GHANA COLLEGE OF PHYSICIANS AND SURGEONS

FACULTY OF FAMILY MEDICINE

FAMILY FUNCTIONING, COPING STRATEGIES AND SEXUAL DYSFUNCTION AMONG CERVICAL CANCER PATIENTS IN THE KUMASI METROPOLIS, GHANA

Submitted to the Faculty of Family Medicine in partial fulfilment of the requirements for the conferment of the Fellowship of the Ghana College of Physicians (FGCP)

BY

DR. GERTRUDE ACQUAH-HAGAN, MBCHB, MGCP

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DECLARATION

I hereby declare that this research proposal is my personal work, and has not been used for other degrees and diplomas in the past.

Signed: 15/ 03/ 2023

Dr Gertrude Acquah-Hagan

CERTIFICATION

This is to certify that this research proposal was developed by the candidate, Dr Gertrude Acquah-Hagan, and has not been used for any other degrees or diplomas in the past.

Supervisor

Dr Henry Lawson, FWACP, FGCPS (Fam Med)

Signed, 15/ 03 /2023

Supervisor

……Dr Thomas Okpoti Konney (MD, FWACS, FGCS)

Signed, 15 / 03 / 2023

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ABSTRACT

Introduction: Cervical cancer is arguably the most common cancer among women in Ghana, and it is associated with 16% of mortality due to cancer. In the Kumasi metropolis, it is the second most diagnosed gynecological cancer after breast cancer. This study assessed the extent of sexual dysfunction in women diagnosed with cervical cancer in the Kumasi metropolis; and explored the role of family functioning and coping strategies in dealing with the diagnosis of cervical cancer.

Methods: The study was conducted from June to December 2020 among women who had a confirmed diagnosis of cervical cancer at the Komfo Anokye Teaching Hospital, Kumasi, by employing a concurrent triangulation design where both qualitative and quantitative data was collected at the same time. In all, 181 and 15 women were included in the quantitative and qualitative aspects, respectively. Data was collected using a structured questionnaire and in-depth interview guides. Sexual dysfunction, coping strategies and family functioning were measured using the Female Sexual Functional Index (FSFI), the brief-COPE and the Family APGAR scale respectively. Data was analyzed using STATA (version 16.0) statistical software package. Bivariate associations were tested using the chi-square test and fisher exact tests. The relationship between family functioning, sexual dysfunction and coping strategies was assessed using logistic and linear regression models where appropriate. Inferences were made with 95% confidence interval with 5% error margin and a p-value of <0.05. Data from the in-depth interviews were analyzed thematically using variable matrix, flow charts, and relevant quotes to highlight result.

Results: The mean age of the women was 58 years (±12.85). More than two-thirds (124; 68.5%) had between 2 – 3 sexual partners and about two-thirds (119; 65.7%) had their first sexual intercourse at age 18. Participants frequently engaged in adaptive coping strategies with religious coping being the most adopted (mean =7.81, SD =0.60). Almost all (96.1%) the respondents had sexual dysfunction. Nearly two-thirds (65.7%) had highly dysfunctional families and nearly one-third (31.5%) had moderately dysfunctional families. Women with parity of 4 – 7 [OR=2.14, 95% CI: 1.12 – 4.07] and 8-13 children [OR=5.52, 95% CI: 1.50 – 20.4] had higher odds of having a functional family compared to those with 0 – 3 children.

Having dysfunctional family was associated with a higher mean active coping [β=5.99; 95% CI: 4.54 – 7.46] and lower mean avoidant coping [β= -1.49; 95% CI: -2.60 – -0.38], compared with women who had functional families. There was no significant association between sexual functioning and family functioning. In the qualitative study, the women recounted difficulties with sexual intercourse due to bleeding, pain, fear and advice from doctors. Most of the women coped with their conditions by praying about it. Social support was mainly received from the husbands and children of women with cervical cancer. Almost all the women however disclosed having financial challenges because of the high cost of treatment.

Conclusions: This research provides evidence of the prevalence and lived realities of sexual-related challenges and coping strategies among women diagnosed with cervical cancer. Majority of the respondents frequently engaged in adaptive coping strategies, with religious coping being the most engaged coping strategy among the women. There was high prevalence of sexual dysfunction and dysfunctional families among the women studied. Family function was positively associated with adaptive coping and negative associated with maladaptive coping strategies. Health campaigns on cervical cancer should be intensified to demystify the disease and its effects on patients, and also to harness support for women with cervical cancer.

Keywords: Cervical cancer, coping strategies, sexual dysfunction, social support, family functioning

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LIST OF ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
ANOVA	Analysis of Variance
APGAR	Adaptability, Partnership, Growth, Affection and Resolve
AOR	Adjusted Odds Ratio
ASR	Age-standardized rate
BSI	Brief Symptom Inventory
BRCS	Brief Religious Coping Scale
BRIEF	Behaviour Rating Inventory of Executive Function
CAPI	Computer-Assisted Personal Interview
CHESS	Comprehensive Health Enhancement Support System
CHRPE	Committee on Human Research, Publication and Ethics
CI	Confidence Interval
COPE	Coping Orientation to Problems Experienced
EAPC	Estimated annual percentage change
EORTC	European Organization for Research and Treatment of Cancer
FSFI	Female Sexual Function Index
FSD	Female Sexual Dysfunction
HIC	High Income Countries
HPV	Human Papilloma virus
HADS	Hospital Anxiety and Depression Scale
KATH	Komfo Anokye Teaching Hospital
KNUST	Kwame Nkrumah University of Science and Technology
LMIC	Low and Middle-Income Countries
Mini-MAC	Mini-Mental Adjustment to Cancer Scale
OR	Odds Ratio
QLQ-C30	Quality of Life Questionnaire – Core 30
S.D	Standard Deviation
SSA	Sub-Saharan Africa
STI	Sexually Transmitted Infection
WHO	World Health Organisatio

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Cervical cancer is a leading public health concern globally. It is however one of the forms of cancer that is most easily preventable.[1] Cervical cancer is among the commonest malignancies associated with the female genital tract and also considered the fourth most frequently diagnosed cancer among women (6.6% of all cancers) with an estimated 570,000 cases in 2018 worldwide.[2,3] The incidence rate of cervical cancer in 2018 was 13.1 per 100,000 globally.[3] Cancer contributes significantly to global morbidity,[4] and cervical cancer was responsible for 311,365 deaths in 2018, constituting 7.5% of total cancer deaths and the fourth leading cause of cancer mortality among women in 2018, with a mortality rate of 6.9 per 100,000.[3] Majority of these deaths occurred in sub-Saharan Africa (SSA) and South Eastern Asia.[3]

Women from developing countries contribute to more than 80% of the burden of cervical cancer globally. Despite dwindling of the incidence and mortality rates of cervical cancer in the last 2 decades, this decline is not significant in developing countries. In SSA, cervical cancer continues to be among the common female malignancies.[4]

In Ghana, cervical cancer is ranked as the second most frequent cancer and the second leading cause of cancer-related mortality among women aged between 15 to 45 years.[2] Current estimates show that 3,151 women are diagnosed with cervical cancer annually and 2,119 die from the disease.[2] The age-standardized incidence and mortality rates of cancer of the cervix in Ghana are 32.9 and 23.0 per 100,000 respectively. About 59.2% of cervical cancer cases in Ghana are attributed to the human papillomavirus (HPV) types 16 and 18.[2] In Ghana, public health preventive strategies such as screening programs for cervical cancer have been difficult to implement, as in most sub-Saharan African countries, partly due to competing health needs such as HIV, malaria, tuberculosis and malnutrition.[5] Coverage for other programmes such as HPV vaccination also remains low,[6] with millions of girls remaining unvaccinated due to the lack of government-funded HPV vaccination programmes and limited access to vaccines.[7]

Cervical cancer is usually characterized by abnormal vaginal bleeding: intermenstrual, post-coital and post-menopausal bleeding; or a prolonged vaginal discharge, that may be bloody or sero-sanguinous which is foul-smelling; or may also be characterised by menorrhagia or metromenorrhagia.[8] In some cases, however, there may be no obvious symptoms until cancer has progressed to an advanced stage. Notwithstanding the stage at which one is diagnosed of cancer, the individual who receives such a diagnosis experiences stress both psychologically and emotionally,[9,10] and this increases his/her risk of mortality.[10] Individuals who are clinically confirmed to have cervical cancer in early stages for example, experience stress of adapting to the diagnosis, complex and usually long treatment, as well as the side effects related to multiple treatment regimens. Treatment regimens as well as the disease itself could also lead to physiological changes that cause difficultly with sexual intercourse after diagnosis.[11] Survival time is also known to be associated with sexual dysfunction.[11] Globally, a high prevalance of sexual dysfunction has been reported in studies conducted in Africa and other parts of the world [12] including a review that found that 50% of women diagnosed with gynaecological cancer were also diagnosed with at least one aspect of sexual dysfunction.[13]Among women receiving treatment for cervical cancer, different levels of prevalence have been reported, ranging from disinterest in a sexual act (26%–85%), to dissatisfaction with sexual life (30%–37%), dyspareunia (26%–55%), reduced intercourse (45%) and narrow/short/dry vagina (32%–50%).[14] A cancer diagnosis is associated with many uncertainties regarding the outcome of the disease, including treatment success, making the involvement of the family very essential.[15] Cervical cancer patients, in the absence of or limited support from families and relatives, have poor coping abilities and decrease in psychological wellbeing[16]. Research has revealed that women with cervical cancer who had less family support and other support systems adopted negative coping strategies [16]. Meanwhile, effective social and family support for cervical cancer patients has been shown to effectively decline the negative repercussions of diagnosis and treatment, increase psychological well-being and enhance the ability to cope with the disease.[17–19]

Women confirmed to have cervical cancer adopt coping mechanisms that help them to deal with the multi-factorial unpleasant experiences stemming from psychological, spiritual and social aspects of their new life circumstances.[20] Coping is termed as "ongoing cognitive and/or behavioural efforts to manage specific external and/or internal demands

that are appraised as tasking or exceeding the resources of the person".[21] Adopting coping strategies that are effective are inalienable to diagnosis and treatment of cervical cancer. This is because it assists patients to adjust and deal with their unpleasant experiences (problem-focused coping) as well as regulates stressful emotions (emotion-focused coping).[22–24] The adaptive coping strategies help decline stress and improve patient outcomes and survival among women with cervical cancer.[23,25] The level of effectiveness of the coping mechanism is contingent or resides in the level of distress, differences in individual coping strategy, degree of social support present, and to a greater extent, the consultation skills, assistance and support from health providers.[26] Hence, swiftly identifying the coping strategies adopted by women diagnosed with cervical cancer or patients with cervical cancer who are poorly coping is extremely essential for treatment compliance, control of patient distress and care in general.

Despite the rising prevalence of cervical cancer in Ghana, attention has not been paid to challenges associated with cervical cancer screening, how these women deal with the stresses associated with cervical cancer diagnosis as well as health implications such as sexual dysfunction. Furthermore, there is a paucity of evidence on how social support influences coping among cervical cancer patients in Ghana.

1.2 Rationale for the study

This study is important for three reasons. Firstly, it may contribute to knowledge in the field of cervical cancer and provide an understanding of the extent of psychosocial stress and sexual dysfunction among cervical cancer patients. Secondly, it may provide evidence on how women diagnosed with cervical cancer cope with psychosocial challenges and sexual dysfunction problems. Finally, this study will help us comprehend the role of the family in cervical cancer treatment and how this could be explored in cervical cancer care in Ghana. These may provide the basis for timely prevention of psychosocial and emotional stresses associated with cervical cancer diagnosis and treatment and the provision of support to women diagnosed with cervical cancer as well as inform health care providers, hospitals and existing palliative care programmes of women's experiences and challenges with cervical cancer. With an in-depth comprehension of these perspectives, better services will be delivered by healthcare providers to help prolong and improve the quality of lives of patients with cervical cancer.

Such information will also be relevant in the establishment of prevention and control programmes, and the provision of support networks for cervical cancer patients.

1.3 Research Questions

In order to meet the objectives of the research, the following research questions were set. The specific questions that were answered in this study were:

I. What coping mechanisms are adopted by women who are diagnosed with cervical cancer?

II. What is the extent of family dysfunction in women diagnosed with cervical cancer?

III. What is the extent of sexual dysfunction among women who are diagnosed with cervical cancer?

IV. Is there any relationship between family functioning and sexual dysfunction?

V. Does family functioning have any bearing on the coping ability of the study population?

VI. Does ability to cope with the diagnosis of cervical cancer have an effect on sexual functioning?

1.3 Aim and objectives of the study

1.3.1 Aim of the study

To assess the extent of sexual dysfunction in women diagnosed with cervical cancer and explore the role of family function and coping strategies in dealing with the diagnosis of cervical cancer.

1.3.2 Specific Objectives

The specific objectives of the study were;

(i) To describe the coping strategies adopted by women diagnosed with cervical cancer

(ii) To assess family functioning among women diagnosed with cervical cancer

(iii) To evaluate sexual functioning among women diagnosed with cervical cancer

(iv) To determine association between family functioning and sexual dysfunction

(v) To ascertain if family functioning has any bearing on coping ability of the study population; and

(vi) To assess the association between coping strategies and sexual functioning

1.4 Operational definitions

Cervical cancer: Tumours that can develop at the neck of the uterus when there is abnormal growth of the cells of the cervix which invade other tissues and organs of the body.[27,28]

Family functioning: Family functioning is defined as the social and structural properties of one's family environment. This encompasses family relationships and interactions especially cohesion and levels of conflict, organization, adaptability, and quality of communication.[29]

Coping: This is termed as behavioural and/or cognitive efforts to deal with specific external and/or internal demands that are appraised as tasking or exceeding the resources of the person.[21]

Sexual dysfunction: It encompasses problems that arise during any stage of the sexual response cycle that could prevent an individual or couple from experiencing satisfaction from sexual activity.

CHAPTER TWO

LITERATURE REVIEW

This chapter provides a review of literature related to the subject under study. Its begins with an overview of cervical cancer, followed by a discussion of the literature linked to the different study objectives. A search strategy was formulated based on medical subject headings (MeSH) terms derived from the research questions. The MeSH terms used included: “Uterine Cervical Neoplasms”, “Sexual Dysfunction, Physiological”, and “Adaptation, Psychological”. A comprehensive search was then conducted on the following electronic bibliographic databases: PubMed, Embase and PsycINFO using a combination of MeSH and variation terms as title/abstract headings with the application of the Boolean operators “AND” and “OR”.

2.1 Overview of cervical cancer

Cervical cancer is a term that describes tumours that grow at the neck of the womb. This happens when there is an abnormal growth of the cells of the cervix. The cells grow and invade other bodily tissues and organs [27,28]. The tumours usually develop as a result of uncharacteristic changes in the cells at the entrance of the womb from the vagina (the opening of the cervix).[30] The cervix constitutes the lowest region of a woman's womb connecting the uterus with the vagina [27,28]. When it becomes invasive, cervical cancer could affect deeper tissues of the cervix and also spread to other bodily parts (metastasis), especially the lungs, vagina, liver, and rectum. Notwithstanding, the growth of cancer on the cervix is slow and progresses through precancerous changes. This provides a suitable platform for preventing, promptly detecting, and possibly treating cervical cancer.[27,28] The cervical cancer is mostly diagnosed in women with average age of mid-50s, however, most women who are diagnosed with precancerous changes in their cervix are mostly in their twenties and thirties.[31]

Cancer of the cervix is normally or nearly always as a result of a long-time infection with the human papillomavirus (HPV).[30] There are myriad of human papillomaviruses which mostly infect the skin cells and mucous membrane cells, and these viruses spread through sexual or having direct contact with the genital area. Cervical cancer either develops from abnormal growth of cells at opening of the cervix, termed as

"squamous cell carcinoma" or from gland cells, termed as "adenocarcinomas," although these are less common.[30]

The most appropriate type of cervical cancer treatment is contingent on the stage or tumour size and the extent of the spread of the abnormal cells to other parts of the body (stage of cancer). When there is early detection of cervical cancer, a simple and small surgical procedure, known as conization, might be enough to treat the tumour. A surgical operation to remove the entire womb, the cervix and upper portions of the vagina (a radical hysterectomy) and the lymph nodes around the womb are usually recommended when the tumours spread to the immediate surrounding tissues. Radiotherapy and chemotherapy might also be considered for all stages of the disease.

2.2 Burden of cervical cancer

Cervical cancer constitutes the fourth commonest cancer among women globally, as well as second for women ages 15 to 44.[32] Globally, 266,000 cervical cancer-related mortalities are recorded annually. In Eastern and Central Africa, cervical cancer is the leading cause of cancer-related mortalities. Meanwhile, a significant percentage of these mortalities is preventable through widespread access to comprehensive cervical cancer programmes, focusing on prevention and control, and have the propensity to reach all women with human papillomavirus (HPV) vaccination as well as all girls. [33]

In the year 2000, an incidence of 470,606 and 233,372 mortalities due to carcinoma of the cervix (cervical cancer) were recorded worldwide among women and more than 80 percent of this burden was borne by developing countries where cancer of the uterine cervix was the leading malignancy affecting women.[32] In the year 2012, there were over 528,000 new cases as well as over 266,000 deaths.[34] In the year 2017, 601,186 cases of cervical cancer were reported globally, which caused 259,671 mortalities.[35] Also, in 2018, new cases were 570,000 and cervical cancer-related mortalities among women (particularly middle-aged women) globally were 311,000.[36] Roughly 740 deaths per day occur due to cervical cancer,[34] making it the second most common cause of cancer-related mortalities among women.[37]

There is an increasingly apparent difference in the incidence and mortality of cervical cancer between developed and developing countries.[32] Over 80% of cervical cancer mortalities happen in low-and middle-income countries (LMICs)[19,38] and death rate

is 18 times higher compared to high-income countries (HIC).[34] In the African region, cancer of the cervix leads in the cause of cancer among women, and it's responsible for 22% of all cancers among females and 12% of all cancers that are newly diagnosed annually.[39] Africa accounts for the highest regional incidence and mortality rates, with the rates being 7–10 times higher than in the western world.[40] Figure 1 shows the distribution of age-standardized rate (ASR), percentage changes in number, and estimated annual percentage change (EAPC) of cervical cancer incidence at the national level, 1990–2019.[36]

For every 100,000 women living in Africa, 34 of them are diagnosed with cervical cancer and 23 out of 100,000 die from cervical cancer every year.[39] The age-standardized incidence and mortality rate of cervical cancer in Southern (43.1 and 20.0 per 100,000), Eastern (40.1 and 30.0 per 100,000) and Western Africa (29.6 and 23.0 per 100,000) are the highest globally.[3] Despite these incidence and mortality rates, research indicates that, cervical cancer incidence has been increasing in SSA.[41] Generally, countries in SSA have limited accessibility to radiation, gynecologic oncologists who are skilled, limited expertise in imaging and pathology as well as limited accessibility to chemotherapy.[19,42]

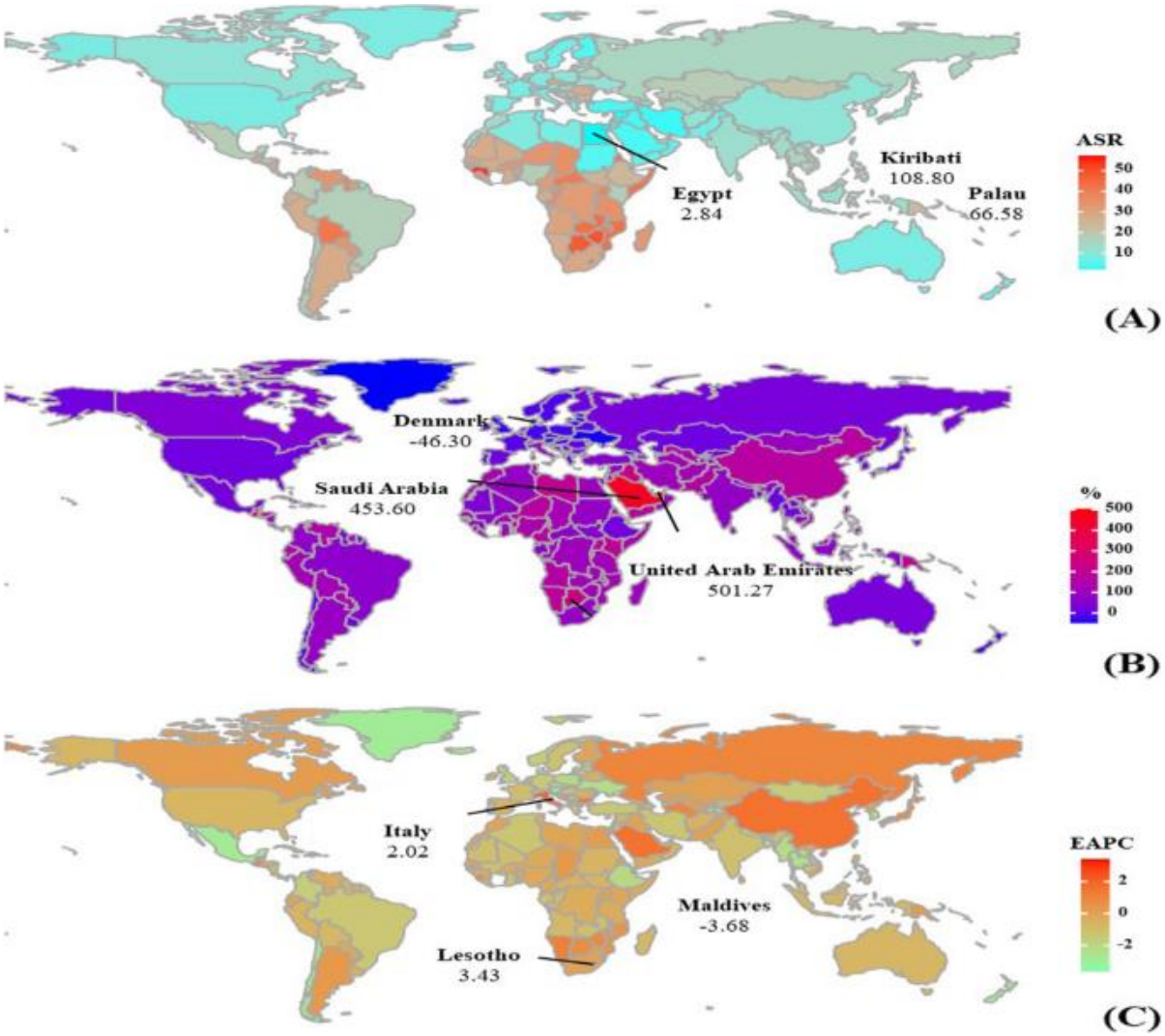

Figure 1: The distribution of age-standardized rate (ASR), percentage changes in number, and estimated annual percentage change (EAPC) of cervical cancer incidence at the national level, 1990–2019. The following were (**a)** the ASR in 2019; (**b)** the percentage changes in number between 2000 and 2019; (**c)** the EAPCs in countries/territories, respectively.

Source: *Zhang et al (2021)*[36]

Among women with cancer in Ghana, cervical cancer has the highest incidence and cause of mortality. Even though, cervical cancer is preventable through early screening, detection and treatment of precancerous lesions, anecdotal evidence from gynaecological health facilities in Ghana reveals that most patients present with a late stage of the disease.[43]

The age-standardized incidence and mortality rate of cervical cancer in Ghana is 32.9 and 23.0 per 100,000, respectively. Cancer of the uterine cervix is therefore the most frequently diagnosed cancer after breast cancer (age-standardized rate is 43,0 per 100,000 women) as well as the topmost cause of cancer-related mortalities among women dwelling in Ghana.[3]

The high incidence and mortality rates associated with cervical cancer in Ghana stem from or are attributed to poor uptake of screening services for cervical cancer (0.8%).[44] Meanwhile, research has indicated that early screening and detection are among the preventive strategies that could drastically decline the magnitude and burden stemming from cervical cancer in the country.[45] Additionally, studies have revealed that among the gynecological cancers diagnosed at a large health facility in Ghana, cervical cancer contributed to about 60% of cases, and 70% of these cases were diagnosed at an advanced stage.[46] In 2012, the incidence and mortalities associated with cervical cancer in Ghana among women were estimated to be 3,052 and 1,556 respectively. Despite the problem and magnitude of cervical cancer in Ghana, there is unavailability of precise information on the incidence and mortality rate of cervical cancer, which further compounds the problem in Ghana.[45]

2.3 Psychosocial challenges associated with cervical cancer diagnosis

Psychological health and well-being, especially among cancer patients, are efforts to maintain sense of control when confronted with life-threatening illness coupled with emotional distress, altered life priorities, fear of unknown, and positive life changes.[47] Cervical cancer has many psychological repercussions on the health of women. The treatment and intervention for the gynecological cancer for example have undesirable repercussions on patients' bodily images, sexual life, fertility and family, and professional and social lives.[48] Cancer diagnosis is associated with psychological and emotional devastation, and patients suffer colossal consequences arising out of psychosocial disorders including fatigue, insomnia, cognitive and functional difficulty, sexual dysfunction and infertility.[49] Cervical cancer diagnosis presents with a high prevalence of distress.[50]

Cervical cancer is associated with offensive vaginal discharge and urinary incontinence which is also extremely distressing. Some women diagnosed with cervical

cancer express intense worthlessness and helplessness, associated with depression and suicidal ideations.[51] In the study conducted to investigate the experiences of patients with cervical cancer in Thailand, stigmatization from the family and community members, and problems with sexuality were identified as common psychosocial problems.[52] Conversely, support from husbands, family, and the community made it possible to cope with many difficulties.[52] This study recruited study participants who were residents of rural communities increasing the possibility of selection bias. It would have been illustrative if a cross-section of the participants were recruited from the urban areas to represent the study.

A longitudinal study was conducted in Italy where emotional disorders were prospectively assessed and quality of life of patients with cervical cancer who were disease-free 2 years following diagnosis was done. The instrument used for data gathering were Hospital Anxiety and Depression Scale (HADS), Global Health Status items of EORTC QLQ-C30 (GHS), and EORTC QLQ-CX24 (CX24). The study revealed that despite an improvement in the health of cancer survivors with time, there are elevated anxiety levels which remains detectable even 2 years following the surgery in approximately 10% of patients with cervical cancer.[53] The study used standardized scales to measure psychological challenges facing the cervical cancer patients including the use of appropriate statistical methods for analysis.

A similar study was replicated in Taiwan to assess psychological challenges among cervical cancer survivors. This longitudinal study retrospectively used data from the National Health Insurance Research Database from the year 1996 to 2010. The study recruited a total of 3664 patients as the study participants. The study revealed that 861 (23.5%) of participants were having anxiety, 149 (4.1%) were depressed, and 348 (9.5%) had both anxiety and depression. The authors concluded that 1,360 (37.1%) cervical cancer patients had anxiety/depression disorders. The authors also opined that psychiatric problems related to anxiety and depressive disorders are dependent on the use of medical services and survival among patients with cervical cancer.[54] Even though, the researchers applied the appropriate methodology and techniques in conducting the study, however, study relied on data gathered more than a decade ago and this could not reflect the current problem of psychological challenges facing cervical cancer patient.

Depression could affect cervical cancer patients and further devastate the quality of their lives as well as their compliance with cancer treatments. A case control study was conducted where the authors recruited 19,316 patients who are diagnosed with cervical cancer from National Health Insurance Research Database in Taiwan. The respondents with cervical cancer were matched against subjects without cervical cancer based on sex, age, and comorbidities within the same diagnostic index. The study, which recruited 19,316 respondents, revealed that the prevalence of depression was 813 (4.21%) in the cervical cancer cohort, and also 744 (3.85%) in the control cohort. The incidence risk ratio of depression was 1.35 among women with cervical cancer. Moreover, the study revealed that cervical cancer is an independent risk factor linked to developing depression or depressive disorder. Additionally, being older (≥65 years old), having comorbidities of ischemic heart disease, diabetes mellitus and cerebrovascular disease were also found to be risk factors that contribute to depressive disorder among women living with cancer of the cervix.[9]

In Northeast Tokyo in Japan, a randomized controlled trial was conducted among women aged 20–69 years who were diagnosed with cervical cancer in Tsukuba City. The study recruited 972 participants (493 in intervention and 479 in the control groups) to represent the study. The study revealed that provision of information from close relatives and health staff would help reduce psychological distress among women with cervical cancer.[55] The researchers adopted the appropriate methodology in conducting the study including using the required scales and appropriate statistical techniques.

Previous epidemiological studies have revealed that psychiatric disorders that are related to stress could have an impact on the progression of disease in numerous cancer types. In Sweden, a study was conducted to assess the psychological challenges associated with being diagnosed with cervical cancer. This cross-sectional study analyzed records from 4,245 patients who were diagnosed with cervical cancer in Sweden between January 1, 2002, and December 31, 2011. The study revealed that among patients who had disorders that were stress-related 55% died from cervical cancer, whiles 20% of patients who had experienced a stressful life event died from cervical cancer.[56]

Using the Family APGAR scale, Aamin et al[57] in their cross-sectional study found a strong correlation between family functioning and quality of life. Findings from the study showed a relationship between dysfunctional families and anxiety and depression. There

was significant difference between the mean scores of patients who scored <8 or >11 on HADS depression subscale, HADS anxiety subscale and < 16 or > 19 on HADS depression and anxiety scores and < 6 and > 6 on family APGAR scale. Significant inverse correlation ($r = -0.43$, $p = <0.0001$) was found between HADS depression and anxiety scores and family APGAR scale. A major limitation of this study however is the use of a small number (n=288) of palliative care cancer patients from a single institution, which could influence the generalizability of the findings to a wider population of cancer patients.

A qualitative study involving 12 women and 3 health professionals was conducted to assess the psychosocial challenges associated with cervical cancer diagnosis in Ethiopia also revealed that women who are diagnosed with cervical cancer faced varied psychosocial, physical and financial-related challenges which had effect on their families.[58] The study found that diagnosis altered the interpersonal relationships many of them had with their families. Some of the women who took part in the study disclosed issues in their family situations. They discussed how the relationship they had with their families and friends changed from bad to worse. This study used a qualitative study design and interviewed twelve women who were living with cervical cancer and three key informants from the study area. The study participants were chosen from among those who have been diagnosed and who had attended treatment sessions during the data collection period. However, the exclusion of some participants due to language reasons could influence representativeness.

A study conducted in Accra, Ghana found that cancer diagnosis especially cervical cancer and related treatment have adverse psychological effects on the patients which manifest in the form of depression, anxiety and distress. The author reported that feeling depressed, fear, anxiety, confusion, dysphoria, embarrassment, hopelessness, self-blame, altered or low self-esteem, frustration, distress and anger are some psychological challenges confronting women diagnosed with cervical cancer.[47]

2.4 Sexual dysfunction and cervical cancer

The World Health Organization posited that sexual health is among the key indicators of quality of life due to its association with reasoning, actions, feelings, social integration, and also one's physical, mental health and well-being. However, women affected by cervical cancer suffer from sexual dysfunction at high levels and multiple times with hindrance at many stages of their sexual response cycle including the libido, arousal,

orgasm, and resolution.[59] Sexuality is an essential element that ensures marital harmony. However, the subject of sexuality is shrouded in complexity and subjectivity, and it plays an important role in one's biological, psychological, and social lives, nurturing personal development and improving the quality of life. Cervical cancer negatively impacts the sexual life of some patients. Sexual dysfunction is most often high among women who are diagnosed with cervical cancer. Additionally, vaginal dryness, loss of libido, dyspareunia (superficial and deep) due to vaginal stenosis, are often experienced by cervical cancer survivors. Furthermore, these women experience pain and psychological distress which plunge them into poorer sexual function. Generally, sexual function of women living with cervical cancer swiftly dwindles after treatments irrespective of the modalities they used.[60] A review by Bodurka and Sun[61] found that 50% of women diagnosed with gynaecological cancer were also diagnosed with at least one aspect of sexual dysfunction.

A scoping review was conducted to ascertain the prevalence of sexual dysfunction among cervical cancer patients. The study, which included 112 globally selected articles, reported that sexual dysfunction exists among women receiving treatment for cervical cancer (radiotherapy or radical hysterectomy with pelvic lymphadenectomy), with different levels of prevalence ranging from disinterest in a sexual act (26%–85%), diminished in lubrication (27%–35%), dissatisfaction with sexual life (30%–37%), dyspareunia (26%–55%), reduced intercourse (45%), narrow/short/dry vagina (32%–50%), and orgasmic dysfunction (20%).[14]

In a recent study from Turkey by Yaman and Ayaz[62], all of the women diagnosed with cervical cancer stated that they did not have sexual relations. They enunciated they have abstained from sexual intercourse due to fear of being hurt. They had the assertion that the sexual act would not be pleasurable for their partners and that their spouses were not attracted to them anymore. This study was a qualitative study of a sample of 17 married women using a semi-structured, in-depth questionnaire. This study was however conducted in only one hospital with a relatively small sample size and therefore generalizability is limited.

Ma et al[63] also conducted a cross-sectional hospital-based study on sexual dysfunction among urban Chinese women with cervical cancer. The study recruited 303 cancer patients

and 293 healthy women. The study indicated that women who had non-malignant cervical conditions had a significantly higher proportion of female sexual dysfunction (FSD) (51.8% vs. 34.8%), low desire (43.2% vs. 26.3%), disorder with arousal (41.6% vs. 28.3%), and lubrication disorder (51.2% vs. 36.9%) in comparison with a group of women without cervical cancer who served as the control group. This study also had some limitations. The study was a hospital-based and not a population-based study and therefore generalizability of the findings is limited. The number of women with the specific cervical condition, including cervical submucosal uterine fibroids and cervical genital warts was very minimal.[63]

A study by Tsai and others in China also looked into the prevalence of sexual dysfunction and associated factors among cervical cancer patients.[64] The crude prevalence and age-standardized prevalence of sexual dysfunction were 66.67% and 55%, respectively. The study found that patients who had not been through sexual counseling services before their therapy or afterwards and who were stage II or above were at a significantly high risk of sexual dysfunction compared with those without these conditions.

In 2015, a research conducted in South Africa explored sexual dysfunction among women diagnosed with cervical cancer using the Female Sexual Function Index (FSFI) on a sample of 147 women.[65] The study found that a good number of women with cervical cancer (94.6%; n = 139) experienced sexual dysfunction, which persisted over time. Sexual arousal was the most affected domain whilst satisfaction was the least affected. The study also found that pain experienced during sexual activity persisted as time progressed. This study, using convenience sampling technique was conducted in a large specialist hospital in the Gauteng Province of South Africa and therefore findings are less likely to be representative of the entire population.[65]

A study conducted at an academic hospital in Gauteng, South Africa also reported experiences of sexual problems among women diagnosed with cervical cancer.[65] During in-depth interviews, some of the women narrated changes in their sexuality, with their partners unable to cope. Some of the women in that study also reported that the treatment had a devastating effect on their sexual desire, with negative consequences on their sexual relationship with their partners. However, being a qualitative study, it might not represent the true meaning of participants' experiences as there could be more than a single explanation of the narratives. Again, all the women were black South African and were

receiving cervical cancer treatment at the same facility, hence it was not possible to make a conclusion that the experiences of the women in this study could be generalized to all women.[65]

Another study was conducted within women who have been hospitalised and were receiving treatment for cervical cancer at a health facility in Tshwane, South Africa, to investigate women's experiences of support from life partners.[66] This was an exploratory qualitative study conducted using a convenience sampling method and included seventeen (n = 17) black South African women. The study found that the symptoms experienced by women diagnosed with cervical cancer affect their sexual relationships. A participant in the study explained that she discontinued sexual intercourse with her life partner after she began to bleed 'a lot' whereas other participants recounted various undesirous experiences relating to their sexual relationships. The limitations of this study, however, were that recruitment and participation in the study were restricted to women who were receiving treatment for cervical cancer in one particular academic hospital, at a specific time during their treatment and hence may not, therefore, be representative of all women who suffer from the disease. The inclusion of participants who had admission to the same ward might have affected the integrity of the responses the participants gave during their interviews as reported by the study.[66]

A recent study conducted in Nigeria to investigate quality of life among 378 women who have been diagnosed with advanced stage of cervical cancer in Nigeria also found that more than 323 (85%) of the patients in the study had some of their sexual domains affected.[67] The cross-sectional descriptive study, which was conducted at Ahmadu Bello University, Zaria, Nigeria assessed quality of life of the participants using the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire–core 30 (QLQ-C30) questionnaire. The study further found differences in quality of life between younger and older patients with a higher proportion of sexually active women among the younger participants <50 years, 18 (8.4%) compared to for those above 50 years, 24 (4.6%). This difference was statistically significant ($P < 0.05$).[67]

2.5 Coping strategies with cervical cancer

Women who have been diagnosed with cancer of the cervix adopt varied means of coping strategies to help them deal with the psychosocial challenges experienced. A study conducted in Ethiopia also identified certain coping strategies adopted by women diagnosed with cervical cancer.[58] The study found that women who received religious services and those who sought support from their families used these as coping mechanisms to address their problems. The study recommended the provision of palliative care and other relevant social support systems to women diagnosed with cervical cancer.

A study conducted to assess psychological problems experienced and coping strategies by women with gynaecological cancer in Turkey also found that among other activities, women living with cervical cancer prayed frequently.[62] The respondents also asserted that receiving support from family and others was extremely essential in coping. A good number of the participants coped through the use of denial. Hence, the authors recommended that a patient going through gynaecological treatment for cancer must be assessed based on psychosocial and spiritual wellbeing and be provided with maximum social support to help frequently cope with their illness.

Recently, Cvitanovic et al[68] conducted a study to assess coping strategies among patients who showed clinical signs of HPV infection and a control cohort of women admitted over one year period in Croatia. The study revealed that self-blame and planning were the commonest strategies adopted by the HPV group. Patients diagnosed to have genital warts used maladaptive coping strategies in comparison to those patients with no presence of HPV. Patients with the human papillomavirus who were stressed out based on their stress scores frequently and mostly utilised maladaptive coping compared to the other patients who had lower life stress score. The study called for urgent need for the integration of psychological interventions into the protocols of routine care for dermatologic diseases.[68] The study however had a small number of respondents (confirmed diagnosis of clinical manifestations of HPV infection (n=66) or in a psoriasis control group (n=56) which could influence generalizability.

A study, using qualitative methods, was conducted in Zambia to investigate how patients respond to cervical cancer diagnosis, as well as their strategies for coping using

the Lazarus and Folkman's Transaction Model of stress and coping.[24] A sample of 19 cervical cancer patients were recruited and interviewed as study participants. The study revealed that regardless of the cervical cancer stage, patients are stressed both psychologically and emotionally. The study concluded that cervical cancer stressfully affected individuals leading to negative reactions including the fear of eminent death, self-pity, and disbelief.[24]

2.6 Coping Strategies adopted by women diagnosed with cervical cancer

A systematic review was conducted globally to ascertain the coping strategies adopted by women with cervical cancer and their impact on the psychological and physical outcomes in people with cancer. The systematic review included 52 articles from international bibliographic databases with a total of 3731 participants. The study revealed that strategies like self-distraction with examples being watching TV, movies and listening to music reduce stress of patients with cancer may be beneficial and improve their quality of life. [69] Similarly, a global systematic review was conducted to examine the potential beneficial or harmful effects of religious/spiritual coping with cancer. The study revealed that during adversities, such as serious and life-threatening conditions like cancer, individuals turn to a higher power or religion (belief in God) for support and also as a way of helping them to cope with the associated stress.[70]

Another randomised clinical trial was conducted in Austria to evaluate the relationship that exist between watching movies during chemotherapy and emotional and social functioning and fatigue status among cancer patients. The study revealed that the use of self-distraction helps patients to cope with the condition and depend less on the family. The authors averred that people who watched movies were less likely to encroach on family life and social activities.[71] Even though, this study was a randomized clinical trial, the study population differs from those in Ghana which could lead to findings that may not reflect the coping strategies among Ghanaian cervical cancer patients.

In the United States of America, Kim and colleagues examined the extent of relationship between social support and coping strategies and patients emotional well-being among women living with cancer. In this qualitative study, authors employed two hypothesized models; a moderation and mediating models. The authors recruited

underserved women from rural Wisconsin and Detroit, Michigan, from May 2001 and April 2003 which was nested in a larger eHealth intervention assessing the Comprehensive Health Enhancement Support System (CHESS). The study revealed that active coping strategies positively impact the well-being psychologically as well as the health behaviours of these patients.[72]

On the other hand, research indicated that having a keen relationship with God provides optimal and reliable refuge, support and comfort as well as receive support from religious communities, especially in African settings.[73] In a qualitative study in Ethiopia, 12 women diagnosed with cervical cancer and 3 healthcare professionals were drawn to represent the study using the case study design. Accordingly, data were collected through the use of in-depth interviews and analysed thematically based on the content and themes. The study revealed that cervical cancer survivors mostly experience problems such as physical, psychosocial, and financial which affect their families. Additionally, the cervical cancer survivors adopted religious coping and social/or family support as mechanisms to address their problems. The study was a facility-based as well as qualitative limiting the generalizability of the findings [74]. Research conducted in a high-income setting also posited that participating in religious activities heightens or ignites these women's sense of belonging which acts as an affront to feeling isolated.[75]

In Ghana, Binka and colleagues conducted research to investigate the varied strategies used among cervical cancer patients in rural Ghana to help them cope with the condition. This qualitative research collected data from patients in the Volta region of Ghana. The authors revealed that even though maladaptive coping strategies are not considered the excellent ways of managing such a disease condition, participants were of the opinion that they were essential in helping them through their treatment and recuperating stages.[76]Also, in the Greater Accra region of Ghana, a cross-sectional study was conducted among women diagnosed with cervical cancer in order to ascertain the coping strategies with cervical cancer. The study recruited 160 patients living with cervical cancer and receiving treatment at the Korle-Bu teaching hospital. The researchers adopted a simple random and stratified sampling techniques to draw respondents for the study using the Brief-COPE and Rosenberg Self-Esteem scales. The study revealed that cervical

cancer patients are adopting the adaptive coping strategy specifically religious coping in dealing with their condition. In religious coping, most of the respondents (76.6%) utilized positive religious coping. The study found a statistical association between religious coping and self-esteem ($r = .53$, $p < .001$) with 28% of the variance in self-esteem being explained by positive religious coping. The study further revealed a statistically significant difference in negative religious coping and religious background [$F (2, 108) = 4.33$, $p = .015$). The study adopted a cross-sectional study design to recruit participants for the study increasing the probability for recall, selection biases and social desirability flaws [77]

A study was conducted among 150 women with cervical cancer who were receiving care on assisted reproduction in two health facilities in Ghana. The study investigated psychological health and its association with infertility and religious coping among respondents using the Brief Symptom Inventory and Brief Religious Coping Scale. This helped to explore the correlation between religious coping and psychological distress. The study found a positive correlation between psychological distress and aging and duration of infertility. The authors also found that negative religious coping was significantly related to somatization, depression and anxiety. Additionally, it was revealed that there was a relationship between positive religious coping and somatization and anxiety but not depression.[76]

2.7 Extent of family dysfunction in women with cervical cancer

Similarly, in the USA, a qualitative study was conducted to ascertain the extent of family dysfunction among women with cervical cancer. The authors focused specifically on parents' self-reports of how functional their families were whilst they were receiving cancer treatment. This qualitative study interviewed eight (8) adults as the first phase of a study investigating the therapeutic functions of spontaneous free play for children dealing with a parent's cancer. The authors reported from the study that cancer patients experience some form of family disruption and dysfunction.[78]

In Mexico and Veracruz, a qualitative study was conducted as part of a multilevel study to analyse the role social and cultural factors play in the timely detection of cervical cancer. The study revealed that family dysfunction exists among women diagnosed with cervical cancer. The study also indicated that fear and self-denial are the two strategies or

important components regulating the behavior of women and their spouses. Women with little or no social support or network have limited or poor opportunities for taking action with respect to their health and wellbeing which translated into poorer or decreased quality of life.[79]

Similarly, in Indonesia, a cross-sectional study was conducted to determine family dysfunction among women diagnosed with cervical cancer. The study interviewed a sample of 48 women with cervical cancer as study participants. The study revealed that family support is positively associated with quality of life of women diagnosed with cervical cancer. The study further revealed that women with strong family support were 2.35 probable to have good quality of life than their counterparts with weak family support.[80]

A qualitative study was conducted in Greece to investigate how patients with cancer perceived changes in their families and the types of support provided by family members. Semi-structured interviews were conducted among eight participants with cancer with an average age of 55.5 years. The study revealed that a family with a member diagnosed with cancer goes through numerous changes. The changes are either positive, negative or mixture of both. Some of the participants expressed that some of their family members' actions expressed love. The study also revealed that there is a need to increase the strength of family relations and involvement of the member with cancer in family matters, as more family roles would benefit the patient. The author concluded that there is a strong family relations, involvement and support for cancer patients.[81]

This is because a study in the USA has revealed that family members and caregivers often feel overloaded with additional obligations and roles which increase their burden to care full-time and provide optimal emotional support and assistance for cancer patients translating into family dysfunction. Because the condition brings alternation of roles, which could be perceived as a loss and by others as excessive overload leading to dysfunction of the family.[82]

Unsupportive responses and assistance from family and friends play an essential role in the psychological adaptation among diagnosed with cancer. A longitudinal study was conducted in Australia to assess the changes in perceived uncooperative behavior from members of the family as well as friends among women who were newly diagnosed with

cancer. The study revealed that emotional trauma, concerns resulting from cancer, functional impairment, difficulty in sharing concerns, and cognitive and behavioral avoidance were related to higher perceived unsupportive responses over time. Additionally, it was revealed that in order to cope with cancer, patient turned to their network of friends and family for assistance and support.[83] For most patients diagnosed with cancer, family and friends give the needed support and this support leads to minimal distress.[84,85] Studies elsewhere revealed that family and friends may behave in unsupportive ways against people undergoing difficult life events including cancer whether their actions are unintentional or intentional.[86]

These unsupportive responses may be overt criticism of patient's coping, complaining about assistance, or subtle responses including avoidance or minimization of patient concerns. Although, these unsupportive responses or dysfunction may be infrequent or moderate for a good number of these patients,[83] however, when these things do happen, they are translated into a more distress situation. Women who are confronted with social support after breast cancer diagnosis was ascertained in Norway. Semi-structured interviews were conducted prior to surgery with 21 women from the ages of 41 to 73 years with newly diagnosed breast cancer at Norwegian University Hospital. The study found that, for cancer patients the family is the most or key source of providing support.[87]

An institutional-based cross-sectional study was conducted in Ethiopia to ascertain the extent of family dysfunction among women diagnosed with cervical cancer. This quantitative study employed systematic sampling to recruit 387 respondents for the study. The study revealed that the women with cervical cancer had dysfunctional families with scores on the level of poor, moderate, and strong social support was found to be 45.3%, 34.2 and 20.5 respectively. The study had its limitation in being an institutional based limiting the ability to generalize the findings to other settings. Additionally, the study failed to assess other dimensions of family dysfunction due to the quantitative approach adopted [88]. It would have been imperative to adopt a qualitative component to ascertain the extent of family dysfunction as well as understand the reasons behind the findings.

2.8 Extent of sexual dysfunction in women diagnosed with cervical cancer

Evidence has it that sexual function among survivors of cervical cancer swiftly dwindles following treatments for cancer despite the modality used[89] causing

psychological problems for these patients. Evidence has proven that sexual dysfunction, vaginal dryness, dyspareunia, and loss of libido are often prevalent or experienced by cervical cancer survivors because the pain and psychological trauma plunge them into poor sexual function.[60,90] In the same vein, Aerts and colleagues asserted that cervical cancer patients mostly experience dyspareunia during penetration, reduced orgasm and sexual arousal in comparison to women not diagnosed with cancer.[91] In the same study, the authors attributed poor sexual arousal to depression associated with the condition.

However, despite all the problems associated with the sexual health of cancer patients, a study conducted in Connecticut, USA revealed that people diagnosed with cervical cancer had increased desire for sexual intercourse.[92] Due to this, a systematic review and meta-analysis was conducted where the authors used the Female Sexual Function index to assess the sexual dysfunction among women diagnosed with cancer. From the systematic review and meta-analysis, it was concluded that cervical cancer survivors suffer multiple levels of sexual dysfunction with hindrance at one or more stages during the sexual response cycle including arousal, libido, orgasm, and resolution.[59] Mishra and colleagues also replicated similar studies in their global scoping review that synthesized available qualitative and quantitative evidence to better comprehend the plight of patients of cervical cancer pertaining to their sexual dysfunction and the management issues. Interestingly, the study indicated that younger cancer patients rather have poorer outcomes with more pronounced impact on sexual well-being. The study also observed that cervical cancer survivors experience sexual dysfunction.[14]

Hamilton reported in the study conducted in New York, USA that women recuperating from cervical cancer are more prone to the experience of sexual dysfunction and related psychological distress and relationship discord. Additionally, it was observed that dyspareunia (painful intercourse) was common among the women who had cervical cancer. The author claimed that the dyspareunia emanate from damage to tissues of the vagina as well as the reshaping of the vagina secondary to surgery and radiation.[93] Similarly, Friedman and colleagues conducted a study in Cleveland in Ohio, USA. The study evaluated women aged 18 years or above with early-stage endometrial cancers who were treated for sexual health. Women with or without active sexual partners were eligible. In conclusion, Friedman et al., reported that 58% of those surveyed reported vaginal dryness, and 23% reported pain.[94] Genitourinary syndrome of menopause, the new

terminology for vulvovaginal atrophy of women was assessed in North America by Portman and Gass. The study revealed that there is a decline in estrogen during cancer diagnosis and treatment. Hence, the decline in estrogen concentrations may culminate in genitourinary atrophy, resulting in genitourinary syndrome of menopause, a new terminology covering a range of symptoms including vaginal dryness.[95]

Jensen and co-authors replicated a similar study in Denmark. This longitudinal study recruited 173 patients with negative lymph node, early-stage cervical cancer and had undergone Radical Hysterectomy and pelvic lymphadenectomy. The authors utilized a validated self-assessment questionnaire to prospectively collect information from participants. The study indicated that women diagnosed with cancer of the cervix mostly experience severe orgasmic problems and unfavourable sexual intercourse.[96] Aerts and colleagues also claimed that the quality of association between individuals with cervical cancer and their partners declined 6 months following surgery. This change pertaining to the relational functioning could be justified by the stress and dilemmas associated with choosing the appropriate and effective treatment plan as well as other family-related issues.[91]

In Amsterdam, a qualitative study was conducted among cervical cancer survivors to ascertain their sexual function after diagnosis of cervical cancer. The researchers utilized exploratory design and purposive sampling to solicit the views of cervical cancer survivors who were receiving treatment at the Leiden University Medical Center or the Academic Medical CenterAmsterdam. The study revealed that the cancer survivors experienced one or more sexual dysfunctions often causing feelings of distress. Also, sexuality is sometimes considered a taboo topic which hampered some of the cancer surviving women to seek assistance. Many participants were keen and wanted to have information on the repercussions on the treatment, practical advice on dealing with dysfunctions, and reassurance that it is common to experience sexual dysfunction. This is a qualitative study that recruited participant from a health facility, this will limit the ability to generalize the findings to other population [97]

In China, a cross-sectional study was conducted among survivors of cervical cancer and their sexual function and quality of life. The researchers enrolled 140 cervical cancer survivors, who are older than 18 years and had received a diagnosis of cervical cancer at

stages I, II, or III and are being treated for cervical cancer at 4 tertiary level hospitals in Hunan Province. The study revealed that the prevalence of sexual dysfunction among the cervical cancer survivors was 78%. Additionally, sexual dysfunction was predicted by radiotherapy or treatment received, age of the participant, type of surgery, sleep disorders, and occupation. The cross-sectional design adopted for the study make the study liable to recall bias and social desirability flaws. [98]

Similarly, in China, a comparative study was conducted among women with cervical diseases to assess sexual function among women with non-malignant cervical diseases and to identify potential risk factors for these diseases. This hospital-based cross-sectional study recruited 303 women diagnosed with cervical cancer and 293 healthy women. The Chinese version of Female Sexual Function Index was utilised to determine the sexual function of the participants. The study revealed that women with non-malignant cervical diseases had higher prevalence (43.2%) of female sexual dysfunction, low desire (43.2% vs. 26.3), arousal disorder (41.6% vs. 28.3%), and lubrication disorder (51.2% vs. 36.9%) compared with the control group. The cervical cancer and cervical intraepithelial neoplasia contributed significantly to the sexual dysfunction. The study was a facility-based limiting the ability to generalize the findings to other settings [63]

In Nigeria, a cross-sectional study was conducted to ascertain the sexual dysfunction after cervical cancer treatment among women diagnosed with cervical cancer. The study recruited 46 women who were 18 and above to represent the study. The Female Sexual Function Index (FSFI) was utilized to ascertain the sexual function among the sexually active cervical cancer women. The study revealed that 15 (32.61%) had sexual intercourse after treatment and eight had an indication of sexual dysfunction (score 21.66; standard deviation=7.06). The types of treatment (p=0.03), radiotherapy (p=0.01), and coupled with the stage of the cancer (p=0.02) contributed to the sexual dysfunction. The most affected domains of sexual dysfunction were the lubrication (p=0.03) and pain (p=0.04) [99].

In Ghana, Osei-Appiah et al (2021) conducted a qualitative study to ascertain the effect cervical cancer has on the sexual and physical health of women who are diagnosed with cervical cancer. This qualitative study utilized phenomenological design and purposive sampling technique to select 30 participants for the study who were engaged in

face-to-face in-depth. Findings form the study showed that women who were living with cervical cancer experience extreme pain during sexual intercourse as well as vaginal bleeding. In the same study, the authors averred that most women could not bear the pain during intercourse with their partners. The pains during sexual intercourse may even have an impact on the process of enjoyment and attainment of orgasm.[12]

2.9 Relationship between family functioning and sexual dysfunction

In Canada, a study was conducted on the reproductive and sexual health of young adults who had survived cancer. Medical records of women aged 20–39 who were diagnosed with solid tumors from 2008–2010 and who survived ≥2 years after the diagnosis of the condition were retrospectively reviewed. The study revealed that respondents who received discussions about reproductive and sexual health from their families and providers had good sexual health in comparison with their counterparts who had no discussions about the subject.[100] In the USA, a research was conducted to ascertain the sexual health in women diagnosed with cervical cancer. This case-control study recruited 100 (cases=50, control=50) women with a history of stage 0 to II cervical cancer as the study participants to understand their sexual health. The study revealed that the study participants reported significantly ($p<.05$) less sexual interest, more sexual dysfunction, and lower sexual satisfaction. The study further revealed that the poor sexual health among the cervical cancer survivors were due to the cancer treatment and poor partner relations or family functioning.

In Korea, stress, social support, and sexual health among women with breast cancer were investigated. This study utilised sub-group analysis, prospective, cross-sectional, and descriptive correlational design for the study. The study revealed that it is extremely essential to devise appropriate ways for spouses, family members, and friends to be functional, communicate and support cancer patients in order to help resolve stress problems experienced by these cohort.[101]

In Indonesia, a cross-sectional study was conducted to investigate family relationship and sexual dysfunction among women diagnosed with cervical cancer. A total of 82 women with cancer were recruited to represent the study. Convenience sampling technique was employed to recruit study participants and the Female Sexual Function Index (FSFI) was utilized to measure sexual function. The study revealed that most of the

cervical cancer survivors (90.2%) experienced sexual dysfunction whilst and more than half (52.4%) experienced distress in marital relationships. The study revealed that respondents with dysfunctional families were more probable to have sexual dysfunction. On the other hand, the sexual dysfunction may affect the marital relationships in women with cervical cancer which could be due to reverse causality. The study only included patients who were married and this introduced selection bias in the study. Additionally, the choice of cross-sectional study design make the study liable to recall bias. [102]

2.10 Family functioning and coping ability

An analytical study was conducted on the incidence and mortality among cervical cancer patients using data from the World Cancer Bank. The results showed a significant negative correlation between cervical cancer incidence rate and mortality with the Human Development Index (HDI) and GNI. A significant negative association was found between the incidence rate of cervical cancer and life expectancy at birth. The study therefore concluded that women in moderate to low HDI societies confronted with poor socioeconomic conditions and such groups should be given highest priority in the prevention of cervix cancer.[103]

The functionality of family plays a key role in psychological adaptation of women diagnosed with cancer. A cross-sectional study was carried out in Indonesia where the authors recruited 102 cancer patients who were currently receiving cancer treatment. Data was collected through the use of purposive sampling technique whiles a family support questionnaire instrument developed with recourse to the concept of the House and Friedman theory was employed as the data collection instrument. The study findings showed that there exist a significant relationship between family function, effective coping strategies and lower anxiety levels among cancer patients.[104] A study also revealed that having a dysfunctional family and unsupportive responses are correlated with higher avoidant coping strategies among cancer patients.[105]

Also, Benson and colleagues investigated the challenges, coping strategies, and social support women who are diagnosed with breast cancer receive in Ghana using a cross-sectional study. This study was carried out at a tertiary facility in Kumasi, Ghana and utilized systematic random sampling technique to draw information from 202 women

who had a confirmed diagnosis of breast cancer. Coping strategies of the women were measured through the use of Brief-COPE. The authors found that there exist an association between functional families and coping strategies among patients of diagnosed with breast cancer.[106] Duci and Tahsini averred that social support which is particularly stemming from closest relations with family members rather have an influence on the effectiveness of coping strategies. Moreover, the ubiquity of familial support generally declines the levels of anxiety and helps to improve the quality of life among cancer patients including those with cervical cancer.[104]

2.11 Coping strategies and sexual function

Evidence indicated that there is negative influence of cancer as well as related treatment on sexual health, which is multidimensional.[107] Lazarus and Rice revealed that avoidant coping strategies may not always be maladaptive but could also have varying effects which is contingent on the level of symptom and distress the patient is experiencing.[108] In Malaysia, CheYa and colleagues in their qualitative study investigated the coping strategies for sexual problems and sexual dysfunction among Malaysian women who were diagnosed with breast cancer. The qualitative study followed phenomenological analysis of fourteen married female respondents diagnosed with breast cancer and had female sexual dysfunction (FSD) which was screened using the Female Sexual Function Index (FSFI-6 items) from Kelantan, Malaysia. The research indicated that active coping was associated with lower odds of sexual function among cancer patients.[109]

In Poland, Chabowski and co. investigated the effect of coping strategy on quality of life in patients with cancer. A sample of 185 patients with lung carcinoma were enrolled in the observational, cross-sectional study. The strategies for coping with cancer were assessed using the Mental Adjustment to Cancer (MiniMAC) scale. The authors found that, majority of the cancer patients used active coping with the disease which correlated with a better quality of life including sexual health. In the same study the authors asserted that compromised quality of life was associated with destructive or avoidant coping strategies among the patients.[110]

Active coping strategies play an important role in tackling cancer-related issues including sexual function. In Northern Greece, a cross-sectional study was done to explore

the relationship between religiosity, mental health, and psychological strength in cancer patients. The study recruited 152 cancer patients using a two-item scale questionnaire, generalised anxiety disorder scale, Connor-Davidson Resilience Scale, and Centrality of Religiosity Scale. Evidence from the study indicates that active coping was positively impacting on patients' lives and decreased their negative emotional states, distress levels, symptoms of mood and hopelessness and also improved their well-being and illness.[111]

In summary, this review of literature shows a gap in evidence from sub-Saharan African countries including Ghana. A systematic review conducted in 2016 that focused on cervical cancer research in Africa for instance found that majority (54.6%) of a total of 350 research articles/reports were on the secondary prevention (i.e., screening) of cervical cancer with very few focusing on various aspects of quality of life. They also found that many countries in Africa had little to no research ever done on cervical cancer.[66] The geographical distribution of cervical cancer research in Africa is illustrated in Figure 2. There is paucity of evidence on the psychosocial challenges associated with cervical cancer diagnosis as well as sexual dysfunction among women from Ghana. Evidence on how women deal with the stresses associated with cervical cancer diagnosis is also rare. This study hopes to fill this evidence gap and also address the dearth of evidence on how family functioning influence coping among cervical cancer patients in Ghana.

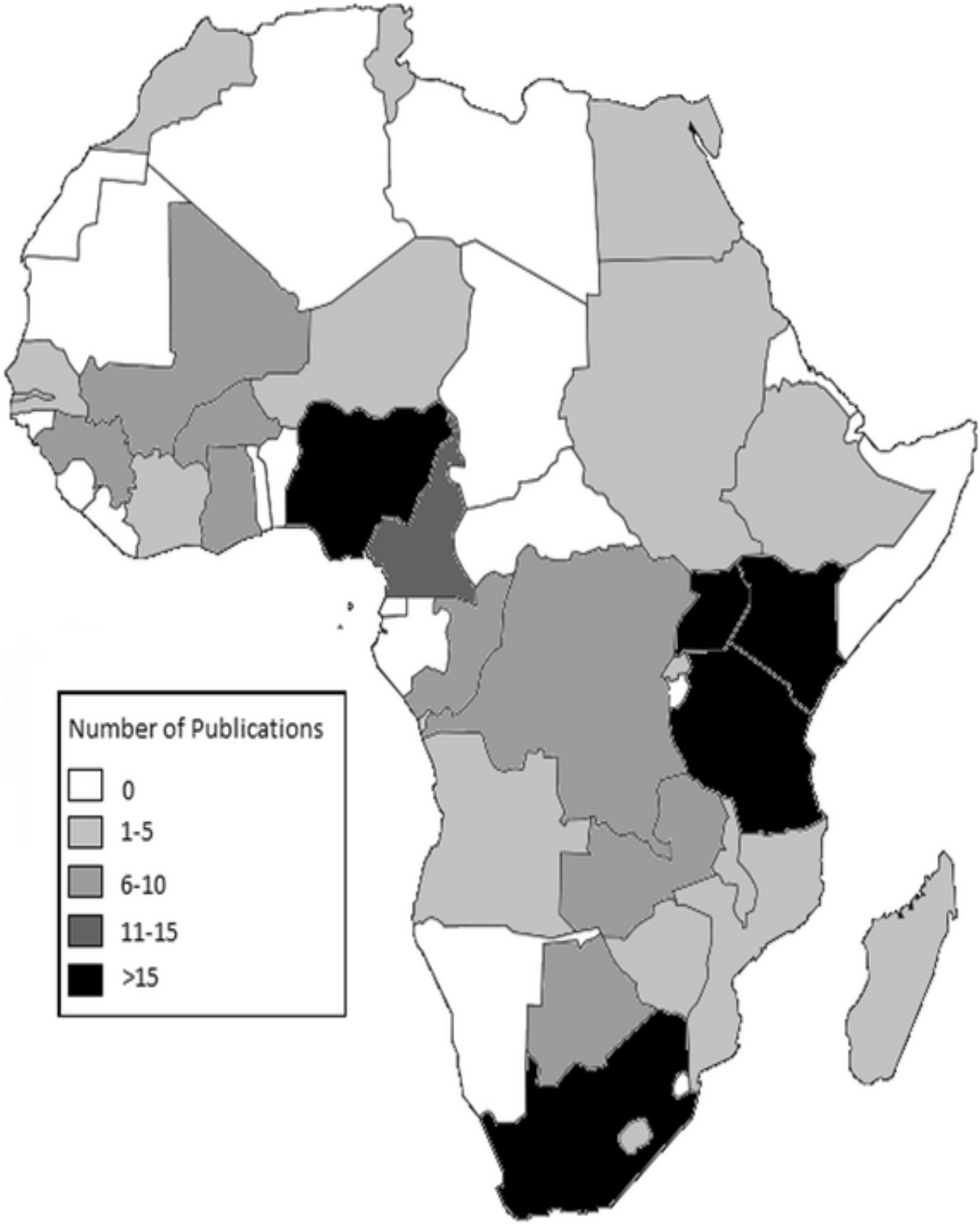

Figure 2: Map of Africa illustrating the geographic distribution of cervical cancer research
Source: Finocchario-Kessler et al[66]

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study design

The study adopted a mixed-method approach which employed both quantitative and qualitative methods to solicit information from respondents. This study employed a concurrent triangulation design where both qualitative and quantitative data was collected at the same time.[112] For the quantitative study, an institutional-based cross-sectional study design was chosen to solicit information from cervical cancer patients to describe the problem of cervical cancer in the study setting.

A grounded theory approach using a form of enquiry was adopted for the qualitative study. The approach was chosen to provide a detailed and in-depth understanding into the issues and experiences of cervical cancer in the defined population. The qualitative grounded theory approach was selected due to the subjective nature of some of the questions used in this study and it is believed that this method helps to get a better understanding of the actual problem that was investigated.

3.2 Study setting

The study was conducted at the Komfo Anokye Teaching Hospital (KATH) in Kumasi, Ashanti region of Ghana. Kumasi is the capital city of the Ashanti Region which is one of 16 administrative regions in Ghana (Figure 3). Kumasi lies in the middle zone of Ghana and is a major transit route between the northern and southern parts of Ghana. It currently has an estimated population of 5,440,463 based on the 2021 population and housing census.[113] The urban population (51.3%) in the region exceeds that of the rural population (48.7%). The region is currently the second most urbanized in the country, after Greater Accra (87.7%). The proportion of the economically active population varies from 71.4% in the Kumasi metropolis to 85.2% in the Amansie West District. Only five districts have proportions lower than 80.0%. The major occupation in all the districts is agriculture/animal husbandry/forestry, except in the Kumasi metropolis, where sales workers predominate. Residents in the rural areas are mostly in agriculture whereas those in urban areas are mainly in sales and production work. Majority of the economically

active population are self-employed, mainly in the private informal sector, which provides job opportunities, particularly for females with little or no formal education.

With respect to education, 65.0% of the population, 15 years and older in the region are literate. Nearly half (48.1%) are literate in both English and a Ghanaian language. Only 3.2 per cent are literate in a Ghanaian language only, while less than 1.0% are able to read and write in other languages. There are differences between the sexes in terms of literacy. More than half (55.8%) of the males are literate in English and a Ghanaian language compared with two fifth (40.4%) of the females. On the whole, the illiteracy level for the region (35.0%) is lower than that of the national average (42.1%). Hospitals are scarcely found in many localities in the districts. The proportions of localities with this facility range from 0.1% in Adansi East and Ahafo Ano South to 4.2% in Ejisu Juaben. Generally, the nearest hospital to the localities without the facility is far. In two districts (Kwabre and Afigya Sekyere), more than 60.0% of the localities have the nearest hospital located within 10 kilometres. In the other districts, the majority of the localities have the facility located over 10 kilometres away.

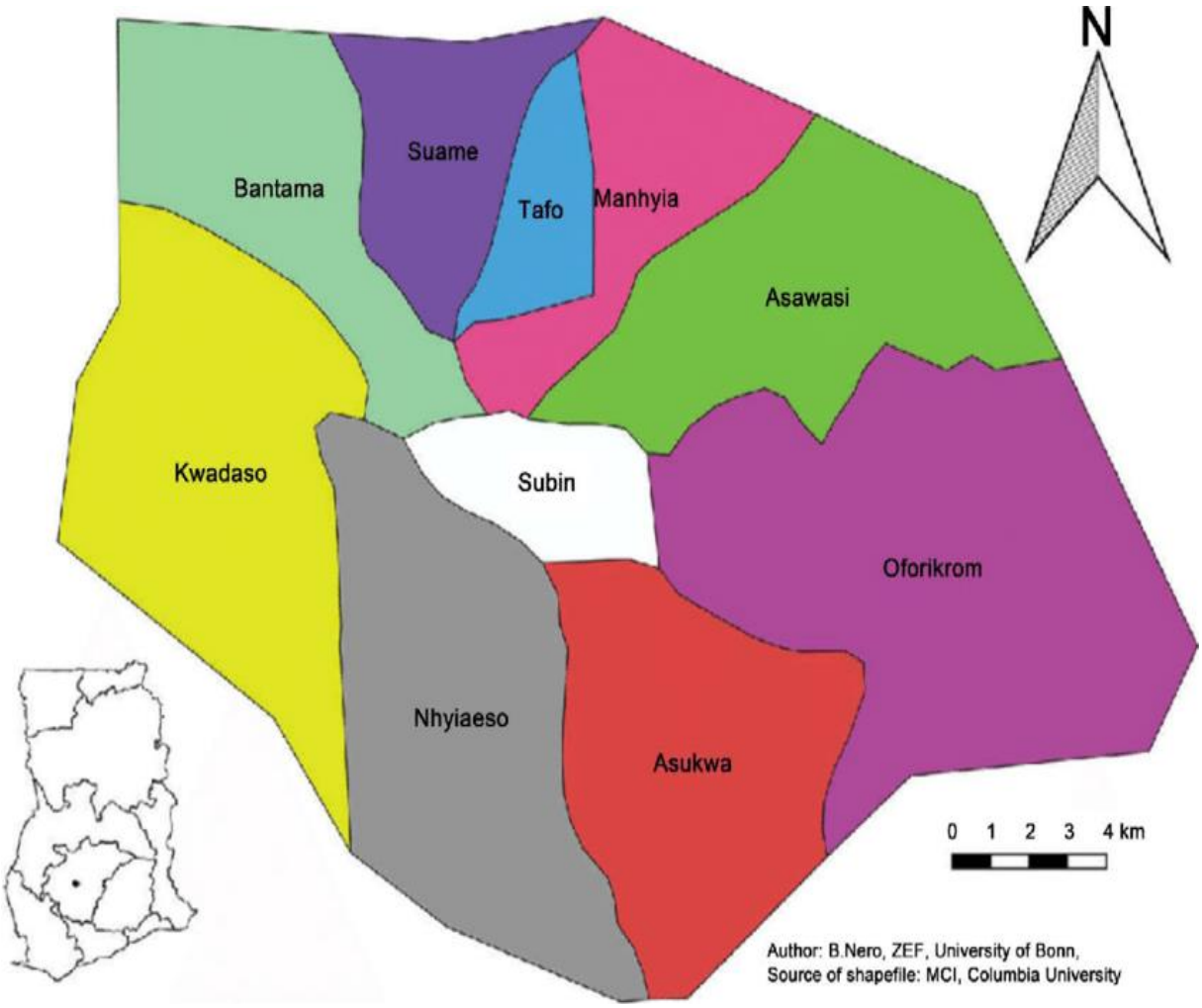

Figure 3: Map of Kumasi Metropolis, Ghana

Komfo Anokye Teaching Hospital (KATH) is the second-largest teaching hospital in Ghana, as well as the referral or tertiary facility in the Ashanti Region. Komfo Anokye Teaching Hospital was built in the year 1954, referred to then as the Kumasi Central Hospital. However, in 1975, it was converted to a teaching hospital based on it's affiliation to the Medical School of the Kwame Nkrumah University of Science and Technology (KNUST). Currently, the facility is also accredited for postgraduate training by the West African College of Surgeons, West African College of Physicians and the Ghana College of Physicians and Surgeons. The hospital currently has about 1200 beds and has clinical and non-clinical directorates. As at April 2023, there were 4160 staff at the KATH. The Gynaecology and Oncology unit, which is a section of the Oncology Directorate commenced operations in the year 2004. Diagnosis and management of all cancers are largely based on clinical presentation with histology and other laboratory-based tests accounting for a smaller proportion of cases of cancers seen in KATH. There were 75 staff

at the Oncology Directorate as at April 2023. The Unit sees about 191 cases a year with 7 specialists in attendance.

Currently, research has revealed that there are only two cancer-based registries in Ghana and these could be found in the two large tertiary referral hospitals, that is Komfo Anokye Teaching Hospital (KATH), Kumasi, and Korle Bu Teaching Hospital (KBTH) in Accra. These health facilities serve as the main referral centers where patients with malignancies, including cervical cancer patients, are diagnosed and treated in Ghana. Hence, the total catchment area for KATH covers approximately 40% of the population of Ghana.[45] KATH was chosen as the study site since it is the referral facility for all cancer-related issues including cervical cancer for the northern part of Ghana, including Kumasi.

3.3 Study population and sampling

Study population
The study population were women who have been diagnosed with cervical cancer at the Oncology Unit of KATH. These women were the most suitable respondents to provide adequate, reliable and valid information in order to answer the research questions.

3.3.1 Inclusion criteria

The following criteria were applied to recruit participants for the study.

i. Women with confirmed diagnosis of cervical cancer.

3.3.2 Exclusion criteria

The following exclusion criteria were applied in the study.

i. Confirmed cervical cancer patients who were pregnant at the time of the study.

ii. Cervical cancer women with previous history of abnormal uterine bleeding, major pelvic surgeries or primary dyspareunia.

iii. Women who were not sexually active about 6 months before cervical cancer diagnosis were also excluded. These women were excluded because of the interest in studying the phenomenon of women who are sexually active yet are experiencing sexual dysfunction in relation to their cervical cancer diagnosis.

iv. Women with previous history of depression or conditions that affect their ability to assess objectively were also excluded.

For the quantitative survey, the sample size was computed following the formula for calculating sample size for cross-sectional studies put forward by Charan and Biswas in 2013.[114] The researcher assumed that the prevalence of sexual function among cervical cancer patients was similar to an investigation conducted by Obora and colleagues.[115] The calculation was also based on a confidence interval (CI) of 95% and a 5% allowable margin of error.

Hence, $N=\frac{Z_{(1-a/2)}^2 P(1-P)}{d^2}$

Where N = required sample size

Z = Confidence level at 95% (standard value of 1.96)

p = Estimated prevalence of sexual function based on previous study = 15% (15% = 0.15)

d = level of precision corresponding to 95% confidence interval (standard value of 0.05)

q = (1-p) probability of the event not occurring, in this case (1-0.15) = 0.85

Hence, $N = \frac{1.96^2 \times 0.15(0.85)}{0.05^2}$

$N = \frac{3.8416 \times 0.1275}{0.0025}$

N= 196

3.3.2 Sampling method

The average respondents needed per day for the quantitative segment was estimated based on the number of expected attendance and the period of data collection. The Oncology Unit currently has an average attendance of 30-40 cervical cancer patients per clinic day (every Tuesday of the week). An average of 15 participants were interviewed every Tuesday for a period of 12 weeks to reach the required sample size. The researcher employed a probability sampling technique in conducting the quantitative study. Specifically, a 'modified' systematic sampling technique was adopted to select the study participants. The sampling process was particularly guided by respondents having an equal chance of representation. With systematic sampling technique, the researcher took the register for the cervical cancer patients present at each visit (average 30 – 40). The

researcher divided the daily estimated sample size (15) by the average daily registrants (30) to obtain the sampling interval. The researcher then selected the first respondent at random and applied the sampling interval. This was done to obtain the required sample size for the day at the Oncology Unit of KATH as respondents.

For the qualitative in-depth interviews, a purposive sampling approach was used to select respondents. Participants were recruited based on their possession of characteristics relevant to the study. Sampling was continued until no new relevant themes emerged (data saturation). The selected participants shared their individual knowledge and experience on the subject matter. The participants for the qualitative study did not take part in the quantitative study.

3.4 Data Collection instruments

A set of measures were used to collect quantitative data for the study

1. Structured Questionnaire: The questionnaire was developed by the author and was based on the study aim and review of literature. The questionnaire encompassed the socio-demographic characteristics of the study participants. These socio-demographic characteristics included:

- Age – the age of the participants in years (real time)
- Level of education completed– the educational levels of participants were categorized into no formal education, primary, junior high school, senior high school and tertiary
- Marital status – the marital or relationship situation of the women, categorized into never married, married, living together, divorced/ separated, widowed
- Religion – the religious background of respondents, categorized into Christianity, Islam, and Other
- Number of children – number of children (alive)
- Age at first sexual intercourse – the age at which one had her first sexual intercourse
- Number of lifetime sexual partners – the number of sexual partners one has had in her lifetime
- Employment status – the employment situation of the women, categorized into employed and unemployed
- Type of occupation – the type of occupation one has, if employed

- Monthly income – the income respondents earned monthly, categorized into less than GH₵ 500.00 and GH₵ 500.00-1000.00.
- History of STIs – whether participants has any history of STIs

2. Female Sexual Function Index (FSFI): Sexual dysfunction was also measured with the FSFI, a 19-item questionnaire, which has been developed as a brief, multidimensional self-reporting instrument for assessing the key dimensions of sexual function in women.[116] It provides scores on six domains of sexual function:

- Desire – two questions relating to the level and frequency of sexual desire
- Arousal – four questions relating to the level, frequency, confidence and satisfaction with sexual arousal
- Lubrication – four questions that elicit experiences on the frequency of lubrication, difficulty during lubrication, frequency of maintaining and difficulty in maintaining lubrication.
- Orgasm – three questions that elicit experience of organism in terms of the frequency, difficulty and satisfaction
- Satisfaction – three questions focusing on women's satisfaction specifying the amount of intimacy with partner, satisfaction with sexual relationship and with overall sexual life.
- Pain – three questions that measure the frequency of pain during vaginal penetration, the frequency of pain following penetration and the degree of pain during or following vaginal penetration.

Scores were assigned to each item and a total score is computed. A specific clinical cut-off score, a total score ≤26.55, has been classified as female sexual dysfunction (FSD).[117] The measure has been validated using small samples of women with female sexual arousal disorder (FSAD) as well as control using sample of women without sexual difficulties.[116] Additionally, the FSFI has been used in Ghana to assess female sexual dysfunction among different populations using similar cut-off points (total FSFI score of 26.55 or less was considered to be diagnostic of FSD), making it applicable in this study.[118]

3. Brief-COPE: Coping strategies were assessed using the brief-COPE, which consists of two items each for 14 different types of coping lifestyles.[26,119] The Brief-COPE

was developed by Carver to replace the COPE (Coping Orientation to Problems Experienced)[120], which was one of the most popular tools used in assessing coping, considering the problematic extension of the original instrument. The 14 subscales on the Brief-COPE and their definitions are:

- acceptance - accepting the reality that has occurred and learning to live with it
- emotional support – receiving emotional assistance, comfort and understanding
- humour - making jokes about the situation and making fun of it
- positive reframing - trying to see the situation from a different light, making it seem positive and look for something good in the situation
- religion- finding comfort in religion or spiritual belief including prayer and meditation
- active coping – taking rightful action to make the situation better or concentrating the efforts on doing something.
- instrumental support – seeking assistance and advice from people including trying to get assistance and advice from others on what to do.
- planning - trying to develop a strategy to combat the situation or thinking or reasoning on the important steps to take
- behavioral disengagement - giving up on trying to deal with the situation or making an attempt to cope
- denial – refusing to believe that the situation is real or believing that the situation has happened.
- self-distraction – relying on work or other activities in order to take mind off things or doing something which will lead to thinking less about the situation
- self-blaming - criticizing oneself and accusing oneself for the situation or what happened
- substance use - using substances like alcohol or other drugs to help feel better and help get through the situation.
- venting - saying things in order to let the unpleasant feelings escape/expressing negative feelings.

The responses were measured on a Likert scale of four (4), which helped to ascertain the frequency that the participants engaged in such strategies; I haven't been doing this at all=1, I have been doing this a little bit=2, I have been doing this a medium amount=3 and

I have been doing that a lot=4. Previously, the BRIEF-cope has been used before in Ghana to assess coping strategies among different populations, including women diagnosed of cancer [106].

4. Family APGAR: Family functioning was also assessed using the Family APGAR proposed by Smilkstein.[121] The purpose of the tool was to assess the perception of family members on the functionality of the family through an examination of how satisfied they were with family relationships. This measure also consisted of five parameters of family functioning: Adaptability, Partnership, Growth, Affection, and Resolve which was abbreviated as "APGAR" using first letters of each of the parameters. The components of the score and their definitions are:

- Adaptability - Adaptability is the usage of both intra and extrafamilial resources for problem solving when family equilibrium is stressed during a crisis
- Partnership - Partnership refers to sharing decision-making and nurturing responsibilities by family members
- Growth - Growth refers to the physical and emotional maturation as well as self-fulfillment that is achieved by family members through providing mutual support and guidance
- Affection - Affection pertains to family members showcasing care and love for its members
- Resolve - Resolve is the commitment to devote time to other members of the family for physical and emotional nurturing. It also encompasses making decision to share wealth and space

The response options were designed to describe the frequency or the level of feeling satisfied with each parameter on a 3-point scale; 0 indicating "hardly ever", 1 indicating "sometimes" and 2 as "almost always". These items were developed based on the premise that a family member's perception of family functioning could be ascertained by reported satisfaction with the five dimensions of family functioning listed above.[121] The scores for each of the five questions were totaled. A score of 7 to 10 indicated a highly functional family. A score of 4 to 6 indicates a moderately dysfunctional family whereas a score of 0 to 3 is suggestive of a severely dysfunctional family. Additionally, the family APGAR tool

has been utilized in Ghana to assess family functioning among different populations using similar cut-off points; and a score of 7–10 as highly functional family, score of 4–6 as moderately dysfunctional family and 0–3 as severely dysfunctional family [122]. This posits that it's validity and reliability have been tested and it is now widely accepted as a useful instrument for assessing family functioning in Ghana.

5. In-depth-interview guide: The in-depth interviews were also conducted using interview guides. The purpose of the interview guide/tool was to conduct intensive individual interviews with a small number of respondents in order to explore their perspectives and experiences with cervical cancer diagnosis, including sexual dysfunction, family support and how the women cope with the diagnosis. The primary advantage of in-depth interviews is that they provide much more detailed information than what is available through the use of other instruments. The interview guide used for the qualitative in-depth interviews is available as Appendix B.

3.5 Study Piloting

A pilot study involving 20 participants was carried out at the Oncology Unit of the KATH prior to the study, to identify potential problems with the study instruments, such as lack of clarity which may affect the validity and reliability of the instruments. The respondents for the pilot study were not included in the final dataset. The questionnaire and interview guides were administered by the researcher to those selected for the study. The questionnaire was then translated using the process of translation outlined by the WHO.[123] One translator, who was familiar with the terminologies of the area covered by the research instrument and with interview skills first conducted a forward translation from English into Twi. The translator had good knowledge in the English-speaking culture but her mother tongue was the primary language of the target culture. Using the same approach as outlined in the previous step, the research instrument was then translated back into the English language by an independent translator, whose mother tongue is English and has no knowledge of the questionnaire.

3.6 Data Collection

Primary data was collected for both the qualitative and quantitative component of the study. Quantitatively, data was collected using structured questionnaire. These

completed questionnaires were designed and saved digitally on an online database- Survey Monkey. These online questionnaires were subsequently administered for data collection. The data was then entered on the Android-based device using the Survey Monkey platform, stored locally on the tablets, and synchronised regularly to the dedicated or virtual server managed personally by the principal investigator. The researcher then extracted the data upon completion of the quantitative data collection.

Indepth interviews were data collection strategy that was adopted to collect qualitative data in the study. In-depth interviews were conducted to create an avenue for more open-ended questions to be asked whilst allowing the interviewee an opportunity to express themselves rather than answering straightforward questions. Fifteen (15) key in-depth interviews were conducted within two (2) months period at the Oncology Unit at KATH. In order to minimize interference, the researcher cooperated with respondents to schedule interview dates, times and venues. Every interview was conducted in Ghanaian local language (Twi) and each lasted for forty-five (45) minutes to one (1) hour. At every interview, one participant was recruited at a time and information on cervical cancer solicited. With permission from respondent, the responses were audio-recorded by trained research assistant to complement written notes by the interviewer. The research team ensured that the participants were safely and consistently assessed, responded to any question and participant distress were managed in case they presented with any during the interviews. Where it was urgent for participant to attend to emergency issues, the audio recorder and interview were paused. Written notes included observations of both verbal and non-verbal cues and communications as they happened, as well as immediate personal reflections about some questions.

3.7 Quality control

Three research assistants were recruited and trained. These research assistants helped the researcher to collect both quantitative and qualitative information from the respondents. Training was given to the research assistants on how to ask respondents questions pertaining to cervical cancer, how to fill the online questionnaire and how to use the tape recorder to record the in-depth interviews. Quantitatively, the use of electronic questionnaire (Survey Monkey) helped for live data quality control, monitoring and interview progress evaluation.

Qualitative research involves a complex interaction between the researcher and the research subject, in which the researcher's relationship with participants and the research process influences the findings. As proposed by Charmaz (2006), under the mantle of constructivism, grounded theorists position themselves within a reflexive framework; thereby making transparent how they render their own reality and how they position themselves within that reality. As a researcher, I do not assume there is a reality awaiting discovery which can be excavated, nor have I the ability to listen, be sensitive and compassionate to the information shared. Even though, this may help to form the building block of any relationship; as it would demand honesty, reciprocity and trust - integral to data collection. Undeniably, as a Family Physician, I may have subsumed these qualities and attributes in my clinical practice as required by my profession. Therefore, I believe it would be wise to prioritize these qualities in the interviews.

3.8 Data management and analysis

All the questionnaires and interview results from the field were checked for completeness, missing values, as well as internal errors from the data collection. Data collected using SurveyMonkey online data collection tool was extracted into STATA (version 16.0) statistical software package for data analysis.[124] Data was described using tables, proportions, means and median values. Bivariate associations were tested using the chi-square and fisher exact tests. The relationship between socio-demographic characteristics, family functioning, sexual dysfunction and coping strategies was assessed using logistic and linear regression models where appropriate. The models were built in a stepwise manner: model 1 adjusted for the socio-demographic variables whereas model 2 included the socio-demographic together with age at first sexual intercourse and number of sexual partners. Inferences were made based on 95% confidence interval with 5% error margin and a p-value of <0.05. Outputs were presented in odds ratio and coefficients where necessary.

Data from the in-depth interviews were analyzed by transcribing verbatim the recorded interviews to English. The data was then thematically analyzed using variable matrix, flow charts and relevant quotes to highlight results. The analysis was supplemented with the use of NVIVO software.

3.9 Ethical and legal considerations

Seeking ethical clearance is essential in every study especially when it deals with human subjects. For this study, ethical clearance was obtained from KNUST, Committee for Human Research Publication and Ethics (CHRPE) and permission was sought from the Municipal Directorate of Health Services, the Research and Development Unit of KATH as well as the Oncology Unit where the study was conducted. Informed consent was also sought from all the respondents before interviewing them. The purpose and the objectives of the study, and any potential risk or benefits inherent in the study were explained to all respondents. The respondents were given an opportunity to ask questions about the study. Privacy and confidentiality were ensured by dealing with the respondents on individual basis and conducting interviews in confined locations. Participants were offered the opportunity to decline to take part in the study or to withdraw at any stage of the research if they so wished without any sanctions.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of respondents

Out of the total 196 cervical cancer patients invited to participate in the study, 181 completed the survey and were involved in the final analysis yielding a response rate of 92.3%.

Out of of 181 cervical cancer patients that participated in the study, more than half (56.9%) of the respondents were in the age category of 51 – 70 years and a little above one-fourth (26.5%) were between the ages of 31-50 years. The mean (SD) age was 57.5 (12.9) years. Nearly half (44.8%) of the respondents were married/living together and a little over half (50.3%) were either divorced or widowed. Of the respondents, 38.7% had no formal education, about one-third (32.6%) had primary education and more than one-fifth (22.1%) attained junior high school (JHS) education. Majority (83.4%) were Christians and 30 (16.6%) belonged to Islamic religion.

Nearly one-third (31.5%) were employed within the 12 months preceding data collection. Among those employed, nearly half (49.1%) worked in sales and services, and more than one-third (38.6%) worked in agriculture. More than one-third (39.8%) had between 8 – 10 children, and nearly one-third (33.2%) had between 4 – 7 children. Of the respondents, majority 150 (82.3%) had monthly income below GH₵500 (equivalent to <62.5 USD), and the rest, 31 (17.7%) had monthly income between GH₵500 – 1,000 (equivalent to 62.5 – 125 USD). Almost all the respondents (98.3%) had no history of sexually transmitted infections whilst very few, 3 (1.7%) had history of sexually transmitted infections like syphilis. More than two-thirds (68.5%) had had between 2 – 3 sexual partners, nearly one-fifth (16.6%) had had between 0 – 1 lifetime sexual partners, and more than one-tenth (14.9%) had had four or more lifetime sexual partners. About two-thirds (65.7%) of respondents had their first sexual intercourse at age 18 and above and about one-third (34.3%) had their first sexual intercourse at age below 18 years (Table 1).

Table 1: Socio-Demographic Characteristics of Respondents

Demographic Characteristics	Frequency (n=181)	Percentage
Age groups (years)		
17-30	3	1.7
31-50	48	26.5
51-70	103	56.9
71-92	27	14.9
Mean ± S.D.	57.5 ±12.85	
Marital status		
Never married	9	5.0
Married/living together	81	44.7
Divorced/Separated/Widowed	91	50.3
Educational status		
No formal education	70	38.7
Primary	59	32.6
JHS	40	22.1
SHS	9	4.9
Tertiary	3	1.7
Religion		
Christian	151	83.4
Moslem	30	16.6
Employment status (within last 12 months)		
Yes	57	31.5
No	124	68.5
If yes, what is your occupation (n=57)		
Sales and services	28	49.1
Skilled manual	3	5.3
Unskilled manual	4	7.0
Agriculture	22	38.6
Parity		
0-3	24	13.3
4-7	60	33.2
8-10	72	39.8
11-13	25	13.8
Monthly income (GH₵)		
Less than 500 (<62.5 USD)	150	82.9
500-1,000 (62.5 – 125 USD)	31	17.1
History of STIs		
Yes	3	1.7
No	178	98.3
Number of lifetime sexual partners		
0-1	30	16.6
2-3	124	68.5
4 or more	27	14.9
Age at first sexual intercourse		
Below 18 years	62	34.3
18 years or more	119	65.7

SD=standard deviation; JHS=Junior High School; SHS=Senior High School

4.2 Coping strategies adopted by cervical cancer patients

Table 2 presents the means and standard deviations of the 14 different coping strategies adopted by the cervical cancer patients that participated in the study. The mean depicts the extent of coping strategies adopted by the respondents. Higher mean indicates higher extent of coping and lower means otherwise. Majority of the respondents frequently engaged in adaptive coping strategies like active coping, emotional support, positive reframing, planning, acceptance, religious coping, instrumental support and humour. The most adopted adaptive coping strategy was religious coping (mean=7.81, S.D=0.60) followed by active coping (mean=7.51, S.D=0.83) and the least was humour (mean=3.85, S.D=1.99).

On the other hand, some respondents frequently engaged in avoidant/maladaptive strategies like voicing, behavioural disengagement, denial, substance use, self-blaming and self-distraction. Substance use (mean=2.06, S.D=0.34) and self-distraction (mean=7.20, S.D=1.09) were the least and most adopted maladaptive coping strategies respectively. The frequencies and percentages of participants responses to the various quesiotns relating to the coping strategies is shown in Appendix Al

Table 2: Coping Strategies among cervical cancer patients

Variables	Mean	S.D
Adaptive coping strategies		
Active coping	7.51	0.83
Emotional support	7.11	1.26
Positive reframing	7.16	1.27
Planning	7.31	1.08
Acceptance	7.13	1.31
Religious coping	7.81	0.60
Use of instrumental support	7.14	1.30
Humour	3.85	1.99
Overall mean	**6.88**	**1.21**
Maladaptive coping strategies		
Voicing	3.15	1.75
Behavioural disengagement	2.94	1.49
Denial	3.06	1.57
Substance use	2.06	0.34
Self-Blaming	2.65	1.22
Self-Distraction	7.20	1.09
Overall mean	**3.51**	**1.24**

SD=standard deviation

Mean of coping strategies was computed by summing the means and S.D of two items/questions for each of the coping variables. Response scale: 1= I have not been doing this at all; 2= I have been doing this a little bit; 3=I have been doing this a medium amount and 4=I have been doing this a lot.

4.3 Sexual health of cervical cancer patients

Table 3A and 3B present the sexual health of participants that took part in the study. The study revealed that majority, 169 (93.4%) often had desire for sexual intercourse and a similar proportion, 168 (92.8%) claimed their level of desire was very high. Majority of participants 161 (89.9%) were almost never turned on during sexual activity, majority 162 (89.5%) had very low sexual arousal, and almost all 172 (95.0%) had very low confidence of becoming sexually aroused. Majority of participants 167 (92.3%) were almost never satisfied with their sexual arousal (excitement), 171 (95%) almost never become lubricated, 174 (96.7%) found it difficult to become lubricated during sexual activity, 171 (95%) almost never maintained lubrication until completion of sex, and 175 (96.7%) had difficulty maintaining wetness until the end of sexual activity. Most of the women 173 (96.1%) almost never reached orgasm during sexual stimulation or activity or found it extremely difficult reaching orgasm 174 (96.7%).

However, majority 163 (90.6%) were very satisfied with the sexual relationship with their partners and 165 (91.1%) were very satisfied with their overall sexual life. Additionally, majority 155 (85.6%) almost never experienced discomfort/pain during sexual activity and had very low degree of discomfort or pain during or following vaginal penetration.

Table 3A: Sexual health among respondents

Variables	Frequency (n=181)	Percentage (%)
Over past four weeks, how often do you feel sexual desire		
Almost always	169	93.4
Most times	4	2.2
Sometimes	4	2.2
Almost never	4	2.2
Degree of sexual desire or interest		
Very high	168	92.8
High	7	3.89
Moderate	3	1.6
Very low or none at all	3	1.6
How often did you turn on during sexual activity		
Almost always	3	1.7
Sometimes	3	1.7
Almost never	161	89.9
No sexual activity	14	7.7
Degree or level of sexual arousal during sexual activity		
Very high	3	1.6
Low	4	2.2
Very low or none at all	162	89.5
No sexual activity	12	6.6
How confident were you becoming sexually aroused		
Very high	2	1.1
High	5	2.8
Very low or none at all	172	95.0
No sexual activity	2	1.1
Have been satisfied with your arousal (excitement)		
Most times	3	1.7
Few times	3	1.7
Almost never	167	92.3
No sexual activity	8	4.4
Become lubricated ("wet") during sexual activity		
Almost always	4	2.2
Few times	2	1.11
Almost never	171	95.0
No sexual activity	3	1.67
Difficult becoming lubricated ("wet") during sexual activity		
Not difficult	3	1.67
Very difficult	3	1.67
Extremely difficult	174	96.7
Maintain lubrication ("wetness") until completion of sexual activity		
Almost always	4	2.2
Few times	2	1.11
Almost never	171	95.0
No sexual activity	3	1.67

Table 3B: Sexual health among Respondents

Variables	Frequency (n=181)	Percentage (%)
Difficult maintaining wetness until completion of sexual activity		
Not difficult	3	1.66
Slightly difficult	3	1.66
Extremely difficult	175	96.7
Reach climax (orgasm) during sexual stimulation or intercourse		
Almost always	3	1.67
Sometimes	4	2.2
Almost never	173	96.1
Difficulty reaching climax during sexual intercourse		
Not difficult	3	1.67
Difficult	4	2.2
Extremely difficult	174	96.1
Satisfied reaching orgasm during sexual intercourse		
Very satisfied	2	1.1
Moderately satisfied	2	1.1
Moderately dissatisfied	2	1.1
Very dissatisfied	174	96.7
Satisfied with emotional closeness between myself and partner		
Very satisfied	2	1.1
Moderately satisfied	4	2.2
Very dissatisfied	175	96.7
Satisfied with sexual relationship with my partner		
Very satisfied	163	90.1
About equal satisfied and dissatisfied	14	7.7
Very dissatisfied	4	2.2
Satisfied with overall sexual life		
Very satisfied	165	91.2
Moderately satisfied	4	2.2
About equal satisfied and dissatisfied	12	6.6
Often experience discomfort or pain during vaginal penetration		
Almost always	2	1.1
Few times	4	2.2
Almost never	158	87.3
No sexual activity	17	9.4
Often experience pain following vaginal penetration		
Almost always	4	2.2
Few times	2	1.1
Almost never	155	85.6
No sexual activity	20	11.1
Level (degree) of discomfort or pain during or following vaginal penetration		
Very high	3	1.66
High	5	2.8
Very low or none at all	158	87.3
No sexual activity	15	8.3

Figure 4 below is a pictorial presentation of the sexual health of the study participants. Sexual dysfunction was estimated by assigning scores to each item/ response and a total score is computed. A specific clinical cutoff score of ≤26.55 was classified as female

sexual dysfunction (FSD).[117] Almost all, 174 (96.1%) the respondents had sexual dysfunction whilst the rest 7(3.9%) had good sexual function.

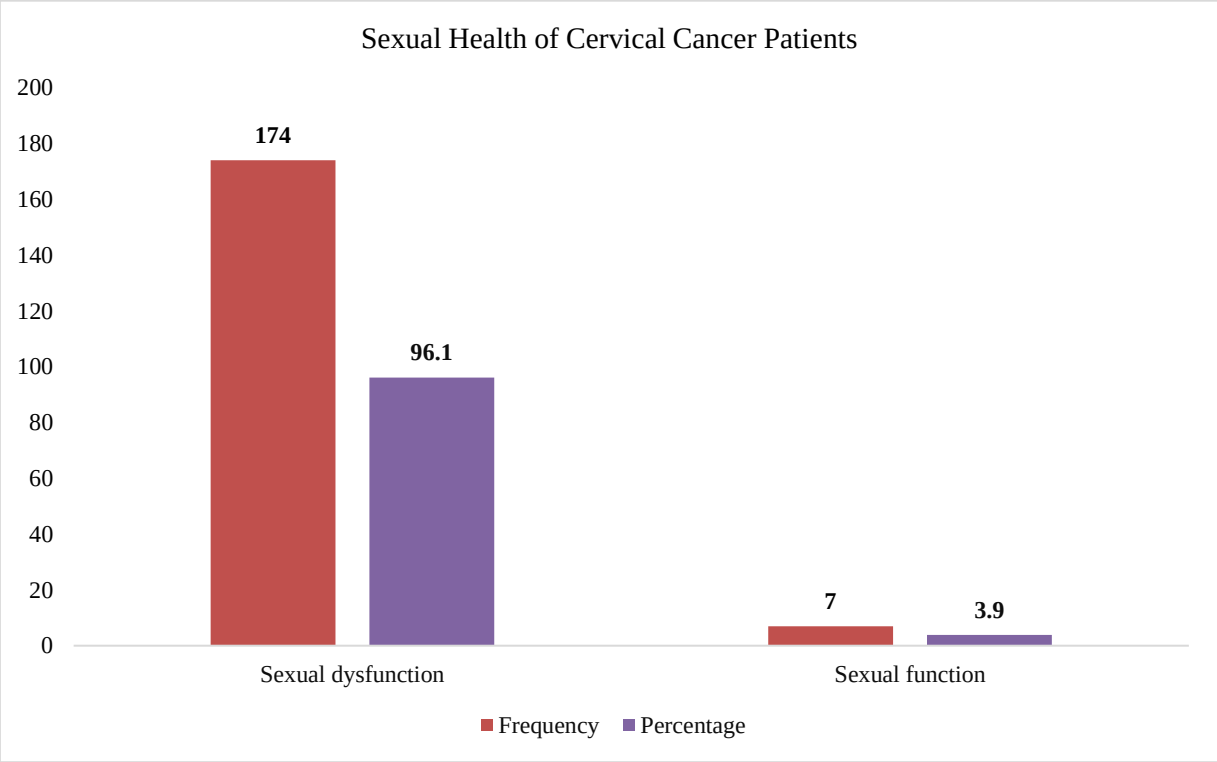

Figure 4: Sexual Health of Cervical Cancer Patients

4.4 Perception of and satisfaction with family relationships

Table 4 presents the family functionality of the respondents in the study. Nearly two-thirds (63.0%) can hardly ever turn to family for assistance when troubled, and a little more than one-third (35.3%) can sometimes turn to family for assistance. Nearly two-thirds (66.3%) of the respondents indicated that their families hardly ever talk over things or share problems with them. A majority of the respondents 118 (65.2%) had family members who hardly ever accepted and supported their wishes to take new activities or directions, and also, nearly two-thirds, 118 (65.2%) of respondents had family members who hardly ever expressed affection and responded to their emotions. Similarly, nearly two-thirds (65.2%) of the participants had families that hardly ever spent time together with them. However, a small proportion of the respondents 6 (3.3%) had families who almost always spent time together with their families.

Table 4: Family Functioning of Cervical Cancer Patients

Variables	Frequency (n=181)	Percentage (%)
Can turn to family for help at anytime		
Hardly ever	114	63.0
Sometimes	64	35.3
Almost always	4	1.7
Family shares things and problems with me		
Hardly ever	118	66.3
Sometimes	59	32.0
Almost always	4	1.7
Family accepts and supports my wish to take new activities		
Hardly ever	118	65.2
Sometimes	58	32.0
Almost always	5	2.8
Family expresses affection and responds to my emotions		
Hardly ever	118	65.2
Sometimes	59	32.6
Almost always	4	2.2
Family and I share time together		
Hardly ever	118	65.2
Sometimes	57	31.5
Almost always	6	3.3

Response scale: Almost always=2, sometimes=1 and hardly ever=0

Figure 5 shows the family functioning of the cervical cancer patients who participated in the study. Nearly two-thirds (65.7%) had severely dysfunctional families, nearly one-third (31.5%) had moderately dysfunctional families, and the least 5 (2.8%) had highly functional families.

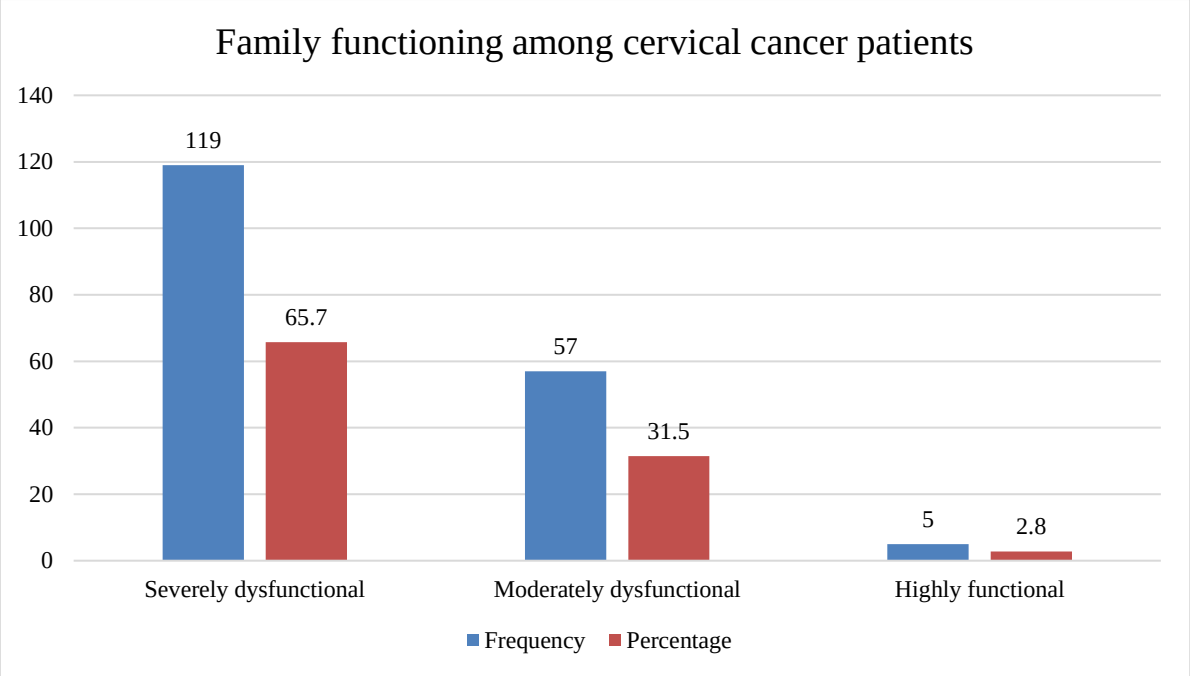

Figure 5: Family Functionality among Cervical Cancer Patients

4.5 Association between socio-demographic characteristics and sexual health

A bivariate analysis was run to ascertain the relationship between sexual functioning and socio-demographic characteristics of the respondents (Table 5). The results of the chi-square test of independence indicated that employment status was positively associated with poor sexual function among cervical cancer patients (X^2=4.702, P=0.030). Associations with all other socio-demographic variables were not statistically significant.

Table 5: Association between socio-demographic characteristics and sexual function

Variables	Sexual functionality		X2	P-value
	Sexual function n (%)	Sexual dysfunction n (%)		
Age group			1.146	0.766
17-30	0(0)	3(1.7)		
31-50	3(42.9)	45(25.9)		
51-70	3(42.9)	100(57.5)		
71-92	1(14.3)	26(14.9)		
Marital status			2.511	0.285
Never married	1(14.3)	7(4.0)		
Married	4(57.1)	78(44.8)		
Divorced/separated	2(28.6)	89(51.2)		
Educational status			0.689	0.953
No formal education	3(42.9)	67(38.5)		
Primary	2(28.6)	57(32.8)		
JHS	2(28.6)	38(21.8)		
SHS	0(0)	9(5.2)		
Tertiary	0(0)	3(1.7)		
Religion			0.7579	0.384
Christian	5(71.4)	146(83.9)		
Islam	2(28.6)	28(16.1)		
Employment status			4.702	0.030*
Currently employed	3(42.9)	54(31.0)		
Currently unemployed	4(57.1)	120(69.0)		
Parity			1.026	0.795
0-3	4(57.1)	74(42.5)		
4-7	2(28.6)	81(46.6)		
8-10	1(14.3)	17(9.8)		
11-13	0(0)	2(1.2)		
Monthly income (GH₵)				
Below 500 (<62.5 USD)	6(85.7)	143(82.2)	0.058	0.810
500 – 1000 (62.5 – 125 USD)	1(14.3)	31(17.8)		
Number of partners				
0-1	1(14.3)	23(13.2)	1.912	0.591
2-3	4(57.1)	126(72.4)		
≥4	2(28.6)	25(14.4)		
Age at first sex			0.104	0.747
Below 18 years	2(28.6)	60(34.5)		
18 years and above	5(71.4)	114(65.5)		

JHS=Junior High School; SHS=Senior High School

Table 6 shows the logistic regression results of the association between socio-demographic characteristics of respondents and sexual function. There was no statistically significant association between any of the socio-demographic variables and sexual function.

Table 6: Logistic regression results of the association between socio-demographic characteristics and sexual function

		Sexual dysfunction		
Variable	**COR**	**95% C.I**	**AOR**	**95% C.I**
Age	1.02	[0.96 – 1.09]	1.03	[0.94 – 1.14]
Parity				
0-3	Ref	Ref	Ref	Ref
4 - 7	2.19	[0.39 – 12.3]	2.32	[0.28 – 18.88]
8 -13	0.92	[0.09 – 8.75]	0.96	[0.06 – 14.79]
Religion				
Christian	Ref	Ref	Ref	Ref
Moslem	0.48	[0.09– 2.60]	0.52	[0.07 – 4.04]
Educational level				
No formal education	Ref	Ref	Ref	Ref
Primary	1.28	[0.21 – 7.91]	1.25	[0.14 – 11.15]
JHS+	0.85	[0.14 – 5.32]	1.34	[0.09 – 19.22]
Employment status				
Currently employed	Ref	Ref	Ref	Ref
Currently unemployed	1.67	[0.36 – 7.70]	0.80	[0.11 – 5.73]
Monthly income (GHC)				
Below 500 (<62.5 USD)	Ref	Ref	Ref	Ref
500 – 1000 (62.5 – 125 USD)	1.30	[0.15 – 11.2]	1.28	[0.09 – 17.03]
Marital status				
Never married	Ref	Ref	Ref	Ref
Married	2.79	[0.27 – 28.5]	0.42	[0.04 – 4.30]
Divorced/separated	6.36	[0.51 – 79.1]	0.68	[0.05 – 8.70]
Number of partners				
0-1	Ref	Ref	Ref	Ref
2-3	0.91	[0.09 – 9.23]	0.78	[0.05 – 11.91
≥4	0.54	[0.05 – 6.40]	0.64	[0.18 – 22.88]
Age at sex				
Below 18 years	Ref	Ref	Ref	Ref
18 and above	0.76	[0.14 – 4.03]	0.26	[0.02 – 3.35]

COR=Crude Odds Ratio, CI=Confidence Interval in square brackets; Ref=Reference Category

4.6 Association between socio-demographic characteristics and family functioning

A bivariate analysis was run to ascertain the relationship between family functioning and socio-demographic characteristics of the respondents (Table 7). The results indicated no positive association between socio-demographic variables and family functionality of the respondents.

Table 7: Association between socio-demographic characteristics and family function

Variable	Family functionality		Fisher	P-value
	Functional N (%)	Dysfunctional N (%)		
Age group			*0.477*	*0.568*
17-30	0(0.0)	3(1.7)		
31-50	0(0.0)	48(27.3)		
51-70	4(80.0)	99(56.3)		
71-92	1(20.0)	26(14.8)		
Marital status			*0.196*	*0.208*
Never married	1(20.0)	8(4.5)		
Married	1(20.0)	80(45.5)		
Divorced/separated	3(60.0)	88(50.0)		
Educational status			*0.613*	*0.736*
No formal education	1(20.0)	69(39.2)		
Primary	3(60.0)	56(31.8)		
JHS	1(20.0)	39(22.2)		
SHS	0(0.0)	9(5.1)		
Tertiary	0(0)	3(1.7)		
Religion			*1.652*	*0.199*
Christian	5(100.0)	146(82.9)		
Islam	0(0.0)	30(17.1)		
Employment status			*0.180*	*0.164*
Currently employed	3(60.0)	54(30.7)		
Currently unemployed	2(40.0)	122(69.3)		
Parity			*0.252*	*0.215*
0-3	0(0.0)	30(17.1)		
4-7	3(60.0)	121(68.8)		
8 - 13	2(40.0)	25(14.2)		
Monthly income(GH₵)			*0.590*	*0.303*
Below 500 (<62.5 USD)	5(100.0)	145(82.4)		
500 – 1000 (62.5 – 125 USD)	0(0.0)	31(17.6)		
Number of partners			*0.252*	*0.215*
0-1	0(10.5)	30(17.1)		
2-3	3(34.3)	121(68.8)		
≥4	2(17.9)	25(14.2)		
Age at first sex			*0.548*	*0.763*
Below 18 years	2(40.0)	59(33.5)		
18 and above	3(60.0)	117(66.5)		

JHS=Junior High School; SHS=Senior High School

Table 8 shows the association between socio-demographic characteristics of respondents and family function. Parity had positive association with family dysfunction in both the crude and adjusted models. The participants with parity of 4 – 7 children were twice more likely to have a dysfunctional family compared to those with 0 – 3 children [OR=2.14, 95% CI=1.12 – 4.07]. The odds of respondents who had parity of 8 – 13 having a dysfunctional family was five times more compared to those with 0 – 3 children

[OR=5.52, 95% CI=1.50 – 20.4]. Similar observations were recorded in the adjusted model.

Table 8: Logistic regression results of the association between socio-demographic characteristics and family functioning

		Family dysfunction		
Variable	**COR**	**95% C.I**	**AOR**	**95% C.I**
Age	1.00	[0.97 – 1.05]	1.03	[0.92 – 1.17]
Parity				
0-3	Ref	Ref	Ref	Ref
4 – 7	2.14*	[1.12 – 4.07]	2.36*	[1.11 – 5.02]
8 -13	5.52*	[1.50 – 20.4]	6.18*	[1.42 – 26.80]
Religion				
Christian	Ref	Ref	Ref	Ref
Moslem	1.78	[0.74– 4.27]	1.60	[0.60 – 4.31]
Educational level				
No formal education	Ref	Ref	Ref	Ref
Primary	0.82	[0.40 – 1.70]	0.92	[0.40 – 2.11]
JHS+	0.39	[0.09 – 1.60]	0.31	[0.06 – 1.71]
Employment status				
Currently employed	Ref	Ref	Ref	Ref
Currently unemployed	1.41	[0.74 – 2.69]	1.86	[0.79 – 4.41]
Monthly income (GHC)				
Below 500 (<62.5 USD)	Ref	Ref	Ref	Ref
500 – 1000 (62.5 – 125 USD)	1.65	[0.71 – 3.81]	1.89	[0.63 – 5.68]
Marital status				
Never married	Ref	Ref	Ref	Ref
Married	5.38	[0.98 – 29.6]	6.60	[0.96 - 45.23]
Divorced/separated	3.82	[0.70 – 20.8]	5.51	[0.76 – 39.83]
Number of partners				
0-1	Ref	Ref	Ref	Ref
2-3	0.80	[0.28 – 2.13]	0.74	[0.30 – 3.45]
≥4	0.64	[0.23 – 1.77]	1.02	[0.21 – 2.57]
Age at sex				
Below 18 years	Ref	Ref	Ref	Ref
18 and above	1.15	[0.61 – 2.16]	0.59	[0.26 – 1.34]

*COR=Crude Odds Ratio, CI=Confidence Interval in square brackets; Ref=Reference Category; *p<0.05, **p<0.01, ***p<0.001*

4.7 Association between socio-demographic characteristics and coping strategies

Table 9 shows the association between socio-demographic characteristic and coping strategies among study participants. In the crude associations, attaining JHS education had a negative association with adaptive/active coping strategies compared to no formal education *[β = -2.39, 95% CI=-4.58, -0.21]*. Giving birth to 4–7 [*β=3.11, 95%CI=1.44- 4.77*] and 8–10 children [*β=3.81, 95%CI=1.05-6.57*] were positively

associated with adaptive coping strategies compared with participants who had parity of 0-3. There was no association between socio-demographic characteristics and maladaptive/ avoidant coping strategies.

In the adjusted model, women who had 4 – 7, 8 – 10, and 11 – 13 children had 3.39 [β= 3.39; 95% CI=1.61 – 5.18], 4.18 [β= 4.18; 95% CI=1.18 – 7.18] and 8.39 [β= 8.39; 95% CI=0.58 – 16.20] increase in mean active coping respectively, compared to women with 0 – 3 children. Being a Moslem was associated with 1.80 decrease in mean maladaptive coping, compared with Christian religion [β=-1.80; 95% CI=-3.41 – -0.19].

Table 9: Regression coefficients to describe the association between sociodemographic characteristics and coping strategies

Variable	Adaptive/Active Coping Strategies		Maladaptive /Avoidant Coping Strategies	
	Crude β (95% CI)	**Adjusted β (95% CI)**	**Crude β (95% CI)**	**Adjusted β (95% CI)**
Age	-0.79 (-2.00, 0.50)	-0.14 (-0.22, -0.06)	-0.03 (-0.07, 0.01)	-0.02 (-0.08, 0.03)
Marital status				
Never married	Ref	Ref	Ref	Ref
Married	3.79 (-0.52, 8.09)	5.02 (0.69, 9.36)	-0.44 (-3.33, 2.44)	0.35 (-2.75, 3.45)
Divorced/separated	3.25 (-1.04, 7.54)	5.27 (0.74, 9.80)	-0.91 (-3.79, 1.96)	0.34 (-2.90, 3.57)
Educational status				
No formal education	Ref	Ref	Ref	Ref
Primary	-0.40 (-2.34,1.53)	-0.39 (-2.36, 1.57)	-0.49 (-1.79, 0.81)	-0.51 (-1.91, 0.89)
JHS	-2.39 (-4.58, -0.21)	-2.47 (-4.78, 0.17)	-0.06 (-1.53, 1.42)	-1.00 (-2.65, 0.65)
SHS	-1.83 (-5.70, 2.04)	-1.72 (-5.85, 2.41)	0.59 (-2.02, 3.20)	-1.32 (-4.27, 1.63)
Tertiary	-0.16 (-6.61, 6.28)	0.24 (-6.60, 7.09)	0.48 (-3.87, 4.83)	-1.39 (-6.28, 3.49)
Religion				
Christian	Ref	Ref	Ref	Ref
Islam	-0.02 (-2.22, 2.18)	-0.38 (-2.63, 1.87)	-1.18 (-2.64, 0.28)	-1.80 (-3.41, -0.19)*
Employment status				
Currently employed	Ref	Ref	Ref	Ref
Currently unemployed	1.29 (-0.47, 3.05)	1.26 (-0.76, 3.28)	-0.34 (-1.52, 0.84)	-0.03 (-1.47, 1.41)
Parity				
0-3	Ref	Ref	Ref	Ref
4-7	3.11 (1.44, 4.77)***	3.39 (1.61, 5.18)***	-0.05 (-1.21, 1.11)	-0.13 (-1.41, 1.15)
8-10	3.81 (1.05, 6.57)**	4.18 (1.18, 7.18) **	-0.98 (-2.90, 0.93)	-0.93 (-3.08, 1.21)
11-13	6.81 (-0.75, 14.36)	8.39 (0.58, 16.20) *	-3.21 (-8.45, 2.04)	-3.21 (-8.79, 2.36)
Monthly income (GH₵)				
Below 500 (<62.5 USD)	Ref	Ref	Ref	Ref
500 – 1000 (62.5 – 125 USD)	-0.63 (-2.78, 1.51)	-0.36 (-2.86, 2.14)	0.74 (-0.69, 2.16)	1.12 (-0.66, 2.91)
Number of life time partners				
0-1	Ref	Ref	Ref	Ref
2-3	-1.25 (-3.88, 1.37)	-0.42 (-3.14, 2.30)	-1.18 (-2.93, 0.57)	-1.35 (-3.29, 0.59)
≥4	-1.61 (-4.25, 1.02)	-0.09 (-3.77, 1.90)	-0.60 (-2.35, 1.16)	-1.27 (-3.29, 0.76)
Age at first sex				
Below 18 years	Ref	Ref	Ref	Ref
18 and above	1.12 (-0.61, 2.84)	-0.04 (-1.95, 1.87)	-0.92 (-2.06, 0.23)	-1.00 (-2.37, 0.36)

JHS=Junior High School; SHS=Senior High School

4.8 Association between coping strategies and sexual functioning

Table 10 shows the results of the association between coping strategies and sexual functioning. Avoidant coping was significantly associated with sexual functioning in the respondents. An increase in mean avoidant coping was associated with lower odds of having a sexual dysfunction in both crude and adjusted models which controlled for socio-demographic characters like number of life time partners and age at first sex. The association was however not significant.

Table 10: Logistic regressions results of the association between coping strategies and sexual functioning

Variable	**Crude**		**Model 1**		**Model 2**	
Coping strategy	COR	95%C.I	AOR	95%C.I	AOR	95%C.I
Active coping	1.00	[0.86 – 1.16]	1.03	[0.86 – 1.22]	1.00	[0.86 – 1.16]
Avoidant coping	0.89	[0.74 – 1.08]	0.89	[0.74 – 1.08]	0.88	[0.72 – 1.07]

*COR=Crude Odds Ratio, AOR=Adjusted Odds Ratio, CI=Confidence Interval; Ref=Reference Category; *p<0.05, **p<0.01, ***p<0.001; The models were built in a stepwise manner: model 1 adjusted for the socio-demographic variables whereas model 2 included the socio-demographic together with age at first sexual intercourse and number of sexual partners*

4.9 Association between family functioning and coping strategies

Table 11 shows the association between family functioning and coping strategies. Having a dysfunctional family was positively associated with active/adaptive coping [β*=6.02, 95%CI=4.58, 7.47*] and negatively associated with avoidant coping strategies [β*=-1.44, 95%CI=-2.55, -0.33*]. In the fully adjusted model (Model 2), having a dysfunctional family was associated with 5.99 increase in mean active coping [β=5.99; 95% CI=4.54 – 7.46] and 1.49 decrease in mean avoidant coping, compared with women who had a functional family [β= -1.49; 95% CI=-2.60 – -0.38].

Table 11: Association between family functioning and coping strategies

	Adaptive/Active strategies			Maladaptive/Avoidant Strategies		
	Crude	**Model 1**	**Model 2**	**Crude**	**Model 1**	**Model 2**
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Functional	Ref	Ref	Ref	Ref	Ref	Ref
Dysfunctional	6.02*[4.58, 7.47]	5.18*[3.67, 6.68]	5.99*[4.54, 7.46]	-1.44*[-2.55, -0.33]	-1.52*[-2.73,0.32]	-1.49*[-2.60,-0.38]

COR=Crude Odds Ratio, AOR=Adjusted Odds Ratio, CI=Confidence Interval
*Ref=Reference Category; *p<0.05, **p<0.01, ***p<0.001*
The models were built in a stepwise manner: model 1 adjusted for the socio-demographic variables whereas model 2 included the socio-demographic together with age at first sexual intercourse and number of sexual partners

4.10 Association between sexual function and family functioning

Table 12 shows the results of the logistic regression analysis to ascertain the association between sexual function and family functioning. Participants who had dysfunctional families had higher chances of having sexual dysfunction compared with those who had functional families. The association was however not significant [OR=2.35, 95% CI=0.51 – 10.83]. Adjusting for socio-demographic characteristics did not alter the association between family functioning and sexual function.

Table 12: Association between sexual function and family functioning

			Model 1		**Model 2**	
	COR	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Functional	Ref	Ref	Ref	Ref	Ref	Ref
Dysfunctional	2.35	[0.51-10.83]	6.62	[0.90-48.76]	2.28	[0.48-10.82]

COR=Crude Odds Ratio, AOR=Adjusted Odds Ratio, CI=Confidence Interval; *Ref=Reference Category; *p<0.05, **p<0.01, ***p<0.001*

The models were built in a stepwise manner: model 1 adjusted for the socio-demographic variables whereas model 2 included the socio-demographic together with age at first sexual intercourse and number of sexual partners

4.11 Qualitative results

4.11.1 Background characteristics of respondents

The background characteristics of participants involved in the in-depth interviews is presented in Table 13. The median age of the women participants was 43 years. Four (4) of the women (26.7%) had no formal education. Six of the women (40%) were married whereas 5 (33.3%) were widowed. Of the women, 26.7% were unemployed, and among those with employment, 5 (33.3%) and 6 (40%) were Farmers and Traders respectively. Most of them had more than three children and the women resided with their husbands (33.3%), children (26.7%) or member of their family (40%). The respondents were similar in terms of parity as majority in both qualitative and quantitative have 8 or more children. However, the sample in the quantitative studies were older and married (44.7% vs 40%) than the qualitative sample, and majority of respondents in the qualitative have higher educational level (middle/JHS vs No formal), and employed (40% vs 31.5%) compared to quantitative sample.

Table 13: Background data of respondents for qualitative segment

Variables	Frequency (n=15)	Percentage
Age		
- Median (min/max)	43 (25/ 68)	
Education		
- None	4	26.7
- Primary	3	20.0
- JHS/middle	6	40.0
- Secondary	2	13.3
Marital status		
- Married	6	40.0
- Not married	2	13.3
- Separated	2	13.3
- Widowed	5	33.3
Employment		
- Unemployed	4	26.7
- Farmer	5	33.3
- Trader	6	40.0
Number of children		
- None	1	6.7
- Two	2	13.3
- Three	3	20.0
- Four or more	9	60.0
Person they live with		
- Husband	5	33.3
- Children	4	26.7
- Member of family	6	40.0

JHS, Junior High School

4.11.2 Disease condition and sexual relationships of participants

As shown in Figure 6, most (80%) of the women were diagnosed of cervical cancer in the past year whereas 40% and 13.3% had been diagnosed for less than a year and more than three years respectively.

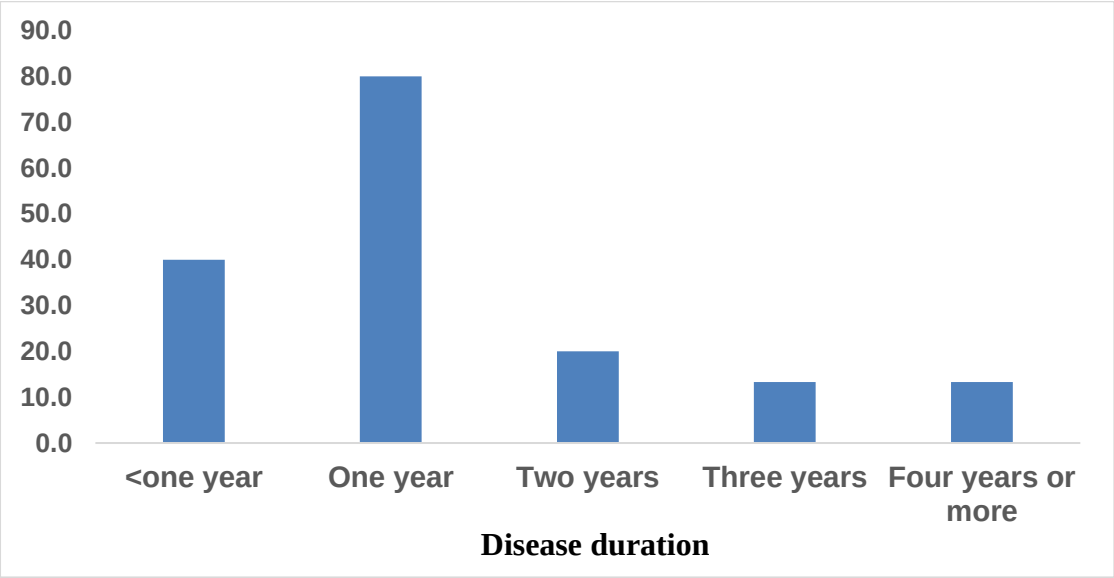

Figure 6: Duration of sickness

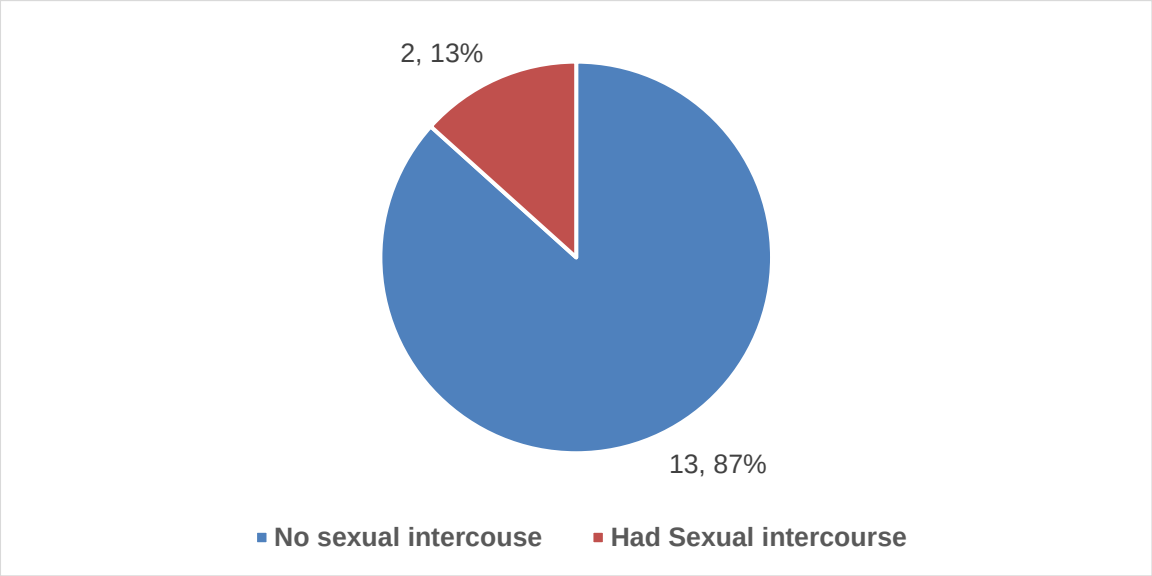

Figure 7: Sexual intercourse in the past year

As shown in Figure 7, more than 85% of the women had not had sexual intercourse during the past year. Reasons for not having had sex as indicated by the women included pain

and bleeding during sex, fear, advice from doctor and personal reasons. Some of the women disclosed:

> *"I'm afraid that the bleeding or the disease will come back again (25 years, married)."*

> *"No please, I haven't. This is because I bleed a lot after having sex. Therefore, it isn't advisable to do that. It has been long since I had sex with my husband, say a year and a half now. (46years, Married)"*

> *"There is no desire to have sex because of the constant bleeding. I don't have the urge to have sex of late." (36years, Married)*

The inability of the women to have sexual intercourse with their partners or spouses had effect on their relationships. One woman responded:

> *"Yes, sometimes especially when he wishes to have sex and I turn him off. I always tell him that I want to inquire from my doctor first if it is safe for me." (25years, Married)*

Sexual intercourse was however not a major problem for some of the women whose husbands have come to terms with their conditions and supporting them with care and treatment. Two women disclosed:

> *"We used to have sex at the early stage but we stopped because anytime we made an attempt to have sex, it was impossible. Then he also fell sick. All we do now is have our normal conversations in the evening and fall asleep in the middle of the conversations (giggles)." (37years, Married)*

> *"No please. We've not had any issue so far. My husband is very supportive. It is only the sex part that sometimes bothers him. I think he wishes to remarry but the disease I have stops him".(43years, Married)*

4.11.3 Coping strategies adopted by women with breast cancer

All the women interviewed disclosed that they coped with their present conditions by praying and sometimes watched television. Some of the women responded:

> *"I pray. Yes, all I do is to pray, sing songs of praise to God and sometimes watch tv (41years, Married)".*

> *"Yes, I used to watch a lot of tv. But for church, I wasn't attending because of the discharge from my private organ. It was very embarrassing and problematic for me. But now, I attend church, I do everything that I have to do and I'm always happy whenever I attend church" (37years, married)*

4.11.4 Social support received by women diagnosed with cervical cancer

The extended family was the most cited source of support (60%). Other sources of support included children (26.7%), the church (20%) and husband (6.7%) as shown in Figure 8.

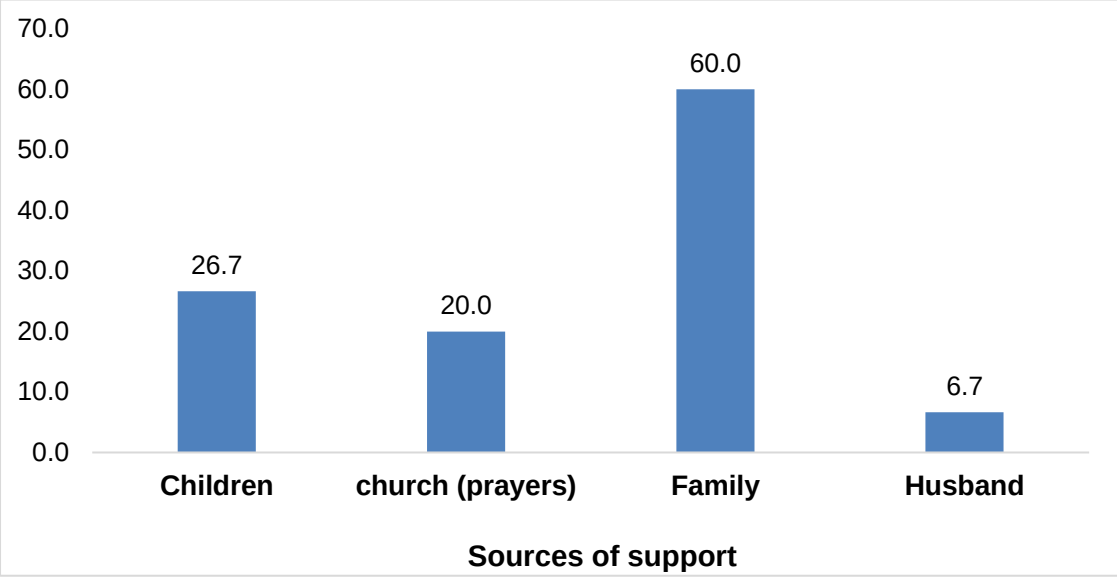

Figure 8: Source of social support (multiple response)

Some women who received support from their children disclosed that their children support them financially and encourage them to go for treatment. Some of the children also stay with the mothers. The women disclosed:

"My children are those who do that. They support me financially, provide all the necessary things that I may need, they encourage me from time to time." (67years, widow)

"One of my children stays with me. She is the one who helps me and run errands for me when I need help" (31 years, 2 children).

"As for the help, my daughter and her husband have gone in for loans to pay my bills and all that. They are now in huge debts to people so, if I can get financial help, I'd be very happy." (39years, not married)

Some of the women who had support from their husbands also responded:

"I wouldn't have made it this far without the help of my husband especially at the early stages; I'm sure I would have been dead by now. He has been a great source of help to me in these times". (41 years, Married)

Some of the women however indicated that they get no help from their families or church. They disclosed:

"Hmm, nowadays no family member wants to help you when you are sick. It is my husband and children who have been helping me from time to time." (37years, married)

"No one helps me in the family, I do not get any help from my church too." (39years, Not married)

None of the respondents joined a support group in their community to help cope with their present condition. One respondent disclosed:

"No, because all those who suffer from the disease in my neighborhood are all dead. So, there is no group to set up. The disease isn't easy to live with. I am always afraid all the time." (41years, married)

4.11.5 Need for support among women with cervical cancer

All the women interviewed expressed the need for support for their present conditions. The support requested was mainly financial and a place to lodge when they go for treatment. They bemoaned the high cost of treatment and the need for support from Government and other stakeholders to assist them take care of that. Some of the women responded:

> *"I want them to know that the expenses surrounding the treatment of this disease are very high. So they should step in and help us. I have spent about thirty-one thousand Ghana cedis just on the machine. We need help." (41years, Married)*

> *"I would be grateful for any help or support that would be given to me, whether financially, provision of food items, and any other provision. I even had to mortgage my farm so that I could get the money for the treatment at the initial stage." (67years, Widow)*

> *"The first day I came here, they put me on a machine which cost 400 Ghana cedis. after that, they put me on another machine which according to the nurses costs 7000 Ghana cedis but later on I found out that I needed to top up that amount with 2200 Ghana cedis to make 9200 Ghana cedis. I pay 200 plus Ghana cedis every Tuesday for the chemo." (67years, Widow)*

> *"Money, because we are suffering a lot to raise the money for the treatment and other expenses. The most important is the financial strength and if you have that, you can get everything and take care of the people you love. We are pleading with the government and everyone else to come to our aid."(44 years, Separated)*

One woman who expressed challenges with lodging when they go for treatment disclosed:

> *"Sometimes, we spend fourteen days here. We have no place to go because we are not based in Kumasi. We always sleep outside; it is always cold out here and we always get a lot of mosquito bites." (32years, Not married)*

One respondent requested support for the facility to be able to provide the needed care for cervical cancer patients. She disclosed:

"I want the government to support the hospital in the maintenance of the machine because it breaks down regularly. They should provide a new one if they can. The machine has been very helpful and will continue to be only when it functions properly on a daily basis." (68years, Widow)

CHAPTER FIVE

DISCUSSION

This section discusses the findings of the study. The discussion integrated findings from the qualitative and quantitative studies. Meaningful integration allows researchers to realize the true benefits of mixed methods to "produce a whole thorough integration that is greater than the sum of the individual qualitative and quantitative parts".[125]

5.1 Sociodemographic characteristics of the study population

Findings from this study showed that, out of the 181 women studied, most, 130 (71.8%) were 50 years and or above, with a mean (SD) age of 57.5 (12.9) years. Women in this age range typically experience multiple social, psychological and biological challenges, including menopausal transition.[126] Nearly half (44.8%) were married/living together and a little over half (50.3%) were either divorced or widowed. More than half (54.7%) had primary or junior high school education and majority (83.4%) were Christians. Nearly one-third (31.5%) were employed within the 12 months preceding data collection however, and about one-third (33.2) had 4-7 children whiles 72 (39.8%) had 8-10 children. The study revealed that high parity is associated with an increased risk of diagnosis of cervical cancer. The finding is parallel to a global systematic review and meta-analysis conducted by Tekalegn et al. among women diagnosed of cervical cancer and in their reproductive age that revealed that women who had high parity were more probable to develop cervical cancer in comparison to their counterparts.[127] The likely explanation is that estrogen and progesterone levels increase during pregnancy. These hormonal changes could be responsible for the alterations in the junction between the squamous and columnar epithelium increasing the risk of women who had high parity to be diagnosed of cervical cancer.[127]

Parity was positively associated with adaptive coping, with higher mean adaptive coping among women with 4-7 and 8-10 number of children compared with participants who had parity of 0-3. Parity also had positive association with family functioning; higher parity was associated with having a dysfunctional family.

5.2 Coping Strategies adopted by women diagnosed with cervical cancer

The main thrust of this section is the coping strategies adopted by women diagnosed with cervical cancer. The study revealed that the participants employed numerous adaptive coping strategies to survive with their condition. Even though this is not considered an excellent way of managing such a serious condition,[25,128] participants believed it was essential in seeing them through their treatment and recuperating stages. Majority of participants frequently engaged in active coping, positive reframing, emotional support, planning, acceptance, religious coping, instrumental support and humour. This corroborates and affirms previous findings in Iran by Khalili and colleagues among adult women (18 - 60 years) diagnosed with breast cancer where authors identified active coping, acceptance, religious coping, planning, and positive reframing as the various adaptive coping strategies among women diagnosed with cancer.[18] Research evidence in the USA conducted by Kim and colleagues among underserved women from rural Wisconsin and Detroit, Michigan and diagnosed with cancer proved that active coping strategies positively influence the psychological well-being and health behaviour of patients with cancer including cervical cancer. [72]

The study revealed that religious coping was the most adopted active coping strategy by participants. The qualitative findings also revealed that women with cervical cancer mostly prayed about their condition to keep them through treatment. Such religious coping encompassed finding comfort in religion or spiritual beliefs, praying and/or meditating. In a related study among young women (28–45 years) with breast cancer in Ghana by Iddrisu and colleagues (2019), it was observed that most of the women adopted religious coping.[129] Participants believed that God is the ultimate healer, hence they prayed and read the Bible. While some believed God could replace their body parts, others relied on religious artefacts including the Rosary, special oil prepared by pastors, and pictures of pastors.[129] The finding was tantamount to studies in Ghana by Oti-Boadi and co-authors in 2006 on Ghanaian women dealing with infertility and a global systematic review by Thune-Boyle in 2017 among adults dealing with cancer that reported that when individuals are confronted with adverse situations, including conditions that are serious and life-threatening like cancer, they resort to a higher power or religion (belief in God) to help them cope with the associated stress.[70,76]

These studies posited that having a keen relationship with God gives optimal and reliable refuge, encouragement and comfort as well as support from religious communities,

especially in African settings like Nigeria among patient with advanced cancer[58] and it is also associated with quality of life.[130] The plausible explanation is that participating in religious activities heightens or ignites these women's sense of belonging which acts as an affront to feeling isolated. However, the implication is that negative religious coping leads to worse psychological adjustment.[131] Anger (feeling of God abandoning you) predicts poor mental health, increases depression, and declines life satisfaction with time. Hence, enquiring about the negative religious coping may be most beneficial.[130]

On the other hand, respondents also engaged in avoidant/maladaptive strategies like voicing, behavioural disengagement, denial, substance use, self-blaming and self-distraction. The maladaptive coping strategies would have a negative relationship on a patients' mental and physical well-being when their symptoms are low or otherwise.[132] The influence of these coping strategies on the psychological well-being is contingent on the situation and individual's features. Lazarus and Rice (2000) opined that these maladaptive coping strategies are not always maladaptive in nature and could have varying repercussions following the level of symptom and distress the patient is confronted with.[108] The finding is in congruence with Cvitanovic and colleagues (2017) in their study in Croatia among people with confirmed diagnosis of clinical manifestations of HPV where the authors revealed that patients diagnosed with genital warts utilised maladaptive strategies compared with patients without genital localization of the human papillomavirus.[68]

The study revealed that self-distraction such as switching to work and other activities including watching TV, movies and listening to music was the most adopted maladaptive coping strategy. Consistent with the study's finding, Khalili et al (2013) observed that in Iran adult women (18 - 60 years) diagnosed with breast cancer mostly employed self-distraction, denial and avoidance as maladaptive coping strategies.[18] This self-distraction like watching TV, movies and listening to music reduces stress of patients with cancer and may have beneficial effects on their quality of life.[69] Additionally, self-distraction help patients to cope with the condition and depend less on family. This argument is also supported by randomized clinical trial conducted in Austria by Pils and colleagues (2000) among patients diagnosed with gynecologic cancer which revealed that watching movies was related to less infringement on patients' family life and social activities.[71]

5.3 Extent of family dysfunction in women with cervical cancer

This study also revealed high prevalence (65.7%) of dysfunctional families among participants. Majority of the women can hardly ever turn to family for assistance when troubled (63.0%), hardly ever talk over things or share problems with families (66.3%), had families who hardly ever accepted and supported their wishes to take new activities or directions (65.2%), hardly ever expressed affection and responded to their emotions (65.2%) and hardly ever spent time together with them (65.2%). The qualitative study also revealed lack of support especially from the nuclear family (from partners and children). This is inconsistent with findings from the qualitative study by Buchbinder et al (2016). in the USA among cancer patients, where some cancer patients bemoaned a lack of support especially from the extended family in the care and management of their condition.[78] The authors reported that cancer patients experienced some form of family disruption and dysfunction.[78] This finding justifies the need to educate the families of cancer patients to strengthen their relationship with the patients and also to increase the level of involvement of these cancer patients in matters of family concern, as giving the patient more family roles would benefit them.[81]

The plausible explanation behind this study's revelation is that cervical cancer results in an alteration in relationships one has with family members. Family members and caregivers often have the feeling of being overloaded with additional obligations and roles and this may increase their burden to provide full-time care and emotional support for the patient, possibly translating into family dysfunction. This argument is justified by a global review conducted among family caregivers of cancer patients that revealed that cancer may threaten previous family interactions. The condition brings alteration of roles, which on one hand could be perceived as a loss and on the other hand as excessive overload leading to dysfunction of the family.[82]

The study also revealed that majority can hardly ever turn to family for assistance when troubled and majority indicated they hardly ever talked over things or shared problems with their families. Moreover, majority of respondents hardly ever accepted and supported their wish to take on new activities or directions, and majority hardly ever spent time together with their families. In order to cope with cancer, patients resort to their network of family and friends for assistance and support.[83] For most people diagnosed with cancer, family and friends rather give out the necessary support and this sometimes translates into less distress.[84,85] However, consistent with the above finding, a study conducted in Europe by Norton et al. among patients

with ovarian cancer revealed that family and friends may be unsupportive towards individuals who are undergoing difficult life events like cancer even though these actions may be intentional or unintentional.[86] However, these unsupportive responses may be overt criticism of the patient's coping strategies, complaints about providing assistance, or subtle responses like avoidance or trivialization of patient concerns. Unsupportive responses or dysfunction may happen whether infrequently or moderately for a good number of the cancer patients,[83] however, when they do happen, they are associated with more distress.

5.4 Extent of sexual dysfunction in women diagnosed with cervical cancer

The main thrust for this segment is sexual dysfunction among women diagnosed with cervical cancer. The study revealed that most respondents had sexual dysfunction despite reporting an overall satisfaction with their sexual life. This finding is consistent with a systematic review and meta-analysis by Maiorino et al (2016) conducted in USA where the authors concluded that cervical cancer survivors suffer multiple levels of sexual dysfunction with hindrances at one or more phases of the sexual response cycle including arousal, libido, orgasm, and resolution.[59] The findings are also consistent with a global scoping review Mishra and colleagues where it was observed that cervical cancer survivors experience sexual dysfunction.[14] The reasonable explanation is that being diagnosed with cervical cancer and the treatment given could lead to sexual dysfunction. This argument is justified by a study in Brazil by Correia et al (2020) among cancer patients that revealed that sexual function in cervical cancer survivors declines significantly after treatments irrespective of the modality used.[89] Another justifiable reason is that, sexual dysfunction, vaginal dryness, dyspareunia, and loss of libido are often prevalent or experienced by cervical cancer survivors because the pain and psychological distress they experience plunges them into poorer sexual function.[60,90]

The study also revealed that some cervical cancer patients experienced pain during vaginal penetration, and had a very high level of pain and discomfort during or following sexual intercourse. This was supported by findings from a qualitative study by Osei-Appiah et al (2021) conducted in Ghana among cervical cancer patients where the women recounted difficulties with sexual intercourse due to bleeding and fear.[12] The authors revealed that cervical cancer patients experience severe pain and vaginal bleeding during sex and that most women could not bear the pain during intercourse with their partners. The pains during intercourse may even affect the enjoyment process and attainment of orgasm.[12] Additionally, Hamilton also

reported in the review among cervical cancer patients that dyspareunia was common among women who had cervical cancer, and the author claimed that the dyspareunia was due to the effects surgery and radiation on reshaping of the vagina and also the tissues of the vagina respectively.[93]

Surprisingly, the study also discovered that despite the sexual dysfunction, participants had high sexual desire. The finding corroborate a study conducted by Greenwald et al (2008) in Connecticut, USA among cervical cancer patients where it was observed that patients diagnosed with cervical cancer were active sexually and had strong desires for sexual intercourse.[92] It was however found that participants almost never turn on during sexual intercourse, had very low level of sexual arousal, very low confidence of becoming sexually aroused and were almost never satisfied during sexual intercourse. Consistent with the finding, a global prospective study by Aerts et al (2014) among women diagnosed with cervical cancer revealed that women diagnosed with cervical cancer are confronted with dyspareunia during sexual penetration and entry, reduced orgasm and sexual arousal in comparison with those without cervical cancer.[91] In the same study, the authors justified that the poor sexual arousal is due to depression associated with the condition.

The study also revealed that some participants found it extremely difficult becoming lubricated, and found it extremely difficult to maintain wetness to the completion of sexual intercourse. In relation to the above finding, a global study by Friedman et al (2011) among women with cancer reported that 58% of those surveyed for their study reported vaginal dryness, and 23% reported pain.[94] The vaginal dryness or no lubrication could be justified by a decline or absence of estrogen in the body or changes to the vaginal tissue. This assertion is supported by research conducted by Portman et al (2014) among North American women with vulvovaginal atrophy that revealed that the decline in estrogen concentrations may culminate in genitourinary atrophy, resulting in genitourinary syndrome of menopause, a new terminology covering range of symptoms including vaginal dryness.[95]

Almost all the study participants never reached orgasm during sex, found it extremely difficult to reach orgasm and were very dissatisfied with their ability to reach orgasm. Corroborating and affirming the study's finding, a longitudinal study conducted by Jensen et al (2004) in Denmark among cervical cancer patients revealed that cervical cancer patients

experienced severe orgasmic problems and uncomfortable sexual intercourse.[96] Additionally, the study found that respondents were very dissatisfied with emotional closeness with their partners during sex, however, were very satisfied with their sexual relationship with partners and very satisfied with their overall sexual life. This is supported by findings from the qualitative interviews, where some women reported relationship challenges as a result of their inability to have sex with their partners. In congruence to this study's finding, Aerts et al (2014) in their global prospective study among women diagnosed with cervical cancer reported that the quality of the association or relations between women confirmed to have cervical cancer and their spouses declined six months following the treatment for cervical cancer. The change in the relations or the family functioning could be justified by the stress and dilemmas associated with choosing the appropriate treatment plan as well as other family-related issues.[91]

5.5 Relationship between family functioning and sexual dysfunction

This segment highlights the relationship between family functioning and sexual dysfunction. The issue of sexual health continues to bother cancer patients, however, they are often ignored. Although the association between these two variables was not statistically significant, the study revealed that participants who had dysfunctional families were more likely to have sexual dysfunction compared with those who had functional families. This could be explained by the fact that, receiving assistance and emotional support from partners and families positively affects sexual life and quality of life of people who survived after being diagnosed of cancer. Hence, those with dysfunctional families have higher tendencies of sexual dysfunction. The finding is consistent with a study by Lopez and colleagues (2018) conducted among patients with breast cancer in Mexico that revealed that sexual dysfunction is more evident in cancer patients with dysfunctional families.[133] Similarly, a study in Canada, revealed that respondents who received discussions about reproductive and sexual health from their families and providers had good sexual health in comparison with their counterparts who had no discussions about the subject.[100]

This notwithstanding, in a related study conducted by Hinnen in the UK among breast cancer patients, the author reported that women with breast cancer have low satisfaction from their married life.[134] Meanwhile, women with cancer had a good sexual life with their partners when they are in functional families, good relationship, socialization and physical affection and support from their partner and families. In Indonesia, a cross-sectional study conducted to

investigate family relationship and sexual dysfunction among women diagnosed with cervical cancer revealed that respondents with dysfunctional families were more probable to have sexual dysfunction.[102] On the other hand, the sexual dysfunction may affect the marital relationships in women with cervical cancer which could be due to reverse causality.[102] Therefore, it is extremely essential to devise appropriate ways for spouses, family members, and friends to be functional, communicate and support cancer patients in order to help resolve stress problems experienced by these women.[101] This is because, cancer patients from dysfunctional families have sexual dysfunction and vice versa. This is justified by evidence from a study by Adam and colleagues conducted among breast cancer patients in Kumasi, Ghana that proved that those who received support or had functional families had a promising life with good quality of life including good sexual health than those who did not receive any form of support or belonged to dysfunctional families.[135]

5.6 Family functioning and coping ability

This section highlights the relationship between family functioning and coping ability of the participants. Interestingly, the study revealed that having dysfunctional family was rather associated with increase in mean active coping compared with women who had functional family. The best explanation that could account for this recent finding is that, cancer patients, knowing the stigma associated with being diagnosed with cancer in Ghana, have devised means to cope with the condition with little or no familial support. This claim is supported by a study in the Northern region of Ghana in 2015 among women in Kassena-Nankana district by Asobayire and Barley where the authors observed that cultural beliefs, stigma and perceptions attached to people with breast cancer acted as affront to the women openly seeking health care.[136]

In contrast to the above finding, a cross-sectional study conducted by Benson et al. among breast cancer patients in Ghana found that a positive correlation exists between functional families and coping strategies among women diagnosed with breast cancer.[106] The social support, particularly stemming from closest relations with family members rather affect the effectiveness of coping strategies positively. Moreover, the ubiquity of family support generally decreases anxiety levels and improves quality of life in cancer patients including cervical cancer patients. This finding also contradicts previous evidence by Chou and co-authors (2020) among young women with breast carcinoma in the USA, which indicated that

increasing the social support or assistance rather heightens women's chances of survival through enhancing their coping skills, providing emotional support, and expanding opportunities for information sharing.[137] It also contradicts a similar study in Indonesia by Sari and colleagues (2012) conducted among cancer patients that revealed significant positive association between family function, effective coping strategies, and lower anxiety levels among cancer patients.[104]

The functionality of a family plays a key role in the psychological adaptation of patients with cancer. Interestingly, in contrast to previous literature, the study revealed that having a dysfunctional family was rather associated with decrease in mean avoidant coping. This indicates that having a dysfunctional family will rather decrease avoidant coping strategies of cancer patients. In contrast to the above finding, a cross-sectional study by Martinez and colleagues among cancer patients in Europe revealed that having a dysfunctional family and unsupportive responses are correlated with higher avoidant coping strategies among cancer patients.[105]

5.7 Coping strategies and sexual functioning

Investigating the association between coping strategies and sexual function among cervical cancer patients is extremely essential due to its impact on sexual health. This study however found no association between coping strategies and sexual health. Other studies have however reported an association between coping strategies and sexual function. A cross-sectional study conducted in Indonesia using a family support questionnaire instrument developed with recourse to the concept of the House and Friedman theory, found that, that there exist a significant relationship between family function, effective coping strategies and lower anxiety levels among cancer patients.[104] A study also revealed that having a dysfunctional family and unsupportive responses are correlated with higher avoidant coping strategies among cancer patients.[105]

Similarly, in a study conducted in Poland by Chabowski et al (2018) among patients with non-small-cell lung carcinoma, the authors found that, majority of the cancer patients use active coping strategies to deal with the disease which correlated with a better quality of life including sexual health. In the same study the authors asserted that compromised quality of life was associated with destructive or avoidant coping strategies among the patients.[110] Active coping strategies have been identified as a relevant dimension in dealing with cancer related

issues including sexual health. This is in line with a cross-sectional study in northern Greece by Fradelos et al (2018) among breast cancer patients that indicated that active coping has a positive impact on patients' lives including a decrease in negative emotional states, levels of distress, mood symptoms and hopelessness and improvement in well-being and illness.[111]

Strengths and limitations

A major limitation however, is the inability to make causal inferences for the statistical associations tested in this study due to the cross-sectional design employed. There was also the possibility of recall and selection bias as a result of the study design, which could affect the accuracy of responses given by the women. Some questions for Female Sexual Function Index were sensitive and that could have also resulted in response bias and affect the accuracy of responses in this study. Although these tools have been used before in this context, some of them, including the BRIEF-Cope, the Family Apgar and the Female Sexual Function Index have not been validated in this study setting. This study could therefore not ascertain the suitability and applicability of the cutoff values for the various tools to this study setting and target population. This study did not have information on the baselines with respect to the parameters assessed and this could affect the ability to draw conclusions regarding the impact of cervical cancer on these parameters. Additionally, the use of fisher exact test in the bivariate analysis indicates the sample size was relatively small, however, the p-values were valid. Also, the study only achieved a response rate of 92.3% which could affect the generalisation of the findings to cervical cancer survivors in Ghana.

Despite the above limitations, the researcher employed robust and rigorous methods in conducting the research, and utilized advanced statistical analysis method, which is the strength of the study. Another key strength of this study is the use of both quantitative and qualitative methods to triangulate the findings on sexual functioning, coping and social support among women with cervical cancer in Ghana.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 Coping mechanisms adopted by women who are diagnosed with cervical cancer in the Kumasi metropolis

In conclusion, majority of the respondents frequently engaged in adaptive coping strategies like active coping, emotional support, positive reframing, planning, acceptance, religious coping, instrumental support, and humour. Religious coping was however the most engaged coping strategy among the women. Almost all the women in the qualitative study resort to praying as a way of coping with their situation.

6.1.2 Extent of family dysfunction in women diagnosed with cervical cancer in the Kumasi metropolis

Findings of this study further show highly dysfunctional families among women with cervical cancer in the Kumasi metropolis. Most of the support for women with cervical cancer however comes from the extended families, with little support from their nuclear families (partners and children).

6.1.3 The extent of sexual dysfunction among women who are diagnosed with cervical cancer in the Kumasi metropolis

This study further revealed that most women with cervical cancer had sexual dysfunction. Despite the higher level of reported satisfaction with sexual relationship with partners, most of the women were almost never satisfied with their sexual arousal (excitement), almost never become lubricated, found it difficult to become lubricated during sexual activity, almost never maintain lubrication until completion of sex and had difficulty maintaining wetness until the end of sexual activity. Again, most of the women almost never reached orgasm during sexual stimulation or activity or found it extremely difficult reaching orgasm.

6.1.4 Relationship between family functioning and sexual dysfunction

In conclusion, findings from this study show no association between family functioning and sexual dysfunction.

6.1.5 Relationship between family functioning and coping ability

Family function was however positively associated with adaptive coping and negative associated with maladaptive coping strategies. Women with a moderately dysfunctional family may be more likely to adopt active coping strategies compared with women who had highly functional families.

6.1.6 Relationship between sexual functioning and coping ability

Coping strategies had no bearing on sexual functioning of women with cervical cancer.

6.2 Recommendations

This section presents recommendations made by the author to stakeholders, based on the findings in this study:

Policy makers

- Government, through the Ministry of Health and Ghana Health Service as well as other relevant stakeholders should provide financial support to women with cervical cancer to reduce the burden of cost of treatment. This should be in the form of making provision in the National Health Insurance Scheme (NHIS) to help cover the full treatment cost or cost sharing or co-payment schemes for women with cervical cancer since the diagnosis of cancer renders the women vulnerable.

- The Government of Ghana and MOH should improve health campaigns, screening and prevention of cervical cancer through HPV vaccination to improve understanding of the health condition among families of women with cervical cancer. This will help to improve the level of understanding and support received by these patients and would go a long way to alleviate the anxieties of patients with the condition.

- Additionally, Ministry of Health and the Ghana Health Service, stakeholders and health providers should help conduct mass screening and HPV vaccination for all women in their reproductive age for cervical cancer as it will translate into early identification of the cancer and commencement of management/treatment to prevent progressing to

advanced stage and reduction in the number of cases of precancers respectively.

Practitioners/health workers

The Ghana Health Service should educate healthcare workers on the important role religion plays in helping cervical cancer patients cope with their condition. Healthcare workers should be well equipped by way of training to provide spiritual and religious support for their patients.

- The curriculum for health workers should include education in sexual health needs of women with cervical cancer and training on how to address these needs appropriately through counselling and appropriate referral.

NGOs/religious organisations

- Ghana Health Service should educate religious bodies on the important role they play in supporting women with cervical cancer and to further encourage them to support these women to cope with their conditions. This education should also address the excesses and abuse in the care of patients who resort to religious bodies for support.

Recommendation for future research

- There is the need to conduct follow-up studies among caregivers of patients with cervical cancer to appropriately estimate the association between family function, sexual health, and coping among cervical cancer patients.
- There is the need to conduct studies to assess the validity, suitability and applicability of the cutoff values of tools such as the APGAR score and the Female Sexual Function Index to this study setting.

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APPENDICES

Appendix A – Coping strategies adopted by cervical cancer patients

Appendix A1: Coping strategies adopted by cervical cancer patients

Variable	Frequency (n=181)	Percentage (%)
Active coping		
I have been concentrating my efforts on doing something about the situation I'm in		
Have been doing this medium amount	43	23.8
Have been doing this a lot	138	76.2
I have been taking action to try to make the situation better.		
Have been doing this medium amount	43	23.8
Have been doing this a lot	138	76.2
Use of emotional support		
I have been getting emotional support from others		
I haven't been doing this at all	1	0.6
I've been doing this a little bit	11	6.1
I've been doing this a medium amount	56	30.9
I've been doing this a lot	113	62.4
I have been getting comfort and understanding from someone		
I haven't been doing this at all	1	0.6
I've been doing this a little bit	11	6.1
I've been doing this a medium amount	53	29.6
I've been doing this a lot	114	63.7
Positive framing		
I've been trying to see it in a different light, to make it seem more positive		
I haven't been doing this at all	1	0.6
I've been doing this a little bit	12	6.7
I've been doing this a medium amount	50	27.9
I've been doing this a lot	116	64.8
I've been looking for something good in what is happening.		
I haven't been doing this at all	1	0.6
I've been doing this a little bit	11	6.2
I've been doing this a medium amount	49	27.5
I've been doing this a lot	117	65.7
Planning		
I have been trying to come up with a strategy about what to do.		
I've been doing this a little bit	11	6.2
I've been doing this a medium amount	49	27.5
I've been doing this a lot	117	65.7
I have been thinking hard about what steps to take.		
I've been doing this a little bit	4	2.2
I've been doing this a medium amount	52	28.7
I've been doing this a lot	125	69.1

Appenxid A2: Coping strategies adopted by cervical cancer patients

Variable	Frequency (n=181)	Percentage (%)
Acceptance		
I've been accepting the reality of the fact that it has happened.		
I haven't been doing this at all	4	2.2
I've been doing this a little bit	7	3.9
I've been doing this a medium amount	57	31.5
I've been doing this a lot	113	62.4
I've been learning to live with it.		
I haven't been doing this at all	4	2.2
I've been doing this a little bit	4	2.2
I've been doing this a medium amount	52	28.7
I've been doing this a lot	121	66.9
Religious coping		
I've been trying to find comfort in my religion or spiritual beliefs		
I haven't been doing this at all	1	0.6
I've been doing this a medium amount	14	7.7
I've been doing this a lot	166	91.7
I've been praying or meditating		
I've been doing this a medium amount	14	7.7
I've been doing this a lot	167	92.3
Instrument support		
I have been trying to get advice or support from people on what to do		
I've been doing this a little bit	14	7.7
I've been doing this a medium amount	44	24.3
I've been doing this a lot	123	68.0
I have been getting help and advice from other people		
I've been doing this a little bit	16	8.8
I've been doing this a medium amount	45	24.9
I've been doing this a lot	120	66.3
Behavioral disengagement		
I've been giving up trying to deal with it.		
I haven't been doing this at all	120	66.3
I've been doing this a little bit	45	24.9
I've been doing this a medium amount	10	5.5
I've been doing this a lot	6	3.3
I've been giving up the attempt to cope.		
I haven't been doing this at all	117	64.6
I've been doing this a little bit	48	26.5
I've been doing this a medium amount	10	5.5
I've been doing this a lot	6	3.3

Appendix A3: Coping strategies adopted by cervical cancer patients

Variable	Frequency (n=181)	Percentage (%)
Venting/Voicing		
I've been saying things to let my unpleasant feelings escape.		
I haven't been doing this at all	114	63.0
I've been doing this a little bit	44	24.3
I've been doing this a medium amount	11	6.1
I've been doing this a lot	12	6.6
I've been expressing my negative feelings.		
I haven't been doing this at all	111	61.9
I've been doing this a little bit	48	26.5
I've been doing this a medium amount	9	5.0
I've been doing this a lot	12	6.6
Humor		
I've been making jokes about it.		
I haven't been doing this at all	84	46.4
I've been doing this a little bit	41	22.7
I've been doing this a medium amount	41	22.7
I've been doing this a lot	15	8.3
I've been making fun of the situation.		
I haven't been doing this at all	85	47.0
I've been doing this a little bit	42	23.2
I've been doing this a medium amount	40	22.1
I've been doing this a lot	14	7.7
Denial		
I've been saying to myself "this isn't real.		
I haven't been doing this at all	115	63.5
I've been doing this a little bit	46	25.4
I've been doing this a medium amount	12	6.6
I've been doing this a lot	8	4.4
I've been refusing to believe that it has happened.		
I haven't been doing this at all	113	62.4
I've been doing this a little bit	48	26.5
I've been doing this a medium amount	13	7.2
I've been doing this a lot	7	3.9
Substance use		
I've been using alcohol or other drugs to make myself feel better		
I haven't been doing this at all	176	97.2
I've been doing this a little bit	5	2.8
I've been using alcohol or other drugs to help me get through it.		
I haven't been doing this at all	176	97.2
I've been doing this a little bit	5	2.8

Appendix A4: Coping strategies adopted by cervical cancer patients

Variable	Frequency (n=181)	Percentage (%)
Self-blaming		
I've been criticizing myself		
I haven't been doing this at all	133	73.5
I've been doing this a little bit	40	22.1
I've been doing this a medium amount	5	2.8
I've been doing this a lot	3	1.7
I've been blaming myself for things that happened		
I haven't been doing this at all	134	74.0
I've been doing this a little bit	39	21.5
I've been doing this a medium amount	5	2.8
I've been doing this a lot	3	1.7
Self-distraction		
I've been turning to work or other activities to take my mind off things.		
I haven't been doing this at all	3	1.7
I've been doing this a little bit	9	5.0
I've been doing this a medium amount	60	33.1
I've been doing this a lot	109	60.2
I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.		
I haven't been doing this at all	1	0.5
I've been doing this a little bit	6	3.3
I've been doing this a medium amount	49	27.1
I've been doing this a lot	125	69.1

Appendix B – Quantitative Study Instruments

QUESTIONNAIRE

Title: Family functioning, coping strategies and sexual dysfunction among cervical cancer patients in Kumasi metropolis, Ghana

I kindly ask you to answer the following questions and statements. By doing so you will contribute to a better scientific understanding of the topic above. Information provided will be kept strictly confidential. Thank you.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Age (years) …….
2. Number of children (Parity) None P0, P1, P2, P3, P4, P5 and above ……..
3. Religion i. Christianity ( ) ii. Islam ( ) iii. Traditional ( )
   iv. Other (please specify)…….
4. Educational status i. No formal education ( ) ii. Primary education ( )
   iii. Junior Secondary ( ) iv. Senior secondary education ( ) V. Tertiary education ( )
5. Are you currently employed or had worked in the 12 months preceding this interview? If yes please state occupation [53] i. Professional/technical/managerial ( ) ii. Clerical ( ) iii. Sales and services ( ) iv. Skilled manual ( ) v. Unskilled manual ( ) vi. Agriculture ( )
6. Income of the family per month (Gh¢)
   i. Less than 500 ( ) ii. 500 – 1000 ( ) iii. Above 1000 ( )
7. Marital status i. Never married ( ) ii. Married or living together ( )
   iii. Divorced /separated/widow ( )
8. Number of lifetime sexual partners i. none ii. 1-2 ( ) iii. 3-4 ( ) iv. 5 or more ( )
9. Age at first sexual intercourse i. below 18 years ( ) ii. 18 years and above ( )
10. Past history of STIs i. Yes ( ) ii. No ( )
11. If yes please specify ……..

SECTION B: COPING STRATEGIES

1 = I haven't been doing this at all

2 = I've been doing this a little bit

3 = I've been doing this a medium amount

4 = I've been doing this a lot

		1	2	3	4
1.	**Active coping**				
a.	I've been concentrating my efforts on doing something about the situation I'm in				
b.	I've been taking action to try to make the situation better.				
2.	**Use of emotional support**				
a.	I've been getting emotional support from others				
b.	I've been getting comfort and understanding from someone.				
3.	**Positive reframing**				
a.	I've been trying to see it in a different light, to make it seem more positive				
b.	I've been looking for something good in what is happening.				
4.	**Planning**				
a.	I've been trying to come up with a strategy about what to do.				
b.	I've been thinking hard about what steps to take.				
5.	**Acceptance**				
a.	I've been accepting the reality of the fact that it has happened.				
b.	I've been learning to live with it.				
6.	**Religious coping**				
a.	I've been trying to find comfort in my religion or spiritual beliefs				
b.	I've been praying or meditating				
7.	**Use of instrumental support**				

a.	I have been trying to get advice or support from people on what to do				
b.	I have been getting help and advice from other people				
8.	**Behavioral disengagement**				
a.	I've been giving up trying to deal with it.				
b.	I've been giving up the attempt to cope.				
9.	**Venting/Voicing**				
a.	I've been saying things to let my unpleasant feelings escape.				
b.	I've been expressing my negative feelings.				
10.	**Humor**				
a.	I've been making jokes about it.				
b.	I've been making fun of the situation.				
11.	**Denial**				
a.	I've been saying to myself "this isn't real.				
b.	I've been refusing to believe that it has happened.				
12.	**Substance use**				
a.	I've been using alcohol or other drugs to make myself feel better				
b.	I've been using alcohol or other drugs to help me get through it.				
13.	**Self-blaming**				
a.	I've been criticizing myself.				
b.	I've been blaming myself for things that happened				
14.	**Self-distraction**				
a.	I've been turning to work or other activities to take my mind off things.				

b.	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.				

SECTION C: SEXUAL HEALTH

These questions ask about your sexual feelings and responses during the past 4 weeks. Please answer the following questions as honestly and clearly as possible. Your responses will be kept completely confidential. In answering these questions the following definitions apply:

Sexual activity can include caressing, foreplay, masturbation and vaginal intercourse.

Sexual intercourse is defined as penile penetration (entry) of the vagina.

Sexual stimulation includes situations like foreplay with a partner, self-stimulation (masturbation), or sexual fantasy.

Sexual desire or interest is a feeling that includes wanting to have a sexual experience, feeling receptive to a partner's sexual initiation, and thinking or fantasizing about having sex.

CHECK ONLY ONE BOX PER QUESTION

	Questions	**Responses**	
	Desire		
1.	Over the past 4 weeks, how often did you feel sexual desire or interest?	5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )**
2.	Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?	5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all	**( )** **( )** **( )** **( )** **( )**
	Subject score		
	Arousal		

3.	Over the past 4 weeks, how often did you feel sexually aroused ("turned on") during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
4.	Over the past 4 weeks, how would you rate your level of sexual arousal ("turn on") during sexual activity or intercourse?	0 = No sexual activity 5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all	**( )** **( )** **( )** **( )** **( )** **( )**
5.	Over the past 4 weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?	0 = No sexual activity 5 = Very high confidence 4 = High confidence 3 = Moderate confidence 2 = Low confidence 1 = Very low or no confidence	**( )** **( )** **( )** **( )** **( )** **( )**
6.	Over the past 4 weeks, how often have you been satisfied with your arousal (excitement) during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
	Subject score		
]	**Lubrication**		
7.	Over the past 4 weeks, how often did you become lubricated ("wet") during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
8.	Over the past 4 weeks, how difficult was it to become lubricated ("wet") during sexual activity or intercourse?	0 = No sexual activity 1 = Extremely difficult or impossible 2 = Very difficult 3 = Difficult 4 = Slightly difficult 5 = Not difficult	**( )** **( )** **( )** **( )** **( )** **( )**

9.	Over the past 4 weeks, how often did you maintain your lubrication ("wetness") until completion of sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
10.	Over the past 4 weeks, how difficult was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?	0 = No sexual activity 1 = Extremely difficult or impossible 2 = Very difficult 3 = Difficult 4 = Slightly difficult 5 = Not difficult	**( )** **( )** **( )** **( )** **( )** **( )**
	Subject score		
	Orgasm		
11.	Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you reach orgasm (climax)?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
12.	Over the past 4 weeks, when you had sexual stimulation or intercourse, how difficult was it for you to reach orgasm (climax)?	0 = No sexual activity 1 = Extremely difficult or impossible 2 = Very difficult 3 = Difficult 4 = Slightly difficult 5 = Not difficult	**( )** **( )** **( )** **( )** **( )** **( )**
13.	Over the past 4 weeks, how satisfied were you with your ability to reach orgasm (climax) during sexual activity or intercourse?	0 = No sexual activity 5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied	**( )** **( )** **( )** **( )** **( )** **( )**
	Subject score		
	Satisfaction		

14.	Over the past 4 weeks, how satisfied have you been with the amount of emotional closeness during sexual activity between you and your partner?	0 = No sexual activity 5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied	**( )** **( )** **( )** **( )** **( )** **( )**
15.	Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?	5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied	**( )** **( )** **( )** **( )** **( )**
16.	Over the past 4 weeks, how satisfied have you been with your overall sexual life?	5 = Very satisfied 4 = Moderately satisfied 3 = About equally satisfied and dissatisfied 2 = Moderately dissatisfied 1 = Very dissatisfied	**( )** **( )** **( )** **( )** **( )**
	Subject score		
	Pain		
17.	Over the past 4 weeks, how often did you experience discomfort or pain during vaginal penetration?	0 = Did not attempt intercourse 1 = Almost always or always 2 = Most times (more than half the time) 3 = Sometimes (about half the time) 4 = A few times (less than half the time) 5 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
18.	Over the past 4 weeks, how often did you experience discomfort or pain following vaginal penetration?	0 = Did not attempt intercourse 1 = Almost always or always 2 = Most times (more than half the time) 3 = Sometimes (about half the time) 4 = A few times (less than half the time) 5 = Almost never or never	**( )** **( )** **( )** **( )** **( )** **( )**
19.	Over the past 4 weeks, how would you rate your level (degree) of discomfort or pain during or following vaginal penetration?	0 = Did not attempt intercourse 1 = Very high 2 = High 3 = Moderate 4 = Low 5 = Very low or none at all	**( )** **( )** **( )** **( )** **( )** **( )**
	Subject score		

	Full Scale score		

SECTION D: FAMILY FUNCTIONALITY

The questions assess your perception and satisfaction with family relationships.

Please choose only one box per question

		Almost Always =2	**Some of the Time =1**	**Hardly Ever = 0**
1.	I am satisfied that I can turn to my family for help when something is troubling me.	( )	( )	( )
2.	I am satisfied with the way my family talks over things with me and shares problems with me.	( )	( )	( )
3.	I am satisfied that my family accepts and supports my wishes to take on new activities or directions.	( )	( )	( )
4.	I am satisfied with the way my family expresses affection and responds to my emotions, such as anger, sorrow, and love.	( )	( )	( )
5.	I am satisfied with the way my family and I share time together.	( )	( )	( )
	Total score			

THANK YOU FOR YOUR TIME!

Appendix C –Indepth Interveiw Guide

Interview date ……

Venue……..

Code …….

A. Introductory questions

- Who do you live with?
- What work do you do?
- What is your marital status?
- How many children do you have?
- What is your highest level of education?
- When did you know you have cancer?
- How are you feeling now?

B. Experiences with respect to sexual dysfunctions

- Do you have any problem when urinating or defecating?
- For the past 12 months, have you been sexually active?
- Are you sexually active now?
- ✓ If YES, Do you feel any pains during sexual intercourse?

  Do you tell your husband/partner about it?

- How often do you have the desire to have sex in a month?
- What sexual pleasure have you ever done/ experienced/ used?

Probe (Masturbation, desire/libido, lubrication, sexual intercourse, Fantasies, Thinking about sex, Porn videos/ magazines, Phone lines / chat lines)

- How have the cervical cancer diagnosis and treatment affected your relationship with your husband/Partner?
- What does your husband/ partner think about you having the cervical cancer?
- Does your husband/partner complain during sexual intercourse?

  If YES, what do they say?

- Do you communicate your sexual issues to your husband/partner?

If YES, what do they say?

C. Coping strategies

- How do you cope with the cervical cancer diagnosis?

  Probe: (are self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame)

- How do you manage the pains and blood flow associated with cervical cancer?
- What do you think about the treatment you are getting?
- Do you feel you are getting any side effects from your treatment/medication?

  If YES, What are they?

D. Social support

- Who supports/motivates you whiles receiving treatment?

  Probe: (family, spouse, colleagues, religious body et cetera)

- What do they do to support/motivates you?

  Probe: (emotional, psychological, escort, financial, Spiritual et cetera)

- Are you a member of any cervical cancer support group/association?

  If YES, How does one become a member?

  How does one access support from these groups?

  Does one pay to become a member?

- Do you think such social support helps you to cope with your condition?

  If YES, What kind of support do they offer their members?

Appendix D- Participant Consent Form

Participant Information Leaflet and Consent Form

<u>This leaflet must be given to all prospective participants to enable them know enough about the research before deciding to or not to participate</u>

Title of Research: Family functioning, coping strategies and sexual dysfunction among cervical cancer patients in the Kumasi metropolis, Ghana

Name(s) and affiliation(s) of researcher(s): This study is being conducted by Dr. Gertrude Acquah-Hagan, Suntreso Government Hospital, Kumasi.

Background (Please explain simply and briefly what the study is about):
Cervical cancer is a leading public health concern globally. Women in developing countries bear more than 80% of the global burden of cervical cancer. Although a decline has been observed in cervical cancer incidence and deaths in the developed world over the past 20 years, there has not been a significant change in the same key indicators in developing countries. It is however one of the most easily preventable forms of cancer.

Women diagnosed with cervical cancer develop coping strategies to deal with the multi-factorial unpleasant experience of a psychological, social and spiritual nature of their new life situation. Early identification of coping strategies adopted by women with cervical cancer as well as patients who are coping poorly is important for treatment compliance, control of distress and patient care in general. Treatment regimens and the disease itself can also cause physiological changes that make sexual intercourse difficult after diagnosis, and survival time has also been associated with sexual dysfunction.

However, despite the rising prevalence of cervical cancer in Ghana, attention has not been paid to the quality of life of cervical cancer women, how these women deal with the stresses associated with cervical cancer diagnosis as well as health implications such as sexual dysfunction. Further, there is paucity of evidence on how social support influence coping among cervical cancer patients in Ghana.

Purpose(s) of research: The purpose of this research is to assess the extent of sexual dysfunction in women diagnosed with cervical cancer in the Kumasi metropolis and explore the role of family functioning and coping strategies in dealing with the diagnosis of cancer.

Procedure of the research, what shall be required of each participant and approximate total number of participants that would be involved in the research:

This study will use both quantitative and qualitative methods to collect data from participants. For the quantitative methods, 181 women will be will be recruited by including every consecutive patients who qualifies to participate in the study. The data will be collected using structured questionnaire. This will be used to collect information on socio-demographic characteristics such as age, education, marital status, religion, number of children, employment; A tool known as female sexual function index will be used to assess the six domains of sexual function such as desire, arousal, lubrication, orgasm, satisfaction, and pain; coping strategies women adopt when diagnosed with cervical cancer will be assessed using a tool known as Brief Cope; and family APGAR scale , which measures a family member's perception of family functioning by examining his/her satisfaction with family relationships will be employed to assess the level of family function among the study participants

For the qualitative part of the study, in-depth interviews will be conducted and sampling will be done until no new relevant themes emerges (data saturation). This will be intensive individual interviews with a small number of respondents to explore their perspectives and experiences with cervical cancer diagnosis, including sexual dysfunction, family support and how the women cope with the diagnosis. The interviews will last for approximately 45 minutes to one hour.

Risk(s): Participating in the study is not likely to cause you any harm. Everyone participating in the study will be asked not to talk about anything that we discuss. This way whatever you say will be private. We don't think anything we are going to talk about will upset you, but if it does,you have the right to opt out at any time in the course of the interview without any repercussions. If this does happen, we will refer you to the health center if you are distressed. Participating in the study or not participating in the study is up to you. If you do not want to participate in the study, it will not affect your role in the community or at the hospital in any way.

Benefit(s): You will not get special treatment and there will be no direct benefits to you for participating in the study.

Confidentiality: All information collected in this study will be given code numbers. No name will be recorded. Data collected cannot be linked to you in anyway. No name or identifier will be used in any publication or reports from this study.

Voluntariness: Taking part in this study should be out of your own free will. You are not under obligation to take part in the study. You have the opportunity to decline to take part in the study or to withdraw at any stage of the research.

Alternatives to participation: If you choose not to participate, this will not affect your treatment in this hospital/institution in any way.

Withdrawal from the research: You may choose to withdraw from the research at anytime without having to explain yourself. You may also choose not to answer any question you find uncomfortable or private.

Consequence of Withdrawal: There will be no consequence, loss of benefit or care to you if you choose to withdraw from the study. Please note however, that some of the information that may have been obtained from you without identifiers (name etc), before you chose to withdraw, may have been modified or used in analysis reports and publications. These cannot be removed anymore. We do promise to make every effort to comply with your wishes as much as practicable.

Costs/Compensation: There wouldn't be any direct compensation in cash but the researcher will appreciate your time and your willingness to participate in the study

Contacts: If you have any question concerning this study, please do not hesitate to contact Dr. Gertrude Acquah-Hagan on 020 8124912.

CONSENT FORM

Statement of person obtaining informed consent:

I have fully explained this research to _____ and have given sufficient information about the study, including that on procedures, risks and benefits, to enable the prospective participant make an informed decision to or not to participate.

DATE: _____ NAME: _____

Statement of person giving consent:

I have read the information on this study/research or have had it translated into a language I understand. I have also talked it over with the interviewer to my satisfaction.

I understand that my participation is voluntary (not compulsory).

I know enough about the purpose, methods, risks and benefits of the research study to decide that I want to take part in it.

I understand that I may freely stop being part of this study at any time without having to explain myself.

I have received a copy of this information leaflet and consent form to keep for myself.

NAME:_____

DATE: _____ SIGNATURE/THUMB PRINT: _____

Statement of person witnessing consent (Process for Non-Literate Participants):

I _____ (Name of Witness) certify that information given to

_____ (Name of Participant), in the local language, is a true reflection of what l have read from the study Participant Information Leaflet, attached.

WITNESS' SIGNATURE (maintain if participant is non-literate): _____

MOTHER'S SIGNATURE (maintain if participant is under 18 years): _____

MOTHER'S NAME: _____

FATHER'S SIGNATURE (maintain if participant is under 18 years): _____

FATHER'S NAME: _____

Appendix E - Assent Form

Adolescent assent to participate in research

Title of Research: Family functioning, coping strategies and sexual dysfunction among cervical cancer patients in the Kumasi metropolis, Ghana

My name is by Dr. Gertrude Acquah-Hagan from the Suntreso Government Hospital, Kumasi.

Background

We are asking you to take part in a research study because we want to learn more about extent of sexual dysfunction in women diagnosed with cervical cancer in the Kumasi metropolis and explore the role of family functioning and coping strategies in dealing with the diagnosis of cancer. Although the prevalence of cervical cancer in Ghana is rising, attention has not been paid to the quality of life of cervical cancer women, how these women deal with the stresses associated with cervical cancer diagnosis as well as health implications such as sexual dysfunction. We also want to know how social support affect how women cope with cervical cancer in Ghana.

If you agree to be in this study, we will ask you to answer some questions about female sexual functioning such as desire, arousal, lubrication, orgasm, satisfaction, and pain; coping strategies women adopt when diagnosed with cervical cancer; and family functioning, which measures the family member's perception of family functioning by examining his/her satisfaction with family relationships.

Risk(s): Participating in the study is not likely to cause you any harm. We will ask everyone participating in the study not to talk about anything that we discuss. This way whatever you say will be private. We don't think anything we talk about will upset you, but if it does you can leave at any time with no problem to you.

Benefit(s): You will not get special treatment and there will be no direct benefits to you for participating in the study.

Confidentiality: All information collected in this study will be given code numbers. No name will be recorded. Data collected cannot be linked to you in anyway. No name or identifier will be used in any publication or reports from this study.

Voluntariness: Taking part in this study should be out of your own free will. You are not under obligation to. You have the opportunity to decline to take part in the study or to withdraw at any stage of the research.

Alternatives to participation: If you choose not to participate, this will not affect your treatment in this hospital/institution in any way.

Withdrawal from the research: You may choose to withdraw from the research at anytime without having to explain yourself. You may also choose not to answer any question you find uncomfortable or private.

Consequence of Withdrawal: There will be no consequence, loss of benefit or care to you if you choose to withdraw from the study.

Signing your name below means that you agree to be in this study. You and your parents will get a copy of this form.

NAME OF STUDY PARTICIPANT

Printed Name of Participant	Signature of Participant	Date

SIGNATURE OF PERSON OBTAINING ASSENT

In my judgment the participant is voluntarily and knowingly agreeing to participate in this research study.

Name of Person Obtaining Assent	Contact Phone Number
Signature of Person Obtaining Assent	Date

Appendix F - Letters of Approval

KOMFO ANOKYE
TEACHING HOSPITAL

P. O. Box 1934
KUMASI - GHANA
Tel: +233 - 3220 - 22301- 4
Fax: +233 - 3220 - 24654/24621
Website: www.kathhsp.org

Our Ref. No: *KATH IRB/AP/087/20*

Your Ref. No:.....

Komfo Anokye Teaching Hospital Institutional Review Board

20th August 2020

Dr. Gertrude Acquah-Hagan,
Suntreso Government Hospital, Kumasi
P. O. Box KS 14775,
Kumasi

Dear Dr. Acquah-Hagan,

Ethics Approval

Protocol title:	Family Functioning, Coping Strategies and Sexual Dysfunction among Cervical Cancer Patients in the Kumasi Metropolis, Ghana
Study site:	Oncology Directorate of the Komfo Anokye Teaching Hospital, Kumasi
Sponsor:	Self-funded

We write in response to your correspondence of 16th June 2020 requesting the Komfo Anokye Teaching Hospital Institutional Review Board (KATH IRB) to review the research study referenced above.

The proposed research study went through Board Review meeting of 11th August 2020 and we are pleased to inform you that KATH IRB has given approval for the following study documents:

- *Protocol version 1 last updated 15th April 2020*
- *Informed Consent form version 1 last updated 15th April 2020*
- *Child Assent form version 1 last updated 15th April 2020*
- *Case Report Form version 1 last updated 15th April 2020*
- *Interview Guide version 1 last updated 15th April 2020*

Approval for the study is in effect until **19th August 2021** and it is the responsibility of the Principal Investigator to maintain the study in good standing at the Komfo Anokye Teaching Hospital. The Board anticipates to be notified of the actual start date of your project.

Prior to the expiration of the study approval, you must submit to the KATH IRB an "Application for Continuing Review" along with provision of "Annual Report" when the study is ongoing, or a "Termination Report" if the research has been completed.

You must hastily report to the KATH IRB should a modification to the research be proposed, and without delay if an unanticipated development occurs before the next required review. Regulations do not permit you to modify conduct of the study in its present form prior to ethics approval; except where urgent action is required to eliminate an apparent immediate hazard to a study subject or other person. It is of utmost importance data generated from this study must be used for the intended purposes only.

Thank you.

Sincerely,

Prof. Kwabena Antwi Danso, BSc, MB ChB, FWACS, FGCS, FACOG
Chairman, KATH-IRB