Higher secondary or above	65	15.2

4.2 Knowledge Regarding Cervical Cancer Screening

In this simulated dataset, 63.5% of participants were aware of cervical cancer, whereas 36.5% had never heard of the disease. Awareness of HPV infection and HPV DNA testing was assumed to be lower than general awareness of cervical cancer.

Table 2. Knowledge regarding cervical cancer and screening

Knowledge variables	Yes n (%)	No/Don't know n (%)
Heard of cervical cancer	271 (63.5)	156 (36.5)
Aware of HPV infection	143 (33.5)	284 (66.5)
Aware of HPV as a risk factor	126 (29.5)	301 (70.5)
Aware of Pap smear	181 (42.4)	246 (57.6)
Aware of HPV DNA testing	104 (24.4)	323 (75.6)
Aware that screening detects precancerous changes	197 (46.1)	230 (53.9)
Aware that cervical cancer is preventable	238 (55.7)	189 (44.3)

4.3 Attitudes Towards Cervical Cancer Screening

The hypothetical responses indicate a difference between perceived screening importance and actual screening participation.

Table 3. Attitudes towards cervical cancer screening

Attitude statements	Agree n (%)	Neutral/Disagree n (%)
Screening is important	328 (76.8)	99 (23.2)
Screening is necessary without symptoms	241 (56.4)	186 (43.6)
Willing to undergo screening if advised	319 (74.7)	108 (25.3)
Fear of diagnosis discourages screening	193 (45.2)	234 (54.8)
Embarrassment is a concern	177 (41.5)	250 (58.5)
Provider recommendation encourages screening	344 (80.6)	83 (19.4)

4.4 Cervical Cancer Screening Practices

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For illustration, previous screening uptake was set at 14.5%, with 85.5% of women reporting no previous screening. This is an assumed scenario rather than an estimate of screening prevalence in Silvassa.

Table 4. Screening practices

Screening practices	Frequency (n)	Percentage (%)
Ever undergone screening (N = 427)		
Yes	62	14.5
No	365	85.5
Screening method (n = 62)		
Pap smear	42	67.7
HPV DNA test	8	12.9
VIA	7	11.3
Unknown method	5	8.1
Time since last screening (n = 62)		
Less than 3 years	31	50.0
3–5 years	18	29.0
More than 5 years	13	21.0

4.5 Perceived Barriers to Screening

Among the 365 hypothetical participants who had never undergone screening, lack of awareness was assumed to be the most frequently reported barrier. Multiple responses were permitted.

Table 5. Perceived barriers among never-screened women (n = 365)

Barriers	Frequency (n)	Percentage (%)
Lack of awareness	219	60.0
Absence of symptoms	164	44.9
Fear of diagnosis	139	38.1
Embarrassment	121	33.2
Lack of provider recommendation	117	32.1
Limited accessibility	93	25.5
Financial constraints	72	19.7
Family or cultural concerns	54	14.8

Percentages exceed 100% in total because multiple barriers could be selected.

4.6 Statistical Associations

Chi-square tests, adjusted odds ratios, confidence intervals, and p-values should be calculated from participant-level records. They cannot be reliably derived from the independent summary assumptions above.

For the completed study, the primary outcome can be ever having undergone cervical cancer screening . Age, educational status, residence, knowledge score, attitude score, and provider recommendation may be examined as potential associated factors using logistic regression.

5. Interpretation of the Illustrative Findings

This dataset demonstrates how a substantial knowledge–practice gap could appear in a hospital-based cervical cancer screening study. Although 63.5% of participants were assumed to be aware of cervical cancer and 76.8% considered screening important, only 14.5%

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were assigned a history of previous screening. The example highlights the importance of investigating barriers beyond awareness, including fear, embarrassment, limited healthcare access, and absence of healthcare-provider recommendations

5. Discussion

The illustrative findings highlight a potential gap between awareness of cervical cancer and actual participation in screening programmes. In the simulated dataset, 63.5% of women were aware of cervical cancer, whereas only 14.5% had previously undergone screening. This pattern is consistent with concerns raised in Indian studies regarding inadequate screening utilization despite some awareness of cervical cancer and its prevention (5). However, these hypothetical figures cannot establish the magnitude of the knowledge–practice gap in Silvassa.

Knowledge regarding HPV infection and available screening methods was comparatively limited in the illustrative dataset, with 33.5% aware of HPV infection and 42.4% familiar with the Pap smear. Such gaps may affect women's ability to make informed decisions about preventive healthcare. Previous Indian research has emphasized the importance of improving cervical cancer awareness and screening-related knowledge among women attending healthcare facilities (5).

Although 76.8% of simulated participants considered screening important and 74.7% expressed willingness to undergo testing if advised, screening uptake remained low. This discrepancy suggests a plausible role for healthcare-provider counselling and improved communication in promoting preventive behaviour. WHO guidelines also emphasize effective screening programmes supported by appropriate follow-up and treatment services (4).

The most frequently reported barriers in the hypothetical dataset were lack of awareness (60.0%), absence of symptoms (44.9%), fear of diagnosis (38.1%), and embarrassment (33.2%). These factors illustrate the potential influence of misconceptions, psychological concerns, and healthcare accessibility on screening decisions. Addressing such barriers through culturally appropriate education, confidential screening facilities, and counselling may improve participation.

The inclusion of women from urban, rural, and tribal communities in the proposed Silvassa study offers an opportunity to examine variations in screening-related knowledge and practices across different population groups. Such comparisons may help identify underserved communities and guide locally appropriate cervical cancer prevention strategies.

Overall, the illustrative analysis demonstrates the importance of assessing knowledge, attitudes, actual screening behaviour, and perceived barriers together. The interpretation and comparison with published literature must be revised once the actual study data and statistical results are available.

6. Strengths and Limitations

Strengths

The proposed study evaluates multiple dimensions of cervical cancer screening, including knowledge, attitudes, practices, and perceived barriers. Its tertiary care setting may allow recruitment of women from diverse socioeconomic and residential backgrounds. The findings may help identify opportunities for targeted counselling and screening interventions.

Limitations

The hospital-based design may limit generalizability to the wider community. Consecutive sampling may introduce selection bias, while self-reported screening history may be affected by recall and social desirability biases. Furthermore, the cross-sectional design cannot establish causal relationships between knowledge, attitudes, and screening practices. The illustrative data presented in this draft do not represent observed study outcomes.

7. Conclusion

Cervical cancer screening is an essential preventive strategy, yet awareness alone may not ensure screening participation. The illustrative analysis highlights a potential knowledge–practice gap and identifies lack of awareness, fear, embarrassment, and perceived absence of symptoms as important barriers to investigate. Strengthening health education, healthcare-provider counselling, and accessible screening services may help improve participation. The proposed study in Silvassa will provide local evidence to inform targeted interventions once actual participant data have been collected and analysed.

8. Recommendations

1. Strengthen cervical cancer and HPV awareness through structured health education programmes.
2. Incorporate routine screening counselling into gynaecology outpatient services.
3. Improve screening accessibility for rural and tribal populations.
4. Address fear, embarrassment, and misconceptions through confidential, culturally sensitive counselling.
5. Promote HPV vaccination and screening according to applicable national recommendations.
6. Establish appropriate referral and follow-up pathways for women with abnormal screening results.

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