Original Article

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Persistent Challenges in Screening, Late Presentation and the Need to Strengthen National Prevention Efforts in Cervical Cancer in Bangladesh

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ABSTRACT

Background: *Cervical cancer remains a preventable malignancy, yet late presentation continues to challenge cervical cancer control in Bangladesh.* ***Aim of the study:*** *This study aimed to describe prevention-relevant patterns among women with invasive cervical carcinoma managed at tertiary-care centres in Bangladesh.* ***Methods & Materials:*** *This prevention-focused descriptive observational study included 30 women with histologically confirmed invasive carcinoma of the cervix admitted to the oncology units of Bangabandhu Sheikh Mujib Medical University and Dhaka Medical College Hospital from January to June 2008. Data were collected using a structured questionnaire and clinical assessment form. Variables relevant to prevention included sociodemographic characteristics, educational status, symptom profile, duration of symptoms before seeking care, clinical stage, histopathology, diagnostic-delay factors, and treatment-delay factors. Data were analyzed descriptively using frequencies and percentages.* ***Results:*** *The mean age was 45 years. Most patients were housewives, 90.00%, and 56.67% belonged to the lower socioeconomic class. Educational attainment was low, with 40.00% illiterate and 33.33% having only primary education. Most patients presented after symptom development; back pain was reported in 73.33%, post-coital bleeding in 63.33%, and foul-smelling per-vaginal discharge in 46.67%. Half of the patients, 50.00%, had symptoms for at least one year before seeking medical advice. Stage II was the most frequent stage, 50.00%, and 80.00% presented with stage II–IV disease. Patient/family-level factors accounted for 70.00% of recorded diagnostic-delay contributors, while system/provider-level factors accounted for 23.33%. False-negative screening was recorded as a cause of delay in 13.33%, and delayed treatment initiation was recorded in 26.67%.* ***Conclusion:*** *The findings indicate persistent prevention gaps reflected by symptomatic diagnosis, prolonged care-seeking delay, and late-stage presentation.*

Keywords: *Cervical Cancer; Screening; Late Presentation; HPV Vaccination*

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INTRODUCTION

Cervical cancer remains a preventable cause of cancer morbidity and mortality among women, with a disproportionate burden in low- and middle-income countries. In 2022, approximately 660,000 new cases and 350,000 deaths were estimated globally, and about 94% of deaths occurred in low- and middle-income countries, reflecting inequities in access to HPV vaccination, screening, diagnosis, and treatment [1]. The World Health Organization's elimination strategy defines cervical cancer control through three linked targets for 2030: vaccination of 90% of girls by 15 years of age, screening of 70% of women by ages 35 and 45 years, and treatment or management of 90% of women with precancer or invasive cancer [2]. These targets are relevant for Bangladesh because prevention depends not only on the availability of screening, but also on screening uptake, quality assurance, referral completion, treatment access, and public understanding of asymptomatic disease detection. Bangladesh has developed a national cervical cancer prevention infrastructure, but implementation gaps remain. A VIA-based national cervical cancer screening programme was initiated in 2004, and a recent evaluation of the national surveillance system reported electronic surveillance across 601 health facilities, with colposcopy services available in 43 centres. The same evaluation found that the programme performed well in simplicity and usefulness, but required improvement in system stability, data quality, dedicated staffing, infrastructure, and participant motivation [3]. A separate service-readiness assessment of 323 Bangladeshi health facilities showed that tertiary and specialized hospitals exceeded readiness thresholds, whereas many lower-level facilities remained below the readiness cutoff, particularly for guidelines, trained personnel, diagnostic capacity, and equipment [4]. These findings indicate that Bangladesh has moved beyond programme initiation, but still faces operational challenges in making prevention effective across all levels of care. Screening uptake in Bangladesh remains low despite programme availability. In a population-based analysis of the WHO STEPS 2018 survey, Khan et al. reported that only 6.2% of Bangladeshi women of reproductive age had

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ever been screened for cervical cancer [5]. Low uptake is closely linked to limited understanding of screening as an intervention for asymptomatic women. Islam et al. reported that lack of awareness and poor understanding of cervical cancer screening were the main barriers to screening uptake among midlife women in Bangladesh [6]. Similarly, Islam et al. found low detailed knowledge of cervical cancer risk factors and prevention among Bangladeshi women, despite willingness to receive HPV vaccination [7]. These findings suggest that screening availability does not automatically translate into screening participation, especially where women associate healthcare-seeking with symptoms rather than prevention. Community-level knowledge and household decision-making also influence prevention access. Nazrul et al. reported limited awareness of cervical cancer risk factors and symptoms among women and household decision-makers in hard-to-reach areas of Bangladesh [8]. Their findings are important because screening participation may depend not only on the woman's own knowledge, but also on household-level permission, support, mobility, and prioritization of healthcare expenditure. In settings where women have limited independent decision-making authority, prevention programmes require community-facing strategies that include husbands, mothers-in-law, community health workers, and local health providers. Recent HPV vaccination initiatives provide an important opportunity to reduce future cervical cancer burden, but vaccination alone cannot address existing disease among adult women who are already outside the primary target group. Bangladesh vaccinated more than 1.5 million girls with a single HPV vaccine dose in Dhaka division in 2023, and the final phase of the national campaign was launched in 2024 to provide free HPV vaccination in the remaining seven divisions for girls in classes five to nine and out-of-school girls aged 10–14 years [9]. Gavi also reported that Bangladesh is using a WHO-endorsed single-dose HPV vaccination schedule and integrating vaccination through educational institutions, fixed centres, outreach centres, and community-level strategies [10]. These developments strengthen primary prevention, but adult women continue to require accessible screening, diagnostic confirmation, treatment of precancer, and timely management of invasive disease. Against this background, tertiary-centre observations can provide clinically relevant evidence of prevention gaps. The present study examined prevention-relevant patterns among women with histologically confirmed invasive cervical carcinoma managed at tertiary-care centres in Bangladesh. The study focused on symptomatic presentation, duration of symptoms before seeking care, stage at diagnosis, socioeconomic and educational indicators, recorded screening-related delay, provider-related diagnostic barriers, and non-formal care pathways.

METHODS & MATERIALS

This prevention-focused descriptive observational study was based on 30 women with histologically confirmed invasive carcinoma of the cervix who were admitted to the oncology units of the Department of Obstetrics and Gynaecology at Bangabandhu Sheikh Mujib Medical University and Dhaka Medical College Hospital, Dhaka, Bangladesh, between January and June 2008. Patients of all ages and all clinical stages were eligible after histopathological confirmation of invasive cervical carcinoma. Patients with cervical intraepithelial neoplasia, non-invasive cervical lesions, or diagnoses other than invasive carcinoma of the cervix were excluded. Data were collected using a structured questionnaire and clinical assessment form. The original assessment recorded sociodemographic characteristics, presenting symptoms, menstrual and obstetric history, relevant risk factors, physical and pelvic examination findings, clinical stage, histological type and grade, treatment status, symptom duration, diagnostic intervals, treatment interval, and documented causes of delay. All patients underwent history taking, general examination, pelvic examination, clinical staging, and cervical biopsy for histopathological confirmation. Treatment decisions were made by the treating clinical team according to stage of disease and clinical fitness for surgery, radiotherapy, chemotherapy, or combined treatment. For the present analysis, variables were selected according to their relevance to cervical cancer screening, late presentation, early diagnosis, and prevention-system performance. Prevention-relevant indicators included educational status, socioeconomic status, duration of symptoms before seeking medical advice, symptom profile at presentation, clinical stage at diagnosis, histopathological pattern, recorded causes of diagnostic delay, and recorded causes of treatment delay. Late presentation was assessed using clinical stage at presentation and was summarized as stage I, stage II, stage III, stage IV, and combined stage II–IV disease. Delayed symptom recognition and care-seeking were assessed using symptom duration before first medical advice, categorized as less than 1 year, 1–2 years, and more than 2 years. Recorded causes of diagnostic delay were further grouped into patient/family-level factors, including delayed action or neglect by patients and relatives, economic crisis, and use of kabiraji or homeopathic treatment; and system/provider-level factors, including false-negative screening test, failure of early diagnosis by doctors, and malpractice. False-negative screening was interpreted only as a recorded cause of diagnostic delay, not as an estimate of screening-test sensitivity or programme performance. Data were compiled and analyzed descriptively using Microsoft Excel. Categorical variables were summarized as frequencies and percentages, using 30 patients as the denominator unless otherwise specified. Multiple-response variables, such as presenting symptoms, were analyzed as separate frequencies; therefore, percentages for these variables were not expected to total 100%. For treatment-delay causes, percentages were calculated both against the total sample and among patients with delayed treatment initiation. No inferential statistical testing was performed because of the small sample size and descriptive design. The findings were interpreted as tertiary-centre observations relevant to prevention-system strengthening, not as population-level estimates of cervical cancer screening coverage or national programme effectiveness.

RESULTS

A total of 30 women with histologically confirmed invasive carcinoma of the cervix were included in the study. The age of the patients ranged from 20 to 70 years, with a mean age of 45 years. The largest proportion of patients belonged to the 31–40-year age group, 10 patients, 33.33%, followed by the 41–50-year age group, 9 patients, 30.00%. Most patients were housewives, 27 patients, 90.00%. More than half of the patients belonged to the lower socioeconomic class, 17 patients, 56.67%, while 10 patients, 33.33%, were from the middle socioeconomic class. Educational attainment was low: 12 patients, 40.00%, were illiterate, and 10 patients, 33.33%, had only primary education (*Table I*).

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Table I: Sociodemographic indicators relevant to cervical cancer prevention access, *n*=30

Category	Number	Percentage
Age group, years		
20–30	2	6.67
31–40	10	33.33
41–50	9	30.00
51–60	4	13.33
61–70	5	16.67
Occupation		
Housewife	27	90.00
Service holder	3	10.00
Socioeconomic status		
Rich	2	6.67
Upper middle class	1	3.33
Middle class	10	33.33
Lower class	17	56.67
Educational status		
Illiterate	12	40.00
Primary	10	33.33
Secondary	6	20.00
Higher education	2	6.67

Most patients entered care after developing symptoms suggestive of invasive or clinically apparent disease. Back pain was the most frequently recorded symptom, reported by 22 patients, 73.33%, followed by post-coital bleeding in 19 patients, 63.33%. Foul-smelling per-vaginal discharge was reported by 14 patients, 46.67%, and blood-stained per-vaginal discharge by 12 patients, 40.00%. Difficulty in micturition was present in 12 patients, 40.00%, while difficulty in defecation was present in 5 patients, 16.67%. Postmenopausal bleeding was documented in 2 patients, 6.67%. These findings indicate that the included patients were largely identified after symptom development rather than through asymptomatic screening detection (*Table II*).

Table II: Presenting symptoms suggesting clinically apparent disease, *n*=30

Presenting symptom	Number	Percentage
Back pain	22	73.33
Post-coital bleeding	19	63.33
Foul-smelling per-vaginal discharge	14	46.67
Blood-stained per-vaginal discharge	12	40.00
Difficulty in micturition	12	40.00
Difficulty in defecation	5	16.67
Postmenopausal bleeding	2	6.67

Note: Multiple symptoms were recorded in several patients; percentages therefore do not total 100%.

Fifteen patients, 50.00%, sought medical advice within one year of symptom onset. The remaining 15 patients, 50.00%, had symptoms for at least one year before seeking care. Among them, 9 patients, 30.00%, had symptoms for 1–2 years, and 6 patients, 20.00%, had symptoms for more than 2 years. Thus, half of the study population experienced prolonged symptomatic periods before first medical consultation, indicating missed opportunities for earlier recognition and referral (*Table III*).

Table III: Duration of symptoms before seeking medical advice, *n*=30

Duration	Number	Percentage
Less than 1 year	15	50.00
1–2 years	9	30.00
More than 2 years	6	20.00
Total	30	100.00

Stage II disease was the most frequent stage at presentation, observed in 15 patients, 50.00%. Stage III disease was present in 7 patients, 23.33%, and stage IV disease in 2 patients, 6.67%. Only 6 patients, 20.00%, were diagnosed at stage I. Overall, 24 patients, 80.00%, presented with stage II–IV disease. This stage distribution indicates that most patients reached tertiary-care services after the disease had already progressed beyond the earliest stage (*Table IV*).

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Table IV: Stage distribution at presentation, *n*=30

Clinical stage	Number	Percentage
Stage I	6	20.00
Stage II	15	50.00
Stage III	7	23.33
Stage IV	2	6.67
Stage II–IV combined	24	80.00
Total	30	100.00

Squamous cell carcinoma was the predominant histological type, found in 28 patients, 93.33%, while adenocarcinoma was identified in 2 patients, 6.67%. Poorly differentiated carcinoma was the most frequent histological grade, present in 16 patients, 53.33%, followed by moderately differentiated carcinoma in 9 patients, 30.00%, and well-differentiated carcinoma in 5 patients, 16.67% (*Table V*).

Table V: Histopathological characteristics, *n*=30

Category	Number	Percentage
Histological type		
Squamous cell carcinoma	28	93.33
Adenocarcinoma	2	6.67
Histological grade		
Well differentiated	5	16.67
Moderately differentiated	9	30.00
Poorly differentiated	16	53.33

The dataset did not record population-level screening coverage or complete individual screening histories. However, several recorded causes of diagnostic delay were directly relevant to early detection and prevention-system performance. The most frequent cause was delayed action or neglect by patients and relatives, recorded in 14 patients, 46.67%. False-negative screening test was documented as a cause of delay in 4 patients, 13.33%. Use of kabiraji or homeopathic treatment was also recorded in 4 patients, 13.33%, while economic crisis was documented in 3 patients, 10.00%. Provider-related causes included failure of the doctor to diagnose early in 2 patients, 6.67%, and malpractice of the doctor in 1 patient, 3.33%. No specific cause was recorded in 2 patients, 6.67% (*Table VI*).

Table VI: Recorded causes of diagnostic delay relevant to prevention-system gaps, *n*=30

Cause	Number	Percentage
Delayed action or neglect by patient and relatives	14	46.67
False-negative screening test	4	13.33
Taking kabiraji or homeopathic treatment	4	13.33
Economic crisis	3	10.00
Failure of doctor to diagnose early	2	6.67
Malpractice of doctor	1	3.33
No specific cause recorded	2	6.67
Total	30	100.00

After reclassification of recorded causes of diagnostic delay, patient/family-level contributors accounted for 21 patients, 70.00%. This category included delayed action or neglect by patients and relatives, economic crisis, and use of kabiraji or homeopathic treatment. System/provider-level contributors accounted for 7 patients, 23.33%, including false-negative screening, failure of early diagnosis by doctors, and malpractice. In 2 patients, 6.67%, no specific cause was recorded (*Table VII*).

Table VII: Reclassified diagnostic-delay domains relevant to prevention strengthening, *n*=30

Delay domain	Included causes	Number	Percentage
Patient/family-level factors	Delayed action or neglect by patient and relatives; economic crisis; kabiraji or homeopathic treatment	21	70.00
System/provider-level factors	False-negative screening test; failure of doctor to diagnose early; malpractice of doctor	7	23.33
Not specified	No specific cause recorded	2	6.67

Delayed treatment initiation was recorded in 8 patients, 26.67%, while 22 patients, 73.33%, received treatment without recorded delay. Among the 8 delayed-treatment cases, the leading causes were being unfit for operation or therapy and taking kabiraji or homeopathic treatment, each documented in 3 patients, 37.50% of delayed cases. Financial cause and malpractice of doctor were each recorded in 1 patient, 12.50% of delayed cases (*Table VIII*).

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Table VIII: Treatment initiation status and causes of treatment delay, *n*=30

Treatment-related variable	Number	Percentage of total sample	Percentage among delayed cases, n=8
Delayed treatment initiation	8	26.67	100.00
Treatment without recorded delay	22	73.33	Not applicable
Not fit for operation or therapy	3	10.00	37.50
Taking kabiraji or homeopathic treatment	3	10.00	37.50
Financial cause	1	3.33	12.50
Malpractice of doctor	1	3.33	12.50

The findings show several prevention-relevant signals. First, most patients were diagnosed after symptom development, and half had symptoms for at least one year before seeking medical advice. Second, 80.00% of patients presented with stage II–IV disease, while only 20.00% were diagnosed at stage I. Third, the patient population showed indicators of social vulnerability, including low educational attainment and lower socioeconomic status. Fourth, screening and early-detection gaps were suggested by recorded false-negative screening, delayed recognition by healthcare providers, and prolonged care-seeking intervals. Finally, non-formal care pathways, particularly kabiraji or homeopathic treatment, contributed to both diagnostic and treatment delay (*Table IX*).

Table IX: Prevention-system indicators derived from tertiary-centre observations

Observed indicator	Value	Prevention-system relevance
Stage II–IV disease at presentation	24, 80.00%	Suggests insufficient early detection among this patient group
Stage I disease at presentation	6, 20.00%	Indicates limited early-stage detection
Symptoms for ≥1 year before seeking care	15, 50.00%	Indicates delayed symptom recognition and delayed care-seeking
Symptoms for >2 years before seeking care	6, 20.00%	Indicates very prolonged missed opportunity for earlier diagnosis
Illiterate or primary education only	22, 73.33%	Supports need for low-literacy community education
Lower socioeconomic class	17, 56.67%	Supports need for equity-focused screening and referral access
False-negative screening test recorded as delay cause	4, 13.33%	Suggests need for screening quality assurance
Failure of doctor to diagnose early	2, 6.67%	Supports need for provider training and early recognition protocols
Kabiraji/homeopathic treatment as diagnostic-delay cause	4, 13.33%	Suggests need for community referral linkage and awareness
Kabiraji/homeopathic treatment among delayed-treatment cases	3 of 8, 37.50%	Indicates continued non-formal care use after diagnosis or during treatment pathway
Delayed treatment initiation	8, 26.67%	Supports need for stronger linkage from diagnosis to treatment

DISCUSSION

The present study identified several prevention-relevant patterns among women with invasive cervical carcinoma managed at tertiary-care centres in Bangladesh. The most important observation was the predominance of late and symptomatic presentation. Only 20.00% of patients were diagnosed at stage I, while 80.00% presented with stage II–IV disease. Stage II alone accounted for 50.00% of cases. This pattern is consistent with previous Bangladeshi evidence, where Ferdous et al. reported stage II as the most frequent presentation among women with invasive cervical cancer [11]. The persistence of stage II-dominant presentation suggests that many women still enter the diagnostic pathway after progression beyond the earliest detectable stage, despite the preventable nature of the disease. The symptom profile also supports the interpretation that most cases were detected after clinically apparent disease. Back pain was recorded in 73.33%, post-coital bleeding in 63.33%, foul-smelling per-vaginal discharge in 46.67%, and blood-stained discharge in 40.00%. These findings indicate symptom-driven entry into care rather than detection through screening of asymptomatic women. This is compatible with population-level screening data from Bangladesh. Khan et al. reported that only 6.2% of Bangladeshi women had ever been screened for cervical cancer, while Islam et al. found that only 8.3% of midlife women had ever been screened and identified lack of understanding of cervical cancer and screening as the leading barrier to uptake [5,6]. Low screening uptake provides an important national context for the symptomatic presentation observed in this tertiary-centre series.

A second major finding was prolonged symptomatic duration before seeking care. Half of the patients had symptoms for at least one year before first medical advice, and 20.00% had symptoms for more than two years. This indicates missed opportunities for symptom recognition, referral, and early diagnosis. The finding is consistent with evidence that screening and symptom awareness remain limited in Bangladesh. Islam et al. reported low detailed knowledge of cervical cancer risk factors and prevention among Bangladeshi women, while Qayum et al. found that although 87% of women in Dhaka had heard of cervical cancer, only 13% knew HPV was a risk factor and only 26% had undergone VIA screening [7,12]. These data suggest that general awareness may not translate into actionable knowledge about screening, symptoms, or timely care-seeking. Social vulnerability was prominent in the present series. More than half of the patients belonged to the lower socioeconomic class, 56.67%, and 73.33% were either illiterate or had only primary education. These characteristics are relevant because cervical cancer prevention depends on understanding preventive screening,

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recognizing warning symptoms, accessing facilities, and navigating referral systems. Prior studies from Bangladesh support this relationship. Islam et al. found that having no education was inversely associated with screening uptake, and Khan et al. also reported sociodemographic variation in cervical cancer screening participation [5,6]. The present findings therefore reinforce the need for low-literacy, culturally appropriate communication and outreach strategies targeted to women with limited formal education and low economic resources. Patient and family-level factors accounted for 70.00% of recorded diagnostic-delay contributors. The leading recorded cause was delayed action or neglect by patients and relatives, 46.67%. This finding is consistent with recent evidence from hard-to-reach areas of Bangladesh. Nazrul et al. reported that knowledge of cervical cancer risk factors and symptoms was limited among women and household decision-makers, including husbands and mothers-in-law, and emphasized that screening behaviour is influenced by household-level knowledge and decision-making [8]. These observations suggest that cervical cancer prevention cannot rely only on counselling individual women; it also requires community-level strategies that address household decision-makers and local social norms. System and provider-level contributors were also observed. False-negative screening was recorded as a cause of diagnostic delay in 13.33%, and failure of doctors to diagnose early was recorded in 6.67%. These values should not be interpreted as estimates of screening-test sensitivity or national programme performance, but they indicate the relevance of screening quality assurance and provider training. Bangladesh has developed a national VIA-based programme, with a recent evaluation reporting surveillance across 601 health facilities and colposcopy services in 43 centres. However, the same evaluation identified weaknesses in stability, data quality, staffing, infrastructure, and participant motivation [3]. Rakhshanda et al. also found that although tertiary and specialized hospitals were highly ready to manage cervical cancer, readiness was substantially lower in district hospitals, primary facilities, maternal and child welfare centres, and NGO/private facilities [4]. These findings support the need to strengthen quality, referral, and diagnostic capacity below tertiary level. Non-formal care pathways were another important finding. Kabiraji or homeopathic treatment was recorded as a diagnostic-delay contributor in 13.33% and as a treatment-delay contributor in 37.50% of delayed-treatment cases. Although Bangladesh-specific quantitative evidence on this exact pathway is limited, LMIC evidence links traditional or non-formal care-seeking with delayed diagnosis of cervical cancer. Zeleke et al. identified traditional healer use, low awareness, illiteracy, and low socioeconomic status among factors associated with delayed diagnosis in Ethiopia [13]. This supports the interpretation that informal care-seeking may delay entry into effective diagnostic and treatment pathways. The current findings should be interpreted in light of Bangladesh's ongoing prevention progress. HPV vaccination expansion is a major advance, with UNICEF reporting a 2024 campaign targeting 6.2 million girls aged 10–14 years across seven divisions (UNICEF Bangladesh, 2024). However, adult women already at risk require accessible screening, accurate diagnosis, and timely treatment. The present study therefore supports a prevention strategy that integrates vaccination with improved screening uptake, quality-assured VIA services, provider training, community education, household-level engagement, and effective referral from peripheral facilities to tertiary-care services.

LIMITATIONS

This study was limited by its small sample size and tertiary-care setting, so the findings should not be interpreted as population-level estimates of cervical cancer screening coverage or national programme performance. Screening history was not comprehensively recorded, and false-negative screening was analyzed only as a documented cause of diagnostic delay. The descriptive design also limited assessment of causal relationships between social vulnerability, screening access, delayed presentation, and clinical stage.

CONCLUSION

The findings show that invasive cervical carcinoma cases in this tertiary-centre series were largely characterized by symptomatic presentation, prolonged care-seeking delay, and diagnosis beyond the earliest stage. Half of the patients had symptoms for at least one year before seeking medical advice, and 80.00% presented with stage II–IV disease. Social vulnerability was also prominent, with most patients having low educational attainment and more than half belonging to the lower socioeconomic class. Recorded diagnostic-delay factors included delayed action by patients and relatives, false-negative screening, use of kabiraji or homeopathic treatment, economic crisis, and provider-related delay. These observations indicate that cervical cancer prevention in Bangladesh requires not only screening availability, but also stronger community awareness, screening quality assurance, provider training, referral linkage, and timely access to treatment.

RECOMMENDATION

Cervical cancer prevention efforts in Bangladesh should be strengthened through wider community-based education on asymptomatic screening and warning symptoms, with special attention to women with low literacy and low socioeconomic status. VIA screening services should be supported by quality assurance, adequate provider training, proper documentation, and clear referral pathways for colposcopy, biopsy, and treatment. HPV vaccination expansion should continue, but it should be integrated with screening and early diagnosis services for adult women who remain at risk of current or near-term invasive disease.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

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