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SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

EVALUATION OF THE TIMELINESS OF TREATMENT INITIATION AMONG CERVICAL CANCER PATIENTS AT THE NATIONAL CENTRE FOR RADIOTHERAPY AND NUCLEAR MEDICINE, KORLE-BU

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH (MPH) DEGREE

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DECLARATION

I hereby declare that excluding precise references which have been duly acknowledged, this submission is my own work towards my MPH dissertation and that, to the best of my knowledge, it contains no material previously published in whole or part by another person to any institution for the award of any other degree.

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(ACADEMIC SUPERVISOR)

Date …….

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DEDICATION

I dedicate this work to the memory of my late mother Ms Beatrice Owusu-Assah who always encouraged me to aspire for higher heights in my chosen career.

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To God be the glory for His sustenance, protection and guidance throughout the course. He kept me safe and sound and I'm much grateful unto Him. I'm most grateful to the faculty at the Epidemiology and Disease Control department of the School of Public Health especially my academic supervisor, Dr Adolphina Addo-Lartey for her direction and advice. You kept me on my toes to finish my work on time.

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ABSTRACT

Background

Cancer of the cervix is the second most common of all cancers which affect women and also a major burden among women in most low and middle income countries. However, the average duration between onset of symptoms and initiation of treatment among cervical cancer at the National Radiotherapy Centre in Ghana is unknown. The study sought to evaluate the timeliness of cervical cancer treatment initiation among patients with cervical cancer.

Methods

It was cross- sectional quantitative study conducted at the National Centre for Radiotherapy and Nuclear Medicine, Korle-Bu from May to June 2018. Data collection was done with the use of structured questionnaire among patients with cervical cancer receiving treatment at the unit. Clinical information about patients were extracted from patients' folders to complete clinical information. Median timeliness of symptoms, diagnosis and treatment initiation were determined as well as the assessment of the risk factors for delayed treatment initiation. The socio-demographic and clinical data were summarised using frequencies, means and proportions. Associations between the outcome and independent variables were determined using Fisher's exact and Pearson's chi-square. Significance levels were determined at a confidence level of 95% with a margin of error 5% and p-value < 0.05.

Results

A total of 117 respondents' participated in this study. The study identified timeliness of symptoms, diagnosis and treatment initiation blocks which can be used in establishing interventions to address delays in the timeliness of treatment initiation. The median patient and treatment initiation

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timeliness were 28 and 31.5 weeks respectively while the mean diagnostic timeliness was 1.62 weeks. About 99 (85%) of the patients experienced total delay. The initial choice of treatment patients opted for and patient delay were significantly associated with total delay ($p< 0.001$). Significant associations were observed between secondary delay and the number of repeated visits to a health facility before diagnosis and the facility that diagnosed ($p<0.001$). The commonest tumour morphology identified was squamous cell carcinoma (86.32%) with 44.46% being diagnosed at stages III and IV of cervical cancer. Unaware of severity of symptoms 87 (74.4%) and perceived cost of treatment 66 (56.4%) were cited as the major reasons patients delayed in presenting to a health facility for treatment.

Conclusion

The results from this study revealed that majority of the patients (84.6%) experienced total delays from the onset of initial symptoms till treatment commencement even though most of them first sought treatment from a health facility. Notable among the factors responsible for the late presentation of patients for definitive diagnosis and treatment were lack of awareness of the severity of the cervical cancer related symptoms and perceived cost of treatment. Educational activities such as health talks among women groups, public and targeted outreach to under privileged women should aim at promoting early detection for prompt treatment through raising of awareness among the public, since cervical cancer is curable when detected early.

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LIST OFABBREVIATIONS

CC	Cervical cancer
CHAG	Christian Health Association of Ghana
CIN	Cervical intraepithelial neoplasia
FIGO	International Federation of Gynaecology and Obstetrics
Globocan	Global cancer statistics
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
HPV- DNA	Human Papilloma Virus- Deoxyribonucleic Acid
IRB	Institutional review board
KATH	Komfo Anokye Teaching Hospital
KBTH	Korle-Bu Teaching Hospital
NCCE	National commission for civic education
NHIS	National Health Insurance Scheme
NRCNM	National Centre for Radiotherapy and Nuclear Medicine
RMNCH	Reproductive, maternal, new-born and child health

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RTC	Radiotherapy Centre
SCC	Squamous Cell Carcinoma
STIs	Sexually Transmitted Infections
UNPF	United Nation Population Fund
WHO	World Health Organization

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DEFINITION OF TERMS

Term	Definition
Cancer	A malignant transformation of the cells of the body leading to deregulation of the body's growth control mechanisms.
Cervical cancer	A type of cancer that affects the cells of the lower portion of the uterus (cervix) that connects the uterus to the vagina.
Delay	A patient having initial symptoms of a particular cancer for more than 16 weeks before treatment commencement.
Staging	The process of determining if a cancer has spread and how far the spread is if any to help in designing the appropriate treatment plan for the patient.
Timeliness	Prompt commencement of treatment after a definitive diagnosis has been established.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Cervical cancer is the second commonest cancer of all female cancers affecting approximately 530 000 new women while 270 000 women also die from the cancer every year (World Health Organization, 2013). Cervical cancer is a major burden among females in low and middle income countries (Sankaranarayanan et al., 2005). About 85% of the deaths are from low and middle income countries (World Health Organization, 2013).

According to WHO (2014), long term infection with the HPV which commonly cause reproductive infections in both sexes, is the main cause of the precancerous lesions. There are more than 80 identified HPV types and out of that, those that cause genital tract infections are about 40. The genotypes implicated in the precancerous lesions are the 16 and 18 oncogenic types with HPV-16 being the commonest. The risk of developing SCC which is the commonest histological type is 250 times among those infected with HPV-18 as compared to 400 times in HPV-16. There is spontaneous clearance of majority of HPV infections on their own within the first 2 years with only a small percent progressing into precancerous lesions and then CC after prolonged infections. The risk increases with early sexual contact, multiple sexual partners, multi parity and oral contraceptive use (WHO, 2014).

Screening activities aimed at early recognition of precancerous lesions and the introduction of the vaccines against the high risk HPV have decreased significantly the occurrence of cervical cancer in the developed countries however, the numbers in developing countries remains very high (Devi, Tang, & Corbex, 2007). Cervical cancer is also estimated to be the most frequently occurring cancer in Sub-Saharan Africa (Ferlay et al., 2010).

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Advanced stages of cancer of the cervix is one of the major causes of cancer associated mortality in low and middle income countries typically due to limited access to appropriate management (Thomson & Forman, 2009). In Ghana, cervical cancer remains a most occurring female cancer constituting 30.9% (3,038) of all cancers with an equally high mortality (Ferlay et al., 2010). At the Korle-Bu Teaching hospital, Anarfi (2010) stated that cervical cancer accounted for 64% of all malignant gynaecological cancers. The proportion of patients who delayed before seeking treatment for cervical cancer in Morocco was 54.6% and delayed treatment is associated with advanced stages of the disease (Ouasmani et al., 2016). Nkyekyer, (2000) acknowledges the high mortality may be because most women with cervical cancer, (64.3%) are diagnosed in advanced stages (stage IIB or worse). Factors such as unavailability to routine screening, inability for women to recognize symptoms and possibly low awareness of cervical cancer could explain the higher mortality of cervical cancer (Khorasanizadeh et al., 2013).

A study conducted on the factors of patient delay in pursuing diagnosis and treatment among women with cervical cancer in Moroccan by Ouasmani et al., (2017) concluded that poor knowledge among most Moroccan patients on cervical cancer was the cause of the delay. Delay in diagnosis and treatment initiation remains to be the utmost obstacle to cross in the management of cancer (Ouasmani et al., 2017). Timeliness is an important dimension to evaluation and monitoring quality of health care. It improves patients' satisfaction and might improve outcomes. Timely diagnosis and treatment initiation of cancer is of essence because of the established relationship between stage at diagnosis and survival rate. Late cancer stage at diagnosis leads to poorer prognosis and management tends to be palliative (Oladeji, Atalabi, Jimoh, Ntekim, & Elumelu, 2016).

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1.2 Problem Statement

The global load of cancer of the cervix is on the rise with about 85% of recorded cases in developing countries (Ferlay et al., 2010). Cervical cancer accounted for about 528,000 of all cancer new cases, representing 22.2% in 2012 and the fourth most common cause of cancer death in females in the Sub Saharan Africa (Stewart & Wild, 2014). The disease is preventable through screening and vaccination against Human Papilloma Virus (Hill, Cox, Nartey, & Philip, 2016). Cervical cancer is increasingly a common type of gynaecological cancers affecting women as well as a global public health problem but treatable (Hill et al, 2016). Its associated mortality rate is higher when compared with breast cancer even though the latter is most prevalent (WHO, 2014).

At the precancerous stage, cervical cancer remains the most treatable form of cancers affecting human (Devi et al., 2007) but the issue is that majority of women with cervical cancer (representing about 80%) in developing countries present for treatment after onset of signs and symptoms (Chadza, 2012). Early detection and extent of spread are vital factors that affect the effectiveness of cervical cancer treatment (Neal & Allgar, 2005). Delay in diagnosis and prompt treatment commencement continues to be the barriers in cervical cancer management (Vinh-Hung et al., 2007). Ouasmani et al., (2017) concluded that there remains a weighty association between patient delay and late stage at presentation. Delay in treatment initiation may increase the percentage of cancer patients presenting with advanced stages of the disease which negatively affects the prognosis and quality of life of patients (Mwaka, Okello, Wabinga, & Walter, 2015). Advanced stage of presentation also results in its associated high mortality (Ouasmani et al., 2017).

According to Berraho et al., (2012), most cases of CC present in advanced stages of the disease when treatment is less effective. An estimate of about 87% of the 266,000 deaths from cervical

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cancer occurs in developing countries (Wu, Jeronimo, & Feldman, 2017). Nkyekyer, (2000) estimated about 64.3% of cervical cancer patients in Ghana present at stages IIA-IVB of the disease. In Ghana, cervical cancer is both the second most prevalent in KBTH and second cause of cancer associated mortality of 28.3% (WHO, 2014 & Calys-tagoe et al., 2014).

Almuammar, Dryden, & Burr, (2010) identified patients' low level of education, fear, anxiety, nature of the disease, general practitioner's experience and referral delays as some of the factors associated with late presentation. Mosha et al., (2009) and Anorlu, Orakwue, & Oyeneyin, (2004) also revealed that patients present late for treatment in low and middle income countries because of patients' delay in seeking treatment and delays in referring of patients to appropriate facilities by care providers . The same situation was observed in Malawi (Rudd et al., 2017).

The high mortality rate is attributed to the late stages at which the women present for treatment. Timeliness of care have a lot of benefits as it decrease the higher mortality rates associated with cervical cancer and also in improving quality of life of patients, but these potentials are not often harnessed and applied.

This study was therefore imperative identifying the average duration between onset of symptoms and the factors associated with delay in treatment commencement in cervical cancer patients at the National Radiotherapy Centre since risk factors for delay in treatment initiation can vary from place to place (Ouasmani et al., 2017). There is also scarcity of information on timeliness of treatment initiation of cervical cancer in a Ghanaian setting hence the study. Such knowledge will help in facilitating the implementation of effective interventions to reduce the time interval between onset of symptoms and treatment initiation.

1.3 Justification

Research on cervical cancer is predominantly related to primary and secondary prevention of cervical cancer that is screening and vaccination against the HPV respectively with tertiary

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prevention which comprises of treatment and quality of life for cervical cancer patients the two most under researched areas (Finocchario-kessler et al., 2016).

Anorlu, (2008) identified low socio-economic status of patients which makes the issue of accessibility and affordability a challenge as a factor accounting for the late presenting of cervical cancer patients to a tertiary hospital in Nigeria.

Nkyekyer, (2000) estimated about 64.3% of cervical cancer patients in Ghana present at stages IIA-IVB of the disease. This study was therefore imperative in identifying the average duration between onset of symptoms and the factors associated with delay in treatment commencement in cervical cancer patients at the National Radiotherapy Centre since risk factors for delay in treatment initiation can vary from place to place (Ouasmani et al., 2017). There is also scarcity of information on timeliness of treatment initiation of cervical cancer in a Ghanaian setting hence the study. Such knowledge will assist in aiding the implementation of effective interventions to reduce the time lag between onset of symptoms and treatment initiation.

1.5 Research Questions

1. What is the average duration between onset of initial symptoms and initiation of cervical cancer?
2. What proportion of patients delayed in seeking treatment at RTC?
3. What factors influence the timeliness of cervical cancer treatment initiation at National Radiotherapy Centre, Korle-Bu?

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1.6 Objectives of the study

1.6.1 General objective

The general objective of the study was to evaluate the timeliness of treatment initiation among cervical cancer patients at the National Radiotherapy Centre, Korle- Bu.

1.6.2 Specific objectives

1. To determine the median duration between onset of initial symptoms and initiation of cervical cancer treatment.
2. To determine the proportion of patients who delayed in seeking treatment at RTC.
3. To evaluate the factors influencing the timeliness of cervical cancer treatment initiation.

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1.4 Conceptual Framework

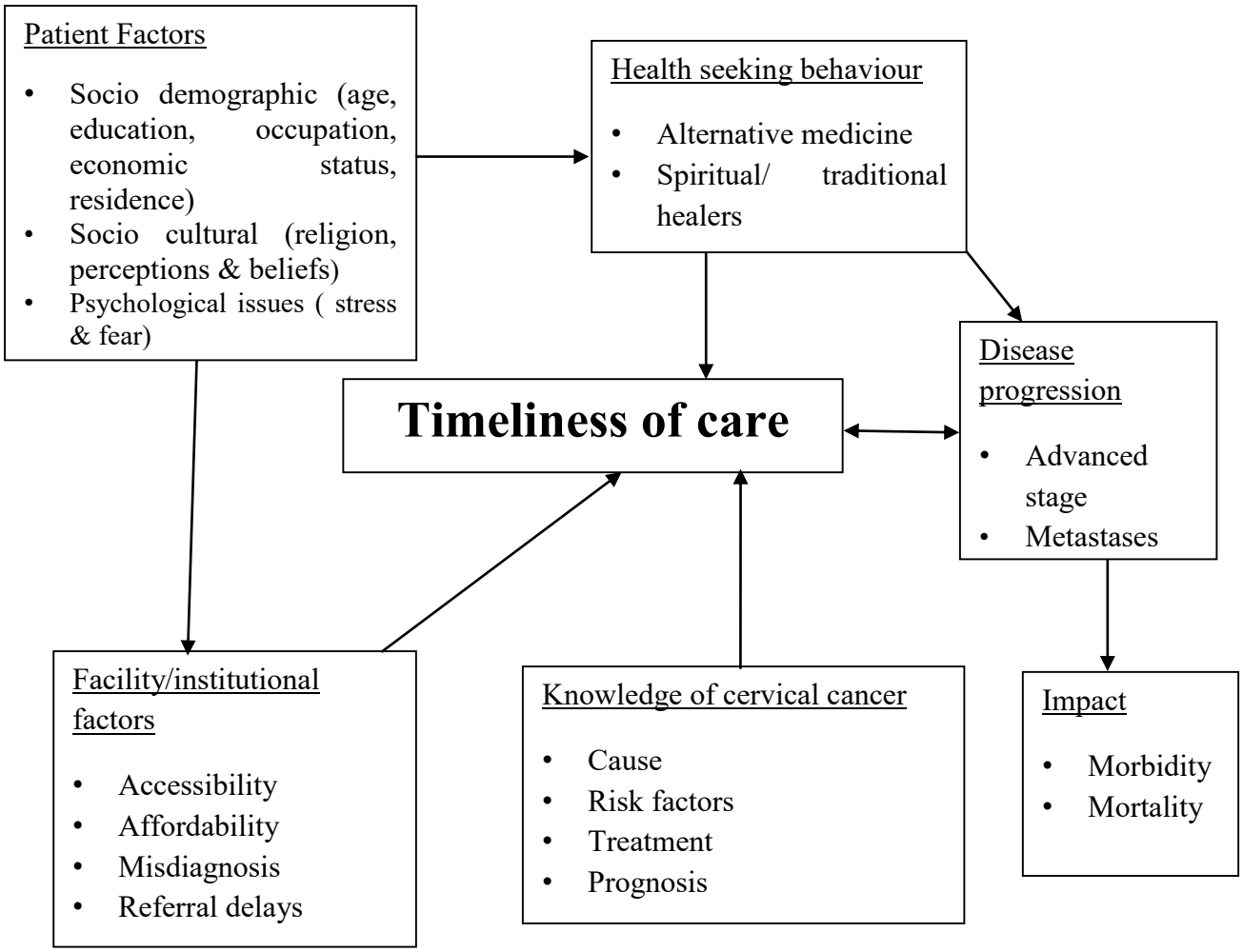

Figure 1: Conceptual framework

It is well documented that treatment initiation among patients with cervical cancer is often delayed (Oladeji et al., 2016). Delay in care initiation leads to advanced stage of the disease at presentation (Anorlu et al., 2004). The recommended duration between onset of initial symptoms and treatment initiation for most cancers is 12 weeks. Periods beyond the 12 weeks are considered delays (Richards, Westcombe, Love, Littlejohns, & Ramirez, 1999).

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The figure above gives a graphical representation of the variables to be studied and the relationships that may exist between them in determining the factors that would influence the timeliness of care among cervical cancer patients. The outcome variable of interest in the study is timeliness of care.

Timeliness of treatment initiation among cervical cancer patients at the Radiotherapy Centre may be due to institutional factors which include delays in referrals, misdiagnosing, affordability and accessibility (Almuammar et al., 2010). Patients' level of knowledge about cervical cancer, health seeking behaviour and the socio- demographic factors of the patients such as age, income status, level of education and religious affiliation are some patient factors affecting timeliness of care (Ouasmani et al., 2017).

Delays in treatment initiation increase the proportion of patients presenting with advanced diseases which have negative impacts on prognosis and quality of life (Mwaka et al., 2015) and it is also associated with higher mortality rates from cervical cancer in low and middle income countries (Anderson, Haas, & Shanahan, 2008).

To ensure timely care is delivered, factors that affect timeliness of care should be identified and addressed properly.

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Definitions of delay

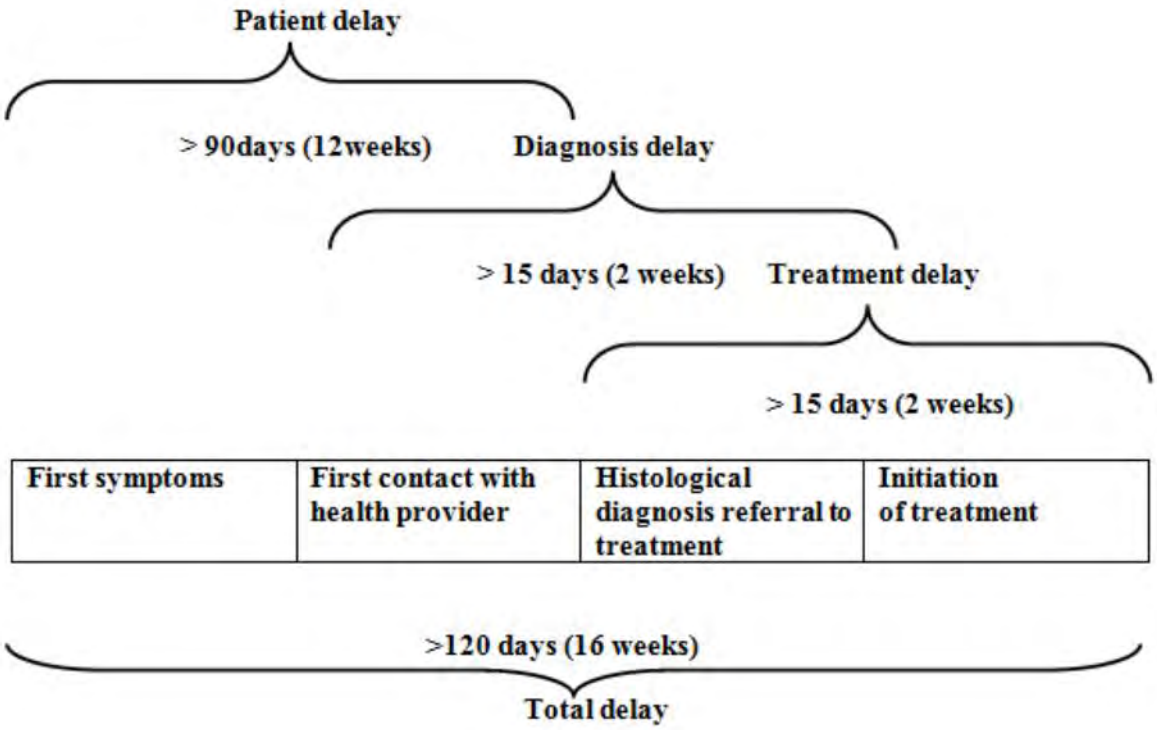

Figure 2: Categorization of delays in cervical cancer (Adopted from Ouasmani et al., 2017)

Primary (patient) delay: Delay that occurred between onset of initial symptoms and first contact to a medical person.

Secondary (diagnosis) delay: Delay occurring between first contacting a medical person to a confirmed diagnosis.

Tertiary (treatment) delay: Delay observed from the time of confirmed diagnosis to treatment initiation.

Total delay: The total time period from onset of initial symptoms to treatment initiation.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Cervical Cancer

Cervical cancer is an easily detectable and treatable cancer that most frequently starts in the transformation zone (squamo-columnar junction) of the cervix (Walsh & Crumbie, 2007; Petignat & Roy, 2007). UNPF (2006) reported that more than 99% of cervical cancers are linked to Human Papilloma Virus (HPV). HPV types 16 and 18 contain potential viral oncogenes that are associated with cervical cancer (Bosch & Iftner, 2005). Predisposing factors associated with the likelihood of being infected with HPV include: sex at early age, multiple sexual partners and promiscuous male partners. Other factors that are linked with the upsurge in the risk of cervical cancer among HPV-DNA positive women include: use of oral contraceptives for five or more, smoking, high parity (five or more full term pregnancies) and previous exposure to other sexually transmitted infections (STIs), notably *Chlamydia trachomatis*, HIV and some herpes viruses (Bosch & Iftner, 2005).

When HPV is introduced into the normal cervix, the virus could either be cleared or invade and infect cervical cells (Wright & Schiffman, 2003). About 90% of infections with HPV clear on their own within months to a few years and without any sequelae, although cytology reports 2 years after HPV infection may show a low-grade squamous intraepithelial lesion. However, only 5% of these infections result in the development of Cervical Intraepithelial Neoplasia (CIN) grade 2 or 3 lesions (cervical dysplasia; the recognized cervical cancer precursor) within 3 years of HPV infection. About 20% of CIN grade 3 lesions progress to invasive cervical cancer within 5 years but only 40% of CIN grade 3 progresses to invasive cervical cancer within 30 years (Boardman, Matthews Jr & Huh, 2013).

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2.2 Clinical staging and manifestations

Petignat and Roy, (2007) reported that the clinical manifestation of cervical cancer depends on the site affected and the stage of the disease. The earliest stage (stage IA) of the disease is usually asymptomatic. However, symptoms when present may include abnormal vaginal bleeding, offensive vaginal discharge, pelvic pain, dyspareunia, or symptoms related to a fistula or metastases (Kingham et al., 2013). Others are post coital bleeding, pain with lymph nodes involvement, serosanguineous foul smelling vaginal discharge and backache (Petignat & Roy, 2007).

Cervical cancer can be categorized into various stages for easy identification and management (Walsh & Crumbie, 2007).

2.2.1 Stages of cervical cancer

Table 1 : 2008 FIGO Staging for Cancer of the Cervix Uteri

STAGE	DESCRIPTION
I	The carcinoma is strictly confined to the cervix (extension to the uterine corpus should be disregarded)
IA	Invasive cancer is identified microscopically. Invasion is limited to stromal invasion with maximum depth of 5mm and a maximum width of 7mm
IA1	Measured invasion of stroma ≤ 3mm in depth and ≤7mm in width
IA2	Measured invasion of stroma > 3mm and < 5mm in depth and ≤ 7mm in width
1B	Clinical lessons confined to the cervix , or preclinical lesions greater than those defined as stage IA
IB1	Clinical lesion no greater than 4cm in size
IB2	Clinical lesions > 4cm in size

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II	The carcinoma extends beyond the uterus, but it has not extended onto the pelvic wall or to the lower third of the vagina
IIA	Involvement of up to the upper two thirds of the vagina; no obvious parametrial involvement
IIA1	Clinical visible lesion ≤ 4cm
IIA2	Clinical visible lesion > 4cm
IIB	Obvious parametrial involvement but not unto the pelvic sidewall
III	The carcinoma has extended onto the pelvic sidewall. On rectal examination, there is no cancer-free space between the tumour and the pelvic sidewall. The tumour involves the lower third of the vagina
IIIA	Involvement of the lower vagina but no extension onto the pelvic sidewall
IIIB	Extension onto the pelvic sidewall, or hydronephrosis / non-functioning kidney
IV	The carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder and/or rectum
IVA	Spread to adjacent pelvic organs
IVB	Spread to distant organs

2.4 Treatment modalities

Depending on the stage, the modalities of treating cervical cancer include:

1. Cone biopsy: This requires the removal of a cone of cervical tissue with cancer and margin. It is generally ideal for early diseases, with no lymph nodes involvement and in women who are not menopausal.

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2. Radical trachealectomy: This comprises of the removal of the cervix and neighbouring lymph nodes, and is ideal in early-stage disease, and young women who want to preserve their fertility.
3. Hysterectomy: This involves total removal of the uterus, cervix and lymph nodes, and is desired in patients who are post-menopausal.
4. External Beam Radiation (Tele therapy): This involves giving radiation from an outside source, whereby radiation beams are concentrated on the cervix and a set prescription administered to the patient. This procedure is normally preferred in stages II-III and is used in combination with chemotherapy administration.
5. Brachytherapy: This involves applying the source of radiation within the cervical cavity of the patient and directly radiating the cancer tissue.

2.5 Knowledge of cervical cancer among the respondents

According to Macleod et al., (2009), patients with little or no knowledge about cervical cancer were more at risk of experiencing primary or patient delays. Unrecognition of the type of symptom experiencing leading to ignoring the initial mild gyneacological symptoms such as spotting after coitus and vaginal discharge as these are often considered general problems and only report to health facilities after the onset of the profuse offensive vaginal bleeding (Galukande, Mirembe, & Wabinga, 2015).

A study conducted in Morocco found primary delay to be higher in women who do not have regular routine gyneacological screenings. Routine screenings were found to be associated with shorter patient delays since symptoms are likely to be noticed during one of the screening sessions for prompt treatment to commence (Ouasmani et al., 2016). Lack of routine screening practises, low knowledge and awareness of cervical cancer are the major risk factors for late presentation for most cancers (Mbuka-Ongona et al., 2013).

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2.6 Impact of cervical cancer

Cervical cancer accounted for more than 270,000 deaths in the world in 2008 with the world age standardised incidence rate 15.2 per every 100,000 women in that same year (Berraho et al., 2012). About 85% of those deaths occurred in low and middle socioeconomic countries like Ghana (Stewart & Wild, 2014). In the USA, an analyses of cancer deaths showed the mortality as a result of cervical cancer increases with decreasing level of education and poverty. This cancer primarily affects women who are disenfranchised economically and its impact appears multifaceted (Berraho et al., 2012).

Aside the financial burden experienced by the patients and family, treatment aftermath issues such as infertility and negative body image affects their lives socially and sexually. Many of the women experience psychological reactions such as anger, depression and shame often due to the notion that cervical cancer is associated with sexually transmitted infections and promiscuous lifestyles (Ashing-giwa et al., 2006).

The offensive vaginal discharge also cause social isolation as a result of stigmatisation with the fear of death steering right there in their faces due to advanced stage of the disease and metastases. These women also experience intense pain which affects their activities of daily living and tend to depend on opiate analgesics such as morphine for pain control (Herzog & Wright, 2007).

2.7 Timeliness of cervical cancer treatment initiation

Timeliness of care (rapid initiation of treatment after definitive diagnosis) is an important dimension in evaluating and monitoring the quality of cancer treatment. It improves patients' satisfaction, quality of life, morbidity and might also improve treatment outcomes (Halpern & Holden, 2012). According to Richards et al., (1999), delay in cancer care refers to having

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symptoms for more than 12 weeks before diagnosis and treatment initiation. The delay has been classified by Oladeji et al., (2016) into three phases:

1. Primary delay: Period between onset of initial symptoms and first consultation with a doctor.
2. Secondary delay: Time interval from first consultation to confirmed diagnosis.
3. Tertiary delay: Period between confirmed diagnosis and treatment initiation.

Facione, (1993) also classified delay into primary (duration between onset of symptoms to first presentation to a clinician) and secondary (duration from first presentation to a clinician and start of treatment) delays. Delay of more than 12 weeks is considered total delay whereas delay of more than 12 to 26 weeks is considered prolonged delay (Richards et al., 1999). Ouasmani et al., 2017 also defined cancer delay as having symptoms of more than 16 weeks before treatment commencement.

Advanced stages of disease at presentation have been linked to delays and have negative impact on prognosis and quality of life (Mwaka et al., 2015).

2.8 Factors associated with timeliness of care

Almuammar et al., (2010) identified patient's knowledge, stress and fear and nature of disease as some patient factors that affect timeliness of treatment initiation. Other patient factors include: little or no knowledge on cervical cancer, seeking after alternative care, poor socio-economic support and financial constraints (Oladeji et al., 2016; Tewari et al., 2015; Ouasmani et al., 2017).

Practitioner and system factors that are likely to affect timeliness of care in cervical cancer include delay in referring patients to tertiary hospitals, travel time to the hospital, general

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practitioner experience and access barriers to the limited tertiary hospitals (Oladeji et al., 2016 & Tewari et al., 2015).

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CHAPTER THREE

METHODS

3.1 Study Design

A quantitative cross-sectional study design was adopted to evaluate the timeliness of treatment initiation among cervical cancer patients. Collection of data was from patients diagnosed with cervical cancer receiving treatment at the National Radiotherapy Centre, Korle-Bu within a six-week's period from 1st May to 12th June, 2018.

3.2 Study Area

The National Centre for Radiotherapy and Nuclear Medicine, Korle-Bu Teaching Hospital (National Radiotherapy Centre, KBTH) which began operation in 1997 as the only Centre then in Ghana for the provision of Radiotherapy services to cancer patients was used as the study location. National Radiotherapy Centre now serves the southern part of the country with not only Radiotherapy services but Chemotherapy and Nuclear Medicine as well receiving referrals from both within Ghana and neighbouring West African countries.

With concurrent of Cisplatin-based chemo radiation as the current standard protocol for locally advanced disease (stage IB2 to IVA) (Herdrich & Weinberger, 2013), a total of 179 and 164 new cervical cancer cases were referred to the Centre where they can get access to the two treatments in the years 2015 and 2016 respectively representing a percentage of about 13.6% of 1210 new cases annually (RTC Statistics department).

Tuesday is the clinic day for gynaecological cancers which has cervical cancer as the majority. Patients present from Monday to Friday over a period of five to six weeks for chemotherapy, radiotherapy (external beam and brachytherapy), patient education and counselling on an outpatient bases.

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3.3 Variables

Table 2: Table of variables

Variable	Type of variable	Operational definition	Scale of measurement
Timeliness of care	Dependent	Rapid initiation of treatment after definitive diagnosis	Ordinal 1. Early 2. Late
Age	Independent	The age of the respondents as at last birthday	Continuous
Religion	Independent	Religious group respondent belongs.	Nominal 0. Christian 1. Muslim 2. Traditionalist 3. Others
Level of education	Independent	Respondents highest level of education attained	Nominal 1. No formal education 2. Primary 3. JHS 4. Secondary 5. Tertiary
Marital status	Independent	Current marital status	Nominal 1. Married 2. Single 3. Divorced 4. Widowed 5. Cohabiting
Income status	Independent	Average earning per month in Cedis	Categorical 1. Sufficient but no savings 2. Sufficient with remittance 3. Sufficient with savings 4. Insufficient but no loan

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			5. Insufficient and had loan
Stage	Independent	Clinical stage of disease during presentation	Ordinal 1. 0 7. IIa2 2. Ia1 8. IIb1 3. 1a2 9. IIIa 4. 1b1 10.IIIb 5. 1b2 11. IVa 6. IIa1 12. IVb
Delay	Independent	Duration between initial symptoms and timeliness of treatment ignition	Ordinal 1. Less significant 2. Significant
Initial Symptoms	Independent	Earlier symptoms experienced by respondents.	Ordinal 1. Inter-menstrual bleeding 2. Post-menopausal bleeding 3. Persistent offensive vaginal discharge 4. Lower abdominal pain 5. Unexplained weight loss
Health seeking behaviour	Independent	Type of initial treatment sought by patient after recognizing initial symptoms	Nominal 1. Self – medication 2. Traditional medicine 3. Prayer camp 4. Pharmacy shop 5. Health facility
Institutional factors	Independent	Facility factors that contribute to delay in treatment initiation	Nominal 1. Accessibility 2. Affordability 3. Misdiagnosis 4. Referral delays
Knowledge of cervical cancer	Independent	Patient's level of knowledge regarding cervical cancer	Ordinal 1. Poor 2. Fair 3. Good 4. Very good

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3.4 Study population

The study population for the research work was all women above 18 years diagnosed with cervical cancer, been referred to the Radiotherapy Centre for further management and had started receiving treatment.

3.5 Inclusion criteria

Inclusion criteria included women aged 18 and above diagnosed with cervical cancer receiving treatment and patients who had completed treatment and reporting for follow up reviews. The above categories of patients were allowed to participate in the study.

3.6 Exclusion criteria

On the other hand, cervical cancer patients in severe pain, yet to start treatment, altered state of consciousness and those being treated for secondary cancers were excluded from the study. No patient was denied participation in the study based on racial or religious grounds.

3.7 Sampling

3.7.1 Sample size determination

The minimum sample size of 116 was obtained from the National Radiotherapy Centre, Korle-Bu for the study.

The sample size was calculated using the Cochran's formula below:

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

n= sample size

Z= Z statistics for a confidence level of 95% for normal distribution i.e. 1.96

P= Proportion of early reporting of cervical cancer in Morocco, 45.4% (Ouasmani et al., 2016).

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d = margin of error, 0.05

n= 381

Sample size determination using the finite population correction factor:

The number of patients with cervical cancer attended to at RTC-KBTH, from Jan-Dec 2016 was 164.

For a finite population of 164 and correcting for this finite population (Naing, Winn, & Rusli, 2006).

$n = n_o N / n_o + (N-1)$,

Where n is corrected sample for a finite population

N is the finite population (164)

n_o is the sample size without considering the finite population correction factor (354)

n = (164*381)/ + 354 (164-1).

The overall sample size was 116

3.7.2 Sampling Procedure/Method

The average number of cervical cancer patients who present for treatment weekly is 15 giving a total of about 90 during the 6-week data collection period hence complete (total) enumeration was employed to sample respondents for the study in which case all cervical cancer patients presenting for treatment would be included in this quantitative study except for those who met the exclusion criteria. This approach is used when the researcher has challenges accessing the appropriate population and involves every single member of the population with an advantage of reducing selection bias (Johnnie, 2011).

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The outpatient review appointment register, chemotherapy booking record and treatment floor list for cervical cancer patients at the Radiotherapy Centre were used for the compilation of the list of respondents for the study. Data collection spanned from Monday to Friday within the six (6) weeks period except on public holidays from patients who met the inclusion criteria and had consented after the purpose, objectives and ethical issues concerning the study had been explained to them. Identities of respondents were coded to prevent the probability of multiple interviewing of same respondents since they present for treatment from Monday through to Friday.

3.8 Data Collection Techniques/ Method and Tool

Data collection in the study was carried out by the researcher and research assistants with the use of a face to face structured written questionnaire. The questionnaire included both open and closed ended questions. In other to be able to achieve the specific objectives of the study, sections were created to obtain information on socio- demographic data such as age, marital status, employment, income status and residence.

A section on the clinical data extracted from the respondents' folders focused on type of cervical cancer, identification and time of initial symptoms and clinical stage of the disease. If women were not able to recollect the date they first presented to a health facility for treatment in relation to the symptoms associated with cancer of the cervix, such dates were estimated by using the midpoint of those weeks as in Gyenwali et al., (2014). The last section of the questionnaire elicited information on determinants affecting timeliness of treatment initiation among cervical cancer patients.

3.9 Quality control

Data collection was carried out by the principal investigator with assistance from two research assistants. A two-day training covering proper introduction of self and rapport establishment,

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the rationale, objectives and informed consenting was done for the research assistants. Issues regarding safety and confidentiality were discussed.

To ensure a reduction of errors, they were taught both the inclusion and exclusion criteria in other to select eligible respondents.

Illiterate respondents were given the opportunity to participate in the study because translations into the two mostly spoken local languages were done by interviewers during the data collection. To ensure that the questionnaires had been completed, the principal investigator daily checked completed ones and also supervised research assistants during the data collection process.

3.10 Data Processing and Analysis

Questions and responses on the questionnaire were coded to make the analysis of the data easy. A computer statistical software package STATA (Version 15.0) was used for analysis after the data had been entered into Microsoft Excel 2013 and imported. Variables analysed in association to timeliness of care at Radiotherapy Centre include age, level of education, marital status, income status, type of earlier symptoms experienced, and stage of the disease. The socio- demographic and clinical data obtained were summarized and described using frequencies, means, proportions, standard deviations and percentages.

The association between the outcome and independent variables were determined using the Pearson's chi- square and Fisher's exact analysis test whereas the relationship between each independent variable and the dependent variable were determined using the logistic regression test. For all statistical analyses, a confidence interval of 95% with a margin of error of 5% and a p value < 0.05 were used to determine significance.

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3.11 Ethical Consideration

Prior to starting the data collection process, ethical clearance was sought from KBTH-IRB/ 00097/2017 since the researcher intended carrying out the study in the hospital. An introductory letter for permission from the School of Public Health was given to the director of the National Centre for Radiotherapy.

Respondents were given written informed consent form which contained the purpose, objectives of the study and the benefits of the study was made available to the patients. Privacy, anonymity and confidentiality were ensured through coding instead of using their names and folder numbers both during the data collection and analysis. Upon agreeing to participate in the study, a volunteer agreement form which was not attached to the questionnaire was signed.

Respondents were assured that they could withdraw from the study at any point and that the information being collected is purely for academic purposes with no personal interest.

Apart from emotional discomfort that accompanied some of the questions asked and the extra time required to complete the questionnaire, the study possessed no harm to the respondents.

Both the hard copies (questionnaire) and soft copies of data stored on external hard drive and CD- ROM would be stored under lock and key in a cupboard by the principal investigator for five years after which hard copies would be shredded whereas soft copies would be deleted from the computer and any other storage device. No compensation was given to the respondents upon completion of the data collection process.

3.12 Pre-testing of data collection tool

Questionnaire was pretested at the RTC prior to the time of data collection to ensure that the questions are understandable and to make sure response options were adequate and appropriate. Corrections were made before the actual study was carried out.

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CHAPTER FOUR

RESULTS

4.1 Characteristics of the study participants.

The total number of 117 women with cervical cancer receiving concurrent chemoradition therapy treatment at RTC, KBTH participated in the study. Ages of the participants ranged from 35 to 87 years with an average age of 57 (± 11.58) years. More than half 64 (54.7%) of the respondents were married. The respondents were evenly spread across the three residential settings during the onset of initial symptoms (rural, Peri-urban and urban). About 27 (23%) of the respondents had no formal education while a similar proportion had tertiary education. The major (85.5%) religious affiliation among the respondents was Christianity. About 6 out of every 10 selected respondents were self-employed however one-third of respondents' monthly income were insufficient but did not rely on loans. Sixty-four (54.7%) of the women foot their bills with the help of family members and friends. The commonest tumour morphology diagnosed was squamous cell carcinoma representing 86.32% and Adenocarcinoma 10.26%. Table 3 gives a detailed information of the background characteristics of the study respondents.

Figure 3 shows the commonest symptoms that prompted the patients to present to a health facility for treatment. Post- menopausal bleeding among the women was the major complaint by the respondents as it was experienced by more than half 54.7% of the respondents followed by persistent offensive vaginal discharge (30.8%). Unexplained weight loss was the least presenting initial symptom among the study respondents.

Approximately 4 of every 10 reported case of cervical cancer was diagnosed at stage IIIB among the study respondents. The proportion of the patients who presented with late and advanced (III & IV) stages of the cancer was 44.44%. The least stages diagnosed according to

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the histopathological staging at the time of presenting were IIIA and IVA as shown in figure in figure 4.

Table 3: Socio-demographic factors of women with cervical cancer receiving concurrent chemo radiotherapy treatment at KBTH (n=117)

Characteristics	Frequency	Percentage
Age: Mean ±SD	57.04 ± 11.58	
35- 50 years	38	32.5
51-87 years	79	67.5
Marital status		
Married	64	54.70
Single	10	8.55
Divorced	24	20.51
Widowed	19	16.24
Residence		
Rural	35	29.91
Peri – urban	41	35.04
Urban	41	35.04
Educational Level		
No formal education	27	23.08
Primary	19	16.24
JHS	21	17.95
Secondary	25	21.37
Tertiary	25	21.37
Religion		
Christian	100	85.47
Muslim	17	14.53
Employment Status		
Unemployed	19	16.24
Salary worker	12	10.26
Self employed	67	57.26
Retired	19	16.24
Income		
Sufficient but no savings	15	12.82
Sufficient with remittance	28	23.93
Sufficient with savings	18	15.38
Insufficient but no loan	43	36.75
Insufficient and had a loan	13	11.11
Method of payment		
Self	53	45.30
Family/ friends	64	54.70

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Tumour Morphology		
Adenocarcinoma	12	10.26
Adenosquamous	4	3.42
Squamous cell carcinoma	101	86.32
Stage Categories		
Early	65	55.65
Late	52	44.44

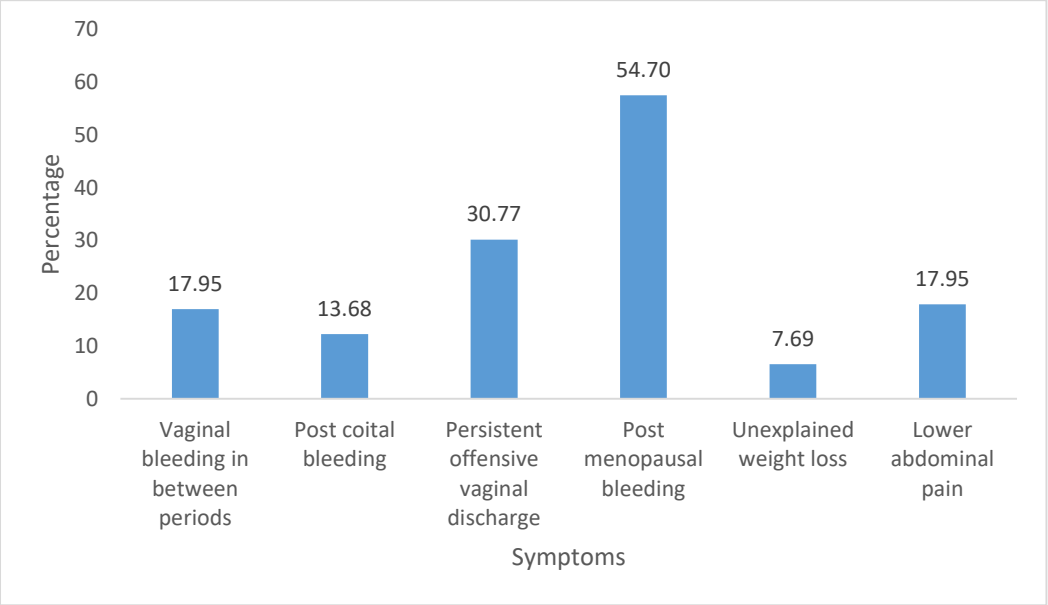

Figure 3: Common presenting symptoms

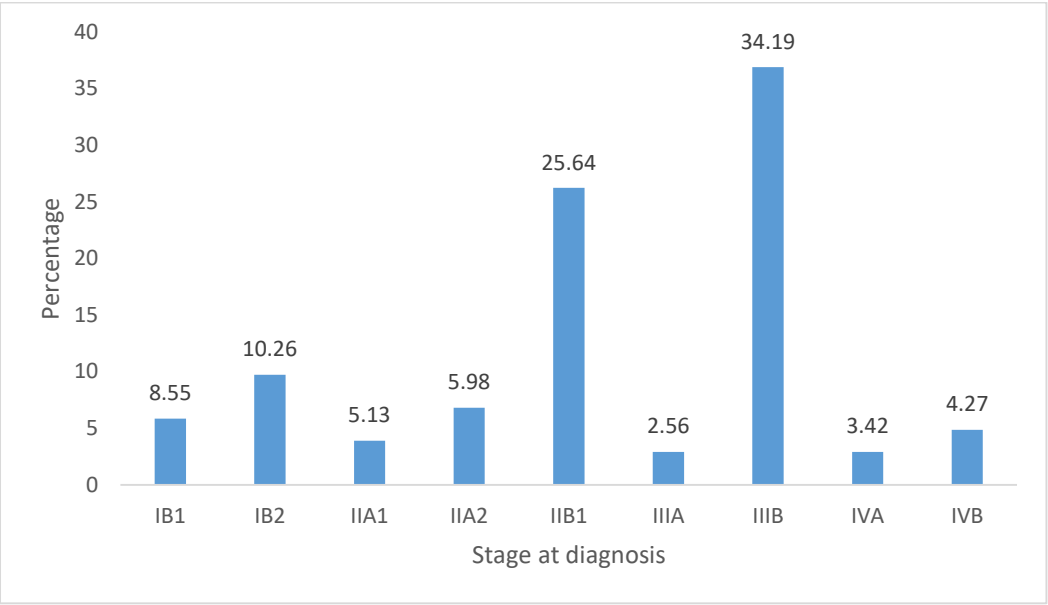

Figure 4: Distribution according to disease stage

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4.2: Knowledge about cervical cancer and the health seeking behaviour of participants.

From table 4 below, about two-tenth of the study respondents correctly knew the cause of cervical cancer while about 5 (4.3%) attributed cervical cancer to being a punishment by a deity for wrong doing. One person gave a log of wood falling on the leg as the cause of the cervical cancer. Also, with regards to the causative agent of cervical cancer, another person also mentioned "dirty blood" in the uterus. Regarding knowledge of risk factors associated with the development of cervical cancer, early start of sexual activity-16.2%, multiple sexual partner-35.0%, STIs- 29.9 %, use of birth control pill-18.8%, cigarette smoking 13.7% and multiparity-15.4 % were reported by the participants.

Among the respondents the following are the known warning signs of cervical cancer: vaginal bleeding in between periods- 18%, post coital bleeding-16%, persistent offensive vaginal discharge- 27.4%, post-menopausal vaginal bleeding- 37.6% and unexplained weight loss-18.8%. Only 22.2% of the study respondents had previous knowledge of cervical cancer having cure as observed in Table 4.

Table 4: Description of knowledge in cervical cancer by women with cervical cancer receiving concurrent chemo radiotherapy treatment at KBTH (n=117)

	Frequency	Percentage
Knowledge of causes		
Infection with HPV	22	18.80
Punishment by a deity	5	4.27
Don't know	88	75.21
Others	2	1.71
Knowledge of risk factors		
Early start of sexual activity		
Yes	19	16.24
No	98	83.76
Multiple sexual partners		
Yes	41	35.04
No	76	64.96

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Multi parity		
Yes	18	15.38
No	99	84.62
Sexually Transmitted Infections		
Yes	35	29.91
No	82	70.09
Cigarette smoking		
Yes	16	13.68
No	101	86.32
Use of birth control pills		
Yes	22	18.80
No	95	81.20
Knowledge of warning signs		
Vaginal bleeding in between periods		
Yes	21	17.95
No	96	82.05
Post coital bleeding		
Yes	19	16.24
No	98	83.76
Persistent offensive vaginal discharge		
Yes	32	27.35
No	85	72.65
Post-menopausal vaginal bleeding		
Yes	44	37.61
No	73	72.39
Unexplained weight loss		
Yes	22	18.81
No	95	81.19
Knowledge of Cure		
Yes	26	22.22
No	91	77.78

Table 5 presents the distribution of the health seeking behaviour of the study participants. Out of the 117 women interviewed, 88 (75.2%) of them sought to a health facility as their first choice of initial treatment however, the remaining 24.79% chose traditional healers, self-medication, prayer camps and pharmacy shops as their first choice of treatment. 50% of the respondents made at most three (3) visits to a health facility before diagnosis while 25% of the respondents made at least 5 visits before diagnosis. Majority of the repeated case occurred

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within the same facility. About 80% of the cases were diagnosed in government owned health facilities.

Table 5: Health seeking behaviour of the women in the study

	Frequency	Percentage
Choice of initial treatment		
Self-medication	15	12.82
Traditional healer	9	7.69
Prayer camp	2	1.71
Pharmacy shop	3	2.56
Health facility	88	75.21
Number of visits before diagnosis:		
Median (LQ,UQ)	3.00(3.00,5.00)	
Place of repeated visits		
With the same facility	56	47.86
Different care providers within the same facility	18	15.38
Different care providers	43	36.75
Diagnosing facility		
Government	93	79.49
Private	18	15.38
CHAG	6	5.13

4.3 Patient timeliness for cervical cancer treatment.

The median number of weeks for the measurement of the various categories of delays in the study are reported in table 6 below. In primary or patient delay that is the time lag from the onset of initial symptoms to first contact with a health facility, 50% of the respondents made their first presentation to a health facility at most 28 weeks after the onset of initial symptoms. However from Table 6, 25% of the respondents reported at most 16 weeks from the onset of symptoms while 75% of them presented to a health facility after at most 48 weeks from the

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onset of symptoms. In Table 6, about 26% experienced a significant patient delay that is delaying more than 12 weeks to 26 weeks while a little over 50% had prolonged (delaying over 26 weeks before first contact with a health facility concerning cervical cancer) patient delays.

The average time spent between the first presentation to a health facility and definitive diagnosis was 2.6 weeks with most of the diagnosis done after two weeks of presentation. About 6 out of every 10 cases of the respondents were treated within two weeks after definitive diagnosis. From Table 6 below, total delay which is the time period between the onset of initial symptoms and treatment initiation showed that 99 (84.6%) of all cervical cancer cases in the study were generally delayed.

Table 6: Measurements of delay

Initial symptoms to first contact with a health facility(HF)(weeks)	**Frequency**	**Percentage**
Median (LQ,UQ)	28(16, 48)	
=< 12 weeks	28	23.93
>12-26 weeks	30	25.64
>26 weeks	59	50.43
First contact with HF to histological diagnosis (weeks)		
Mean ± SD	2.59 ± 1.29	
≤ 2 weeks	39	33.33
>2 weeks	78	66.67
Histological diagnosis to treatment initiation (weeks)		
Median (LQ,UQ)	1.62 (1.08, 2.60)	
≤ 2 weeks	72	61.54
>2 weeks	45	38.46
Onset of initial symptoms to treatment initiation (weeks)		
Median (LQ,UQ)	31.50(19.40, 52.23)	
≤ 16 weeks	18	15.38
>16 weeks	99	84.62

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Table 7: Association between socio demographic factors and patient delay.

	Patient delay				
	≤ 12 weeks	13-26 weeks	>26weeks	chi-square	p-value
Age				1.549	0.463
35-50	10(26.32)	7(18.42)	21(55.26)		
51-82	18(22.78)	23(29.11)	38(48.10)		
Marital status					0.444
Married	12(18.75)	14(29.11)	38(59.38)		
Single	3(30.00)	3(30.00)	4(40.00)		
Divorced	6(25.00)	6(33.33)	10(41.67)		
Widowed	7(36.84)	5(26.23)	7(35.84)		
Residence				3.400	0.493
Rural	8(22.86)	6(17.14)	21(60.00)		
Peri-urban	11(26.83)	10(24.39)	20(48.78)		
Urban	9(21.95)	14(34.15)	18(43.90)		
Highest educational level					0.731
No formal education	7(25.93)	9(33.33)	11(40.74)		
Primary	4(21.05)	6(31.58)	9(47.37)		
JHS	7(33.33)	3(14.29)	10(52.38)		
Secondary	4(16.00)	5(20.00)	16(64.00)		
Tertiary	6(24.00)	7(28.00)	12(48.00)		
Religion					0.258
Christian	24(24.00)	23(23.00)	53(53.00)		
Muslim	4(23.53)	7(41.18)	6(35.29)		
Employment status					0.095
Unemployed	2(10.53)	2(10.53)	15(78.95)		
Salary worker	2(16.67)	2(16.67)	8(66.67)		
Self employed	18(26.87)	19(28.36)	30(44.78)		
Retired	6(31.58)	7(36.84)	6(31.58)		
Income Status					0.943
Sufficient but no savings	2(13.33)	4(26.67)	9(60)		
Sufficient with remittance	9(32.14)	5(17.86)	14(50)		
Sufficient with savings	4(22.22)	5(27.78)	9(50)		
Insufficient but no loan	10(23.26)	13(30.23)	20(46.54)		
Insufficient and had loan	3(23.08)	3(23.08)	7(53.85)		
Method of payment				0.4858	0.784
Self	13(24.53)	15(28.30)	25(47.17)		
Family	15(23.44)	15(23.44)	34(53.13)		
Initial Treatment					<0.001*
Self –medication	0(0.00)	4(26.67)	11(73.33)		

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Traditional healer	0(0.00)	3(33.33)	6(66.67)
Prayer camp	0(0.00)	0(0.00)	2(100)
Pharmacy shop	2(66.67)	0(0.00)	1(33.33)
Health facility	26(26.55)	23(26.14)	39(44.32)

From the test of independent association, choice of initial treatment was significantly associated with patient delay ($p<0.05$).

Table 8: Association between clinical symptoms and patient delay.

	Patient delay				
	=< 12 weeks	13-26 weeks	>26weeks		
Bleeding in between periods				1.270	0.530
No	21(21.88)	25(26.04)	50(52.08)		
Yes	7(33.33)	5(23.81)	9(42.86)		
Post coital bleeding					0.846
No	25(24.75)	26(25.74)	50(49.50)		
Yes	3(18.75)	4(25.0)	9(56.25)		
Persistent offensive vaginal discharge				0.7170	0.699
No	21(25.93)	21(25.93)	39(48.45)		
Yes	7(19.44)	9(25.0)	20(55.56)		
Post-menopausal bleeding				0.7609	0.684
No	12(22.64)	12(22.64)	29(54.72)		
Yes	16(25.0)	18(28.13)	30(46.88)		
Unexplained weight loss					0.900
No	26(24.07)	27(25.0)	55(50.93)		
Yes	2(22.22)	3(33.33)	4(44.44)		
Lower abdominal pain				3.019	0.221
No	21(21.88)	23(23.96)	52(54.61)		
Yes	7(33.33)	7(33.33)	7(33.33)		

From the test of independent association, none of the socio demographic factors was significantly associated with total delay ($p>0.05$).

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4.4: Factors associated with longer diagnostic delays

Table 9 below displays the association between institutional factors and secondary delay. Place of repeated visits was identified to be significantly associated with secondary delay. Thus the proportion of patients who sought care from different care providers in different health facilities reported a higher secondary delay than those who attended the same health facility. Patients with secondary delay had significantly higher mean number of visits (4.77 versus 2.69, p<0.001) as compared to patients who did not experience any significant diagnostic delays.

Table 9: Association between clinical factors and secondary delay

	Secondary delay			
	≤ 2Weeks	>2weeks	Chi-square	p-value
Place were patients had repeated visits			18.42	<0.001
Within the same facility	28(50.0)	28(50.0)		
Different providers within the same facility	7(38.89)	11(61.11)		
Different care providers in different facilities	4(9.3)	39(90.7)		
Diagnosing facility				0.341
Government	28(30.11)	65(69.89)		
Private	8(44.44)	10(55.56)		
CHAG	3(50)	3(50)		
No of repeated visits before diagnosing: Mean ± SD	2.69 ± 0.14	4.77 ± 0.28	-6.58	<0.001

4.5: Proportion of cervical cancer patients who delayed in seeking treatment.

Among the two staging categories, only 20% of those who presented with early stages did not experience total delay whiles 90.4% of the late or advanced stages suffered total delays. Total delay was significantly associated with patient delay. Primary delay which is more than 12 weeks accounted for 84.62% of total delayed cases. Majority of the patients who experienced

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total delays were presented at late stages of cervical cancer. More than half of all non-total delayed and total delayed cases were secondary delays (79.49% and 87.18%) respectively. From the test of independent association in table 12, lower abdominal pain symptom was the only clinical factor significantly associated with total delay (p=0.03). The initial choice of treatment after onset of symptoms was significantly associated with both patient and treatment delays (p<0.001).

Table 10: Association between total delay and the various delays and stage of presentation

	Total delay			
	=<16 weeks	>16 weeks	Chi-square	p-value
Primary delay				<0.001
=<12 weeks	18(64.29)	10(35.71)		
12.1-26 weeks	0(0)	30(100)		
>26 weeks	0(0)	50(100)		
Secondary delay			1.182	0.277
=<2 weeks	8(20.51)	31(79.49)		
>2 weeks	10(18.06)	68(87.18)		
Third delay			0.876	0.349
=<2 weeks	11(17.81)	60(82.19)		
>2 weeks	5(11.35)	39(88.64)		
Stage categories			2.393	0.122
Early stage	13(20)	52(80.12)		
Late stage	5(9.62)	47(90.38)		

Table 11: Association between socio demographic factors and total delay

	Total delay			
Variable	< = 16 weeks	> 16 weeks	chi-square	p-value
Age			1.400	0.239
35-50	8(21.05)	30(78.95)		
51-87	10(12.66)	69(87.34)		
Marital status				0.386
Married	9(14.06)	55(85.94)		
Single	2(20.00)	8(80.00)		
Divorced	2(8.33)	22(91.67)		

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Widowed	5(26.32)	14(73.68)		
Place of residence			0.9109	0.634
Rural	7(20.0)	28(80.0)		
Peri-urban	5(12.50)	36(87.80)		
Urban	6(14.63)	35(83.37)		
Highest educational status				0.928
No formal education	5(18.52)	22(81.48)		
Primary	3(15.79)	16(84.48)		
JHS	4(19.05)	17(80.95)		
Secondary	3(12.0)	22(88.0)		
Tertiary	3(12.0)	22(88.0)		
Religion				0.725
Christian	15(15.00)	85(85.00)		
Muslim	3(17.65)	14(82.35)		
Employment Status				0.063
Unemployed	1(5.26)	18(94.74)		
Salary worker	2(16.67)	10(83.33)		
Self employed	12(17.91)	55(82.09)		
Retired	3(15.38)	16(84.21)		
Income Status				0.827
Sufficient but no savings	1(6.67)	14(93.33)		
Sufficient with remittance	4(14.29)	24(85.71)		
Sufficient with savings	3(16.67)	15(83.33)		
Insufficient but no loan	7(16.28)	36(83.72)		
Insufficient and had loan	3(23.08)	10(76.95)		
Method of payment			0.0063	0.937
Self	8(15.09)	45(84.91)		
Family	10(15.63)	54(84.38)		
Initial Treatment				
Self-medication	0(0.00)	15(100)		<0.001
Traditional healer	0(0.00)	9(100)		
Prayer camp	0(0.00)	2(100)		
Pharmacy shop	2(66.67)	1(33.33)		
Health facility	18(18.18)	72(81.82)		

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Table 12: Clinical features versus total delay

	Total delay			
Variable	< = 16 weeks	> 16 weeks	chi-square	p-value
Bleeding in between periods			3.4188	0.064
No	12(12.50)	84(87.5)		
Yes	6(28.57)	15(71.43)		
Post coital bleeding				0.711
No	15(14.85)	86(85.72)		
Yes	3(18.75)	13(81.25)		
Persistent offensive vaginal discharge				0.580
No	14(17.28)	67(82.72)		
Yes	4(11.11)	32(88.89)		
Post-menopausal bleeding			0.9031	0.342
No	10(18.87)	43(81.13)		
Yes	8(12.50)	56(86.5)		
Unexplained weight loss				0.627
No	16(14.81)	92(85.19)		
Yes	2(22.22)	7(77.78)		
Lower abdominal pain			4.683	0.03
No	12(21.50)	84(87.50)		
Yes	6(28.57)	15(84.62)		

4.6: Factors associated with timeliness of treatment initiation delay

The table below shows the reasons why respondents in the study delayed in presenting to a health facility when they started experiencing initial symptoms. Unaware of the severity of symptoms was identified as the common reason (74.36%) with lack of time being the least mentioned reason (9.4%).

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Table 13: Reasons for delayed presentation

Reasons for delayed presentation to a health facility	**Frequency**	**Percentage**
Unaware of severity of symptoms	87	74.36
Too embarrassed with symptoms	31	26.30
Fear of examination outcome	33	28.21
Cultural/ religious reason	16	13.68
Lack of time	11	9.4
Perceived cost of treatment	66	56.41
Institutional factors likely to cause delay		
Limited access to health facility	16	13.68
Frequent visits before diagnosis	36	30.77
Treated for something else	13	11.32
Cost of treatment	52	44.44
Who can reduce the delay		
Patient	37	31.62
Family	2	1.71
Health system	55	47.01
Government	23	19.66

From table 13, cost of treatment (44.44%) was identified to be the mostly reported institutional factor among the respondents attributed to causing delay in the treatment initiation. Respondents mentioned that improving the health system across the various levels can reduce the time lag from onset of symptoms and treatment initiation while admitting that patients also had a role to play in improving the timeliness of treatment initiation through early reporting to a health facility for prompt treatment.

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CHAPTER FIVE

DISCUSSION

This study investigated the timeliness of treatment initiation among cervical cancer patients receiving treatment at the RTC. The mean age of the respondents was 57.04 (±11.58). The median patient and treatment initiation timeliness were 28 and 31.5 weeks respectively while the mean diagnostic timeliness was 1.62 weeks. About 85% of the patients experienced total delay. The commonest tumour morphology identified was squamous cell carcinoma (86.32%) with 44.44% being diagnosed at stages III and IV of cervical cancer. Unaware of severity of symptoms (74.4%) and perceived cost of treatment (56.4%) were cited as the major reasons patients delayed in presenting to a health facility for treatment.

The mean age, 57 years at diagnosing is higher than observed in a study by Missaoui et al., (2010) in Tunisia (51.2 years). This cancer is mostly identified above 50 years because of its long precancerous phase of about 10 to 20 years. Thus, infection with the virus could occur in the late 20's and early 30's, and a woman would probably be in 40's or 50's before exhibiting signs and symptoms of locally advanced stage of the disease.

Delay in the initiation of treatment in cancer is the time period between the onset of initial symptoms and treatment commencement. The commonest initial symptom and 72 respondents being above 50 years observed in this study as post-menopausal bleeding among the respondents is in agreement to the above mentioned fact that CC is mostly seen in post-menopausal women. There have been several classifications of delay in the timeliness of treatment initiation by different publications as seen in Richards et al (1999), Ouasmani et al., (2017), Ouasmani et al., (2016) and Gyenwali et al., (2014). For the purposes of the study, the classifications by Ouasmani et al., (2017) was adopted. This classification were into three

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namely; patient delay, secondary delay and tertiary delays. According to Ouasmani et al., (2017), a period of more than 16 weeks from beginning of initial symptoms till treatment commencement is regarded as total delay. The median total delay found in this study was 31 weeks which is slightly higher than observed in Morocco which is reported as 27 weeks (Ouasmani et al., 2017).

More than half of the patients had patient delay, consistent with studies done in (Berraho et al., 2012) and (Ouasmani et al., 2016) both done in Morocco. Squamous cell carcinoma accounted for 85.85% while Adenocarcinoma recorded only 11.32% which is consistent with findings from Sudan among others (Gien, Beauchemin, & Thomas, 2010 ; Ibrahim, Rasch, Pukkala, & Aro, 2011 & M.K., a., S., & H., 2011).

Findings of this study are a sharp contrast to that observed in Sudan as age, place of residence at the onset of initial symptoms and highest level of education attained by the women were found to be significantly associated with patient and total delays (Ouasmani et al., 2016). Out of the 117 women, 52 (44.4%) presented with late or advanced (III&IV) stages of cervical cancer and about 90% of those who presented with advanced stages experienced total delay. Patient or primary delay which is the time lag of more than 12 weeks from the onset of initial symptom till first presenting to a health facility with the experiencing symptom accounted for 88.6%, secondary, 70.5% and treatment delay, 40.9%. Patient delay was significantly associated with total delay. Over half 89 (76.07%) of the women spent over 90 days before reporting to a health facility after the onset of initial symptoms and experienced patient delay.

Simon and his colleagues admitted that high proportion of patient delay may be due to low knowledge level and unaware of the severity of the symptoms experiencing among patients with cervical cancer symptoms causing them to delay before presenting to a health facility (Simon et al, 2011).

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In the present study, it was observed that previous knowledge about HPV causing cervical cancer was very low which is in line with findings from other African countries like Kenya and Nigeria (Wamburu, Busakhala, Owuor, & Nyagero, 2016 & Anorlu et al., 2004). Only about 19% of the respondents and a similar percentage (22%) knew about the cause being HPV and it being curable. There was an observed higher proportion of stages IIA and below (29.92%) as compared to 19% in Nepal (Gyenwali et al., 2014).

Various reasons were given by the respondents in this study for delaying in presenting to a health facility after onset of initial symptoms were noticed. Being unaware of the severity of symptoms and perceived cost of treatment were the commonest deterring reasons for patient delaying presentation to a health facility for treatment. Low socio economic status and educational levels may might have accounted for the delays as cost of perceived treatment was among the reasons cited for not reporting early to a health facility for prompt diagnosis and treatment. These same reasons were cited by Macleod et al, (2009) as the most predominant patient delay factor in all cancer cases.

The results of this findings agrees with earlier report by Price and his colleagues as a challenge to cancer care in developing countries (Price, Ndom, Atenguena, Mambou Nouemssi, & Ryder, 2012). Secondary delay was observed to be due to multiple visits to health facilities before definitive diagnosis. The frequent visits may be due to the inability of the primary care provider to appropriately recognise the symptoms patient is presenting with due to inexperience thereby delaying referrals to the appropriate facilities for treatment to commence (Macleod et al., 2009). Lack of equipped laboratories especially in the rural areas may have accounted for the prolonged time lag since samples would have to be transported to urban areas for analysis and then results sent back to the primary care provider. Since treatment with concurrent chemo radiation of cervical cancer is not covered by the National Health Insurance, sources of funding for treatment were 45% for personal savings and 56% for family and friends creating a lot of

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financial and psychological burden on the patients and families as in the case of many African countries (Price et al., 2012). Again, in the study "Factors associated with late presentation of cancer" by Almuammar et al, (2010), fear of examination outcome was found to be associated with patient delay. Fear of treatment outcome contributed 29.3% of the reasons for late presentation.

The initial choice of treatment opted by the patients in this study after the onset of symptoms were found to be significantly associated with both patient and total delays. Diagnostic delay however was not found to be significantly associated with total delay. There was a strong evidence observed between lower abdominal pain as a symptom experienced by patients and cancer delays which is consistent with findings from Macleod et al., (2009). The major risk factor for patient to delay in presenting to a health facility with a cancer symptom is their inability to interpret the seriousness of the symptoms. Cancer symptoms that are vague in nature and atypical are likely to result in patients delaying before presenting to a health facility for treatment in the advanced stages of the disease; but symptoms that are alarming like bleeding and the presence of a lump often results in early reporting to a health facility for assessment as these symptoms affect their activities of daily living and also burden them psychologically. A study conducted in Asia concluded that it may be due to the fact that patients consider gynaecological bleedings such as post coital, inter-menstrual and post-menopausal as emergencies as compared to lower abdominal pain (Berraho et al., 2012).

According to the respondents in the current study, institutional factors that delayed their presentation and treatment were high cost of treatment (41.5%) and frequent visits to a health facility before diagnosis (32%). The number of repeated visits before diagnosis which recorded a mean of 2.14 weeks and the facility where the repeated visits occurred were significantly associated with secondary delay. A study in India identified the lack of appropriate referral systems in the management of cancer causing a delay in the referring patients to tertiary

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hospitals and consultations with unqualified or inexperienced practitioners as accounting for most institutional delays. It also revealed that the high cost of treatment of cancers worsened the problem of delays in the treatment initiation process (Tiwari et al., 2015).

Findings of this study concurs with the situation in India as high cost of treatment was the main factor patient cited as an institutional factor that accounted for the delay in their treatment initiation process. Patients receiving concurrent chemo radiation treatment for cervical cancer in Ghana pays approximately 5,000 Cedis. This does not include surgery and laboratory investigations which is high for the average women to pay. Macleod et al., (2009) found misdiagnosing and symptomatic treatment as factors that cause delays institutionally. Symptomatic treatments may have accounted for the frequent visits to health facilities before definitive diagnosis was observed even though the causes of the frequent visits were not ascertained in this study.

The low level of knowledge about cancer and its management among health care professionals and also the neglect by government in the provision of adequate infrastructure for the management of cancers were identified as resulting in delays since there would be overcrowding and utilisation of the few available resources causing constant breakdown of available equipment in neighbouring Nigeria (Price et al., 2012) with institutional delay accounting for 46.2% of delays in the treatment initiation of patients with cervical cancer (Oladeji et al., 2016). There are only two government facilities in the country that can offer concurrent chemo radiation services to patients within Ghana and the neighbouring countries with locally advanced stages of cervical cancer making prompt treatment virtually impossible since the numbers are a lot always causing back log.

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Limitations

1. Being a cross-sectional study, recall bias was anticipated to some extent since patients had to remember the time they actually started experiencing the various symptoms and the date they first reported to a health facility. To reduce this bias in relation to the dates, those first visit dates were retrieved from the hospital cards and folders from the first point of call if they were available. When not available or if the patient could remember the year, month and week of first contact with a health facility, such dates were approximated.
2. Newly referred patients to the unit were not included in the study due to the breakdown of the radiotherapy simulator machine which is used for delineating the treatment field to be treated and hence findings of this study might not be the true reflection of the timeliness of care during the data collection period and hence cannot be generalized.

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CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Less than half of the cervical cancer cases (44.46%) in this study were diagnosed at advanced stages. Delay occurred in all periods in patient's journey from onset of initial symptoms to treatment initiation. Among the delays, patient delay is of crucial importance because of its longer span. There is limited knowledge about cervical cancer by most women in the surveyed population. Cost of treatment deterred a lot of patients from presenting early for treatment at the RTC.

6.2 Recommendations

Based on the findings from this study, the following are recommended

Government

- Should subsidized the cost of treatment or incorporate it in the RMNCH to eliminate the barrier of cost in the treatment process.

Ministry of Health

- Should implement an effective screening programme targeting the WHO screening recommended group (30- 49 years women) to aid in the early detection of CC for prompt treatment thereby reducing unnecessary delays.
- Should liaise with the NCCE in organizing continuous health programs on cervical cancer especially in the under privileged women in the rural areas.
- Should develop a national protocol for the management of cervical cancer to reduce the multiple visits to health facilities before definitive diagnosis which was significantly associated with secondary delays.

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Health workers

- Should conduct public education and targeted community outreaches to create awareness of cervical cancer and the need for early self -reporting of symptoms to health facilities for investigations.
- Should educate all female clients encountered during their course of duty on gyneacological health issues since awareness of signs and symptoms promotes early presentation for treatment.

Women

- Should be responsible for their own health and report any unusual gyneacological symptoms immediately to a health facility as early detection greatly improves the chances of favourable treatment outcomes and prognosis.

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APPENDICES

APPENDIX A: PARTICIPANTS INFORMATION SHEET

TITLE: EVALUATION OF THE TIMELINESS OF TREATMENT INITIATION AMONG CERVICAL CANCER PATIENTS AT THE NATIONAL RADIOTHERAPY CENTRE, KORLE-BU

Hello, my name is Fakyewaa Opoku, a post graduate student from the School of Public Health, University of Ghana. I am carrying out a study in this department to evaluate the timeliness of treatment initiation among patients with cervical cancer.

General information about Research: You are been requested to participate in a research to evaluate the timeliness of treatment initiation among cervical cancer patients. Please read the form carefully OR THE FORM WILL BE READ TO YOU IN THE LANGUAGE YOU UNDERSTAND. Please ask any question you may have before agreeing to take part in the study.

If you agree to take part in this study, we will conduct an interview with you. The interview will take about 15 minutes to complete. This would be done while awaiting your time treatment or consultation or after completion of your session at a designated desk away from others and would not in any way interfere with your care plan. Additionally, your demographic information, information about your disease and treatment will be obtained from your medical chart and your clinical team with your permission.

Possible Benefits: There will be no payment made to you.

Possible Risks: Apart from emotional discomfort that would accompany some of the questions asked and the extra time that would be required to complete the questionnaire, this study would possess no harm to you.

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Confidentiality: The records of this study will be kept private and used for academic purposes only. Report will not include any information that will make it possible to identify you.

Additional cost and compensation: I do not anticipate any additional cost that you will incur as a participant of this study. No compensation either in cash or kind will be given to you.

Participating in the study will not affect the current or future relationship with the Centre. If you decide to take part, you can withdraw at any time. However, you are welcome to discuss any concern with us before taking any decision.

Contact for Additional Information

Your right as a participant: This research has been reviewed and approved by the Ethical and Protocol Review Committee of the Korle-Bu Teaching Hospital. If you have any question about your right as a research participant, you can contact the KBTH-IRB Administrator, Mr Victor Nortey (Tel: 0302 667759) between the hours of 8am and 5pm.

You will be given a copy of this form to keep for your records

If you have any further questions concerning this study please contact Fakyewaa Opoku on (Tel: 020 8095241 or E-mail: fyopoku@gmail.com).

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APPENDIX B: VOLUNTER AGREEMENT

The above document describing the benefits, risks and procedures for the research: **Evaluation of the Timeliness of Treatment Initiation among Cervical Cancer Patients at the National Centre for Radiotherapy, Korle-Bu** has been explained to me. I have been given the opportunity to have questions about the research answered to my satisfaction. I agree to participate as a volunteer.

…… ……..

Date Name and Signature (or Thumbprint)

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

…… …….

Date Name and Signature (or Thumbprint)

I certify that the nature and purpose, the potential benefits, the possible risks associated with participating in this study have been explained to the above individual.

…….. …….

Date Name and Signature of person who obtained consent

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APPENDIX C: QUESTIONNAIRE

Instructions

Kindly answer the following questions by ticking (✓) or writing when necessary in the spaces provided.

SECTION A SOCIO- DEMOGRAPHIC INFORMATION

1. Participant's Number ……..
2. Date of Birth/ Age ……../……/……..

   Day Month Year
3. Marital status

   ……. (1) Married

   ……. (2) Single

   ……. (3) Divorced

   ……. (4) Widowed

   ……. (5) Cohabiting
4. Level of education

   ……. (0) No formal education

   ……. (1) Primary

   ……. (2) JHS

   ……. (3) Secondary

   ……. (4) Tertiary
5. Place of residence at onset of initial symptoms

   …… (1) Rural

   …… (2) Peri-urban

   …… (3) Urban

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6. Religion

……. (0) Christian

……. (1) Muslim

……. (2) Traditionalist

……. (3) Others ……

7. Employment

…….. (1) Unemployed

…….. (2) Salary Worker

…….. (3) Self Employed

…….. (4) Retired

8. Income Status

…….. (1) Sufficient but no savings

…….. (2) Sufficient with remittance

…….. (3) Sufficient with savings

…….. (4) Insufficient but no loan

…….. (5) Insufficient and had loan

9. Method of payment for cost of treatment

…….. (1) Self

…….. (2) Family

…….. (3) Loan

…….. (4) Insurance

…….. (5) Other ……

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SECTION B PATIENT'S KNOWLEDGE ON CERVICAL CANCER

10. What causes cervical cancer?

…… (1) Infection with HPV

…… (2) Punishment by a deity

…… (3) Don't know

…… (4) Others ……

11. What are the risk factors for cervical cancer? Tick as many that apply

…… (1) Early start of sexual activity

…… (2) Multiple sexual partners

…… (2) Multi parity

…… (4) Sexually transmitted infections

…….... (5) Cigarette Smoking

…… (6) Use of birth control pills

12. What are the warning signs of cervical cancer? Tick as many that apply

…… (1) Vaginal bleeding between periods

…… (2) Vaginal bleeding during or after sexual activity

…… (3) Persistent offensive vaginal discharge

…… (4) Post-menopausal vaginal bleeding

…… (5) Unexplained weight loss

13. Did you know cervical cancer have a cure?

…….. (0) Yes

…….. (1) No

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14. What was the initial symptom you noticed?

..... (1) Vaginal bleeding between periods

…… (2) Vaginal bleeding during or after sexual activity

…… (3) Persistent offensive vaginal discharge

…… (4) Post-menopausal vaginal bleeding

…… (5) Unexplained weight loss

..... (6) Abdominal pain

SECTION C HEALTH SEEKING BEHAVIOUR

15. Where did you first seek treatment?

……. (1) Self medicated

……. (2) Traditional healer

…… (3) Prayer camp

……. (4) Pharmacy shop

……. (5) Health facility

16. What informed you to choose the treatment option above?

…….. (1) Cheaper

…….. (2) Closer

..... (3) Better care

…… (4) Not a "hospital" disease

17. How many visits did you make to the care providers before a final diagnosis was made?

…… (Number)

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18. Where did you have the repeated visits?

…….. (1) With the same facility

…….. (2) Different care providers in the same facility

……. (3) Different care providers (alternative medicine, traditional and spiritual healers, health facilities)

19. What type of facility finally diagnosed the disease?

…… (1) Government

…….. (2) Private

…….. (3) CHAG

SECTION D ESTIMATION OF TIMELINESS & CLINICAL DATA

20. How long did it take you to seek treatment after onset of symptoms?

……. Days

……. Weeks

……. Months

21. Date of first contact with a health care provider

……../……../……..

22. Date of diagnosis

……../……../……..

23. Date of referral to RTC

……./……../……

24. Date of first appointment at RTC

……/……./…….

25. Date for Simulation

……/……../……

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26. Date for treatment commencement

……../……./……..

27. Type of cervical cancer per histopathology

……. (1) Squamous cell carcinoma

……. (2) Adenocarcinoma

..... (3) Adenosquamous

……. (4) Others (…….)

28. Stage of cervical cancer

…….	(1)	Stage 0	…….	(2)	Stage Ia1
…….	(3)	Stage Ia2	…….	(4)	Stage Ib1
…….	(5)	Stage Ib2	…….	(6)	Stage IIa1
…….	(7)	Stage IIa2	…….	(8)	Stage IIb1
…….	(9)	Stage IIIa	……..	(10)	Stage IIIb
…….	(11)	Stage IVa	…….	(12)	Stage IVb

29. What factors might have made you to delay seeking treatment from the onset of initial symptoms? Tick as many as apply

……. (1) Not aware of the severity of the symptoms

……. (2) Too embarrassed with symptoms

..... (3) Fear of examination outcome

……. (4) Cultural/religious reason

……. (5) Lack of time

…….. (6) Perceived cost of treatment

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30. What facility/ institutional factor is likely to contribute to the delay in treatment initiation?

…….. (1) Limited access to a health facility

…….. (2) Frequent visits to the hospital before diagnosis

…….. (3) Treated for something else

…….. (4) Cost of treatment

31. Who do you think can better reduce the time lag between onset of initial symptoms and treatment commencement?

……..(1) Patient

……... (2) Family

……... (3) Health system

…….. (4) Government