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ORIGINAL RESEARCH ARTICLE OPEN ACCESS

Diagnostic experiences of patients with cervical cancer: A qualitative study in Accra Metropolis, Ghana

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Abstract – *Purpose*: The majority of cervical cancer cases are diagnosed at the advanced stage in low-income countries. However, there is limited information on the diagnostic experiences of patients with cervical cancer in sub-Saharan Africa. The current study explored the diagnostic experiences of patients who received cervical cancer diagnoses in Accra, Ghana. *Method*: An exploratory qualitative research design was used in this study. Using a purposive sampling technique, a semi-structured interview guide was used to interview 12 participants to gain insight into their diagnostic experiences with cervical cancer. The data collected were analysed using content analysis, in which major themes and subthemes were generated. These findings were supported with verbatim quotes from the participants. *Results*: Two major themes emerged with their corresponding sub-themes. 1. The patients experienced delayed diagnosis of cervical cancer. The patients attributed the delays to the missed diagnosis of the cancer in the hospital. 2. The main screening test reported was the Pap smear. Most of the patients stated they experienced pain, perceived violation of privacy during examination, and loss of blood during the Pap smear. *Conclusion*: It takes patients with symptoms of cervical cancer several visits to different hospitals to get a diagnosis of cervical cancer in Ghana. Initiation of traditional remedies and the perceived healthcare providers' inability to recommend cervical cancer diagnostic tests accounted for the delayed diagnosis of the disease. These findings have implications for cervical cancer education, training of healthcare providers on cervical cancer diagnosis, and the development of cervical cancer assessment tools to improve cervical cancer management.

Key words: Cervical cancer, Delayed diagnosis, Experiences, Patients, Sub-Saharan Africa.

Introduction

Cervical cancer (CC) is the second cause of cancer-associated deaths among women in Ghana in 2022 [1]. In 2023, the crude incidence rate of CC in Ghana was 18.3 per 100, 000 women with 1699 deaths of women [2]. Studies have shown that the persistent infection of high-risk human papillomavirus (HPV) (e.g., HPV 16, 18, 31) is the primary cause of CC [3–5]. These infections cause changes in the cervix, called precancerous cervical lesions [5]. The precancerous cervical lesions do not show signs and symptoms and women most often are not aware of the cervical changes and only report at health facilities when the precancerous lesions or changes become advanced CC [5, 6]. It takes between 5 and 20 years for precancerous cervical lesions or changes to become CC [5]. This poses challenges to CC diagnosis. For example, studies showed that most CCs were diagnosed at the advanced stage of the disease partly due to patients' inability to detect the signs and symptoms and report for early treatment [7–9]. However, little is known about how patients who complained of the symptoms of CC gets diagnosis in Ghana.

One preventive measure for CC as recommended by the World Health Organization (WHO) [10], is the screening for early diagnosis and treatment of precancerous cervical lesions. Cervical cancer screening tools such as cytology (i.e., Papanicolaou smear (Pap smear) and liquid-based cytology (LBC)), HPV testing, and visual inspection on acetic acid (VIA) can detect precancerous cervical lesions in healthy women [11]. The diagnosis of cervical cancer utilizes colposcopy and histopathology studies to confirmed positive HPV test, cervical cytology, and VIA reports [11, 12]. Positive colposcopy and histopathology results are used to inform patients management. Although histopathology is the gold standard for diagnosing cervical cancer, its access is limited. Even though, colposcopy has a lower specificity when compared to histopathology [13], it has shown sensitivity and specificity of 91.2%–93.5% and 47.1%–50.1% respectively in detecting cervical precancer and cancer in women testing positive for HPV [12].

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The integration of cytology screening services, HPV testing, and HPV vaccination for CC prevention into medical and public health services has substantially reduced CC incidence and mortality in high-income countries [14].

In sub-Saharan Africa, the incidence and mortality rate of CC remain high due to the limited implementation of CC prevention and diagnosis strategies [15, 16] as well as other individual-related factors [17, 18]. Systematic reviews reported limited use of Pap smear, colposcopy, and HPV testing across sub-Saharan Africa [17, 19, 20]. Lack of these screening and diagnostic tools negatively impacts efforts to achieve early diagnosis and treatment of CC. Other studies showed that poor knowledge of CC and the cost of screening were associated with non-participation in cervical screening programs [21–23]. Other barriers identified among regular screening women include fear of pain, embarrassment, lack of screening services, and fear of cancer diagnosis [14, 24].

In Ghana, there is no national CC prevention program except for a few hospital-based screening centers that mostly offer opportunistic screening services for diagnostic purposes. There are only two gynecologic oncologists in Ghana [25] who lead the diagnosis of over 4,800 gynecologic cancer cases annually [1]. While studies in Ghana [21, 22, 26, 27] had examined the experiences of women on regular CC screening and/ or lived experiences with the disease, little is known about patients who had symptoms of CC and sought a diagnosis in the healthcare system. The perspectives of these patients on how they were diagnosed with CC would shed light on the success of CC diagnosis and challenges. This will inform policy directions and development of clinical care guidelines for CC. Therefore, the purpose of this study was to explore the journey of getting a diagnosis of CC in the Accra Metropolis, Ghana.

Materials and methods

Research design

An exploratory-descriptive qualitative design was adopted in this study to explore the subjective diagnostic experiences of patients with symptoms who received CC diagnoses. This research design ensured that the researcher probed the participants' experience of the phenomenon and described in detail the findings [28]. The focus of the design was to gain insight into the patient's experiences during the search for a diagnosis of CC.

Study setting

The study was conducted in the Accra Metropolis. Accra Metropolis is the seat of the Government of Ghana as well as the national business center. Most of the nation's best health facilities are in the Accra metropolis. The CC screening center in the Greater Accra Regional Hospital (GARH) was used as an outlet for the recruitment of the participants for the study. The GARH is the most well-known referral center for CC screening and diagnosis in Ghana. The center receives patients from all parts of Ghana, including other hospitals in the Accra Metropolis for CC diagnosis. The CC screening center in the GARH has well-trained healthcare professionals with skills in CC screening and sample collection for diagnosis. The Accra Metropolis was used as the setting because of its cultural diversity, service availability, and a city made up of urban rich and poor living together. Even though a single-center recruitment may have referral bias, because cervical sample collection was integral to the patients' experiences of the diagnosis, only GARH had trained professionals who could collect sterile cervical samples at the time of data collection.

Target population and sampling

The target population for this study was all patients who were referred to the CC screening center at the GARH for CC screening and diagnosis. Patients who had symptoms of CC and previously consulted a doctor, received a CC diagnosis at GARH through referral, were aged 18 years or older, and reported from the Accra Metropolis were included. Women without symptoms of CC who were diagnosed through regular screening and those who reported from other parts of Ghana were excluded. This is because those diagnosed through regular screening had fair knowledge of CC and could discuss and prompt CC with their doctors, and those from other parts of Ghana could not easily be traced because there is no proper housing address system across Ghana. Those patients who willingly accepted to be part of the study and consented were recruited as participants.

Purposive sampling was used to select the participants for this study because patients who have ever complained of symptoms of CC to their doctors can describe how they got the diagnosis without prior knowledge of CC. Twelve (12) out of 140 patients who met the above inclusion criteria were interviewed and data reached saturation. Data saturation is operationalized in this study as when no new information comes from the interviews with participants, the data collection is considered adequate, and of high-quality data [29]. On the interview with the 10th participant, the researcher began to hear the same responses/comments. Two more participants were interviewed to ensure data saturation and the 12th participant; no new information was realized, and data reached saturation. A systematic review on qualitative data saturation showed that a sample size of 9–17 participants is good enough to reach data saturation [30].

Data collection procedures

The first author collected data for this study. Patients diagnosed with CC were identified through the institutional register by staff of the CC screening center. The staff at the center contacted the potential participants on the phone and explained the purpose of the study to them and referred those who wanted to learn more about the study to the first author. Interested participants either contacted the researcher or allowed the staff to share participant contact numbers and/ or home addresses (if available) with the researcher to contact and schedule interview dates, time, and place of interview. The purpose of the study was explained to the participants, who agreed and met the inclusion criteria. One by one, with face-to-face interviews

in English and Ashanti Twi were scheduled and conducted from November 2017 to May 2018. Each interview session lasted between 45 and 60 min.

The interviews were based on open-ended questions about CC diagnosis, developed in the form of a semi-structured interview guide by the authors according to the objectives of the study. The questions were pretested using two clients at the GARH, and necessary corrections were made, but these were not included in the analysis. The following questions were asked (What informed your decision to look for the diagnosis of the cancer; Share with me how you got the CC diagnosis). Participants' responses were probed appropriately, and the interviews were recorded with the participants' permission. Social desirability bias was minimized through ensuring anonymity and confidentiality, phrasing questions neutrally, and a strong rapport, which ensured a non-judgmental and relaxed interviewing environment. Even though most participants had completed treatment, recall bias was minimized because participants were allowed time to reflect and provide responses that really matter most during the cancer diagnosis. Field notes on participants' gestures and researcher reflections were taken alongside the interviews to consolidate responses and feelings, respectively.

Data management and analysis

Data collection and analysis were carried out concurrently. Content analysis principles and procedures were used for the data analysis. The interviews were transcribed verbatim. Two of the interviews were first translated from Ashanti Twi into English and transcribed by the second author, who understands and writes the Twi language. An independent language reviewer cross-checked and reviewed the two translated transcripts. The transcripts were read through repeatedly by all authors to gain the meanings of the responses. The ideas were first identified and coded. Similar codes were re-grouped to form subthemes. The subthemes were then used to generate major themes. The resulting thematic structure served as the organizing framework for the results of the study [31]. The data was managed by manually sorting the codes and quotes under respective themes and subthemes. These were reviewed by all the authors, and a consensus was reached after the reviews. The transcripts and audio recordings were saved on the researcher's personal computer in identifiable folders with a security code/password to make them inaccessible to any other person, according to the institutional and the country's Data Protection Act.

Rigor

The study included participants diagnosed with CC at the screening center at GARH. All the participants had symptoms of CC before their diagnosis. The data collection and analysis were done concurrently, which ensured member checks and follow-up on emerging themes for confirmability. The participants were also followed up to validate or clarify the meaning of codes for credibility purposes. Field notes and reflective journals were also kept for audit purposes for dependability. The sampling strategy and data collection were described to ensure the transferability of the study. The use of the same interview guide by the same interviewer also ensured the rigor of the study.

Ethical considerations

The study received ethical clearance from Ghana Health Services – GHS-ERC 011/10/17 and Noguchi Memorial Institute for Medical Research – NMIMR-IRB-022/17-18 of the University of Ghana. Institutional approval was also sought from the GARH to use the CC screening center register to identify participants for the study. Participants were told that participating in the study was voluntary and that refusal to participate would not in any way affect their healthcare at the facility. Individual written informed consent forms were obtained from all the participants who willingly signed to agree to participate.

Results

Demographic profile of participants

Twelve (12) patients participated in this study. The ages of participants ranged from 35 years to 68 years. Most of the participants attained a basic level of education (i.e., 6–9 years). All the participants were once married. To ensure confidentiality, the participants were represented by codes (e.g., C1, C2) (Table 1).

Thematic findings

Two (2) overarching themes emerged from the analysis of the diagnostic experiences of the patients with CC. These were: 1. Delayed Diagnosis of Cervical Cancer (subthemes: Causes, Consequences); and 2. Diagnosis Pathways for Cervical Cancer (subthemes: Screening Stools, Diagnostic Test, Differential Test) (Figure 1).

Delayed diagnosis of cervical cancer

Most of the women felt that their diagnosis of cervical cancer was delayed. While some of the women believed that the delay was caused by their initial use of traditional remedies to cure the disease, others attributed the delay to the lack of CC tests in the hospitals, and some perceived that their doctors fail to detect CC or recommend an early referral.

Causes of delayed diagnosis of cervical cancer

Seeking traditional remedies

Some of the participants stated they consulted a herbalist or traditional medicine practitioner to treat their symptoms.

> *"One of my friends took me to a man who cooks this herbal medicine. He gave me the roots, not the leaves to come home and cook it and use… I was using those things and not going to the hospital" (C5).*

Table 1. Demographic characteristics of participants.

Code	Age	Residence	Marital status	# Sexual partners	#Children	# Clinic/hospital visited	Level of education	Occupation	Time after cancer diagnosis	Family planning
C1	35	Osu	Married	5	2	6	Tertiary	Business	2 years	Yes
C2	38	Madina	Divorce	5	2	5	Tertiary	Manageress	5 years	Yes
C3	62	East Legon	Divorce	3	4	8	Tertiary	Nurse	4 years	Yes
C4	63	Adabraka	Widow	3	4	7	Secondary	Manageress	18 months	No
C5	54	Accra New Town	Divorce	10	4	10	Secondary	Evangelist	16 months	No
C6	68	Osu	Divorce	1	3	9	Basic level	Trader	6 years	Yes
C7	44	Kasoa	Married	3	8	8	Basic level	Trader	2 years	Yes
C8	64	Dome	Married	1	3	6	Basic level	Trader	3 years	No
C9	62	Kasoa	Married	1	3	8	Secondary	Designer	4 years	Yes
C10	54	La	Married	2	3	8	Basic level	Trader	5 years	Yes
C11	40	La	Married	4	3	6	Tertiary	Teacher	3 years	Yes
C12	60	Dansoma	Widow	5	5	10	Basic level	Trader	4 years	Yes

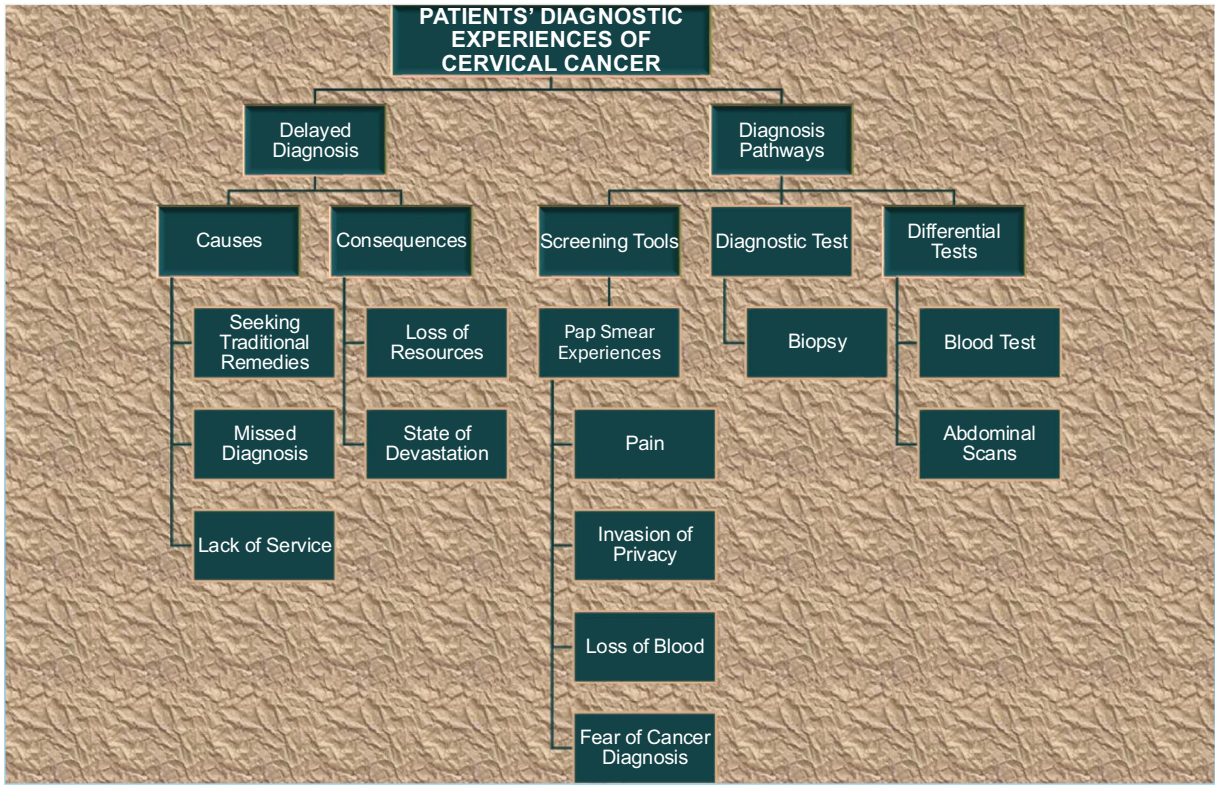

Figure 1. Themes and subthemes of patients' diagnostic experiences of cervical cancer.

"...I was drinking leaf tea and some other leaves...I boiled it and sieve the water into a water container and drink it. I used it for some time before going to the hospital when it was not getting better" (C2).

Missed diagnosis

Some of the women indicated that they received treatment for different diseases other than CC, and their conditions never improved over a long period.

"Hmm! I don't know but I think the doctors (previous ones) didn't know I have this (CC). One (doctor) told me that my condition is `white' (candidiasis), *another told me it is pelvic inflammatory disease (PID)...." (C12).*

"...You see, the doctors in Korle-Bu are doing well but for my condition, they were giving me treatment for different diseases PID, dysmenorrhea, etc. for a long time...." (C4).

Most of the participants described their referrals to the CC screening center as very late. They attributed the late referrals to their doctors' inability to detect the signs of the cancer and commence early referral.

"The doctor asked me to go there (another hospital) and do some test, and I went and did the test (Pap smear) ... and he (doctor) told me it was CC. I wished I had the referral earlier" (C7).

"None of the doctors I met before thought of referring me for the test (pap smear test). They will rather give you medicines to go and be taking but the problem (CC) is not getting better" (C11)
"I think the doctor doesn't know about the test (pap smear test). Like he would have refer me to go and do it because that test is not common in the hospitals" (C1).

Some participants stated that the test for CC was not common in the Accra metropolis.

"No, I visited about 10 clinics and hospitals with my complains but none of those hospitals have the test for this thing (CC)" *(C12)*
"It is not a common test in Ghana. The hospitals I went to previously all don't have it (Pap smear)" *(C9)*
"I don't know why that test (Pap smear) is not in the hospitals I went to . . . may be that is why the doctors didn't ask me to do it" (C10)

Consequences of delayed diagnosis

Loss of resources

Participants reported a loss of resources in finding the diagnosis of CC. They described loss of resources in the form of money, friends/husbands, time, and energy. Most of the participants said finding a diagnosis of CC has made them spend so much money buying drugs that could not treat the cancer.

"The wrong treatment I was taking for over two years has finished my money before I even started the treatment of the cancer" (C5).
"Going to different doctors, doing tests, and paying for drugs that cannot help me cost us a lot of money..." (C8).
"Our money got finished before we started the cancer treatment" (C3).

Three (3) participants attributed their marital divorces to the fact that it took them a long time to know that their problem was CC. Because they could not bear the pain to satisfy their husbands sexually, their husbands decided to get second wives, and that contributed to the divorces.

"Hmm! (looking sad) *I can't believe that my husband will do that to me. Because of my pain I cannot endure sex with him, so he gets married to another woman. I also packed and left him.... but I think If the doctors know my problem and explain it to my husband, he may not have mistreated me that way....."* (C2).
"I didn't know that my husband will be demanding sex when I told him about my problem (disease). He didn't believe me because the doctors did not find the problem (CC) at the time. So, our problems (divorce) started and that ended it" (C6).

Many of the participants felt that their doctors could not diagnose the disease or make referrals at initial visits. Because of this the cancer has caused them to lose energy and effort to sustain their lives. They thought they could not do anything meaningful in their lives again.

"See me! (tears dropping) *I wasn't looking like this. I cannot do anything because the disease has finished me. If we know the disease early and start the treatment, I should be better than this* (throwing her arms out)*"* (C3).
".... I don't think I can go back to work (shaking her head). *Nobody will want to be closer to me and I don't have the energy to work again especially when I don't even know where my problem* (CC*) will take me"* (C1).
"At a point, I felt I'm tired of seeing doctors and not getting better, but the pains and the bad smell was pushing me to the hospital. I was confused and felt that my body was tired" (C10).

State of devastation

Some of the women expressed that they became tired and desolation to attend hospitals to seek diagnosis and treatment for the disease.

"You know that if you go to the hospital and there are no changes it means that the doctor didn't give you the correct treatment. So, you must see another doctor. I went to most of the hospitals in Accra and at a point I became fed-up" (C3)
"Because I wanted to know what was wrong with me, I went to many clinics and hospitals. Even one doctor told me that he would make me the chief patient because I'm always there" (C10)
".....My husband also became tired of following me to the hospital. I felt bad about myself always going to the hospital" (C1)

Diagnosis pathways for cervical cancer

Biopsy studies

A few of the participants mentioned that a biopsy was done as the main diagnostic test at the pathology department to diagnose cervical cancer.

"*According to him* (specialist*) they took biopsy (ecto and endo specimens) and sent them to the pathology department again. I think it took 21 days before I went for the results, and they said it was CC"* (C4).
". . .. they (nurses) *pick something from my womb* (cervix*) and asked me to send it to another institution* (GSB) *for further testing..."* (C6).

Pap smear experiences

Most of the Participants described the Pap smear (a screening test) as the main test their doctors used to diagnose CC in this study. The participants said that they did the Pap smear test at GARH and repeated it at the Ghana Standard Board (GSB) for confirmation.

"...they did the test (Pap smear) *and said they have found something bad about my womb..."* (C6).
"...Yes, so I quickly went to that hospital (GARH*) to have the Pap smear test done. They told me that they have found vagina infections of which they gave me treatment but asked me to go to the GSB to do a test. It was then on my second Pap smear test that I was told the result was positive*" (C2).

Pain

All the participants indicated that they experienced pain when undergoing the Pap smear procedure. They attributed the pain experienced to the disease state of the cervix and the instruments used for the procedure.

"Oooh, because I have those things; they said bruises, I feel pain when they put that thing inside. It was not comfortable at all" (C2).
"I feel ok but what they were doing was painful...Especially using that thing (instrument) inside the vagina" (C6).

Some women described the pain as sharp and severe.

"They wore gloves and used something like ear cleaner stick and took something out. There was this sharp pain and that was it" (C10).
"It was painful and severe and after, I saw small drops of blood" (C8).

Some of the women indicated that their pains were not satisfactorily managed.

"They told me it (pain) will happen, I don't know because of that they didn't give anything for the pain...They said I will be fine" (C8).
"They talk to me about the pain and offer me nothing for it (pain), so I took it like that" (C1).

However, one participant stated that painkillers were used to manage her pain.

"At the hospital, the pain was severe because I was already having pains in the left leg, so the doctor gave me a prescription to buy painkillers" (C5).

Invasion of privacy

Most of the participants stated that they lost their dignity and integrity through privacy invasion during the Pap smear testing. They expressed shame and worry about the removal of their clothes in the presence of male doctors.

"...because of the CC test, I must lose myself (remove clothes) *but that was very difficult. It is like you are going to give birth. They lay you on the bed as if you are giving birth and your private part is just exposed" (C5).*

"Because of sickness you don't think about people seeing your private organs, but it is not good. Even if you are feeling shy you must put it aside... Yes, I felt and have shyness" (C7).

Loss of blood

Some participants experienced bleeding of the cervix during and after the Pap smear test. They described the bleeding as drops and clots of blood.

"I was given injections so I didn't feel pain much but there were clots of blood after the test" (C4)
"Though with some time the bleeding stop, when he (doctor) started I feel pains and started bleeding and the doctor said it was bleeding because there was a sore there" (C5)

The women stated that they had used the sanitary pad to manage the bleeding.

"Ooh, that one I used the pad for it" (C4).
"The doctor said I can use the pad to stop the bleeding" (C5).

Fear of cervical cancer diagnosis

All the participants expressed some level of fear of a CC diagnosis. They expressed the fear in the form of sadness, psychological and emotional pain, panic, and fear of death. The reasons for the expression of fear included: cancer has no cure, cancer treatment is deadly, and cancer is dangerous and could kill you.

Some participants indicated that they were sad and confused by the news of Pap smear-positive results.

"I was down (sad) *because I went there on my own and this is it...So when I was on my way home, I was so down* (said in a low tone) *that I was asking myself who sent you there? if I hadn't, I would have had my peace of mind. I was really confused" (C10).*

Most participants expressed serious fear of death before and after receiving the news of the CC diagnosis.

"I was seriously praying that it was not CC because I heard much about cancer on radio and TV that cancer is deadly. ...Receiving the diagnosis was not easy and I have cancer. I don't even know whether CC or whatever cancer, I knew that whatever cancer, it is deadly" (C1).
"When I first came to the family planning, and they told me about the disease I really became frightened. I thought it was going to kill me" (C8).

Some of the women described their fear of the diagnosis as panicking.

"They gave me another week and when I came, they gave me the results, and the woman said I have that sickness

(CC). That time my heart was beating, and I was sweating" (C9).
"I panicked I was afraid when he gave me that report. I was told it has no cure; the possibility of the cure is very low. I told one of my sons and he said ooh, this thing is a life and death thing ooh ...As for cancer no (3x) ..." (C5).

Many participants experienced emotional pain after they were informed about the diagnosis of CC.

"Hmm, the time I hear that I have CC, I was always crying" (C6).
"Ooh, it was not easy initially taking the news that I have CC. I was always thinking about it and asking myself can I be safe and still be able to do my work. It was a difficult time in my life" (C11).

Some participants believed that the counseling they received following the diagnosis of the disease helped in relieving the psychological burden of the CC diagnosis.

"The nursing sister I talked about had to explain to me what the report was all about. She counselled me too and told me that I would have to see a doctor at the hospital for the treatment. That helped me a lot" (C10).

Differential test

In addition to the Pap smear test, some participants said the specialist asked them to do abdominal scans for differential diagnosis.

"...So, I was given a note to go for a scan. When the results came, the specialist told me that there was no fibroid ...." (C4).
"They did several tests and scans and told me it was necessary to remove the womb. They took something from my genital organs and put it in a bottle and asked me to send it there..." (C8).

Some participants also reported that the specialist physically examined them and had their blood samples taken for laboratory analysis. They believed that these procedures were necessary for an appropriate diagnosis.

"Here, the specialist examined me, and they took my blood to the laboratory for testing. They also sent me to another hospital and there too, they did some tests and told me that I had cancer in my womb (CC). *I felt that they were doing the right things to help me, but the tests were plenty, plenty of tests"* (C6).
"Is at the hospital that the specialist examined my body... he also asked me to do some tests using blood samples at the laboratory and ..." (C1).

Discussion

The current study explored the diagnosis experiences of patients with CC in the Accra Metropolis. Our findings indicate that the patients visited several hospitals, some started traditional remedies, others perceived they received missed diagnoses of CC in the hospital, and most of them stated they had lost their resources before the cancer diagnosis. All the patients experienced pain and loss of blood during the Pap smear and biopsy collection; most of the patients felt their privacy was invaded, and all the patients feared the diagnosis of CC. These findings highlight the associated effects of patient-related factors (i.e., use of traditional remedies), healthcare provider-related factors (i.e., late referral), and healthcare system-related factors (i.e., lack of CC screening and diagnostic test) on early diagnosis and care of patients with CC, as well as the adverse effects of Pap smear and biopsy collection on the patients. These findings should inform the development and implementation of a national CC prevention and control program to aggressively reduce the incidence, mortality, and burden of CC in Ghana.

In contrast, and consistent with other studies [7, 18, 27, 32, 33], in this study, patients attributed the delayed diagnosis of CC to the non-availability of CC diagnostic services and perceived a missed diagnosis of the disease by their healthcare providers who were unable to diagnose and/ or make quick referrals for the patients to visit a CC screening center. While this assertion is consistent with some previous studies [27, 32–34], other studies found that fear of cancer treatment [7], cancer diagnostic cost, and women's lack of knowledge of the disease [18, 32, 34] accounted for the delayed diagnosis of CC. While other studies on cervical sample collection and biopsy quality analysis found false negative results due to poor specimen handling and inadequate biopsy as causes of delays in the diagnosis of CC [35, 36], in this study only few patients identified biopsy as the diagnostic test. The discrepancies in these studies are largely the differences in the study population knowledge of CC and its diagnosis pathways (i.e., key informants/healthcare providers Vs patients Vs regular screening women), the study setting (i.e., rural Vs Urban Vs City), and the availability of CC screening and diagnostic services.

Consistent with other studies [7, 27, 33], patients in this study attended at least 5 different hospitals in search of a diagnosis of their presenting signs and symptoms despite being urban dwellers. This means that rural dwellers with symptoms of CC in Ghana could even find it more difficult to get a diagnosis of CC considering distance to health facility and competence of rural healthcare providers. The patients' search for CC diagnosis in this study resulted in the loss of resources (i.e., money, time, and energy) before the diagnosis of CC. Even though no literature supports these findings, the results demonstrate the negative physical, social, and psychological impact of CC diagnosis on these patients. For example, some of the patients were in a state of devastation and desolation because the healthcare system could not support and provide diagnostic services for early diagnosis of their condition. To mitigate these consequences, psychotherapy can be prescribed for these patients from the time of diagnosis to cancer treatment and post-treatment.

Consistent with a previous study in Burkina Faso and South Africa [37], Pap smear (a screening test) was perceived by the patients in this study to be the main CC diagnostic test in Ghana instead of the histopathology reports. This may mean that the

doctors did not provide adequate health education to these patients on Pap smear and the purpose of the biopsy analysis, or it may be because of patients' recall bias. In this study, the breach of patients' privacy and the expression of fear of CC diagnosis were consistent with previous studies [14, 24]. It is, therefore, recommended that healthcare providers involved in the conduct of Pap smear or biopsy collection procedures adopt appropriate provider-patient rapport-building techniques (e.g., use of self-awareness in an open introduction and role definition of the team members, non-verbal conveyance of empathy, active listening, and adjusting to the patient's preference, etc.) [38]. This can minimize privacy invasion guilt and patient feeling of loss of self-integrity, as well as reduce fears of positive results outcomes. When applicable, patients with referrals for Pap smear tests could be made to do self-collection cervical sampling, which is most preferred by regular cervical screening women [39]. This will not only ensure maintenance of patient self-integrity but also empower patients' involvement in the care process.

Furthermore, in contrast to previous reports of perception of pain and/ or discomfort in Pap smear among regular cervical screening women [14, 24, 34, 40], in this study, all the patients experienced moderate to severe pain. Some patients also reported blood loss during the Pap smear. The pain and blood loss were attributed to the disease state of the cervix and the insertion of the instrument (speculum). These findings are not surprising because of the biopsy collection that accompanied the Pap smear in this study. However, there is a need to compare the levels of pain and blood loss in Pap smear and biopsy collection in a large sample of patients already with signs and symptoms of CC. It is therefore recommended that healthcare providers adhere to the National Comprehensive Cancer Network 2024 guidelines on pain management during Pap smear and biopsy collection [41], especially when patients are referred for these procedures.

Study implications and recommendations

Our findings offer several recommendations that can help Ghana and other sub-Saharan African countries incorporate and speed the development and implementation of CC prevention and control programs. In line with the WHO recommendation for CC prevention [10], we recommend that the Government of Ghana commit to and roll out a comprehensive national CC prevention and control program (i.e., awareness, screening, and diagnosis services; HPV vaccinations; and cancer treatment and supportive care for patients with CC). Measures like these have been documented to have significantly reduced CC incidence and mortality rates in high-income countries [14].

The patients' search (i.e., have met with at least 5 different doctors/prescribers in the urban setting before being referred for CC screening and diagnostic test) for CC diagnosis suggests that many healthcare providers (prescribers) in Ghana may lack CC and cervical screening and diagnosis knowledge. We recommend the development of a comprehensive training program for healthcare providers on CC to be rolled out in all regional and district health directorates in Ghana. We also recommend that the Ghana Medical and Dental Council and/ or the Ghana Medical Association develop and disseminate CC assessment tools to all their members to improve CC assessment and diagnosis for management. In addition, current evidence also suggests that there are 2 gynecologic oncologists in Ghana [25]. We, therefore, recommend Ministry of Health prioritize the health training sponsorship to train gynecologic oncologists to meet the needs of the increasing incidence of gynecologic cancers in Ghana.

Regarding the psychosocial impact of CC diagnosis on these patients, we recommend free psychotherapy for persons diagnosed with CC during cancer and post-cancer treatment. In addition, women referred for diagnostic services should be encouraged to go with a support person. To minimize pain and control bleeding during a Pap smear and biopsy collection, we recommend healthcare providers use lidocaine 10% spray on the cervix [42, 43] before the start of the Pap smear or biopsy procedure for all patients referred for cervical screening and diagnosis. Patients should be encouraged to use sanitary pads to control bleeding after a Pap smear or biopsy procedure.

Finally, we recommend further qualitative studies on the experiences of patients with CC treatment, and comparative quantitative studies on delays in the diagnosis and treatment of CC among patients diagnosed with CC and healthcare providers in Ghana.

Strengths and limitations of the study

This study is the first study in Ghana that explored the diagnostic journeys of patients in depth, providing valuable insights into this area. Additionally, the study benefits from rich narrative data and the concurrent collection and analysis of data, which adds depth and rigor to the findings. The open-ended questions asked in the in-depth interviews enabled the researchers to probe into the findings identified.

The limitations of the study include 1) Lack of data triangulation from healthcare providers to consolidate the findings; 2) The lack of rural participant inclusion, which may limit the generalizability of the findings to entire Ghanaian CC patients; 3) The potential for selection bias, which may affect the representativeness of the sample but was necessary to focus on the study objective; 4) No clinical record review was conducted to verify misdiagnosis as it was not possible to trace patients records in at least 5 different hospitals in a healthcare system that do not utilize patient electronic health records; and 5) The possible bias during translation when converting local language into English, which could influence the accuracy of participants' responses even though transcripts were cross-checked with a language expert. Despite these limitations, the study makes an important contribution to the literature on our understanding of the diagnosis experiences of patients referred for CC screening, diagnostic tests, and diagnosis.

Conclusions

The study identified perceived inability of healthcare providers to diagnose CC, use of traditional remedies by patients to treat CC, and lack of diagnostic services as the main causes of delays in CC diagnosis in patients who complained of

symptoms. Pain and blood loss were identified as major adverse effects of the Pap smear and biopsy collection among patients with symptoms of CC.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Data availability statement

All data supporting the results and conclusion of this paper are included in the article.

Author contribution statement

DAA: Conceptualization, Methodology, Data curation, Formal analysis, Writing – original draft preparation; LA: Conceptualization, Methodology, Data curation, Formal analysis, Validation, Writing – review and editing; and LAO: Conceptualization, Methodology, Data curation, Formal analysis, Validation, Writing – review and editing. All authors read and approved the final manuscript.

Ethics approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by Ghana Health Services – GHS-ERC 011/10/17 and Noguchi Memorial Institute for Medical Research – NMIMR-IRB-022/17-18.

Informed consent

Informed consent forms were obtained from all individual participants included in the study.

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