

Research Article

Factors Associated With Cervical Cancer Awareness, Screening Knowledge, and Preventive Practices among Reproductive-Age Women in Bangladesh: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Cervical cancer is one of the biggest ones in Bangladesh status of the second most common cancer among the women. It is an avoidable disease but many of them are coming in late stage in tertiary health institution e.g. Ahsania Mission Cancer & General Hospital (AMCGH) thus resulting high death rate. Several critical knowledge gaps exist that complicate perceptions about this issue: about three fourths of women of reproductive age are aware of HPV and basic knowledge about the disease, the association between HPV and cervical cancer and the need for the timely screening for women. Furthermore, there is a low uptake of screening and in many cohorts it is not much more than 10%. The objective of this study is to determine the socio-demographic factors, knowledge about the problem and sociological barriers and finally to highlight the importance of institutional and opportunistic screening model for better cancer early detection of the growing cervical cancer burden in this country. It will be an exploratory study of reproductive age women in Bangladesh including patients and attendants of Ahsania Mission Cancer & General Hospital (AMCGH) to find out the factors of readiness to screening for cervical cancer and awareness of preventative measures. Although, the most prevalent type of cancer-related death for women is cervical cancer, it appears that the majority of women are unaware of the majority of the primary risk factors, such as HPV, and screening rates are not high, so screening is needed. This study was based on an assessment of socioeconomic factors (education, income and age) associated with health-seeking behaviors from a hospital based registry. Results will demonstrate the importance of introducing opportunistic screening programmes at various clinical service points to decrease multiple barriers to participation in screening and the need for integrated approaches to prevention based on evidence to better align clinical burden with effective interventions in the Bangladeshi health system more upstream.

Keywords: Cervical Cancer, Bangladesh, Screening, Awareness, Preventive Practices.

INTRODUCTION

One of the most significant public health issues in women especially in LMIC is the cervical cancer. One of the leading causes of morbidity and mortality in reproductive aged women of

Bangladesh is cervical cancer. All of these are effective methods of prevention: however, the awareness and uptake of screening, early treatment of precancerous lesions, as well as HPV vaccination remains low. Insufficient

healthcare information, income inequalities, beliefs, and limited access to healthcare facilities are some of the factors that impact upon low rates of screening and limited preventive care. To design targeted interventions and enhance health outcomes, it is crucial to understand women's knowledge and perceptions about cervical cancer. Hence, the goal of this study is to find out the factors associated to awareness of cervical cancer, knowledge of cancer screening and preventive practices among the reproductive age group women visiting Ahsania Mission Cancer & General Hospital (AMCGH) in Bangladesh. The findings may be used to guide evidence informed strategies to enhance cervical cancer prevention and control programmes.

LITERATURE REVIEW

Yet, despite the importance of HPV vaccination and routine screening in saving lives, there is a lot of knowledge gaps and sociocultural issues around effective prevention for this age group ((12878551) et al., 2025; Nazrul et al., 2024). These inequalities are more evident despite the restricted infrastructure of health, and in the absence of local socioeconomic concerns in promotion actions. Moreover, empirical findings indicate that even if there is a general awareness there is little understanding of aetiology of the disease and specific role of primary prevention (Islam et al., 2018). But, socio-demographic factors such as education status, working status and monthly income have an impact on this awareness and action gap (Begum et al. 2024; Khatun et al. 2025). Further, digital media, a major source of information for younger generations, also brings them new challenges requiring interventions specifically targeted at younger generations, which address these behaviours. While existing studies found that both medical students and population groups in urban areas reached different levels of awareness on this protection, the population group in the rural areas still struggles with the related issues of the system such as early marriage, inadequate screening facilities (Rahman et al., 2025; Zohra et al., 2025; Qayum et al., 2021). However, studies have shown that even though there is a gap between willingness to accept vaccination in urban and rural areas, the tendency to accept vaccination is high in both areas indicating that future public health efforts can help to bridge the gap by running public awareness campaigns and sending messages of awareness on symptoms and prevention

measures (Islam, 2019). However, such actions must take into account the need to eliminate deeply entrenched culture stigmas and financial constraints for accessing regular clinical consultations (Kiruthika², 2025; Petersen et al., 2022). Furthermore, establishing common communication platforms between mothers and health care systems can be a crucial measure to address misinformation and boost vaccine uptake among younger age groups (Ripon et al., 2026). Additionally, the move towards HPV self-sampling can overcome hurdles to cytology in the clinic, such as logistical inconveniences, discomfort, and embarrassment (Zhetpisbayeva et al., 2023). A step forward to adopt such diagnostic innovations implies a broader policy integration that will herald the changes to the centralised, facility dependent testing into a community integrated testing while reducing the impact of modesty concerns and social taboos (Elshami et al., 2024; Yuldashbaevna, 2025). Furthermore, to ensure the context-specificity of the message, message tailoring is needed and should be used to increase community engagement and acknowledging existing misconceived notions (Coursey et al., 2024; Kindi et al., 2024).

Also, policymakers should consider creating scope for increasing insurance and income generation opportunities; which is a major determinant of health seeking behavior (Tiruneh et al., 2017). Besides, gender-neutral vaccination strategies and incorporating HPV vaccination into normal vaccination programs at state level are key to attaining long-term population-level protection (Getova-Kolarova et al., 2024). Lastly, decentralized screening services and mobile health units have played a major role in providing health services and health facilities for screening results in hard-to-reach geographic locations due to the lack of existing health services and health facility (Yeşilfidan et al., 2025; Zhetpisbayeva et al., 2024). Moreover, there is a need for building institutional capacity including through intensive training of health care providers and ensuring strong mechanisms for quality assurance to ensure sustainability of these expanded services (Atnafu et al., 2024; Yusuf, 2024). However, community health workers (CHWs) who speak and understand the language and culture of the community they work with may be important in gaining trust and rapport within the community to encourage participation in programs that support primary prevention (Thomas-Purcell et al., 2024).

Furthermore, targeted awareness initiatives to boost knowledge on the importance of vaccination and regular check-ups are also needed to enhance these outreach efforts and to act as cancer prevention strategies (Huang et al., 2025; Omotoso et al., 2023).

Beyond these outreach activities, attention needs to be paid to broader structures and how they interact with women's ability to engage with the health system, such as the effect of inequality in education, autonomy in intra-household decision making and so forth (Rajkhowa et al., 2024). This assessment needs to be intersectional and account for power dynamics and gender norms in society, and how these connect to perceived and then access to available health services (Ginsburg et al., 2023). By incorporating the clinical and financial care navigation directly into these interventions, these approaches can break down and address systemic barriers to screening, helping clients bridge the gap from screening access to the client's ability to access the screening (Holt et al., 2023). Moreover, multisector strategies which can enable coordination between health systems and other social protection measures should be considered as they can do their part in reducing inequalities in health system choice, which are known to be associated with lower uptake of preventive care (Mahumud et al., 2020). These activities should focus on women of all ages - particularly those living in lower income communities, and with lower levels of education - with community-based campaigns to increase the awareness of the importance of early detection and of access to health services. Moreover, developing strategies to support the embedding of cervical cancer services into other community health initiatives and priorities can help drive the cost-effectiveness and reach of diagnostic services to the most marginalized by increasing uptake of the services (Akinyemiju et al., 2022). Moreover, HPV based screening can be most efficiently introduced in these systems than traditional cytological screening and could be used to identify women who require more clinical action (Gakidou et al., 2008). But the transformation to such testing requires robust institutional frameworks to ensure that the technologies will be available, culturally appropriate and financially accessible to the most at-risk people (Law et al., 2025; Prez et al., 2021).

METHODOLOGY

The present study was of cross sectional, quantitative type of research to know the

factors affecting awareness of cervical cancer, knowledge on the screening process and practice of the cervical cancer prevention among the reproductive age women in Ahsania Mission Cancer & General Hospital (AMCGH) in Bangladesh. Both Primaries as well as Secondary Data sources was used. Data collection was made using convenience sampling technique using structured questionnaire and questionnaire was posted online to reproductive age females. It was planned to have questions related to demographic, awareness of cervical cancer, knowledge of screening methods and health measures to prevent cervical cancer included in the questionnaire. To provide context and supporting data, secondary data was gathered from published journal articles, Government reports, World Health Organisation (WHO) publications and other relevant online databases. Descriptive and inferential statistical techniques were used to analyze the collected data. Sociodemographic factors and their association with cervical cancer-related awareness, knowledge and practices were identified by the use of frequencies, percentages, means and chi-square tests. Throughout the study voluntary participation, informed consent, confidentiality and anonymity of respondents were carefully kept.

Discussion and Analysis

It is an important public health problem in Bangladesh with cervical cancer is the second most prevalent cancer in women in Bangladesh. The awareness as well as participation in screening and mitigation measures is alarmingly low and with a high burden of women, there is an urgent need amongst the reproductive age women. According to the latest report, cervical cancer that predominantly strikes women of reproductive age group, accounts for approximately 12% of all female cancers in the country. The cancer statistics from institutions such as Ahsania Mission Cancer & General Hospital (AMCGH) and the other tertiary hospitals shows that in the case of women, cervical cancer is one of the most common cancers which has been identified with the additional problem of late detection.

One of the greatest challenges in achieving effective control is that the essential knowledge is lacking. Large scale studies done in different health care institutions in Bangladesh have shown that majority of the women, even up to 75%, have never heard about cervical cancer. Knowledge of the risk factors, such as the

Human Papillomavirus (HPV) is limited even when people know the risk factors (Qayum et al., 2021). For example, during pre-intervention assessments, a person's understanding that HPV is a cause of the disease is less than 10% of the time. This lack of knowledge carries over

to screening as well, with estimates by various studies being as low as 7.5% to as high as 20% of women being aware of screening options like the Visual Inspection with Acetic Acid (VIA) test (Ramtel et al., 2022).

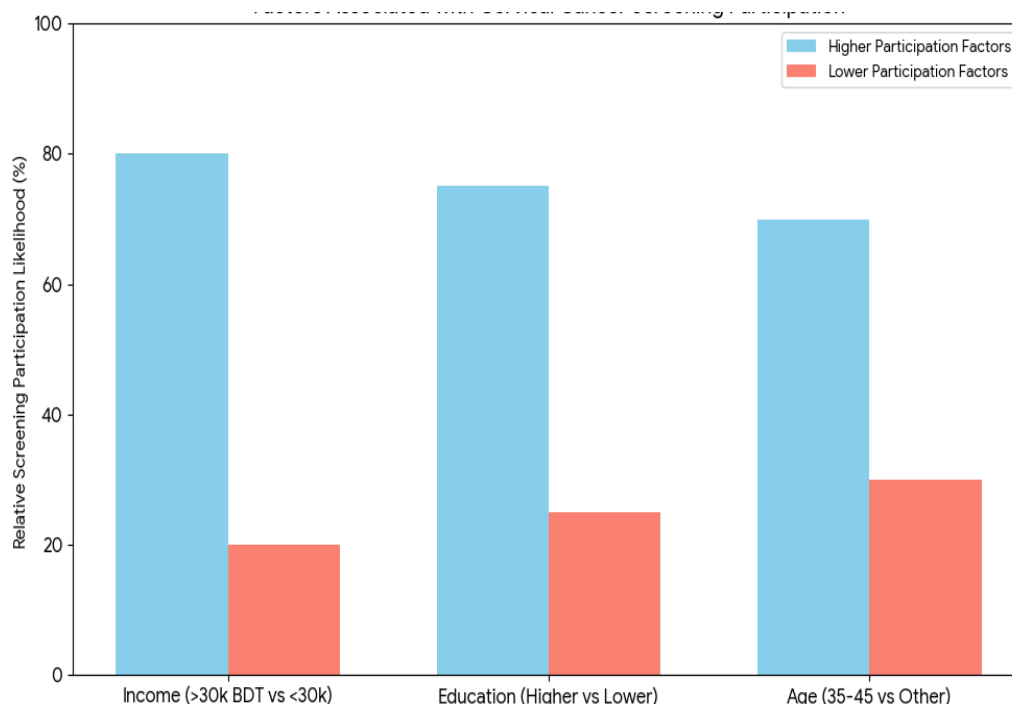


Figure 1: Factors Associated With Cervical Cancer Screening Participation

Moreover, screening and HPV vaccination is also underdeveloped and so is the prevention in general. The government of the People's Republic of Bangladesh has established more VIA screening centres in upazila health complexes but number of people using the centres are still low (Ahmed et al., 2008). Only 5-20% of women who are eligible for screening receive it regularly for cervical cancer. The low rates invariably go hand in hand with quite a few socio-economic and demographic factors. Age is another important factor; as women aged 35-45 demonstrate slightly higher engagement, possibly as a result of them having access to more health care systems during their reproduction age (Marques et al., 2020). Screening participation rates are also good predictors, with women with higher level of education and women from higher income families (monthly income >30,000 BDT) having higher screening participation rates (probably due to information and resources).

Cultural, and social, factors are also very important. A major factor is marriage at a younger age (≤ 20 years): understand this by remembering that women who marry at a younger age are at increased risk of having cervical issues, and have less health seeking behaviors. Moreover, this difference in accessing institutions brings in disparity between rural and urban area; rural women may have even less access to AMCGH which provides a specialised diagnostic services such as histopathology and colposcopy. Designed to create awareness in a community fashion, the importance of institutions such as AMCGH is critical as it allows for centres that not only care for patients but serve as a beacon for awareness in the community. Currently, screening is "opportunistic" - that is, only people who have symptoms are offered screening - therefore, effectiveness of the early detection is complicated (Crosby et al., 2022).

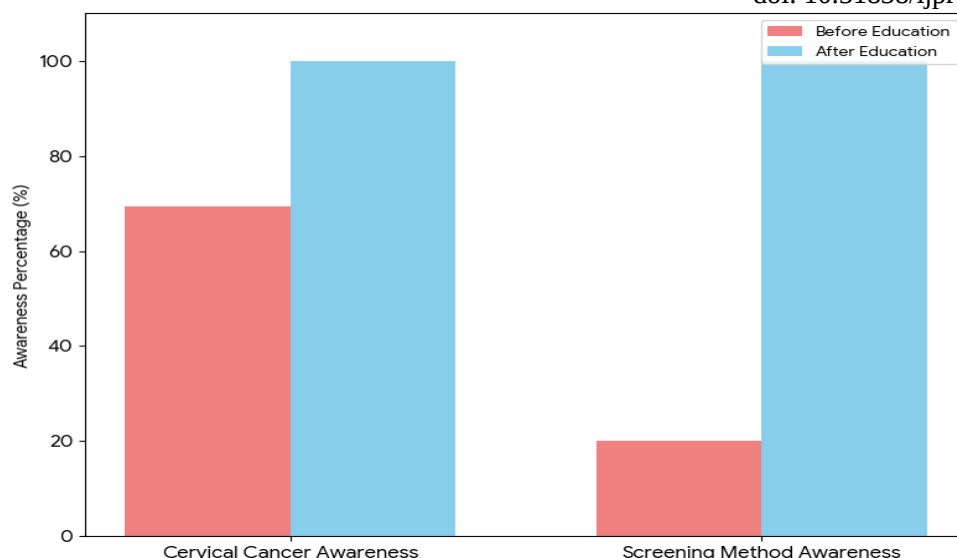


Figure 2: Impact of Structured Health Education on Awareness

Properly targeting education is key to change. Structured health education can result in impressive awareness changes as has been demonstrated in studies. Prior to intense health education, baseline scores were 69.5% for 100% awareness of cervical cancer, and 20% for screening methods. A multifaceted approach is needed to close the "knowledge-practice" gap, such as media campaigns, engaging with community health care providers and establishing a population-based approach for screening of women aged 30-60. By prioritizing HPV Vaccination, routine screening

and tackling problems such as early marriage, Healthcare systems in Bangladesh can change from treating the diseases at an advanced stage to preventing and intervening early, and thus, give it a chance of cure (Haseen et al., 2023). Institutional level (AMCGH) and community level interventions that combat these inequalities will be a key part of a sustainable approach to reducing mortality and morbidity from this preventable disease.

Cancer Registry Report in Ahsania Mission Cancer & General Hospital (AMCGH)

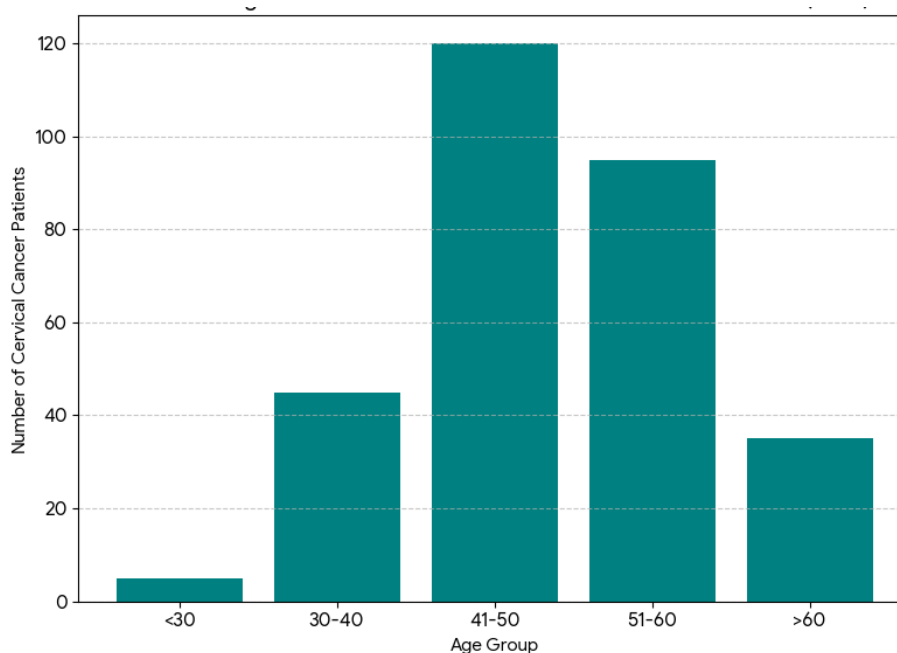


Figure 3: Illustrative Age Distribution of Cervical Cancer Patients at AMCGH (2023)

The future upcoming Hospital Based Cancer Registry Report (2023) published by Ahsania

Mission Cancer & General Hospital (AMCGH) will help to understand facts in detail about cervical

cancer that is happening in Bangladesh. However this report does not focus on the lack of awareness (up to 75% of reproductive age women who have no basic knowledge of cervical cancer), but instead the reality of clinical practice - quantitative data on the real numbers of cases and distribution by demographics among those women who make it through the system and arrive at a tertiary centre. ICD-10 coding system and electronic database which assisted in systematic organization of patients' data facilitated the identification of the specific burden in the hospital population among patients of cancer cervix. Transmission on the practice of this registry is an essential denominator to screen knowledge and preventive practices among practitioners and researchers. It provides a measurement of the number of women who present with cervical malignancy and this can help to inform analyses of the current awareness or screening uptake and its clinical implications. The report in conjunction with the registry demographic information like information on residence of women attending AMCGH, age stratified information etc. provides a profile of women attending AMCGH at present for treatment of cervical cancer.

The registry value also can provide a measure to assess present effective community based screening programs. If, as would be hoped, there are effective screening programmes in place, and the number of cases is relatively high in 2023, indicating that most of the cases are caught early, then this will be reflected in the numbers. This information is of great value in assessing if the difference in the uptake of any preventative intervention actually corresponds with the patients seen at AMCGH in the clinical staging system. In the end, the registry report is epidemiological data to counterbalance what are qualitative issues over the seemingly abstract concepts of "awareness" and "knowledge". It shows the concealed issue of

access to care by reproductive-age females, and the extent to which it impacts their health status. AMCGH provides an evidence base annually, quantitatively describing patterns in cancer in each particular area, which is crucial for defining the strategies that are required to strengthen the early detection. It originates from the hospital environment and can be used as a feedback to the health system and as a reflection of the direct consequences and implications of the lack of current knowledge on disease burden and the statistics required when developing more robust and nationwide preventive and screening interventions (Eckelman & Sherman, 2016; Mullings et al., 2019; Younis et al., 2025).

Screening Knowledge and Preventive Practices among Reproductive-Age Women

Cervical cancer is a one of the most serious public health problems in Bangladesh, and second most prevalent cancer among women. The facilities of the diagnostic centers are available today at the tertiary level hospitals e.g. Ahsania Mission Cancer & General Hospital (AMCGH), but the problem is that it has not yet been reduced as far back as the top of the funnel because of the late presentation. This stems from the vast lack of knowledge--as one of the key factors. Data shows that almost three-quarters of girls and women across the nation who can conceive have only a "limited knowledge" of cervical cancer, HPV and why screening is important. Almost three-quarters of eligible girls and women nationwide have "limited knowledge" about cervical cancer, HPV and the need for screening, says data (Bilalaga et al., 2025; Stephens et al., 2023). This is widespread and highlighted by significant socio-economic differences, with women under 30,000 BDT in household income, and no tertiary education showing poorer health-seeking behaviours than the other groups in the population.

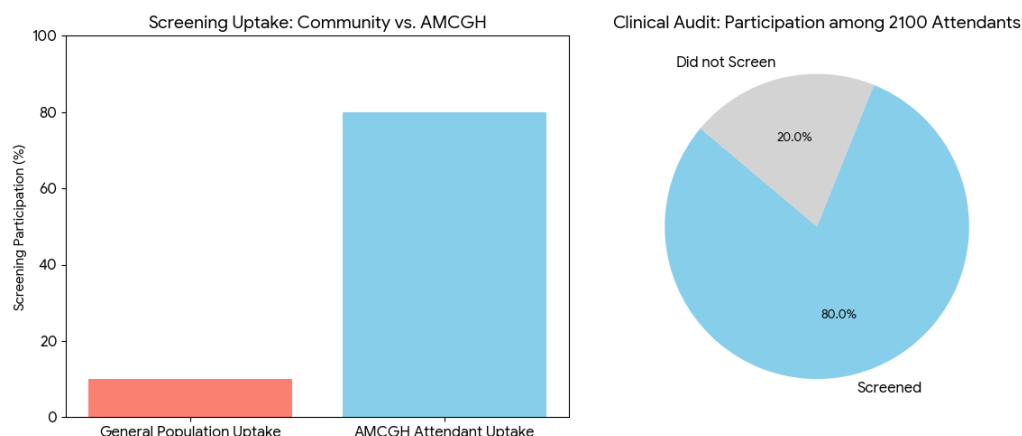


Figure 4: Screening Uptake Comparison and Clinical Audit Participation

Implementing preventive activities is still low, and average uptake for these routine cancer screenings is typically between 4 - 10% eligible women (Ginsburg et al., 2023; Um & Sopheab, 2025). There is no systematic and systematic screening infrastructure in the country and a big proportion of screening is done opportunistically. But the experience of recent programs at AMCGH shows that clinical

environments could be utilized to help correct these deficits. A so-called opportunistic approach (using the hospital attendants worked with to help with screening) when people visit the hospital on behalf of family members was also shown to result in high rates of screening uptake (Khaliq et al., 2015; Sivaram et al., 2018).

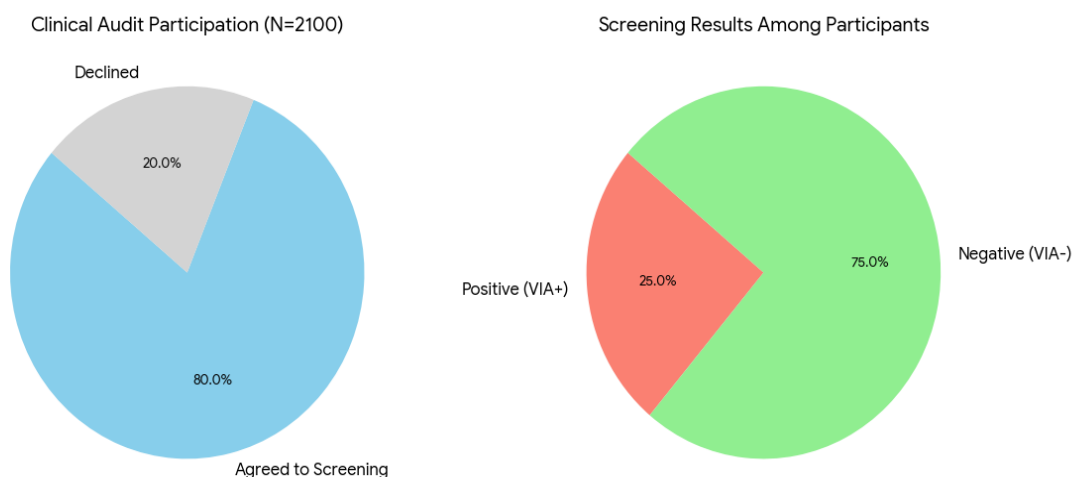


Figure 5: Clinical Audit Results From 2,100 Women Attendants

The clinical audit that caught attention was where VIA (Visual Inspection with Acetic Acid) screening was carried out in 2100 women attendants and the services offered are free of cost. Results were impressive: overall, most of those asked (80%) agreed to the procedure and this is well above benchmarks for the level of community-based screening. This group of women, 25 percent had a positive result, and were then immediately referred for a colposcopy and treatment of an early stage lesion; otherwise "unscreened" based on this

alone. Whether this high participation rate is due to people being opposed to screening or not is not necessarily a good indicator of resistance, as the latter is more likely to be a challenge if it is not readily available to be screened and made aware in Bangladesh (Azim et al., 2025; Chowdhury et al., 2024). In addition, the waiting time of the hospital visits, a not so often used resource, was showed to be relevant and of great importance. AMCGH can implement preventative health screening as part of the care continuum and

identify patterns and draw conclusions about the health needs (met or not met) of patient groups and required diagnostic services (Ferrante et al., 2010). The success of this opportunistic model, points out the potential for change of the existing paradigm of cancer control in Bangladesh. Cost effective and clinically viable to shift from disease management to disease prevention. The data shows that although certain factors such as early marriage and living in rural households are still considered to be risk factors, the targeted placement of screening services, along with educational campaigns, can be effective in changing the cervical cancer prevention landscape (Zhang et al., 2020; Zhetpisbayeva et al., 2023). Mortality and morbidity due to this preventable condition in the country can be reduced by implementing an institutional screening programme along with community liaison.

CONCLUSIONS AND RECOMMENDATIONS

Taking cognizance of epidemiological data of the country and institutional data of Ahsania Mission Cancer & General Hospital (AMCGH), it can be said that the present situation of cervical cancer in the country is very complicated where one hand there are health issues at the national level, while the other hand there are opportunities for intervention at the institutional level. The message is clear: Cervical cancer cannot only be considered a clinical tragedy but also a public health failure with a significant amount of lack of awareness, very low uptake of screening and a very passive instead of proactive approach to health care (Argaheni et al., 2020; Ginsburg et al., 2023). It's not the biology: half the population of this target group is unaware of the disease; it's the lack of basic information on the disease in 75% of the target group and the lack of much education and structure to help people to navigate the health system. This is a fault, because, too many women have to go to high education to come upon an opportunistic diagnosis, one before they experience symptoms (Cerdeira-Flores et al., 2020; Ginsburg et al., 2023). Hence, a level of activity at late-stage symptomatic presentation (including AMCGH) of similar proportions is to be expected until the important issues of effective population based primary and secondary prevention measures are addressed. Evidence from these clinical data would suggest that unless there is a shift in focus to a more longterm approach to early stage care, the

tertiary institutions are likely to be overwhelmed by patients who seek tertiary, more resourcing, more complex, less successful curative care to the detriment of care of the manageable early staged patients (Lawler et al., 2022; Shulman et al., 2009).

This requires a multi-dimensional approach and institutionalisation of knowledge and access to screening. The basic suggestion is to extend the studied opportunistic screening (hospital based) which has been validated in AMCGH. The good response of 80% to screening by patient attendants is an example of the traditional "lack of time" or "inconvenience" issue being neutralized, when screening is offered as part and parcel of the current hospital care. Therefore expanding and decentralizing it along with strict policy that all female cancer patients and attendants (under 60 years of age and above 30) should be screened periodically through VIA or HPV test, if any, should be implemented in all tertiary cancer facilities of Bangladesh (Ahmed et al., 2008; Nessa et al., 2020). This should be thought of as a standard of care and not just a place of death, as is the norm with vital sign monitoring, a hospital should be seen as a preventative environment and hub.

Public health messages should take into account the socioeconomic determinants of health in the broader context. As there is a strong association between higher education and higher income and higher screening uptake, awareness programmes should be tailored to the needs of low income, rural and lower education communities with higher levels of late stage screening (Hvidberg et al., 2014; Murfin et al., 2019). These campaigns should go beyond information and build awareness and understanding of the screening process, include a clear reference to cultural taboos surrounding cervical problems, and have a strong link between the early marriage (a significant risk factor in the Bangladeshi context) and long-term care of the cervix. It is possible to reach these target groups with these messages via already-established local and community structures, including NGOs, local religious leaders and rural health workers, who can play a major role in linking tertiary centres with the target groups (Dunyo et al., 2018).

In addition, the cancer information should be readily available and standardized in all the national health setups. Adopting the model of AMCGH's work throughout the country is desirable since they use SPSS and ICD-10 in

patient management (Mahmoud et al., 2021). Without accurate, timely information, public health policies are not going to be successful. There is a suppository game going on in terms of distribution of resources and no single database on a National scale. The Government can use these pan-national data to identify the 'hotspots' of cervical cancer in the country, and mobilise the mobile screenings to the hot spots (Nessa et al., 2024). This evidence-based strategy would present an opportunity to shift the focus from burden to a 'control' strategy, from hospital based to community based approach.

Last, policy-makers must seriously take into account formal integration of HPV vaccination for youth in the long term, in addition to workforce scaling up for VIA. There is a need for additional training at the mid-level to rejuvenate the skills of nurses and paramedics—who are also community health workers—in how to perform VIA as well as recognise early cervical cancer (Obol et al., 2020). Bangladesh can't simply sideline the oncologists or gynecologists and hand over the task of screening to them and continue it on a sustainable and more extensive scale. Skills, training and context of screening and referral of frontline health workers could be capitalized on to achieve system-wide roll-out of coverage required to reduce incidence rate in the next decade (Joshi et al., 2014).

We need a new way of doing cervical cancer in Europe and that is "piecemeal" approaches that need to give up. Through the screening process AMCGH has helped build, combined with a strong will to take this initiative at the national level to use data to support advocacy and decentralized workforce training, the ingredients for ensuring this are in place: Bangladesh will not have to say in the future that women die of cervical cancer. The facts indicate that there are tools that exist to its prevention — the problem is delivery (Nessa et al., 2025). The recommendations above, if implemented, would save thousands of lives a year and show that bridging the gap between tertiary cancer (oncology) research and the public health practice being done at community level is possible; it is possible to provide equity-based, life-saving cancer care for all women of reproductive age (Chávez-MacGregor & Jackson, 2025; Ginsburg et al., 2023). Lastly in Bangladesh context, way of "reactive oncology" should not be possible anymore anymore, rather "Universal, standardized and accessible

approach to prevention" is the starting point of the future of health (Ringborg et al., 2023).

Funding

This study can be funded by national, institutional and international health research institutions. Since the study emphasizes the cancer control at a national level, there can be sources of primary funds from the Ministry of Health and Family Welfare (MoHFW) and the Directorate general of health services (DGHS) in the country. Additional funding in the form of extra support from the Bangladesh Medical Research Council (BMRC), a founder of public health and epidemiological research, may be requested. Funding organisations outside of the country may also be interested in supporting this activity; these include the World Health Organisation (WHO), Gavi, Vaccine Alliance and the International Agency for Research on Cancer (IARC), each of which have a focus on HPV related cervical cancer prevention. Furthermore, cancer-related organizations in other countries, e.g., the Union for International Cancer Control (UICC), can be a source of technical and/or financial support. In this regard, data collection and implementation can also be funded in collaboration with Ahsania Mission Cancer & General Hospital.

Conflict of Interest

There is no conflict of interest with this study. The investigation was self-conducted and there were no financial, commercial or personal relationships that could have been construed to have an influence in the design, collection, analysis, interpretation or reporting of the results. Funding provided neither from any private or public organisation interested in products/services for cervical cancer screening, nor from pharmaceutical companies or manufacturers of diagnostic products. This study was conducted in partnership with Ahsania Mission Cancer & General Hospital (AMCGH) only for academic and public health study purposes. The authors are fully responsible for the integrity of the research and objectivity. Conclusions made are only based on the empirical data, and established scientific methods used so that transparency and objectivity can be maintained for in the study process.

Ethical Approval

This study was approved by the Institutional Review Board (IRB) of Ahsania Mission Cancer & General Hospital, (AMCGH), and Dhaka

before starting the data collection. This study was conducted in compliance with the moral principles of the institutional and national research committee based on protection of the rights of the subject of the study according to the Helsinki Declaration of 1964, as amended. After proper explanation of the study purpose, procedure, the possibility of risk, and benefit to all the participants, written informed consent was obtained from all of them. No participation was mandatory and at any time respondents had the option to stop their participation without any consequences. Confidentiality and anonymity of the participants was safeguarded throughout the study and in the final report with the help of coded identifiers which could not be traced or identified any individual participant. Only for academic or research purposes data were used.

Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author without restriction upon reasonable request, following the ethical and institutional clearance. Due to the sensitive nature of patient related information, the raw data set were not made public due to confidentiality agreement of the Ahsania Mission Cancer & General Hospital (AMCGH). For academic and non-commercial research, however, aggregated and anonymised data and summaries used for analysis are available for research request within the framework of respect for ethical considerations and the institution's data protection policies. Widely agreed upon standard precautions were taken to ensure confidentiality and integrity of all data collected, processed and also stored during the study. The researchers who wish to access the data for replication or further analysis are encouraged to request such access from the corresponding author who will make such access possible according to applicable regulations and institutional review board requirement.

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