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Original Article

Cervical Cancer Cognizance and Service Delivery Practices Among Community Health Nurses in the Krobo Enclave, Eastern Region of Ghana: A Cross-Sectional Study

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ABSTRACT

Background: Cervical cancer remains a major public health challenge globally and disproportionately affects women in low- and middle-income countries, including Ghana. Community health nurses (CHNs) play a critical role in promoting cervical cancer prevention, education, screening advocacy, and referral services within rural and underserved communities. However, limited evidence exists regarding their cognizance of cervical cancer and related service delivery practices within community-based healthcare settings in Ghana. This study assessed cervical cancer cognizance and service delivery practices among community health nurses within the Krobo Enclave in the Eastern Region of Ghana.

Methods: A quantitative cross-sectional descriptive study was conducted among community health nurses within the Upper Manya Krobo, Lower Manya Krobo, and Yilo Krobo municipalities between January and April 2020. Using a census sampling approach, all 177 eligible community health nurses were targeted for participation. Data were collected using a structured questionnaire assessing socio-demographic characteristics, general awareness, knowledge, and cervical cancer-related service delivery practices. Descriptive statistics, Chi-square analysis, logistic regression, and Spearman's rank correlation analysis were performed using STATA version 14.

Results: A total of 145 community health nurses participated in the study, yielding a response rate of 81.9%. Most respondents demonstrated low general awareness regarding cervical cancer (62.8%), although moderate overall knowledge levels were observed, with 55.9% demonstrating high knowledge scores. Knowledge regarding cervical cancer risk factors, prevention, symptoms, and treatment was generally satisfactory; however, knowledge and practical experience related to screening procedures such as Visual Inspection with Acetic Acid (VIA) and Pap smear testing were limited. Cervical cancer service delivery practices were generally poor, with 67.6% of respondents demonstrating low service delivery practice scores. Educational level was significantly associated with general awareness ($p = 0.015$). A weak but statistically significant positive relationship was observed between cervical cancer cognizance and service delivery practices ($r = 0.20$, $p = 0.015$).

Conclusion: Although community health nurses demonstrated moderate knowledge regarding cervical cancer, general awareness and service delivery practices were suboptimal. The findings suggest that knowledge alone may not translate into effective cervical cancer prevention practices within community healthcare settings. Regular in-service training, practical screening workshops, and strengthened integration of cervical cancer prevention services within the Community-based Health Planning and Services (CHPS) system are needed to improve community-level cervical cancer prevention and early detection efforts in Ghana.

Keywords: Ghana Cervical Cancer, Community Health Nurses, Cervical Cancer Screening, Service Delivery Practices, Ghana

Introduction

Cervical cancer remains a major global public health challenge and one of the leading causes of cancer-related morbidity and mortality among women worldwide. Despite being largely preventable through vaccination, screening, and early treatment, the disease disproportionately affects women in low- and middle-income countries (LMICs), where access to preventive healthcare services remains limited[1]. According to the World Health Organization (WHO), more than 85% of cervical cancer-related deaths occur in developing regions of the world (WHO, 2019)[2]. The disease continues to impose substantial social, economic, and healthcare burdens globally.

The burden of cervical cancer is particularly severe in Sub-Saharan Africa, where inadequate screening programs, limited public awareness, delayed diagnosis, and weak healthcare infrastructure contribute to poor outcomes. Aweke et al. (2017) reported that approximately 34.8 new cervical cancer cases occur per 100,000 women annually in Sub-Saharan Africa[3]. In Ghana, cervical cancer remains one of the leading cancers among women, with approximately 3,052 new cases reported annually [4]. The crude incidence rate has been estimated at 24.3 per 100,000 women per year [5]. Although global initiatives toward cervical cancer elimination have intensified, major barriers to effective prevention and control still exist in many developing countries, including Ghana.

Persistent infection with high-risk Human Papillomavirus (HPV), particularly HPV types 16 and 18, is recognized as the principal cause of cervical cancer[6]. Nevertheless, cervical cancer is highly preventable through HPV vaccination, early screening, and timely treatment of precancerous lesions. Screening approaches such as Papanicolaou (Pap) smear testing, Visual Inspection with Acetic Acid (VIA), and HPV testing have significantly reduced cervical cancer incidence and mortality in many high-income countries. However, access to these preventive interventions remains limited in many low-resource settings because of inadequate healthcare infrastructure, shortage of trained personnel, financial barriers, and insufficient public awareness [7]. In Ghana, national strategies aimed at improving HPV vaccination, cervical cancer awareness, and screening integration within reproductive healthcare services have been developed by the Ministry of Health, although implementation challenges persist[8].

Community health nurses (CHNs) play an important role in Ghana's primary healthcare system and are strategically positioned to support cervical cancer prevention and control activities within communities. As frontline healthcare providers within the Community-based Health Planning and Services (CHPS) system, CHNs are responsible for health education, disease prevention, maternal and reproductive healthcare, counseling, referrals, and community outreach services. Their close interaction with women at the community level places them in a unique position to promote cervical cancer awareness, encourage screening uptake, identify suspected cases early, and facilitate timely referrals for treatment[9].

Although awareness and knowledge of cervical cancer among healthcare workers are important determinants of preventive healthcare delivery, evidence suggests that knowledge alone does not always translate into effective service delivery practices. Healthcare workers may possess adequate theoretical knowledge of cervical cancer while demonstrating limited participation in screening promotion, counseling, referral services, and preventive interventions. Inadequate professional training, lack of practical screening skills, poor institutional support, and insufficient continuing education opportunities may contribute to poor implementation of cervical cancer-related services within primary healthcare settings. Existing studies in Ghana have largely focused on cervical cancer awareness and screening practices among the general population and urban healthcare workers, with limited attention given to community health nurses working within rural and peri-urban settings. Furthermore, few studies have simultaneously examined both cervical cancer cognizance and service delivery practices among frontline community healthcare providers[10].

The conceptual framework guiding this study is presented in Figure 1. The framework illustrates the hypothesized relationship between socio-demographic characteristics, cervical cancer cognizance, and service delivery practices among community health nurses.

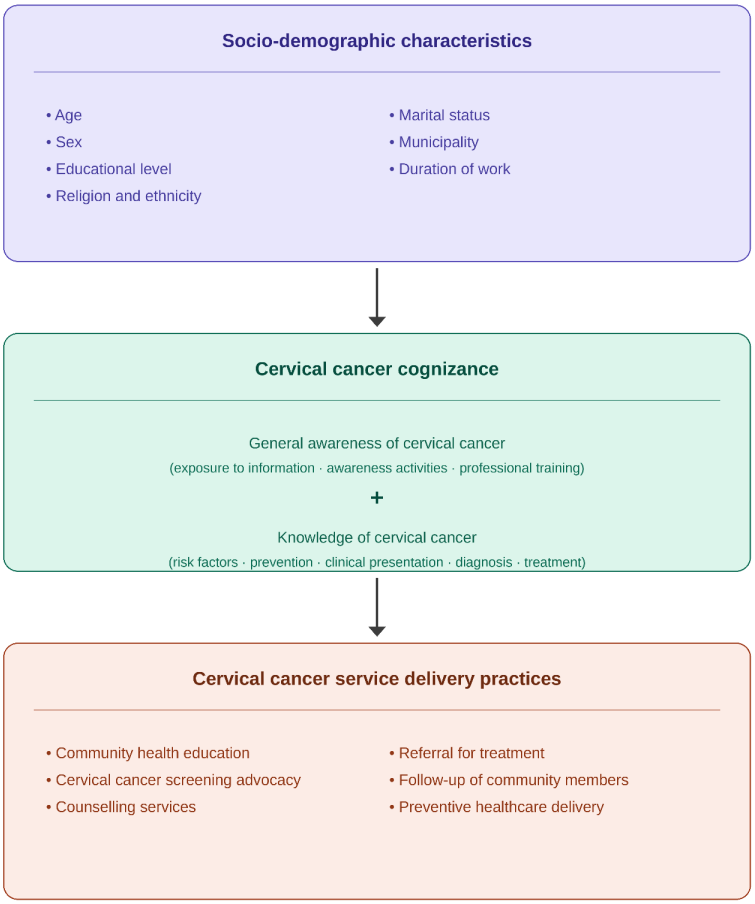

Figure 1. Conceptual framework of cervical cancer cognizance and service delivery practices among community health nurses

Caption: Conceptual framework illustrating the hypothesised relationships between socio-demographic characteristics, cervical cancer cognizance, and service delivery practices among community health nurses in the Krobo Enclave, Eastern Region of Ghana. Socio-demographic factors, including age, sex, educational level, religion, ethnicity, marital status, municipality, and duration of work, are hypothesised to influence levels of cervical cancer cognizance, comprising general awareness and knowledge of cervical cancer. Cervical cancer cognizance is further hypothesised to influence service delivery practices, including community health education, screening advocacy, counselling, referral for treatment, follow-up, and preventive healthcare delivery.

The relevance of community health nurse readiness has, if anything, increased since these data were collected. In 2025, Ghana launched its first nationwide HPV vaccination campaign, targeting girls aged 9–14 years through a programme delivered partly through the CHPS system, in which these nurses work[8,11]. The success of such cervical cancer elimination efforts depends substantially on the preparedness of frontline community health nurses to provide complementary education, screening promotion, and referral, underscoring the continued relevance of baseline evidence on their cognizance and service delivery. It is against this background that this study assessed the cognizance of cervical cancer and its service delivery practices among community health nurses within the Krobo Enclave in the Eastern Region of Ghana. Specifically, the study assessed the general awareness and knowledge of cervical cancer among CHNs, evaluated their cervical cancer-related service delivery practices, and examined the relationship between cognizance and service delivery practices.

Methods

Study Design

This study employed a quantitative cross-sectional descriptive design to assess the cognizance of cervical cancer and its service delivery practices among community health nurses (CHNs) within the Krobo Enclave in the Eastern Region of Ghana. The cross-sectional design enabled the collection of data from participants at a single point in time in order to evaluate

levels of awareness, knowledge, and cervical cancer-related service delivery practices among CHNs. The quantitative approach was considered appropriate because it facilitated objective measurement and statistical analysis of the relationship between cervical cancer cognizance and service delivery practices among the study population. Data collection was conducted between January 2020 and April 2020.

Study Setting

The study was conducted within the Krobo Enclave in the Eastern Region of Ghana, comprising the Upper Manya Krobo Municipality, Lower Manya Krobo Municipality, and Yilo Krobo Municipality. These municipalities operate under the Ghana Health Service and implement the Community-based Health Planning and Services (CHPS) system to deliver primary healthcare services to predominantly rural and peri-urban populations. Community health nurses within these municipalities play important roles in disease prevention, maternal and reproductive healthcare, health education, counseling, referrals, and community outreach services.

Records obtained from the Municipal Health Directorates indicated that there were 177 community health nurses working within the study area at the time of the study. Of these, 46 were located in Upper Manya Krobo, 68 in Lower Manya Krobo, and 63 in Yilo Krobo Municipality.

Study Population

The study population consisted of all community health nurses working within the Upper Manya Krobo, Lower Manya Krobo, and Yilo Krobo Municipalities during the study period. Community health nurses who were officially employed within the selected municipalities and available during the period of data collection were eligible to participate in the study. Nurses who had resigned or were on extended leave throughout the entire data-collection period could not be enrolled and are reflected in the study's non-response.

Sample Size and Sampling Technique

A census sampling approach was adopted for this study. Given the relatively small and manageable population size, all 177 eligible community health nurses within the three municipalities were targeted for participation. The use of the census method minimized sampling error and enhanced the representativeness of the findings within the study setting. Of the 177 community health nurses targeted, 145 completed and returned the questionnaire, yielding a response rate of 81.9%. The remaining 32 nurses (18.1%) did not participate because they were on extended leave during the data-collection period or had resigned and were no longer attached to their facilities; non-participation, therefore, reflected administrative unavailability rather than refusal, reducing the likelihood of non-response bias.

Data Collection Instrument and Procedure

Data were collected using a structured questionnaire developed by the researchers for this study, informed by the cervical cancer knowledge, attitude, and practice literature in comparable Ghanaian settings [12,13], rather than being adapted from a single previously validated instrument, an approach consistent with similar published studies in this research area. The questionnaire consisted of both open-ended and closed-ended items and was organized into four sections.

Section A elicited information on respondents' socio-demographic and professional characteristics (12 items, Q1–Q12), including age, sex, marital status, ethnicity, religion, educational level, municipality, and duration of work. Section B assessed cognizance of cervical cancer (12 items, Q13–Q24), comprising both general-awareness and knowledge items covering risk factors, prevention, clinical presentation, diagnosis, and treatment, several of which contained multiple sub-statements; awareness and knowledge items were scored as separate subscales and combined into an overall cognizance score. Section C assessed sources of cervical cancer information (4 items, Q25–Q28). Section D assessed cervical cancer service delivery practices (3 multi-part items, Q29–Q31) using binary Yes/No response options.

The questionnaire was interviewer-administered. A trained research assistant read each item aloud to the respondent in a private setting and recorded the responses directly onto the questionnaire. Each administration lasted approximately 20 minutes. Before data collection, all research assistants underwent a structured training session covering the study objectives, the intent and meaning of each questionnaire item, standardized procedures for reading and recording responses, and the ethical handling of participant information. A written data-collection guide was used to ensure uniform administration across the three municipalities and to minimize inter-rater variability.

Content validity of the instrument was supported through review against the cervical cancer knowledge, attitude, and practice literature from comparable Ghanaian settings and through expert assessment to reflect the local healthcare context and study objectives. Face validity was further assessed during pretesting in the Asuogyaman District, where the instrument was evaluated for clarity, relevance, appropriateness of wording, question flow, and respondent comprehension. Items identified as

ambiguous were rephrased, redundant items were removed, and minor modifications were made before commencement of the main study. It is acknowledged that formal internal consistency testing, such as Cronbach's alpha computation, was not conducted following instrument modification, which represents a methodological limitation. Future studies employing similar instruments should incorporate reliability analyses to strengthen psychometric rigour.

Pretesting of the Instrument

The questionnaire was pretested in the Asuogyaman District of the Eastern Region of Ghana, which shares similar socio-demographic and healthcare delivery characteristics with the study area. The pretesting process was undertaken to assess clarity, relevance, appropriateness of wording, flow of questions, respondent understanding, and average completion time.

Because the Asuogyaman District lies outside the three study municipalities (Upper Manya Krobo, Lower Manya Krobo, and Yilo Krobo), the small number of community health nurses who took part in the pretest were not part of the study population and were not included in the final sample (n = 145). On the basis of the pretest feedback, items that respondents found ambiguous or unclear were rephrased to improve clarity, and redundant items were removed to reduce response burden, before commencement of the main study.

Study Variables and Measurements

The primary outcome variable for the study was cervical cancer service delivery practice among community health nurses. Independent variables included socio-demographic characteristics and cervical cancer cognizance-related measures.

Socio-demographic variables included age, sex, ethnicity, religion, marital status, municipality, educational level, and duration of work. Cervical cancer cognizance-related variables included general awareness of cervical cancer, knowledge of cervical cancer risk factors, prevention, clinical presentation, diagnosis, treatment, and overall cognizance.

General awareness referred to respondents' exposure to cervical cancer-related information and awareness activities. Knowledge referred to respondents' factual understanding of cervical cancer risk factors, prevention methods, symptoms, diagnosis, and treatment. Cognizance was conceptualized as the combined measure of general awareness and knowledge of cervical cancer among respondents.

Service delivery practices referred to respondents' engagement in cervical cancer-related preventive and community-based healthcare activities, including screening advocacy, counseling, referrals, follow-up activities, and health education within their communities. Service delivery practices (Section D) were measured using binary Yes/No items and combined into a single cumulative service delivery practice score (categorized as high or low using the mean cut-off of 8.0 ± 1.2) rather than analyzed as separate activity scores. Items used a lifetime ("ever") reference frame; a bounded recall period was not applied, which is acknowledged as a limitation.

Scoring and Categorization of Variables

Responses to questions assessing general awareness, knowledge, cognizance, and service delivery practices were scored using a numeric scoring system. Correct responses were coded as "1," whereas incorrect responses and "don't know" responses were coded as "0." Scores for individual items were summed to generate composite scores for general awareness, knowledge, cognizance, and service delivery practices.

General awareness scores were generated from items assessing exposure to cervical cancer information and awareness-related activities. Knowledge scores were derived from questions assessing cervical cancer risk factors, prevention strategies, clinical presentation, diagnosis, and treatment. Service delivery practice scores were generated from items assessing respondents' participation in cervical cancer education, screening promotion, counseling, referral practices, follow-up services, and preventive healthcare delivery.

To facilitate interpretation and regression analysis, composite scores were categorized into binary outcomes of "high" and "low" using mean score cut-off points. Respondents scoring above the mean score for a particular construct were categorized as having high levels, whereas those scoring at or below the mean score were categorized as having low levels.

The mean cut-off scores used in this study were 6.0 ± 1.3 for general awareness, 27.0 ± 5.6 for total knowledge, and 8.0 ± 1.2 for service delivery practices. Overall cognizance scores were generated by combining general awareness and knowledge scores.

Overall cognizance of cervical cancer was derived by summing respondents' general awareness scores and total knowledge scores into a single composite score. No differential weighting was applied to either component; each item within both subscales contributed equally to the composite cognizance score. This approach was considered appropriate because both awareness and knowledge represent complementary dimensions of cervical cancer cognizance and were measured on comparable numeric scales. The composite cognizance score was subsequently used in Spearman's rank correlation analysis to examine its relationship with cervical cancer service delivery practices. Mean cut-off scores were

used to categorize respondents into 'high' and 'low' cognizance groups to facilitate binary logistic regression analysis. The use of mean-based cut-offs is consistent with approaches adopted in comparable studies examining health knowledge and practice outcomes in similar low-resource settings

Data Analysis

Data were entered, cleaned, and analyzed using STATA version 14 (StataCorp LP, College Station, Texas, USA) and Microsoft Excel. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize respondents' socio-demographic characteristics, levels of awareness, knowledge, cognizance, and service delivery practices.

Bivariate analyses were performed to examine associations between socio-demographic characteristics and cervical cancer awareness, knowledge, and service delivery practices. Pearson's Chi-square test and Fisher's exact test were used where appropriate, depending on cell frequencies and fulfillment of statistical assumptions.

Multivariable logistic regression analyses were subsequently conducted to identify factors independently associated with cervical cancer service delivery practices and general awareness after adjusting for potential confounding variables, including age, sex, marital status, educational level, municipality, religion, and duration of work. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported.

To assess the relationship between cervical cancer cognizance and service delivery practices, Spearman's rank correlation analysis was performed. This non-parametric test was considered appropriate because the composite variables were ranked and not perfectly normally distributed. Correlation coefficients were used to determine the strength and direction of the association between cognizance and cervical cancer service delivery practices.

All statistical analyses were conducted at a 95% confidence level, and statistical significance was set at a p-value of less than 0.05.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Board of Ensign College of Public Health (Reference: ENSIGN/IRB/M6, approved 14 December 2020). Permission to conduct the study was subsequently obtained from the Eastern Regional Health Directorate and the Municipal Health Directorates of Upper Manya Krobo, Lower Manya Krobo, and Yilo Krobo.

The purpose of the study was verbally explained to participants, after which written consent (signature or thumbprint) was obtained from all participants before data collection. Participation in the study was entirely voluntary, and respondents were informed of their right to withdraw from the study at any stage without any consequences. Confidentiality and anonymity of participants were maintained throughout the study. No personal identifiers were included in the analysis or reporting of findings, and all information obtained during the study was treated with strict confidentiality. No financial compensation was provided to participants.

Results

Socio-Demographic Characteristics of Respondents

A total of 177 questionnaires were distributed among community health nurses across the Upper Manya Krobo, Lower Manya Krobo, and Yilo Krobo municipalities, of which 145 were completed and returned, yielding a response rate of 81.9%. The majority of respondents were females (79.3%), while males accounted for 20.7% of the study population. Most respondents were within the younger age categories, with 48.3% aged 20–29 years and 47.6% aged 30–39 years. Christianity was the predominant religion among participants (95.2%).

In terms of ethnicity, Akan respondents constituted the largest proportion (42.8%), followed by Dangme (26.9%) and Ewe (21.4%). Most respondents possessed certificate-level qualifications (73.8%), whereas 20.7% had diploma qualifications and only 4.1% held degree qualifications. Regarding work experience, approximately two-thirds (63.5%) had worked as community health nurses for less than five years. Respondents were fairly distributed across the three municipalities, with 38.6% from Lower Manya Krobo, 36.6% from Yilo Krobo, and 24.8% from Upper Manya Krobo.

Table 1. Socio-Demographic Characteristics of Community Health Nurses

Variable	Category	Frequency (n=145)	Percentage (%)
Age	20–29 years	71	48.3
	30–39 years	69	47.6
	40–49 years	2	1.4

	50–59 years	3	2.1
Sex	Female	115	79.3
	Male	30	20.7
Religion	Christianity	138	95.2
	Islam	5	3.5
	Other	2	1.4
Educational level	Certificate	107	73.8
	Diploma	30	20.7
	Advanced diploma	2	1.4
	Degree	6	4.1
Work duration	<5 years	92	63.5
	5–10 years	43	29.7
	11–15 years	7	4.8
	≥16 years	3	2.1
Municipality	Upper Manya Krobo	36	24.8
	Lower Manya Krobo	56	38.6
	Yilo Krobo	53	36.6

General Awareness of Cervical Cancer

Overall, respondents demonstrated relatively low levels of general awareness regarding cervical cancer. Using the established mean cut-off score of 6.0 ± 1.3, approximately 62.8% of respondents were categorized as having low general awareness, whereas 37.2% demonstrated high awareness levels.

Almost all respondents (99.3%) had heard about cervical cancer. However, practical exposure and professional training related to cervical cancer remained limited. Most respondents (86.2%) had never encountered a cervical cancer patient before, and nearly all participants (95.9%) had never attended a workshop or seminar on cervical cancer. Informal community-based sources such as churches, relatives, friends, and public gatherings constituted the major source of information (61.1%), followed by school-based education (26.4%) and mass media (12.5%).

Awareness regarding global cervical cancer initiatives was also limited. Less than half of respondents correctly identified January as Cervical Cancer Awareness Month, while many participants were unaware of the global ranking of cervical cancer among causes of cancer-related mortality among women.

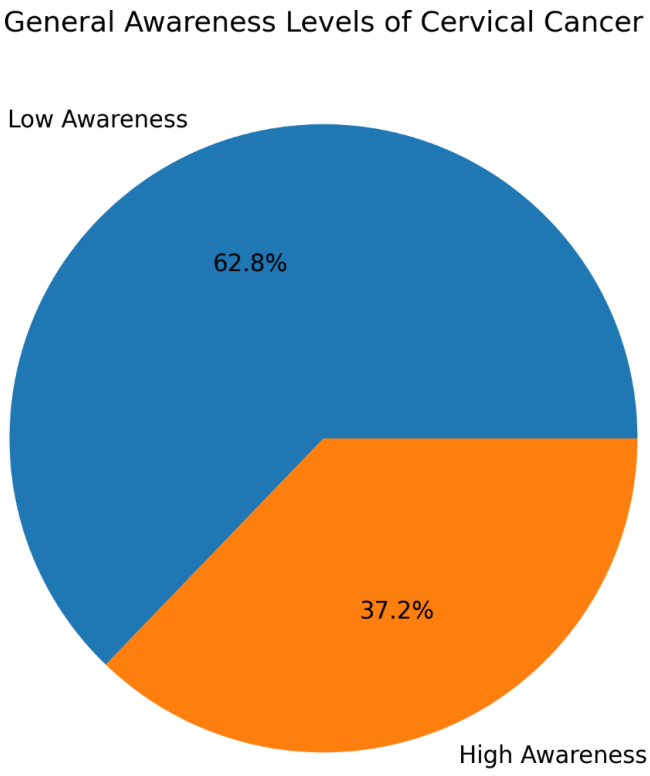

Figure 2. General Awareness Levels of Cervical Cancer Among Community Health Nurses.

Distribution of respondents according to general awareness levels of cervical cancer. Most respondents demonstrated low general awareness levels despite having heard about cervical cancer.

Table 2. Summary of General Awareness Indicators on Cervical Cancer

Variable	Response Category	Frequency	Percentage (%)
Heard about cervical cancer	Yes	144	99.3
Ever seen a cervical cancer patient	Yes	20	13.8
Ever attended a cervical cancer workshop/seminar	Yes	6	4.1
Correctly identified awareness month	Yes	55	37.9
Main source of information	Informal/community sources	88	61.1
	School	38	26.4
	Mass media	18	12.5

Knowledge of Cervical Cancer

Respondents demonstrated moderate overall knowledge regarding cervical cancer despite relatively low general awareness levels. Using the mean cut-off score of 27.0 ± 5.6, approximately 55.9% of respondents demonstrated high total knowledge, whereas 44.1% demonstrated low knowledge levels.

Knowledge levels varied across the assessed domains. Knowledge regarding cervical cancer risk factors was relatively low, with only 40.0% of respondents demonstrating high scores. In contrast, higher knowledge levels were observed for prevention (53.1%), clinical presentation (62.1%), and treatment (73.1%).

Most respondents correctly identified HPV infection, multiple sexual partners, high parity, early sexual debut, and HIV co-infection as major risk factors for cervical cancer. Knowledge regarding preventive measures was generally high, with most respondents recognizing HPV vaccination, routine screening, and treatment of precancerous lesions as important preventive strategies.

Respondents also demonstrated relatively good knowledge regarding the presentation of cervical cancer. Offensive vaginal bleeding, postcoital bleeding, intermenstrual bleeding, and postmenopausal bleeding were commonly identified as symptoms of cervical cancer. However, fewer respondents recognized that cervical cancer may initially present asymptomatically.

Although most respondents acknowledged that cervical cancer could be treated when diagnosed early, knowledge regarding screening and diagnostic approaches remained limited. Only a minority correctly identified VIA, Pap smear, and HPV testing as recognized cervical cancer screening methods.

Table 3. Levels of Cervical Cancer Knowledge Among Community Health Nurses

Knowledge Domain	Low n (%)	High n (%)
Risk factors	87 (60.0)	58 (40.0)
Prevention	68 (46.9)	77 (53.1)
Clinical presentation	55 (37.9)	90 (62.1)
Treatment	39 (26.9)	106 (73.1)
Total knowledge	64 (44.1)	81 (55.9)

Detailed item-level knowledge responses are presented in Supplementary Tables S1–S5.

Cervical Cancer Service Delivery Practices

Overall, cervical cancer service delivery practices among respondents were poor. Using the established mean cut-off score of 8.0 ± 1.2, approximately 67.6% of respondents demonstrated low service delivery practice scores, whereas only 32.4% demonstrated high practice levels.

Practical exposure to cervical cancer screening procedures was particularly limited. Only 11.0% of respondents reported knowing VIA, and less than 1% had ever performed VIA within the community setting. Similarly, only 2.1% had ever performed a Pap smear for a community member.

Although more than half of respondents reported providing cervical cancer education during antenatal care and child welfare clinics, most did not routinely follow up with postpartum women regarding cervical cancer screening services. Community outreach activities related to cervical cancer were also suboptimal, with most respondents reporting only occasional awareness creation during field visits.

Rehabilitation and follow-up practices were similarly limited. Most respondents reported that they did not actively follow up cervical cancer patients within the community and did not routinely provide counseling services to patients and their relatives. Confidence in identifying suspected cervical cancer cases was generally low among respondents.

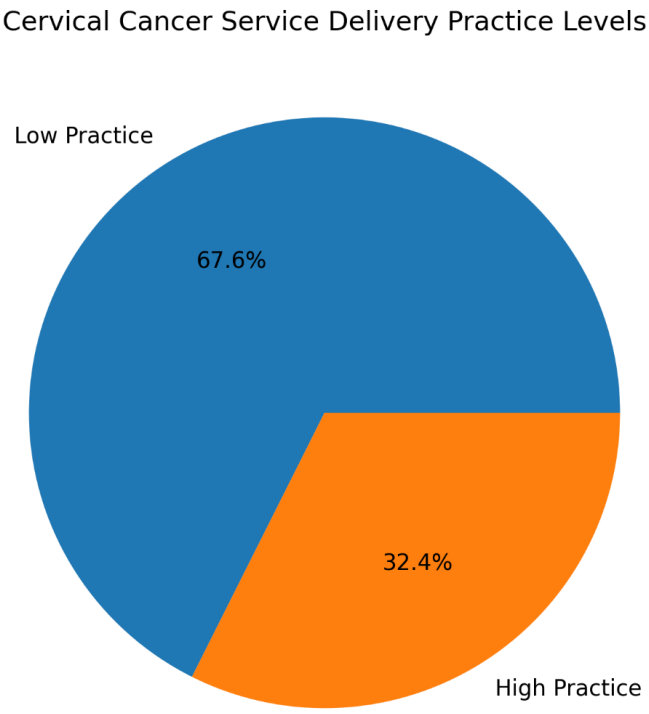

Figure 3. Cervical Cancer Service Delivery Practice Levels Among Community Health Nurses

Caption: Distribution of respondents according to cervical cancer service delivery practice levels. Most respondents demonstrated low cervical cancer service delivery practice levels.

Table 4. Summary of Cervical Cancer Service Delivery Practices Among Community Health Nurses

Variable	Yes n (%)	No n (%)
Knowledge of VIA	16 (11.0)	129 (89.0)
Ever performed VIA	1 (0.7)	144 (99.3)
Knowledge of the Pap smear procedure	17 (11.7)	128 (88.3)
Ever performed a Pap smear	3 (2.1)	142 (97.9)
Cervical cancer education during ANC/CWC	81 (55.9)	64 (44.1)
Postpartum follow-up for screening	33 (22.8)	112 (77.2)
Counseling services offered	39 (26.9)	106 (73.1)

Factors Associated with General Awareness and Service Delivery Practices

Bivariate analyses demonstrated that educational level was significantly associated with cervical cancer general awareness ($p = 0.015$). Respondents with higher educational qualifications were more likely to demonstrate higher levels of awareness. No statistically significant associations were observed between general awareness and age, sex, religion, marital status, municipality, or duration of work.

Similarly, no statistically significant associations were identified between socio-demographic characteristics and overall knowledge levels or service delivery practices.

Multivariable logistic regression analysis demonstrated that respondents with high total knowledge scores were significantly more likely to demonstrate high levels of general awareness compared with those with low knowledge scores (AOR = 4.13; 95% CI: 1.77–9.62; $p = 0.001$). However, total knowledge was not significantly associated with cervical cancer service delivery practices after adjustment for socio-demographic characteristics (AOR = 1.36; 95% CI: 0.62–3.01; $p = 0.442$).

Respondents with 5–10 years of work experience appeared more likely to demonstrate better cervical cancer service delivery practices compared with respondents with fewer years of experience, although the association did not achieve statistical significance.

Table 5. Multivariable Logistic Regression Analysis of Factors Associated with Cervical Cancer General Awareness and Service Delivery Practices

Variable	Adjusted OR (95% CI)	p-value
High total knowledge and general awareness	4.13 (1.77–9.62)	0.001*
High total knowledge and service delivery practice	1.36 (0.62–3.01)	0.442
Work duration (5–10 years) and service delivery practice	3.30 (0.88–12.32)	0.076
Diploma qualification and awareness	2.80 (1.02–8.03)	0.045*

**Statistically significant at $p < 0.05$*

Cognizance of Cervical Cancer and Its Relationship with Service Delivery Practices

Overall cognizance of cervical cancer was generated by combining respondents' general awareness and total knowledge scores. Approximately 64.8% of respondents demonstrated high cognizance levels, whereas 35.2% demonstrated low cognizance levels.

Spearman's rank correlation analysis demonstrated a statistically significant but weak positive relationship between cervical cancer cognizance and service delivery practices among respondents ($r = 0.20$, $p = 0.015$). Given the cross-sectional design and the modest effect size, this association should not be interpreted as causal or directional.

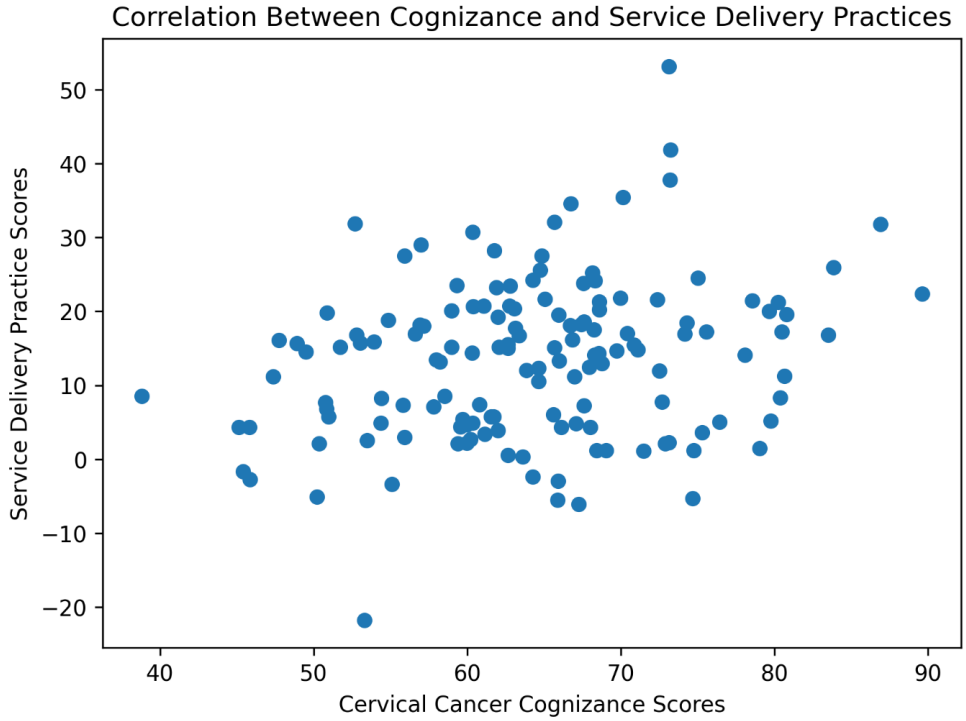

Figure 4. Correlation Between Cervical Cancer Cognizance and Service Delivery Practices

Caption: Scatter plot illustrating the weak positive relationship between cervical cancer cognizance and cervical cancer service delivery practices among community health nurses (Spearman's rho = 0.20, p = 0.015).

Discussion

Overview of Main Findings

This study assessed the cognizance of cervical cancer and its service delivery practices among community health nurses within the Krobo Enclave in the Eastern Region of Ghana. While respondents demonstrated moderate theoretical knowledge of cervical cancer, both general awareness levels and service delivery practices were suboptimal a pattern that underscores the gap between knowing about a disease and actively engaging in its prevention at the community level.

General Awareness of Cervical Cancer

The findings of this study demonstrated low general awareness levels regarding cervical cancer among community health nurses within the Krobo Enclave. Although almost all respondents had heard

about cervical cancer, substantial gaps existed in practical exposure, professional training, and awareness of global cervical cancer initiatives. Most respondents had never encountered a cervical cancer patient and had never attended a workshop or seminar related to cervical cancer. These findings suggest limited continuing professional education and inadequate exposure to cervical cancer-related public health activities among frontline healthcare providers.

The low awareness levels observed in this study are comparable to findings from previous studies conducted in low-resource settings. Getahun et al. (2013) similarly reported limited awareness and exposure to cervical cancer among women in Northwest Ethiopia[14], while studies conducted among community health workers in Nigeria also documented inadequate participation in cervical cancer-related workshops and training programs[15] .In contrast, studies conducted in Thailand among village health volunteers demonstrated considerably higher awareness levels, likely reflecting stronger community-based cervical cancer education and training programs[16]

An important finding of this study was that most respondents relied on informal community-based sources such as churches, relatives, friends, and public gatherings for information on cervical cancer rather than structured professional education or institutional training. This may indicate inadequate integration of cervical cancer updates and continuing education within primary healthcare systems. The limited participation in workshops and seminars observed among respondents may further explain the poor awareness regarding cervical cancer awareness campaigns and global prevention initiatives[17].

The observed low awareness levels among community health nurses have important implications for cervical cancer prevention efforts within rural and peri-urban communities. As frontline healthcare providers within the Community-based Health Planning and Services (CHPS) system, CHNs are expected to serve as key agents of community education, early detection, and preventive healthcare promotion. Limited awareness among these healthcare workers may negatively affect community sensitization, screening advocacy, and utilization of cervical cancer prevention services[18].

Knowledge of Cervical Cancer

Despite the relatively low general awareness levels observed in this study, respondents demonstrated moderate overall knowledge regarding cervical cancer. Most participants correctly identified major risk factors such as HPV infection, multiple sexual partners, high parity, and early sexual debut. Knowledge regarding prevention strategies, clinical presentation, and treatment was also relatively high.

These findings are consistent with studies conducted among healthcare workers in Ethiopia, Nigeria, and Thailand, which similarly reported relatively good knowledge regarding cervical cancer among health professionals and community healthcare workers[19,20] . The relatively good knowledge observed in this study may be attributed to cervical cancer-related education received during nursing training programs. This finding suggests that pre-service nursing education in Ghana may provide adequate theoretical information regarding cervical cancer[21].

However, despite the generally favorable knowledge scores, important knowledge gaps remained evident, particularly regarding screening and diagnostic procedures. Knowledge of VIA and Pap smear screening procedures was notably low among respondents. Only a small proportion correctly identified VIA as a screening method, and very few respondents had practical knowledge regarding screening implementation. Similar findings have been reported in previous studies conducted in low-resource settings where healthcare workers demonstrated theoretical knowledge of cervical cancer but had limited knowledge regarding practical screening procedures and implementation strategies[22].

The discrepancy between general theoretical knowledge and practical screening knowledge observed in this study highlights an important gap between academic training and clinical or community-based implementation. This finding may suggest that although cervical cancer concepts are introduced during nursing education, practical competencies related to cervical cancer screening and service delivery remain insufficiently emphasized within community-level healthcare systems[23].

Cervical Cancer Service Delivery Practices

One of the most important findings of this study was the generally poor level of cervical cancer service delivery practices among community health nurses. Most respondents demonstrated limited involvement in cervical cancer screening, follow-up, counseling, rehabilitation, and community outreach activities. Knowledge and performance of VIA and Pap smear procedures were particularly low, with only a very small proportion of respondents reporting practical experience with these screening methods[15].

These findings are concerning because community health nurses constitute the frontline workforce within Ghana's primary healthcare system and are expected to play critical roles in disease prevention, health education, screening advocacy, and

referral services. Suboptimal preventive care engagement among these healthcare workers may contribute to delayed diagnosis, low screening uptake, and reduced utilization of cervical cancer prevention services within communities[24].

These findings are consistent with studies conducted in Zimbabwe, Malaysia, and Nigeria, which reported inadequate implementation of preventive cervical cancer services among healthcare workers and community health providers [25]. Similar studies have also shown that many healthcare workers rarely initiate cervical cancer discussions with women during routine healthcare encounters despite the willingness of women to undergo screening when recommended by healthcare providers[26].

The limited screening-related activities observed in this study may be attributed to inadequate professional training, limited access to screening resources, insufficient institutional support, lack of practical competency-based training, and weak integration of cervical cancer prevention services within primary healthcare delivery systems. The low confidence reported by respondents in identifying suspected cervical cancer cases further reinforces the need for improved clinical training and capacity strengthening among community health nurses[27].

Another notable finding was the absence of routine postpartum follow-up and rehabilitation-related practices among most respondents, who reported that they did not actively follow up women for cervical cancer screening after delivery or provide counseling and rehabilitation support to patients and their relatives. These findings highlight missed opportunities for integrating cervical cancer prevention into maternal and reproductive healthcare programs[28].

Without adequate community-based education, screening promotion, referral systems, and follow-up services, women within rural and peri-urban settings may continue to experience delayed diagnosis and reduced access to preventive healthcare services[29].

Relationship Between Cervical Cancer Cognizance and Service Delivery Practices

This study identified a weak but statistically significant positive relationship between cervical cancer cognizance and service delivery practices among community health nurses ($r = 0.20$, $p = 0.015$). Given the cross-sectional design and the modest effect size, this association should not be interpreted as causal or directional. However, the modest strength of this association is itself an important finding: it confirms that cognizance alone is insufficient to drive substantive change in practice at the community level.

This finding aligns with a well-established body of evidence demonstrating that knowledge does not automatically translate into practice. Factors such as limited training opportunities, inadequate equipment, poor supervision, shortage of screening resources, and lack of institutional support may negatively affect implementation of cervical cancer prevention services even among knowledgeable healthcare workers[30], [31].

These structural and institutional barriers operate independently of individual knowledge levels and must therefore be addressed through targeted system-level interventions in parallel with educational capacity-building efforts.

The positive association observed in this study nevertheless emphasizes the value of continuous professional education for community health nurses. Strengthening awareness and knowledge through workshops, seminars, in-service training, and practical screening programs may contribute to gradual improvements in cervical cancer-related service delivery practices at the community level, particularly when paired with practical competency reinforcement and adequate institutional support.

Factors Associated with Awareness and Service Delivery Practices

Educational level was the only socio-demographic characteristic significantly associated with general awareness of cervical cancer among respondents. Community health nurses with higher educational qualifications were more likely to demonstrate higher levels of awareness compared with respondents with lower qualifications. This finding suggests that educational advancement may enhance exposure to cervical cancer-related information, professional training opportunities, and public health knowledge[32].

In contrast, no statistically significant associations were observed between socio-demographic characteristics and overall knowledge or service delivery practices. Although respondents with longer work experience appeared more likely to demonstrate better service delivery practices, the association did not achieve statistical significance after adjustment for potential confounders.

These findings may suggest that factors beyond socio-demographic characteristics influence cervical cancer service delivery practices among community health nurses. Institutional support systems, continuing professional education, availability of screening resources, and organizational policies may play more important roles in determining service delivery performance than individual demographic characteristics alone[33].

Public Health and Policy Implications

The findings of this study have important implications for cervical cancer prevention and control efforts within Ghana's primary healthcare system. Given the central role of community health nurses within the CHPS system, strengthening their awareness, knowledge, and practical competencies may significantly improve cervical cancer prevention services within rural and underserved communities.

There is a need for regular in-service training programs, workshops, and continuing professional education activities focused on cervical cancer prevention, screening, counseling, and referral practices. Practical competency-based training on VIA and Pap smear procedures should be integrated into community healthcare training programs to improve screening-related practices among CHNs.

The findings also highlight the importance of integrating cervical cancer prevention services into routine maternal and reproductive healthcare programs, including antenatal care, child welfare clinics, and postpartum follow-up services. Strengthening institutional support, improving access to screening equipment, and expanding community-based awareness campaigns may further enhance cervical cancer prevention efforts within primary healthcare settings[34].

Strengths and Limitations of the Study

This study provides important evidence regarding cervical cancer cognizance and service delivery practices among community health nurses within the Krobo Enclave in the Eastern Region of Ghana. The findings contribute to the limited literature examining both cervical cancer cognizance and practical service delivery among frontline community healthcare providers in Ghana. Additionally, the use of a census sampling approach enhanced the representativeness of the findings within the study setting.

However, several limitations should be acknowledged. The cross-sectional design limits the ability to establish causal relationships between cervical cancer cognizance and service delivery practices. The study also relied on self-reported responses, which may be subject to recall bias and social desirability bias. Furthermore, barriers influencing cervical cancer service delivery practices were not explored in detail and may require further qualitative investigation.

Data were collected in 2020, and Ghana's cervical cancer prevention landscape has since evolved most notably the launch of the national HPV vaccination campaign in 2025, delivered partly through the CHPS system. These findings are therefore best interpreted as a baseline characterization of community health nurse readiness rather than a description of the present state of practice; however, the structural drivers identified (limited practical screening training, weak integration of cervical cancer services into primary care, and few continuing-education opportunities) are unlikely to have been fully resolved, and these data provide a reference point against which recent reforms can be assessed. The study also relied entirely on self-reported data without validation against clinical records, screening logs, or facility service registers, and reported practices may therefore be subject to recall and social desirability bias; because data were collected through interviewer-led administration, reports of personal screening uptake and service delivery may be particularly susceptible to social desirability bias. In addition, no formal internal consistency testing (e.g., Cronbach's alpha or KR-20) was undertaken, so the psychometric reliability of the cognizance and service-delivery scores could not be statistically verified; this limits confidence in their reproducibility and constrains direct comparison with studies using psychometrically validated instruments, such as a comparable study among female health professionals in the Tamale Metropolis that applied KR-20 for dichotomously scored items and Cronbach's alpha for Likert-scaled items[35]. Some references cited in this manuscript reflect literature published after data collection and were included to contextualize the findings within the current body of evidence. Future studies should assess whether the gaps identified here persist in light of recent policy and programmatic developments in Ghana.

Future Research Directions

Future studies should explore barriers affecting cervical cancer screening and service delivery practices among community health nurses using mixed-methods or qualitative approaches. Further research is also needed to assess the effectiveness of continuous professional training programs and community-based screening interventions in improving cervical cancer prevention practices within primary healthcare systems in Ghana and other low-resource settings.

Conclusion

This study assessed the cognizance of cervical cancer and its service delivery practices among community health nurses within the Krobo Enclave in the Eastern Region of Ghana. The findings revealed relatively low levels of general awareness despite moderate overall knowledge levels, and cervical cancer-related service delivery practices were generally poor. Practical implementation of screening procedures

such as Visual Inspection with Acetic Acid (VIA) and Pap smear testing was particularly limited, and many respondents reported inadequate involvement in follow-up, counseling, and community-based cervical cancer prevention activities.

Critically, as discussed in Section 5.5, the weak but significant association between cognizance and service delivery practices confirms that awareness and knowledge, while necessary, are not sufficient on their own to substantially improve implementation of cervical cancer prevention services within community healthcare settings. Institutional support, practical competency-based training, availability of screening resources, and continuous professional development must accompany any educational intervention.

The findings highlight important gaps in cervical cancer prevention efforts within Ghana's primary healthcare system and emphasize the need for targeted interventions to strengthen the capacity of frontline healthcare providers. Regular in-service training programs, workshops, seminars, and practical screening demonstrations should be organized to improve both awareness and practical competencies among community health nurses. Integrating cervical cancer screening and education into routine maternal and reproductive healthcare services within the Community-based Health Planning and Services (CHPS) system may further improve community-level prevention and early detection efforts.

Overall, strengthening the cognizance and practical service delivery capacity of community health nurses may contribute significantly to improving cervical cancer prevention, early detection, and referral services among underserved populations in Ghana and similar low-resource settings.

Supplementary Materials

Supplementary file available via:
https://www.journalehdi.com/suppfile/762/ehdi048_Supplementary_Materials_R3.pdf

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