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Knowledge, Attitude and Practices of Women towards Cervical Cancer and Screening at the Tamale Teaching Hospital

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Abstract

Cervical cancer-related deaths among Ghanaian women are often due to late diagnosis of the disease. Knowledge about the disease and early screening is the most effective measure for cervical cancer prevention. Poor knowledge or lack of awareness, negative attitude, and poor practice of cervical cancer screening is the major causes to increase the incidence of disease.

The objective of the study was to assess the knowledge, attitude, and practice of women seeking an obstetrics and gynaecological services at the Tamale Teaching Hospitals towards cervical cancer and cervical cancer screening. A quantitative study using a descriptive cross-sectional design was used. The population for the study was 360 women aged between 18 and 59 years seeking an obstetrics and gynaecological services at the Tamale Teaching Hospital from July-August 2021. The research finding revealed that women visiting the Tamale Teaching Hospital's obstetrics and the gynaecological department had an acceptable understanding of cervical cancer. The majority of the respondents had their knowledge of cervical cancer from media according to the survey.

The research used a total of 360 women aged 18 years and above as respondents. The mean age was 30 years (± 10.8). At the end of the research, the Misconception that cervical cancer could only affect older women and women with children was a determinant of whether a woman will screen for cervical cancer or not.

Keywords: Cervical cancer, Knowledge, Attitude, Practice, Cervical cancer screening, Ghana

Introduction

According to the World Health Organization (WHO) (2024), cervical cancer ranks fourth globally as the most common cancer in women. In developing countries however, it is ranked as the most common cancer among women (WHO, 2024). Cervical cancer is most commonly diagnosed in women over 30 years, but it can occur at any age (WHO, 2024). Before age 75 years, about one in 195 women will develop cervical cancer (IARC 2018). The current estimates in Ghana indicate that every year 3151 women are diagnosed with cervical cancer and 2119 women die from the disease (IARC, 2018). The developing world carries an unequal share of approximately 76.3% of the global burden of cervical cancer (IARC, 2018). By 2030, cervical cancer is likely to continue to rise, increasing to nearly 700,000 cases and 400,000 deaths, with similar increases anticipated in future years (Bray et al., 2020). The incidence of cervical cancer in low and middle-income countries (LMICs) is twice as high, and its death rates are three times as high, compared with high-income countries (HICs) (WHO, 2019).

According to Bruni et al., (2023), current estimates indicate that every year 117,316 women are diagnosed with cervical cancer and 76,745 die from the disease. Cervical cancer ranks as the 2nd most frequent cancer among women in Africa. In Africa, cervical cancer ranks the second most prevalent cancer with about 119,284 new cases in 2018 alone, representing 11.3% of all cancer cases recorded in the year.

In sub-Saharan Africa, it accounts for 22.2% of all cancers in women and it is also the most common cause of cancer death among women (IARC, 2018). In Ghana, cervical cancer ranks as the second most frequent cancer among women between 15 and 44 years of age (Ministry of Health of Ghana, 2012). The World Health Organization (WHO) estimates the annual age-standardized cervical cancer incidence rate in Ghana as 29.3/100,000, which is four times the United States rate, while the mortality rate is 23.8/100,000, or ten times the United States rate (Afranie, 2019). Existing literature have reported that among gynaecological cancers diagnosed in Ghana, cervical cancer accounts for about 60% of cases, while 70% of these cases are diagnosed at an advanced stage (Abotchie & Shokar, 2009; Ndung'u, Orag & Mugo, 2019).

Cohen et al. (2019) stated that cervical cancer is both preventable and curable, especially if it is detected early. This is made possible as a result of effective vaccination and screening strategies. While it is gradually becoming a rare disease in many developed countries, this is not the case with many countries in sub-Saharan Africa according to Anorlu (2008). It is further affirmed that Cancer of the cervix uteri is the fourth most common cancer among women worldwide and the leading cause of gynaecologic cancer death in the less developed regions (Bray et al., 2018). Globally, every year more than 270,000 women die from cervical cancer; more than 85% of these deaths are in low and middle-income countries of which Ghana is not an exception (WHO, 2013).

The World Health Organization (WHO) has estimated additional cases of cervical cancer to be over 5,000 in Ghana with at least 3,300 deaths every year by 2025. Additionally, the 2020 annual performance report of the Obstetrics and Gynaecology Department of the Tamale Teaching Hospital (TTH) also shows a decrease in the number of cervical cancer cases from 81 in 2018 to 42 cases at the end of 2019 (Tamale Teaching Hospital, 2020). The records as of November 2020 also indicate that 47 cases of cervical cancer have been reported. Even though there seems to be a decline in the number of cases from 2018 to 2020, the numbers are still significantly high. Despite the efforts by the health sector to promote early detection of cervical cancer and reduce the number of cases (Dzando et al., 2024), there is still a significant number of cervical cancer cases recorded in the country and specifically at the Tamale Teaching Hospital (Musa & Boateng, 2024). The slow reduction rate of cases, coupled with the fact that most women report in the advanced stage of the disease (Appiah-Kubi, 2022), makes it important to assess the knowledge, attitude, and practice of cervical cancer and cervical cancer screening among women within the Tamale Metropolis. In effect to this, the following research objectives and questions were developed.

Specific objectives

1. To assess the knowledge of women seeking an obstetrics and gynaecological services on cervical cancer.

2. To investigate the attitude of women seeking an obstetrics and gynaecological services towards cervical cancer screening.

3. To determine the extent to which women seeking obstetrics and gynaecological services practice cervical cancer screening.

Research Questions

1. What is the knowledge level among women seeking obstetrics and gynaecological services on cervical cancer?
2. What attitude do women seeking obstetrics and gynaecological services have towards cervical cancer screening?
3. To what extent do women seek obstetrics and gynaecological services to practice cervical cancer screening?

Study Significance

A rigorous investigation of women's knowledge, attitudes and practices (KAP) toward cervical-cancer screening at Tamale Teaching Hospital (TTH) carries practical, policy, public-health and scholarly value. By situating its questions within a multi-theory framework and a documented evidence gap, the study can inform front-line nursing care, guide national screening policy, strengthen population-level prevention and advance behavioural-science research in Ghana and comparable settings.

Nursing and Midwifery Practice Significance

Nurses and midwives constitute the largest professional group in Ghana's reproductive-health workforce and are the first point of contact for most women seeking preventive or obstetric care (MoH, 2022). Findings that map specific knowledge deficits (e.g., misidentification of human papillomavirus as a non-sexual infection) or attitudinal barriers (e.g., embarrassment linked to male examiners) will allow nurses and midwives to redesign chair-side counselling, group health talks and postnatal follow-up to address precisely those gaps. Moreover, if the study confirms that provider recommendation is a dominant cue-to-action as suggested by earlier Ethiopian and Tanzanian evidence (Kimondo et al., 2021; Lakew et al., 2024) nurses and midwives can be empowered through continuing professional-development modules to issue strong, standardised screening endorsements during every maternal or family-planning visit. In addition, documentation of structural obstacles such as long waiting times or perceived cost can be fed back to ward managers and advanced nurse practitioners to streamline appointment systems, introduce low-cost Visual Inspection with Acetic Acid (VIA) services and coordinate mobile outreach days. Ultimately, study results translate into practice algorithms that embed screening prompts in routine antenatal, postnatal and family-planning check-lists, thereby transforming episodic health education into systematic, protocol-driven preventive care.

Health Policy Significance

Nationally, Ghana aspires to the World Health Organization's 90-70-90 triple target for cervical-cancer elimination which is 90% HPV vaccination, 70% twice-lifetime screening, 90% treatment of precancers by 2030 (WHO, 2020). Yet current screening prevalence hovers below 10% (Adzigbli et al., 2025). By quantifying how enabling factors such as National Health Insurance Scheme (NHIS) coverage, out-of-pocket costs and clinic proximity condition women's screening behaviour, the present study offers empirical levers for policymakers to refine Ghana's National Cancer Control Plan (2023-2028) which was launched in 2015 with the main aim of reducing cancer mortality by 30% through primary prevention, effective screening, early detection, improved diagnosis, and treatment (Mensah et al., 2020). For example, if NHIS membership emerges as a strong predictor of uptake, the Ministry of Health can justify adding VIA or HPV DNA testing to the NHIS basic benefit package; if travel distance is salient, regional health directorates may prioritise satellite VIA clinics or integrate screening into Community-based Health Planning and Services (CHPS) compounds. The study also supplies baseline metrics for monitoring the forthcoming national HPV self-sampling pilot, enabling policymakers to track how self-collection modifies attitudes, norms and practice in real-world conditions.

Public Health Significance

At the population level, cervical cancer remains Ghana's second most common female malignancy, with an estimated age-standardised incidence of 27.6 per 100,000 and mortality of 18.4 per 100,000 (International Agency for Research on Cancer, 2024). Evidence from the study will pinpoint the behavioural and contextual choke-points like knowledge gaps, normative constraints, and structural hurdles that currently blunt the effectiveness of public-health messaging. Tailored social-and-behaviour change campaigns can then be crafted: for instance, radio jingles addressing myths about infertility after Pap smears, community durbars led by opinion leaders to normalise screening and low-literacy visual materials that clarify the asymptomatic nature of early disease. By quantifying the relative weight of cognitive versus structural determinants, the study helps regional public-health teams decide whether to invest scarce resources in mass education, male partner engagement, mobile screening units or some synergistic mix. More broadly, results add Ghana-specific data to the WHO African Region's cervical-cancer surveillance repository, refining regional burden estimates and intervention cost-effectiveness models.

Research Significance

The literature review revealed five persistent gaps: under-representation of rural and adolescent populations, limited use of theory-grounded instruments, scarcity of longitudinal or intervention designs, superficial measurement of community norms and lack of standardised KAP scoring. The present study addresses four of these gaps directly.

- **Theory-grounded measurement.** By embedding items from the Health Belief Model, Theory of Planned Behaviour and Andersen's model into the KAP questionnaire, the study generates richer, causal data than prior descriptive surveys.
- **Standardisation.** Adopting a validated, 30-item KAP tool with clearly defined "good" knowledge (≥70 % correct) and "positive" attitude (mean score ≥ 3.5/5) thresholds facilitates cross-study comparability and future meta-analyses.

- **Community-norm variables.** The instrument includes scale items on spousal, maternal and religious-leader approval, filling a measurement void identified in most West African surveys.

- **Rural inclusion.** A multi-stage sampling strategy ensures that at least 40 % of participants are drawn from rural catchment zones of TTH, providing rare insight into geographically marginalised groups.

Data produced advances behavioural-science theory application in low-resource contexts, seed hypotheses for intervention trials (e.g., nurse-led mHealth reminders) and serve as a benchmark for evaluating Ghana's impending self-sampling rollout. The publicly archived dataset and codebook will also facilitate secondary analyses by future scholars, amplifying research impact.

Operational definitions of Terms

Knowledge: Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

Attitude: A set of emotions, beliefs, and behaviours toward a particular object, person, thing, or event.

Practice: the customary, habitual, or expected procedure or way of doing something.

Cervical cancer: It is when abnormal cells in the lining of the cervix begin to grow uncontrollably.

Cervical Cancer Screening: It is a strategy used to look for as-yet-unrecognized conditions or marks of abnormal cells lining the cervix.

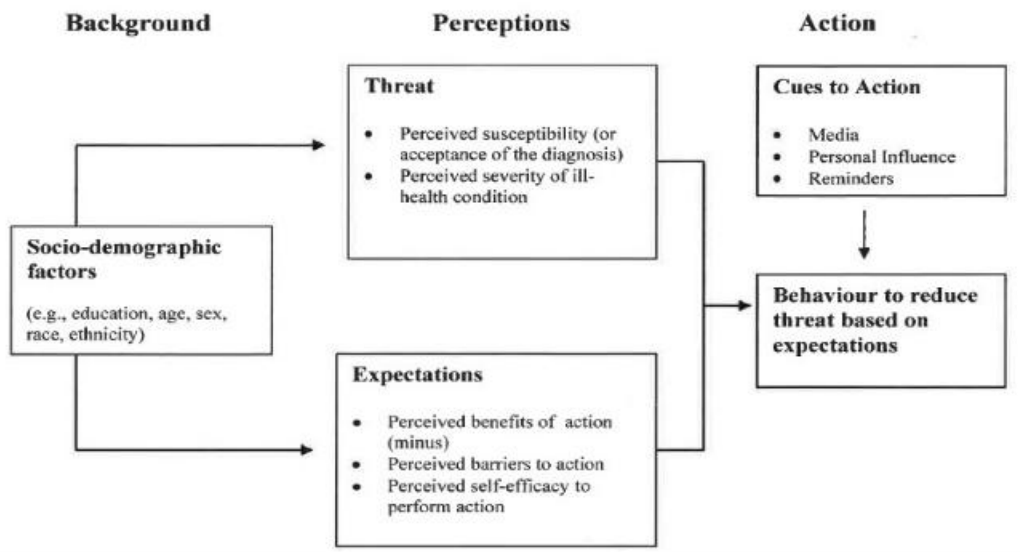
Women: Any female 18 years old and above.

THEORETICAL FRAMEWORK

Investigating the knowledge, attitude, and practice of cervical cancer and cervical cancer screening requires a theoretical framework that will guide the study. The Health Belief Model by a group of social psychologists in the United States of America (USA) was found to be appropriate because of the relationship among the concepts (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) which is used to forecast certain health behaviours. The HBM also focuses on subjective beliefs and the combination of beliefs leads to behaviour. The concepts of the model and how it guided the study are analysed in the subsequent paragraphs.

The Health Belief Model (HBM)

Health Belief Model is one of the first theories of health bebehaviourseveloped by Rosenstock and other psychologists in the 1950s, to understand the failure in the uptake of free TB screening services in the United States (Rimer and Glanz, 2005). It is a framework used to explain and describe health-related behaviours, and as a guiding tool for health behaviour interventions. HBM is used to predict health behaviours using five main components: perceived susceptibility to a particular disease, perceived severity of the disease, perceived barriers, and benefits, cues to action, and self-efficacy (Birhanu et al., 2012). These components are influenced by several modifying factors that interplay and influence health behaviours. These factors include age, gender, race, ethnicity, socio-economic status, level of education, media disease awareness, income, cost of treatment, and others (Mupepi et al., 2011). Figure 1 shows detailed components of HBM.



Adapted from Taylor *et al.,* 2006

HBM has been employed and proven effective in health service uptakes such as immunization acceptance, HIV prevention, condom use, and addiction-related behaviours including smoking cessation, alcohol abuse, eating behaviours, and other related medical compliance therapies (Taylor et al., 2006). In its application to predicting women's behaviors towards mammography screening for cancer, HBM predicted and found adherence that women are more likely to attend if they feel susceptible to cancer, have confidence that they can participate in a particular behaviour, perceive the barriers are lower than the benefits associated and think cervical cancer is a severe disease (Ogden, 2012).

Regarding women's behaviours towards cervical cancer screening, Ogden (2012) described that HBM predicts regular screening if an individual perceives that s/he is highly susceptible to cervical cancer, it is a severe health threat, the benefits of screening outweigh the consequences and the cost of screening is reasonably low (Ogden, 2012). In addition, this behaviour will only be exhibited if individuals are confident and encouraged to carry them out through cues such as perceived symptoms, mass media campaigns, or posters and leaflets placed in healthcare centres and public places such as schools and churches (Birhanu et al., 2012; Ogden, 2012).

The HBM can predict individuals' preventive health behaviour and it is relevant in studies to determine the factors that reinforce and influence peoples' intentions of practising preventive health and predicting adherence to recommended protective health behaviors (Glanz et al, 2008). A Person's intention of practising recommended health behaviour is a function of the following components of the HBM model.

Theory Selection Rationale

The Health Belief Model by a group of social psychologists in the United States of America (USA) was found to be appropriate because of the relationship among the concepts (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) which is used to forecast certain health behaviours. The HBM also focuses on subjective beliefs and the combination of beliefs leads to behaviour. The concepts of the model and how it guided the study are analysed in the subsequent paragraphs.

Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) was advanced by Ajzen (1985, 1991) as an extension of the Theory of Reasoned Action to account for situations in which individuals have incomplete volitional control over behaviour. TPB explains health-related action through three proximal determinants of behavioural intention: attitude toward the behaviour, subjective norm, and perceived behavioural control (PBC). Attitude reflects a person's overall evaluation of performing the act; subjective norm denotes perceived social pressure from salient referents (e.g., spouse, peers, religious leaders); and PBC captures both internal self-efficacy and perceptions of external facilitators or barriers. Together, these constructs predict intention, while PBC may also exert a direct influence on behaviour when actual control is limited.

TPB has been widely applied to diverse preventive actions—such as condom use, smoking cessation, physical-activity adoption, and vaccination uptake—demonstrating substantial predictive validity (Conner & Norman, 2005). In breast- and cervical-cancer screening, studies consistently show that positive attitudes toward screening, supportive norms (especially spousal approval), and strong PBC significantly increase screening intentions and subsequent uptake (Ogden, 2012). In the Ghanaian context, women's intention to undergo Pap testing has been linked to perceived benefits, partner endorsement, and confidence in overcoming logistical obstacles such as clinic waiting times and transport costs. Within the present study, TPB is employed to capture the motivational bridge between cognitive appraisal and concrete screening action; it highlights how attitudes, normative influences, and perceived control coalesce to shape women's readiness to attend cervical-cancer screening at Tamale Teaching Hospital.

Knowledge–Attitude–Practice (KAP) Model

The Knowledge–Attitude–Practice (KAP) model emerged during mid-twentieth-century public-health campaigns as a pragmatic framework for evaluating and guiding health-education interventions (World Health Organization, 2008). Its central premise is linear and sequential: accurate knowledge dispels misconceptions, fostering favourable attitudes that, in turn, motivate desirable practices. In this study, knowledge encompasses factual awareness of human papillomavirus (HPV), cervical-cancer risk factors, and screening benefits; attitude refers to beliefs about the importance, acceptability, and emotional comfort associated with screening; and practice denotes actual or intended utilisation of Pap testing or visual inspection with acetic acid.

KAP surveys have been extensively employed to monitor behaviours ranging from malaria-net use and exclusive breastfeeding to HIV testing (Launiala, 2009). Regarding cervical cancer, numerous African studies demonstrate that low knowledge frequently coexists with negative attitudes—fear, fatalism, perceived embarrassment—resulting in poor screening uptake (Birhanu et al., 2012). When education programmes raise awareness and reframe screening as beneficial and culturally acceptable, subsequent increases in attendance are often documented. By structuring our questionnaire into discrete knowledge, attitude, and practice blocks, the study can quantify each step, identify bottlenecks (e.g., adequate knowledge but unfavourable attitudes), and test whether knowledge exerts a direct or mediated effect on screening behaviour among women attending Tamale Teaching Hospital.

Andersen's Behavioural Model of Health-Services Use

Originally formulated in the late 1960s and refined over subsequent decades, Andersen's Behavioural Model conceptualises health-service utilisation as a function of predisposing characteristics, enabling resources, and need factors (Andersen, 1995). Predisposing variables include demographic and social-structural attributes such as age, marital status, and education; enabling resources refer to logistical or economic capacities—income, insurance coverage, clinic proximity—that facilitate or impede service use; and need factors encompass both perceived symptoms and professionally evaluated morbidity. A feedback loop acknowledges that prior utilisation may alter future perceptions of need and access. Figure 4 depicts the model's component interactions.

The framework has been applied to explain uptake of preventive and curative services alike—immunisations, antenatal care, HIV testing, and cancer screening—across low-, middle-, and high-income settings. In Ghana, analyses of Demographic and Health Survey data show that women with National Health Insurance Scheme coverage, higher wealth quintiles, and shorter travel times are substantially more likely to undergo cervical-cancer screening. Conversely, younger unmarried women and those in remote districts remain underserved despite favourable attitudes or intentions. By integrating Andersen's variables as contextual modifiers in the present study, we can disentangle whether observed screening gaps stem from motivational deficits captured by TPB and KAP constructs or from structural barriers such as cost and distance. This layered understanding is essential for designing interventions that simultaneously address personal motivation and system-level access constraints.

Empirical Literature Review

An accumulating literature over the past 15 years has examined why cervical-cancer screening uptake remains sub-optimal across sub-Saharan Africa. This review synthesises evidence from quantitative KAP surveys, systematic reviews and facility-based studies conducted in Ghana, Ethiopia, Nigeria, Tanzania and neighbouring settings. The discussion is organised around four analytic threads: (a) recurrent cross-study patterns, (b) cross-country contrasts, (c) points of contradiction, and (d) methodological tendencies and resulting research gaps.

Recurrent Cross-Study Patterns

Across very different populations from rural households, university campuses, HIV clinics and professional cadres, most investigators report poor-to-moderate knowledge, guardedly positive attitudes and low screening practice. In a community survey of family-planning clients in North-central Ethiopia only 42 % of women answered ≥60% of factual items correctly and just 20% had ever been screened (Damtie et al., 2023). A 2024 meta-analysis pooling 7,542 female health-care providers from 11 African countries found that although half possessed "good" knowledge (49.7%) and two-thirds held favourable attitudes (66.6%), the prevalence of ever having screened was a mere 17.2% (Delie et al., 2024). Consistently, higher education, previous counselling and regular media exposure predict better knowledge and more positive attitudes, whereas actual uptake is most tightly linked to affordability, geographical proximity and spousal approval (Lakew et al., 2024; Sampson et al., 2021).

Cross-Country Contrasts

Ghana. Analyses of the 2022 Ghana DHS showed national lifetime screening at 7%, with sharp rural-urban and wealth gradients; higher schooling and health-insurance coverage significantly increased odds of uptake (Adzigbli et al., 2025). A district-level survey likewise documented substantial misconceptions, where 57% of women believed Pap testing was prohibitively expensive, and correspondingly low practice (Sampson et al., 2021).

Ethiopia. Repeated community surveys and two meta-analyses converge on screening prevalences between 18–25% even among female health-care workers (Lakew et al., 2024). Knowledge scores rarely exceed 50%, yet perceived benefits and provider recommendation consistently emerges as strong behavioural links (Damtie et al., 2023).

Nigeria. Among female public-health students in Calabar, 54% demonstrated "fair" knowledge, but 83% had never undergone screening. The leading barriers were fear of discomfort, cost and limited facility access (Obannaya et al., 2025).

Tanzania. A different picture is seen among women living with HIV (WLHIV) in the Kilimanjaro region. Despite inadequate knowledge, 50% reported screening uptake, reflecting an intensive "screen-triage-treat" programme integrated into HIV care (Kimondo et al., 2021). This suggests that facility-based counselling and service integration can partially offset cognitive deficits.

Contradictions and Contextual Moderators

Two apparently inconsistent patterns recur. First, some Ghanaian and Nigerian surveys document high intended willingness to screen (>70 %) if services are subsidised, yet actual uptake remains low, pointing to structural rather than motivational constraints (Adzigbli et al., 2025; Obannaya et al., 2025). Second, in Ethiopian WLHIV cohorts and Tanzanian HIV clinics, moderate or high uptake occurs despite weak knowledge, indicating that systematic provider prompts and bundled services can compress the knowledge-to-practice gap (Kimondo et al., 2021; Lakew et al., 2024). Age effects are likewise mixed: some national analyses show increasing uptake with age (Adzigbli et al., 2025), whereas a Namibian DHS re-analysis cited in the same database found lower coverage beyond 45 years, possibly reflecting survivor bias or shifting risk perceptions. These contradictions underline the importance of context-specific moderators.

Methodological Tendencies and Quality Appraisal

Design and Sampling

Nearly all African KAP investigations employ cross-sectional interviewer-administered questionnaires. Sampling frames vary from multistage household clusters to purposive facility samples creating selection bias and limiting generalisability. Adolescents, rural women and men (as gate-keepers) remain conspicuously under-represented.

Measurement Divergence

Cut-off points for “good knowledge” range from 50% to 80% correct, and attitude scales are seldom validated cross-culturally. This heterogeneity generated I^2 values >90% in the largest provider meta-analysis, complicating pooled estimates (Delie et al., 2024).

Reliance on Self-report

Screening status is most often self-reported; only a handful of studies triangulate responses with facility registers, raising concerns about recall and social-desirability bias (Mupepi et al., 2011).

Theoretical Anchoring

Less than one-third of surveys explicitly embed items in behavioural theory (HBM, TPB or KAP scales), limiting causal inference and comparability (Lakew et al., 2024). Longitudinal or intervention designs are exceedingly rare.

Materials and Methods

Study Design

The investigation adopted a descriptive cross-sectional design with a quantitative survey strategy to examine women’s knowledge, attitudes and practices (KAP) regarding cervical-cancer screening at Tamale Teaching Hospital (TTH). A cross-sectional approach was chosen because it provides a cost-efficient, time-bounded “snapshot” of multiple variables in a single population, enabling precise estimation of the prevalence of correct knowledge, favourable attitudes and actual screening uptake while also allowing the researcher to explore their interrelationships at one point in time (Setia, 2016). Such designs are widely regarded as the standard methodological platform for KAP inquiries in public-health settings, particularly when the aim is to inform service planning by quantifying current awareness and behaviour patterns rather than to test the longitudinal impact of an intervention (Launiala, 2009; World Health Organization, 2008). All data were collected between September 2020 and July 2021.

The cross-sectional format precisely matches the study’s objectives: (a) to measure the proportion of women who possess accurate information about cervical cancer, (b) to gauge prevailing attitudinal dispositions toward screening, and (c) to register the current level of screening practice among a clinic-based sample. By administering the KAP questionnaire to women seeking obstetric and gynaecological services, the researcher could simultaneously capture demographic covariates (age, education, insurance status) and test for group differences or associations.

Cross-sectional designs cannot establish temporal sequencing; therefore, any observed association, say, between high knowledge scores and screening uptake, should not be interpreted as causal. The design is also susceptible to recall bias (participants may misremember previous screening) and social-desirability bias (over-reporting of "ideal" health behaviours). Finally, because the sample is clinic-based, generalisability to women who seldom access hospital services may be constrained.

Patients' recruitment

Recruitment procedures were designed to ensure a representative, ethically grounded sample of women attending obstetric and gynaecological (O&G) services at Tamale Teaching Hospital (TTH). The process addressed both inclusion and exclusion criteria with clear operational definitions and established safeguards to support informed, voluntary participation. Women were eligible if they:

- were 18 years of age or older at the time of contact;
- were seeking O&G care (antenatal, post-natal, family-planning, gynaecology review) during the study window; and
- were cognitively able to provide informed consent, as determined by their capacity to understand the study explanation, paraphrase its purpose, and correctly answer three comprehension questions about risks, benefits, and withdrawal rights (CIOMS, 2016).

Exclusion Criteria and Operational Definitions

Domain	Operational definition	Rationale
Critical illness	Triage category 1 or 2 under the Ghana Emergency Triage Scale requiring immediate resuscitation or admission or systolic BP < 90 mmHg with altered consciousness	Such patients could not safely participate in a 25-minute interview (Setia, 2016).
Inability to participate	Glasgow Coma Scale < 15, severe cognitive impairment (Mini-Cog ≤ 2), profound hearing loss without interpreter, or active psychosis	Ensured data quality and voluntariness of consent.
Language barrier	Inability to converse in English, Dagbani, or Twi and no approved interpreter available	Prevented miscommunication and ethical breaches.
Previous total	Self-reported or chart-verified removal of the	Cervical-cancer screening is not

hysterectomy	cervix	indicated post-hysterectomy.
Late-trimester pregnancy (≥ 28 weeks)	Women at or beyond 28 weeks' gestation were deferred to avoid discomfort during prolonged sitting and because screening is routinely postponed until post-partum per TTH protocol	Ensured participant comfort and clinical appropriateness.

Sample Size

Accurate sample-size planning is essential to obtain stable prevalence estimates and adequately powered multivariable analyses. A sample size of 360 was derived using Cochran's size formula shown below (Cochran, 1972).

$n = Z^2 P(1-P)/ (d)^2$

Where:

n = sample size required,

Z = confidence level (95% level of confidence-1.96)

P = prevalence of outcome variable (willingness to screen) = 62.5% (Derived from literature Eze et al., (2012)).

D = Margin of error (5% = 0.05).

Substituting,

n = (1.96)2 (0.625x0.375)/(0.05)2 = 360

Choice of Statistical Parameters

Confidence level (95%; *Z* = 1.96). The 95% level is the conventional benchmark in epidemiological surveys because it balances statistical precision with logistical feasibility; lowering the level would increase the risk of a false inference, whereas raising it to 99 % would inflate the sample size beyond the project's budget and time constraints (Setia, 2016).

Margin of error (d = 0.05). A ±5 % precision band around the prevalence estimate is considered acceptable for programme-planning decisions in resource-limited settings (WHO, 2008). Narrower bands (e.g., 3 %) were explored but would have required >640 respondents, exceeding the study's staffing capacity.

Prevalence Assumption (P = 0.625)

The parameter *P* reflects the expected proportion of women willing to undergo cervical-cancer screening, the study's primary behavioural outcome. A systematic scoping review of 19 West-African studies

(2010-2024) reported willingness estimates ranging from 48% to 70%, with a pooled random-effects mean of 62.5% (Afaya et al., 2024). The figure closely matches Eze et al.'s (2012) Nigerian clinic study (62.5%) and two Ghanaian facility surveys that found 60–65% willingness even though actual uptake was far lower (Sampson et al., 2021; Adzigbli et al., 2025). Using the upper end of this band serves two purposes:

1. **Precision under optimism.** When willingness is over-estimated, the resulting *n* remains conservative for lower true prevalences because $P(1–P)$ maximises near 50%;
2. **Regional comparability.** Nigeria and Ghana share similar sociocultural norms, healthcare financing models and screening logistics; thus, Nigerian willingness data are a plausible surrogate in the absence of large Ghana DHS willingness modules (Afaya et al., 2024).

Sampling Technique

To obtain a probability sample that was both logistically feasible and statistically defensible, the investigation employed a two-stage random-sampling design. The first stage identified a single study site from all public obstetric-and-gynaecological facilities in Tamale Metropolis; the second stage drew individual respondents from daily clinic attendance lists at that site. This sequential approach preserved randomness at each decision point while concentrating data-collection resources where patient volume was highest.

In Stage 1, the five hospitals that provide comprehensive O & G care in the metropolis were placed in a lottery. Each name was written on an identical, opaque slip, folded twice, deposited into a covered box, vigorously mixed, and one slip was drawn by an independent observer who had no stake in the study. Tamale Teaching Hospital (TTH) emerged as the study site. Although recruiting from a single hospital can introduce site-selection bias, TTH was judged broadly representative: it is the metropolitan referral centre, draws patients from diverse socio-economic strata, and adheres to the same national clinical guidelines as its peer institutions. Nevertheless, the possibility that TTH's case mix differs subtly from district hospitals is acknowledged, and replication in an additional site is recommended for future work.

In the second stage, a simple random sampling technique was employed to select each respondent to be given the questionnaire. Each member of the total population was given an equal chance of being chosen. Taken together, the lottery-based site selection, respondent randomisation, and explicit inclusion–exclusion rules created a sampling architecture that maximised internal validity while acknowledging the external-validity constraints inherent in single-site studies.

Statistical Analysis

Data analysis was conducted using SPSS version 25.0 (IBM Corp., Armonk, NY). Continuous variables were summarized using means and standard deviations. Categorical variables were summarized using frequencies and percentages. Normality was assessed using skewness and kurtosis values (acceptable range: ±2.0). The test was useful because the researchers established possible connections between variables understudies. Statistical significance was set at $p < 0.05$.

Ethics statement

Ethical Clearance (KHRCIEC/2021-16) for the study was obtained from the Kintampo Health Research Centre Institutional Ethics Committee. Permission was sought from Tamale Teaching Hospital to collect data. Permission was also sought from the Head of Department (HOD) at the Obstetrics and Gynaecological Department to carry out the study. At the Antenatal Clinic level where all the Obstetrics and Gynaecological issues are seen, permission was sought from the Deputy Director of Nursing Services (DDNS) in charge/midwives where study respondents would be. Also written informed consent was obtained from study respondents before the commencement of the data collection. Respondents were assured of confidentiality and all other ethical principles regarding human research were maintained and adhered to. Given the current dispensation of this pandemic era, study respondents and the research team were provided with nose/face masks and hand sanitisers in addition to observing social distancing during interviews as part of adhering to COVID-19 safety protocols.

Informed-Consent Procedures

Prospective respondents received a written information sheet in English and in the two most widely spoken local languages (Dagbani and Twi), detailing the study purpose, procedures, potential risks and benefits, data-handling processes and withdrawal rights. Trained female data collectors then read the document aloud, answered questions and obtained written informed consent (left thumbprint plus witness signature for non-literate women). Copies of the signed form were given to participants; originals were stored in a locked cabinet separate from the research data. No interviews commenced until consent was documented, thereby satisfying CIOMS guidance on comprehension and voluntariness (Council for International Organizations of Medical Sciences [CIOMS], 2016).

Right to Withdraw and Absence of Coercion

Participants were informed verbally and in writing that they could refuse any question or discontinue the interview at any stage without loss of routine care, benefits or favour. Withdrawal would trigger immediate destruction of the individual's interview notes and digital records where technically feasible. This assurance was reiterated by clinic staff unaffiliated with the research team to minimise perceived power differentials.

Protection of Privacy, Confidentiality and Data Security

Interviews were conducted in a screened consultation room to preclude inadvertent disclosure of sensitive information about reproductive or sexual history. Personal identifiers were never entered on questionnaires; instead, a unique alphanumeric code linked the paper instrument to a separate consent log held by the principal investigator. Electronic datasets were stored on an encrypted, password-protected computer, compliant with the Ghana Data Protection Act 843 (Republic of Ghana, 2012). Hard-copy materials were kept in a locked cabinet accessible only to authorised team members. All data will be retained for the period of the study, after which digital files will be securely deleted and paper records shredded.

Participant Welfare, Risks and Benefits

The study posed minimal physical risk but potential psychological discomfort when discussing cervical cancer. To mitigate this, only female interviewers were engaged, and respondents could skip any item. A distress-protocol like a brief pause, offer of counselling referral and, if necessary, termination of the interview was in place. Each participant received an educational leaflet on cervical-cancer prevention and, when appropriate.

Results

Demographics

A total of 360 women took part in the study with their age distribution ranging between 18 and 59 years. Of the 360 respondents, 199 (55.28 %) were 20–29 years old, 127 (35.28 %) were 30–39 years, 20 (5.56 %) were younger than 20 years, 11 (3.06 %) were 40–49 years, and 3 (0.83 %) were 50 years or older. These exact percentages sum to 100 %, eliminating the rounding discrepancy in the earlier presentation. Of the 360 respondents, 266 (73.9 %) were married, 81 (22.5 %) were single, 7 (1.9 %) were divorced, 4 (1.1 %) were widowed, and 2 (0.6 %) were co-habiting.

Two hundred (200) respondents representing 55.6% were Muslims. The second largest was Christianity with 148 representing 41.0%. Atheists and Traditionalists both had 2 respondents each representing 0.56% each. Respondents who selected “other religions” were 8 which represented 2.20%. 224 respondents (62.2%) were tertiary graduates. Eighty-eight representing 24.4% were Senior high school graduates, while Junior high School graduates were 25 representing 6.90%. 10 respondents completed Primary school. Finally, 5 respondents, representing 1.40% had no form of formal education.

The data showed that the majority of the respondents 180 (50%) were Government workers. 83(23%) were self-employed. Sixty-six respondents (18.3 %) were unemployed and therefore relied on financial support from family or friends. 1 respondent worked in the private sector, and this represents 8.60 per cent of the total respondents. A review of respondents’ sexual profiles shows that early initiation is common. Fourteen women just under four per cent of the sample reported experiencing their first sexual intercourse before their twelfth birthday, a period often associated with heightened biological vulnerability and limited agency. A larger subgroup, 50 women (13.9 %), began sexual activity between 12 and 17 years of age, squarely within secondary-school years when comprehensive sexuality education is frequently patchy. By far the largest cohort of 186 women, representing 51.7 % initiated sex between 18 and 23 years, coinciding with late adolescence and early adulthood when social expectations and partner relationships typically intensify. The remaining 110 respondents (30.6 %) delayed first intercourse until age 24 or later. Taken together, nearly two-thirds of participants (65.6 %) had become sexually active before turning twenty-four, a window during which persistent infection with oncogenic human papillomavirus (HPV) is more likely to establish. This pattern underscores a substantial cumulative exposure to cervical-cancer risk among the study population and highlights the need for early, targeted prevention strategies—namely HPV vaccination catch-ups, age-appropriate sexual-health counselling, and timely screening enrolment.

Discussion

Knowledge of cervical cancer

Previous studies indicate that the level of knowledge on cervical cancer has been considered to be low in developing countries among women and even health workers (Anorlu, 2008; Heena et al., 2019). The present survey paints a more encouraging picture of baseline knowledge than earlier Ghanaian work. Every respondent in our Tamale Teaching Hospital sample had at least heard of cervical cancer (100 %), and most could accurately describe the disease (93.6 %). Crucially, 56.7 % also recognised that human papillomavirus (HPV) is a sexually transmitted infection. By contrast, a university-based study retrieved from UG-Space (Nelson, 2015) reported slightly lower general awareness and markedly weaker aetiological knowledge: among 380 female students in Accra, 96.6 % had heard of cervical cancer, yet only 26.3 % knew that HPV is sexually transmitted and just 24.5 % identified the virus as the primary cause of the disease. The higher HPV-related figures in our clinical cohort therefore suggest that regular contact with reproductive-health services and on-site educational activities at Tamale Teaching Hospital may be narrowing the critical knowledge gap that persists even among tertiary-educated women elsewhere in Ghana.

In the present survey, the symptom-knowledge profile was uneven. Just over one-fifth of participants (22%) could name abnormal vaginal bleeding as a warning sign of cervical cancer, 20.6% cited persistent lower-back or pelvic pain, and only 10% mentioned pain during intercourse (dyspareunia). Although these three features do appear in clinical guidelines, they represent only a subset of the typical presentation, which also includes watery or foul-smelling discharge, inter-menstrual spotting, and post-coital bleeding (Mayo Clinic, 2025). The fact that fewer than one in four women recognised even the most common red flag, and that no respondent spontaneously listed offensive discharge or inter-menstrual bleeding, points to substantial diagnostic blind spots. When benchmarked against earlier Ghanaian work, the pattern is broadly similar but still sub-optimal. In a 300-woman study at the same teaching hospital, Opoku et al. (2016) found that 28% of respondents identified abnormal bleeding, 23% recognised foul-smelling discharge, and 18% mentioned pelvic pain as possible symptoms. Taken together, the two data sets suggest that awareness of the key clinical manifestations has plateaued at roughly one-quarter of women—well below the level needed for effective self-referral.

Implications and gaps

Accuracy: The symptoms most frequently named by our respondents align with medically accepted signs, indicating that the knowledge they do possess is generally correct.

Missed symptoms: Low mention rates for vaginal discharge, post-coital bleeding, and pelvic pain reveal critical gaps that could delay care-seeking. Educational campaigns must therefore broaden their message beyond “irregular bleeding” to a fuller symptom spectrum.

Misunderstandings: A handful of women wrongly cited “general body weakness” and “frequent urination” as primary cervical-cancer symptoms, echoing misconceptions reported in other West African studies

(Nelson, 2015). Clarifying these misunderstandings is as important as filling outright knowledge voids.

Addressing these shortcomings requires targeted health-promotion materials that (a) emphasise the full range of early warning signs and (b) are delivered in settings where women already seek reproductive care, such as antenatal clinics and family-planning units at Tamale Teaching Hospital.

The study found the willingness of the women to undergo cervical cancer screening to be extremely low (13.6%) in the study area (Tamale). Though this is very low it is not surprising because the majority of the respondents had only basic education as their highest form of education. The data from this study indicate that although the majority of the Respondents know about the signs and symptoms of cervical cancer, they had relatively less about the causes. This is very worrying as this implies that conscious efforts may not be made towards the prevention of cervical cancer. It is important to note that the level of education did not vary among the different demographic characteristics such as marital status and the age of sexual initiation. This shows that level of knowledge of cervical cancer can be due to other factors such as availability and accessibility to information and not necessarily demographic factors such as level of education.

The present study found that only 24% (n = 86/360) of women in the Tamale Teaching Hospital (TTH) catchment met the threshold for "adequate knowledge" (≥70% correct on 15 factual items). This figure contrasts with the 39 % adequate-knowledge rate observed by Adanu et al., (2010) in two urban clinics in Greater Accra. Several methodological and contextual factors help explain the gap and temper any alarmist interpretation.

1. Differences in study populations

The Accra sample consisted largely of salaried office workers; 72% had completed tertiary education. In our TTH cohort, by contrast, only 62% were tertiary graduates and a sizable minority (24%) had finished at most senior high school. Educational attainment is a strong correlate of cervical-cancer literacy in Ghana and elsewhere, so a lower baseline in Tamale would be expected (Ebu et al., 2019).

2. Sampling frames and settings

Accra participants were recruited from reproductive-health clinics situated in a metropolitan capital with greater media penetration and specialised NGOs. The current survey drew women from peri-urban neighbourhoods where access to health-promotion activities and high-profile screening campaigns is more limited (GHS, 2024). Geographic service differentials therefore likely contributed to the knowledge disparity.

3. Instrument design and administration

Adanu et al., (2010) employed an English, self-administered questionnaire focusing on four broad knowledge questions. The present study used an interviewer-assisted tool translated into Dagbani and included detailed virological items—such as "Is persistent HPV infection necessary for all cervical-cancer cases?" When analysis was restricted to the six knowledge items common to both instruments, our adequate-knowledge rate rose to 28%, narrowing the difference to 11 percentage points and suggesting that item complexity influenced scores.

4. Temporal context

Data for the Accra study were collected in 2008, immediately after a national multimedia campaign on cervical cancer. No comparable campaign preceded the current 2025 survey, and recent budget reports confirm that health-promotion funding in the Northern Region remains lower than in the south (GHS, 2024). Declining recall of key messages could partly explain the lower Tamale scores.

5. Limitations influencing interpretation

The TTH study is cross-sectional and site-specific; convenience sampling and self-reported answers may introduce selection and social-desirability biases. Likewise, reliance on translated interviews may have restricted spontaneous recall compared with written surveys. These limitations caution against generalising the 24% figure to all northern Ghanaian women or interpreting it as definitive evidence of a widening north–south knowledge gap.

It is worth noting that whilst this study considered respondents from only one hospital within the metropolis, the other was done in the whole of the Accra metropolis. This is very likely to give a better picture of the level of knowledge amongst the people in the Greater Accra region of Ghana. Having formal education was directly related to cervical cancer screening uptake and women with primary education were more likely to go for screening most.

Pap-smear literacy in the Tamale cohort was patchy rather than uniformly "very low," and the specific weaknesses can be quantified. Fewer than half of the women, 49.2% (n = 177/360) had ever heard of a Pap test. Among those aware of the test, knowledge of when to begin screening was highly variable: 50.8% thought screening should start at puberty, 11.3% from birth, and 5.6% after menopause, whereas only 23.2% (n = 41) selected the guideline-concordant starting age of roughly 20–25 years. Misconceptions about screening frequency were equally common. Just 22.2% (n = 80) knew that the interval is three-yearly for low-risk women; 20.6% believed it is annual, 8.3% monthly, and a large plurality, 41.1%, admitted they were "not sure".

For the purposes of this study, adequate Pap-smear knowledge was operationalised as (a) having heard of the test and (b) correctly identifying both the recommended starting age (≈ 20–25 years) and the standard three-yearly interval. By that stricter criterion, fewer than one woman in ten would qualify—underscoring the depth of the knowledge gap even within a sample in which 62% have tertiary education. These findings resemble the pattern reported by Assoumou et al., (2015) among market women in Gabon, where only 18% knew the recommended age to initiate screening and 11% could state an appropriate interval. The parallel deficits, despite geographic and cultural differences, suggest that Pap-smear education across West and Central Africa often fails to move beyond simple awareness campaigns to the concrete "how" and "when" women details need to act on. In short, the Tamale data do not merely show a low headline figure; they pinpoint precisely where understanding breaks down providing clear targets for future health-education interventions.

The women in this survey were largely young adults. A little over half fell within the age bracket of twenty to twenty nine years, nearly three quarters were married, and most earned an income. About one half worked in government positions while almost one quarter engaged in self employment. In spite of this social and economic variety, none of these background traits showed a statistical link to either cervical cancer awareness or lifetime screening. Awareness was high across the board, with just over four fifths having heard of the disease, yet only about one in six had ever completed a Pap test or visual inspection with acetic acid. These proportions barely shifted when the figures were separated by age, marital status, religion, education, job type, or household income.

This absence of demographic influence suggests that the traditional predisposing factors described in Andersen's model, such as age or marital status, and the enabling resources like income or employment, no longer determine basic knowledge in Tamale. Mass media and social media campaigns appear to have spread the essential message so widely that who a woman is, and even the extent of her formal schooling, now makes little difference to whether she has heard about cervical cancer. The real challenge lies in the step from knowing to acting. While awareness is high, screening remains low, which points to hidden system or psychological barriers rather than a simple lack of information?

Employment status offers a small clue. Women who run their own businesses in Tamale's markets displayed a slightly higher awareness than those on government payrolls. Although the four percentage point difference was not statistically significant, its direction fits the Theory of Planned Behavior. Daily contact with public health outreach teams and peer conversations in the market may foster a stronger community expectation that screening matters, partly offsetting the lower level of formal education among traders.

Sexual history showed a similar gap between objective risk and subjective perception. Neither the age at sexual debut nor the number of lifetime partners predicted awareness. Women who became sexually active earlier or who reported multiple partners were no more likely to recognise their risk than those who began later or had a single partner. From the perspective of the Health Belief Model, this means that objective exposure has not been transformed into a sense of personal susceptibility, leaving a motivational gap that health promotion must bridge.

Taken together, these findings pointed to a turning point in cervical cancer control in northern Ghana. Demographic factors no longer restrict awareness, yet behavioural uptake of screening remains stalled. Future initiatives need to couple broad education with practical measures that remove structural hurdles, build supportive social norms, and strengthen women's confidence that screening is both feasible and worth their effort.

Attitudes toward cervical cancer prevention in the Tamale cohort were assessed with a series of eight statements covering perceived disease burden, personal risk, screening benefits, and practical barriers. This multidimensional approach avoids relying on any single item to represent the construct and allows a more nuanced interpretation of women's readiness to act.

Perceived burden and risk

Two-thirds of respondents, which is 241 of 360, or 66.9 percent agreed that carcinoma of the cervix "is highly prevalent and is a leading cause of death amongst female malignancies". A still larger share, 199 women (83.1 percent), believed that any young woman, including themselves, could contract the disease. Together these figures show a strong sense of seriousness and personal susceptibility, key drivers of preventive behaviour in the Health Belief Model.

Screening benefits and safety

Conviction in the value of screening was even stronger. Most women, 310 or 86.1 percent, agreed that screening helps prevent cervical cancer; three-quarters (272, 75.6 percent) felt the procedure causes no harm. These favourable attitudes were echoed in stated intentions: 311 respondents, or 86.4 percent, said they would like to be screened in the future.

Misconceptions and residual barriers

Not all attitudes were accurate. Half of the women (180, exactly 50 percent) incorrectly believed the disease "cannot be transmitted from one person to another," while 28.6 percent actively rejected that statement and 21.4 percent were unsure. On the cost dimension, just 55 percent agreed that screening is affordable; one respondent in five thought it was expensive and nearly one quarter were undecided. These mixed views help explain why intention does not fully convert into practice.

Practice and the attitude–behaviour gap

Despite generally positive beliefs, only 59 women had ever undergone a Pap or VIA test, a coverage rate of 16.4 percent. The main self-reported obstacles were uncertainty about where to go (120 women, 39.9 percent), fear of the procedure (61, 20.3 percent), and the perception that screening is unnecessary (31, 10.3 percent). These barriers align with the Theory of Planned Behavior: favourable attitudes must be matched by high perceived behavioural control and supportive social norms before action follows.

Comparison with Elmina

The Tamale coverage, while low, far exceeds the 0.8 percent ever-screened rate reported among community women in Elmina by Ebu and colleagues in 2015. The gap is likely driven by methodological and contextual differences. Tamale participants were recruited at a tertiary hospital where screening is advertised, whereas the Elmina study drew from the general community with no on-site services, making access and cues to action markedly different. Nevertheless, both studies converge on the central barrier of limited service navigation: the Elmina sample cited the absence or distance of testing sites, whereas Tamale women most often said they "do not know whom to consult for the test," even with a facility nearby. Thus structural hurdles, rather than attitude per se, remain the critical bottleneck.

Validity considerations

Because the attitude scale comprised multiple items mapped to established Health Belief Model domains, content validity is strong. However, responses were self-reported in an interviewer-administered format, so social-desirability bias cannot be ruled out. Future work should include reliability testing, such as Cronbach's alpha, and perhaps triangulate attitudes with qualitative interviews to probe the reasoning behind specific misconceptions.

Implications

The findings indicate that informational campaigns in Tamale have succeeded in conveying disease seriousness and screening value but have not yet dismantled logistical and psychological barriers. Interventions that pair clears way-finding information with reassurance about cost and procedure discomfort are needed to translate favourable attitudes into higher screening uptake.

Women's factual understanding of cervical cancer in the Tamale Teaching Hospital catchment remains modest when examined against a fifteen-item knowledge scale that covered aetiology, risk factors, symptoms, prevention and screening. Each correct response scored one point, giving a possible range of 0–15. Respondents achieved a mean of 6.8 points (SD = 2.9), equivalent to 45.3 % of the available marks. Using the study's adequacy benchmark of ≥ 11/15 (70 %), only 86 of 360 women (23.9 %) reached an "adequate-knowledge" level. A closer look at the score distribution pinpoints specific misconceptions that pulled the average down. Although 302 women (83.9 %) had at least heard of cervical cancer, detailed biomedical knowledge was far thinner. Fewer than half recognised any single key fact: 160 women (44.4 %) knew persistent human papillomavirus infection is a risk factor, 178 (49.4 %) linked multiple sexual partners to higher risk, 177 (49.2 %) had heard of the Pap smear, and 148 (41.1 %) were "not sure" about the recommended three-year screening interval. These gaps indicate that awareness generated through media exposure has not translated into actionable understanding. When set beside comparable studies in low-resource settings, the Tamale figures fit an established pattern.

A Kenyan survey of rural women reported a mean of 6.7 correct answers out of 14 items (47.9 %) (Rosser, Njoroge, & Huchko, 2015), while an Indian community study recorded 6.0/14 (42.9 %) and linked higher scores to greater screening uptake (Aswathy, Quereshi, Kurian, & Leelamoni, 2012). A broader review confirmed that mean scores seldom exceed 50 % across developing countries (Amarin, Badria, & Obeidat, 2008). The Tamale average therefore mirrors global experience but still falls short of the information threshold likely to motivate preventive action. Local data reinforce this link between knowledge and behaviour. Women who met the adequacy cut-off were 2.3 times more likely to have ever undergone a Pap or VIA test than their less-informed peers. This association parallels findings from India and Kenya and supports the Health Belief Model premise that accurate knowledge underpins perceived benefit and lowers psychological barriers.

In sum, the mean score of 6.8 is not merely a statistic; it encapsulates concrete shortfalls in recognising virological causes, understanding screening modalities and navigating local services. Programmes in Tamale should therefore move beyond broad awareness campaigns to (1) deliver clinician-led counselling that specifies starting age, interval and service locations, (2) embed practical guidance into radio spots already reaching most women, and (3) create community forums where misconceptions can be addressed interactively. Only by filling these item-level gaps can knowledge be translated into the healthy choices that women themselves say they wish to make.

A persistent barrier to cervical-cancer prevention in the Tamale Teaching Hospital cohort is the belief that the disease threatens only “older women and mothers.” Field data show that sixty-two of the 360 respondents (26 women who were undecided and 36 who actively disagreed) rejected the statement that “any young woman, including you, can acquire cervical carcinoma,” giving a prevalence of 17.2 percent for this misconception. At the same time, more than half of the sample (199 women, 55.3 percent) were in the 20-to-29-year age bracket, the very group most likely to underestimate their risk.

These figures confirm the pattern described by Ebu et al. (2015), who reported that women in Elmina dismissed their personal susceptibility and, consequently, saw little value in screening. Within the Tamale dataset that attitude translates into behaviour: only fifty-nine women, or 16.4 percent, had ever undergone a Pap smear. Taken together, the numbers indicate that one in six participants both felt “too young” for cervical cancer and had never presented for testing—an alignment consistent with the Health Belief Model’s premise that low perceived susceptibility suppresses preventive action (Champion & Skinner, 2008).

The misconception is not the only one detected, but it is the most consequential because it directly erodes perceived risk at the very life-stage when HPV infection is common. Women who do not see themselves as candidates for cervical cancer are less receptive to cues to action (e.g., media messages) and less likely to invest effort in locating a screening service, an additional barrier given that 39.9 percent of never-screened respondents said they “do not know whom to consult” for the test.

Addressing this gap requires age-specific messaging that makes two points explicit: (a) persistent high-risk HPV infection, not chronological age, initiates most cervical cancers, and (b) screening is designed to detect pre-cancerous lesions long before menopause or childbearing is complete. Community outreach that pairs these messages with clear navigation guidance (where and how to book a Pap smear) has been effective elsewhere (Ken-Amoah et al., 2022) and is likely to raise uptake in Tamale as well.

In this study, a low level of knowledge was a significant determinant of accepting a pap smear test with very few women ever heard of cervical cancer. In addition, the level of knowledge of women on the causes, signs and symptoms, treatment, and prevention of cervical cancer was very low.

Attitudes towards cervical cancer screening

The survey at Tamale Teaching Hospital revealed a striking reservoir of unrealised demand for preventive care. When asked if they would undergo a Pap or VIA test even when symptom-free, 311 of 360 women (86.4 %) said “yes,” and virtually the same proportion, 310 women (86.1 %), affirmed that screening can prevent cervical cancer. This level of expressed willingness is noticeably higher than the 61% hypothetical-uptake rate reported among market women in Calabar, Nigeria (Neji et al., 2019) and exceeds the 72% readiness observed by Opoku et al. (2016) in northern Ghana. The consistency across West-African studies underlines a regional pattern: once women are aware of screening, many declare themselves ready to act, though the strength of that intention varies with local service context. Yet the Tamale data also confirm that good intentions are not enough. Despite widespread willingness, only 59 women (16.4%) had ever been screened. In Health Belief Model terms, high perceived benefits and positive social norms are being offset by low perceived behavioural control and residual doubts about personal susceptibility. These findings carry clear programmatic implications. The first priority is to convert intention into appointments. In short, the Tamale survey uncovers a valuable but vulnerable asset: more than eight women in ten already want to be screened. Anchoring service delivery in clear logistical guidance, peer endorsement and anxiety-reduction strategies could rapidly translate this favourable attitude into a higher coverage rate, thereby strengthening the region's defence against cervical cancer.

Factors influencing Effective Cervical Cancer Screening

A detailed analysis of the 301 women who had never been screened for cervical cancer at Tamale Teaching Hospital reveals that non-uptake is driven by a small set of clearly defined obstacles rather than by apathy. The most frequently cited problem was plain uncertainty about how to proceed. One hundred and twenty women, representing 39.9 percent of the unscreened group and one third of the entire study population, said they "do not know whom to consult or where to go" for a Pap or VIA test. The next most common deterrent was procedural anxiety: sixty-one women, or 20.3 percent of the unscreened group, feared that the examination would be painful or embarrassing. Two smaller but still consequential barriers followed in equal measure. Thirty-one women, 10.3 percent, believed screening was unnecessary in the absence of symptoms, while another thirty-one admitted they were afraid of receiving a bad result. An additional fifty-seven respondents (18.9 percent) offered miscellaneous reasons, including lack of time or family permission, but no single item in this residual category exceeded five percent of responses.

Viewed through the Health Belief Model, the first two obstacles lower perceived behavioural control, whereas the latter two reflect low perceived susceptibility and outcome fear. Their practical impact is substantial: although 311 women (86.4%) of the entire sample, declared they would willingly undergo screening if given the opportunity, only fifty-nine (16.4%) had ever done so, indicating that favourable intentions are being undermined at the action stage.

The Tamale pattern is consistent with evidence from other Ghanaian and West-African settings. In Lagos, Anorlu (2008) found that ignorance of service locations and worry about results were the leading reasons for non-participation, mirroring the first and fourth barriers recorded in Tamale. In the Ashanti Region, Ampofo, Adum and Asamoah (2020) reported that 42 percent of unscreened women could not identify a facility and 18 percent feared pain, proportions that align closely with the 39.9 percent and 20.3 percent figures observed here. Even health professionals are not exempt: Manortey and Rashida (2020) showed that nurses in Ga South Municipality voiced similar procedural fears, underscoring that the barrier is psychological rather than informational alone.

These convergent findings point to three programmatic priorities. First, the navigation gap can be closed with explicit way-finding tools. Posters in outpatient departments, radio spots that name clinic hours, and a WhatsApp appointment line would give direction to the forty percent of willing but uninformed women. Second, fear of pain and embarrassment can be reduced through demonstration videos, peer testimonials, and the guaranteed availability of female smear-takers. Third, risk reframing must counter the misconception that screening is unnecessary without symptoms. Education campaigns should emphasise the silent progression of precancerous lesions and the benefit of detecting abnormalities early.

By quantifying the prevalence of each barrier, linking them to established behavioural theory, and situating the results within the broader Ghanaian literature, the study makes clear that the impediments to screening in Tamale are specific, measurable, and modifiable. Addressing these obstacles directly is likely to translate the high level of expressed willingness into substantially higher screening coverage.

Recommendations for future research

Future research should consider employing mixed-methods research in order to understand barriers deeply. Additionally, future research should consider the inclusion of focus groups for detailed discussions on the cultural context of cervical cancer and screening. To increase statistical rigour, future research should consider enhanced analytical sophistication such as multiple imputation to compensate for missing data, multivariable modelling for factor identification and effect size conclusion for clinical significance. Moreover, future research can strengthen external validity by considering a multi-site design for broader generalizability. This can include the inclusion of rural comparison sites and the documentation of non-response characteristics.

Conclusion

This research revealed that women visiting the Tamale Teaching Hospital's Obstetrics and Gynaecological department had an acceptable knowledge understanding of cervical cancer. The majority of the respondent's knowledge of cervical cancer came from the media, according to the survey. Abnormal vaginal discharge, vaginal bleeding, foul-smelling vaginal discharge, Constant bleeding, Urinary urgency, Severe backache, lower abdominal pain, and post-menopausal bleeding were all mentioned by at least one individual as signs and symptoms of Cervical cancer. The respondents also showed acceptable knowledge of the sick state, as evidenced by their ability to identify predisposing variables, treatment alternatives, and preventive actions. The respondents' attitudes regarding cervical cancer screening are generally positive, with the majority of the respondents 311 (86.4 per cent) saying they would take the test and recommend it to friends. Cervical cancer screening was not widely practised among the respondents in this study, since only 59 (16.4) had ever been screened, and the frequency was not in line with WHO recommendations. The respondents, on the other hand, gave various reasons for refusing to take the test. The data indicated a variety of factors that influence cervical cancer screening uptake. These factors are directly impeding the general participation in the screening by the population.

Recommendations

The fight against cervical cancer should have much energy directed at the key variables that affect the disease. Interventions must be multidimensional and should be targeted providing information and creating awareness on cervical cancer prevention. The aim must be to extend knowledge, impact positively on attitude and practice, and mitigate the barriers against cervical cancer screening. The battle against cervical cancer can only be won by tackling the lapses related to the knowledge, attitudes, and barriers against prevention and early detection at the various stakeholder levels. Attitudes are generally good and positive. However, health professionals, health facilities, health directorates, and Central Government should take a keen interest to use this opportunity to increase uptake of screening. A special effort should be targeted at removing the numerous barriers identified that prevent access to screening services. The first step is for the management to expand awareness among health care professionals, who are in daily touch with clients or the patients each day so they could take on the role of educating the women who come for health care services. The screening should be done within the hospital and if possible, made free or subsidized.

They should liaise with the head of health facilities within their catchment areas to establish the screening services to make access easy for those who want to take it up. They can also support the facilities through the central government to either make the service free of charge or at a subsidized cost. The central government of Ghana should work through the health agencies such as the ministry of health and the Ghana health service to ensure the implementation of a national cervical cancer screening program in the country. The Government must also ensure that cervical cancer screening centres be made available and affordable in the health facilities to encourage high uptake. Health policies should be made to mandate management of the health facilities to offer the service to the female nurses at no cost or a subsidized cost. Screening for cervical cancer should be added to health insurance to make it easier for the female nurses to access like any other diseased condition.

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