International Journal of Medical Research and Innovation in Applied Science (IJMRIAS)
ISSN (Online): 3143-2476
Volume-2 Issue-4 || Oct – Dec 2026 || PP. 26 – 33
https://ijmrias.org/

Assessment of Knowledge Regarding Cervical Cancer Screening Among Women Attending Gynecology Outpatient Departments

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http://www.ijmrias.org/ || Vol. 2 No. 4 (2026): November Issue

Date of Submission: 10-10-2026 **Date of Acceptance:** 21-10-2026 **Date of Publication:** 12-11-2026

Abstract : Cervical cancer screening can identify precancerous changes before symptoms develop, but participation requires women to understand its purpose, available methods, and follow-up requirements. This assessment examines screening knowledge and its association with selected demographic characteristics among women attending gynecology outpatient departments. A cross-sectional analytical framework was developed using a simulated sample of 300 women aged 30–65 years. Knowledge was assessed through twelve items covering screening purpose, human papillomavirus, screening methods, eligibility, vaccination, and interpretation of results. Correct answers received one point, producing scores ranging from zero to twelve. Descriptive statistics, a Wilson confidence interval, and Pearson chi-square tests were calculated. The mean knowledge score was 5.25±2.92. Lower, intermediate, and higher knowledge categories included 57.0%, 25.3%, and 17.7% of participants, respectively. Although 62.0% recognized that screening could detect precancerous changes, only 36.3% correctly identified the role of HPV testing, and 32.7% understood that recommended screening intervals depend on the testing method and clinical history. Higher knowledge was associated with secondary education or above (p=0.001) and previous screening information exposure (p<0.001). Associations with age and residence were not statistically significant. The analysis identifies educational domains suitable for outpatient assessment while distinguishing knowledge from screening participation. Actual survey data, local instrument validation, and adjustment for confounding are necessary before drawing conclusions about a hospital population.

Keywords: Cervical cancer; screening knowledge; human papillomavirus; gynecology outpatient department; women's health; cancer prevention.

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Introduction

Cervical cancer prevention depends on several connected activities: HPV vaccination, appropriate screening, assessment of abnormal findings, and treatment when indicated. Persistent infection with oncogenic human papillomavirus is central to cervical cancer development, while precancerous changes frequently produce no symptoms. Consequently, waiting for symptoms is not an appropriate substitute for recommended screening [1,2].

Knowledge influences how women interpret screening invitations and clinical advice. A woman may have heard of cervical cancer without understanding that screening is intended for eligible people who feel well. Similarly, familiarity with the term "Pap smear" does not establish understanding of HPV testing, repeat screening, or follow-up after an abnormal result.

Gynecology outpatient departments offer opportunities to assess these distinctions. Women attending for menstrual concerns, reproductive healthcare, or other gynecological conditions may encounter screening information during routine care. However, attendance does not establish screening eligibility, previous participation, or sufficient knowledge. A consultation for symptoms also differs from preventive screening.

WHO guidance supports HPV DNA testing as a primary screening method, with screening schedules determined by population characteristics and the method used [3]. Educational assessments should therefore avoid presenting one interval as universally applicable.

The present manuscript focuses on knowledge of screening rather than cancer diagnosis or screening coverage. It provides a transparent framework for examining specific information gaps and their relationship with selected participant characteristics.

Literature Review

Screening within the prevention pathway

The WHO cervical cancer elimination initiative combines vaccination, screening, and treatment through its 90–70–90 targets [4]. This framework establishes that screening has value within a functioning care pathway. Knowledge alone cannot prevent disease unless women can access appropriate testing and subsequent management.

The WHO screening guideline distinguishes testing strategies and populations, including women living with HIV [3]. This matters for questionnaire development: knowledge questions should reflect the chosen guideline and should not classify a clinically appropriate answer as incorrect merely because it differs from an oversimplified schedule.

Community knowledge and screening practice

Aswathy and colleagues assessed cervical cancer screening knowledge and practice in rural Kerala [5]. Their study showed why awareness and participation require separate measurement. Knowing that early detection is possible does not establish that a woman has undergone screening or understands the complete process.

This distinction has practical importance for outpatient research. A knowledge score describes responses to questions; screening practice requires information about whether testing occurred, which test was performed, and whether it was preventive or prompted by symptoms.

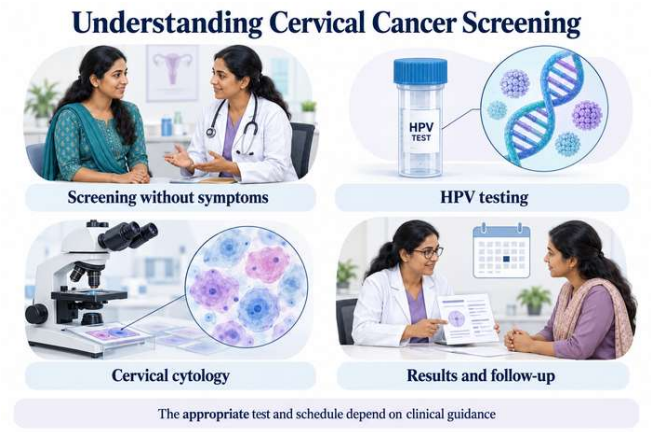
Hospital-based assessments

Bansal and colleagues investigated knowledge, attitudes, and practices among adult women attending a hospital in Bhopal [6]. They reported suboptimal knowledge alongside favorable attitudes toward screening, with limited participation in practice. Their findings caution against treating willingness as evidence of completed screening.

Narayana and colleagues examined women attending an obstetrics and gynecology department in South India [7]. Their hospital-based survey addressed cervical cancer, prevention, and screening together. The study supports the relevance of gynecology clinics as assessment settings, while also demonstrating the need to identify exactly which knowledge domain an overall score represents.

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Khanna assessed cervical cancer and screening knowledge among women attending a rural healthcare center in northern India [8]. The clinic-based approach is directly relevant to understanding educational needs among women already connected with healthcare services. However, purposive recruitment limits population generalization.

Dahiya and colleagues examined knowledge, attitudes, and practices regarding screening among women in New Delhi [9]. Their findings support assessing understanding of screening alongside knowledge of symptoms and risk factors, while retaining distinctions between these constructs.

Evidence supporting screening programs

Sankaranarayanan and colleagues conducted a cluster-randomized trial of cervical screening in rural India [10]. The study evaluated HPV testing, cytology, and visual inspection with acetic acid, providing direct evidence about screening outcomes rather than knowledge alone.

Shastri and colleagues evaluated VIA screening performed by primary health workers in Mumbai [11]. Their trial demonstrates that screening research must consider delivery systems and organized follow-up. Its clinical outcomes should not be attributed to education alone.

Research gap

Existing evidence supports assessing awareness, understanding, and participation separately. A focused outpatient study should identify misconceptions concerning asymptomatic screening, HPV testing, vaccination, and abnormal results. Transparent scoring and locally appropriate language are needed to make findings interpretable and useful for education.

Aim and Objectives

The aim is to assess knowledge regarding cervical cancer screening among women attending gynecology outpatient departments.

The objectives are to:

- Measure knowledge of screening purpose and methods.
- Identify misconceptions about eligibility, vaccination, and test results.
- Describe overall knowledge scores.
- Examine associations with age, education, residence, and previous information exposure.
- Identify priorities for outpatient education.

Materials and Methods

Study design and setting

The framework uses an analytical cross-sectional design for women attending gynecology outpatient departments in a tertiary hospital. The numerical analysis contains 300 simulated records. No hospital identity or study period is assigned.

For actual implementation, recruitment should cover different clinic days and consultation sessions. Knowledge assessment should precede study-related education to avoid measuring information supplied immediately before the interview.

Population and eligibility

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The proposed population comprises women aged 30–65 years who can provide informed consent. The age range defines the assessment population; it does not imply that every attendee requires the same test or schedule.

Emergency cases should receive care before research participation. Previous cervical cancer, treatment for cervical precancer, total hysterectomy, and HIV status require appropriate documentation because they may alter interpretation of routine screening questions. Sensitive information should be collected only when justified and protected.

Each woman should contribute one questionnaire. Repeat attendance must not generate duplicate observations.

Sample size and recruitment

Using an anticipated proportion of 50%, 95% confidence, and six-percentage-point absolute precision:

$$n = \frac{1.96^2(0.50)(0.50)}{0.06^2} = 266.8$$

Allowing 10% for incomplete responses:

$$n_{\text{target}} = \frac{266.8}{0.90} = 296.4$$

The planning target is rounded to 300.

Consecutive recruitment is proposed. Because this is not population-based random sampling, confidence intervals should be interpreted as approximate measures of statistical uncertainty rather than guarantees of community representativeness.

Questionnaire development

The proposed questionnaire includes demographic characteristics, previous exposure to screening information, and twelve knowledge items. Content is informed by WHO guidance and published Indian research [2,3,5–9].

Responses should include “true,” “false,” and “do not know.” Standardized administration is needed to avoid hints or explanations before answers are recorded. Where translated versions are used, comprehension testing and linguistic adaptation should precede recruitment.

The instrument is a proposed checklist, not an established validated scale. No pilot results, expert ratings, or reliability coefficients are fabricated.

Scoring and operational definitions

Each correct response receives one point; incorrect and uncertain responses receive zero. Total scores range from zero to twelve.

Knowledge category	Score
Lower	0–5
Intermediate	6–8
Higher	9–12

These categories are descriptive thresholds. They do not establish clinical competence or individual screening eligibility.

Education is grouped as primary schooling or less versus secondary schooling or higher. Previous information exposure means reporting having received cervical screening information before assessment, whether from professionals, educational material, or media.

Statistical analysis

Categorical variables are summarized using frequencies and percentages. Mean and standard deviation describe total knowledge scores. A Wilson 95% confidence interval accompanies the proportion classified as having higher knowledge.

Pearson chi-square tests examine associations between higher knowledge and selected characteristics. Tests are two-sided, with $p<0.05$ treated as statistically significant. Results are exploratory and unadjusted.

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All reported scores, item frequencies, and associations were calculated from the same simulated participant-level response matrix.



Ethical considerations

Actual research requires institutional ethics approval, voluntary informed consent, and secure handling of personal information. Declining participation must not affect care. Participants reporting concerning symptoms require clinical assessment rather than reassurance based on a questionnaire score.

Results

Participant characteristics

The simulated sample includes 300 women. The largest age group is 40–49 years. Secondary education or higher is reported for 53.3%, while 53.3% reside in rural areas. Previous screening information exposure occurs in 30.0%.



Table 1. Simulated participant characteristics

Characteristic	Category	Number	Percentage
Age	30–39 years	100	33.3
	40–49 years	125	41.7
	50–65 years	75	25.0
Education	Primary or less	140	46.7
	Secondary or higher	160	53.3
Residence	Urban	140	46.7
	Rural	160	53.3
Previous screening information	Yes	90	30.0
	No	210	70.0

Item-specific knowledge

Understanding of screening purpose is more common than knowledge of specific methods and follow-up principles.

Table 2. Simulated correct responses to screening knowledge items

Knowledge statement assessed	Correct, n	Percentage
Screening can identify precancerous cervical changes	186	62.0

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Eligible women may need screening without symptoms	181	60.3
Pap testing examines cervical cells for abnormalities	135	45.0
HPV testing detects high-risk HPV infection	109	36.3
VIA uses acetic acid to assess cervical changes	122	40.7
Screening intervals depend on method and clinical history	98	32.7
HPV vaccination does not remove the need for recommended screening	111	37.0
Persistent high-risk HPV infection contributes to cervical cancer	143	47.7
An abnormal screening result does not necessarily mean cancer	137	45.7
Abnormal results may require further assessment or management	124	41.3
One negative result does not guarantee lifelong protection	118	39.3
An ordinary pelvic examination does not automatically include screening	110	36.7

Each item has a denominator of 300.

Overall knowledge

The mean score is **5.25±2.92 out of twelve**. Lower knowledge includes 171 women, while 53 achieve higher knowledge.

Table 3. Simulated knowledge categories

Category	Number	Percentage
Lower	171	57.0
Intermediate	76	25.3
Higher	53	17.7
Total	300	100.0

The proportion with higher knowledge is **17.7% (95% CI: 13.8%–22.4%)**.

Associations with demographic characteristics

Higher knowledge is more frequent among women with secondary education or higher and those previously exposed to screening information.

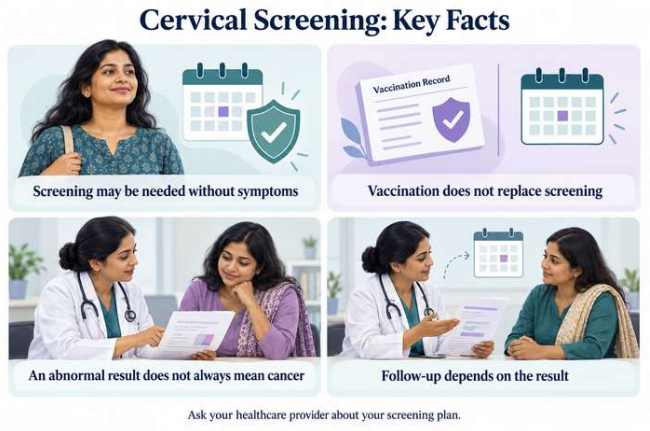


Table 4. Simulated associations with higher knowledge

Characteristic	Higher knowledge, n/N (%)	χ^2	p-value
Age: 30–39 years	17/100 (17.0)	0.38	0.829

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Age: 40–49 years	21/125 (16.8)	—	—
Age: 50–65 years	15/75 (20.0)	—	—
Primary education or less	14/140 (10.0)	10.61	0.001
Secondary education or higher	39/160 (24.4)	—	—
Urban residence	24/140 (17.1)	0.05	0.824
Rural residence	29/160 (18.1)	—	—
Previous information: no	22/210 (10.5)	24.88	<0.001
Previous information: yes	31/90 (34.4)	—	—

Each statistic compares all categories of its corresponding characteristic.

Discussion

The simulated results show that broad understanding of screening purpose can coexist with limited knowledge of testing methods and follow-up. Although most participants correctly recognize that screening can identify precancerous changes, substantially fewer understand HPV testing or the factors determining repeat testing.

This difference matters because a simple question about having heard of screening may overstate practical understanding. Education should explain what testing involves, why it may be offered without symptoms, and what happens after the result.

Hospital-based studies from India support distinguishing awareness, attitudes, and practice [6,7,9]. However, their percentages cannot be compared directly with the present categories because instruments, participant populations, and scoring rules differ. A score of nine on this checklist does not correspond automatically to a "good knowledge" category used elsewhere.

The association with education may reflect differences in health literacy, access to information, or familiarity with medical terminology. It should not be interpreted as an independent effect because income, occupation, healthcare exposure, and other potential confounders are not jointly analyzed.

Previous information exposure is also associated with higher knowledge. This finding does not demonstrate educational effectiveness. Women with greater pre-existing interest may seek information, while those who have undergone previous investigations may receive more counseling. The content, accuracy, timing, and source of information require separate measurement.

Neither age nor residence shows a statistically significant association. These results do not prove that knowledge is identical across groups. They indicate that the specified comparisons do not provide sufficient evidence of differences within the simulated sample.

A particularly important distinction concerns symptoms. Early cervical precancer frequently lacks symptoms, while abnormal bleeding or discharge warrants clinical evaluation rather than waiting for routine screening [2]. Education must therefore explain both preventive screening and assessment of symptoms without confusing their purposes. who.int

The Indian screening trials provide evidence that organized testing can improve clinically meaningful outcomes [10,11]. Their findings should not be used to claim that a knowledge intervention alone reduces mortality. Effective prevention also depends on test quality, appropriate management, and continuity of care.

Outpatient departments can connect information with available services, but assessment should not assume that willingness translates into attendance. Practical barriers, privacy concerns, competing responsibilities, and service availability should be investigated in subsequent work.

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Implications for Practice and Research

Educational messages should prioritize asymptomatic screening, the distinction between HPV and cytology tests, and the meaning of abnormal results. Explanations should use locally understandable terms and clarify where follow-up is available.

A locally implemented study should document the guideline used when developing its answer key. Questions about ages and intervals require particular care because recommendations depend on population and testing strategy.

Future research should assess knowledge alongside verified screening history while keeping the outcomes separate. A prospective evaluation could examine knowledge retention, completed testing, and follow-up attendance after education. Participant-level models could then assess associations while accounting for relevant confounding.

Strengths and Limitations

The framework reports individual knowledge domains, explicit scoring, and consistent denominators. The mean score and categorical results originate from the same simulated records.

Its central limitation is the absence of actual observations. The figures do not establish knowledge levels in any hospital. In an implemented study, consecutive sampling would limit generalizability, interviewer administration could introduce response bias, and a cross-sectional design would prevent causal inference.

The checklist requires local validation. Its descriptive thresholds are not established standards, and no screening uptake, diagnostic outcome, or treatment result is measured.

Conclusion

Assessment of cervical screening knowledge should extend beyond familiarity with cancer or the Pap test. The simulated analysis identifies gaps in understanding HPV testing, repeat screening, vaccination, and abnormal results, with higher knowledge associated with education and previous information exposure. Actual survey findings are needed to confirm these patterns. Clear education should be linked to accessible screening and reliable follow-up.

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