

**INITIAL CLINICAL PRESENTATION OF CERVICAL CANCER
PATIENTS AT THE PIETERSBURG HOSPITAL, LIMPOPO
PROVINCE, SOUTH AFRICA**

by

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DECLARATION

I declare that the "Initial clinical presentation of cervical cancer patients at the Pietersburg Hospital, Limpopo Province, South Africa" is my own work and that all the sources that I have used or quoted are indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

<u>EDMIA MAITE MOHUBA</u>	<u></u>	<u>15/05/2016</u>
Full names	Signature	Date

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DEDICATION

I dedicate this study to my husband, Dinkwanyane Kgalema Mohuba, and three daughters; Thato, Tiisetso and Dimpho; for their encouragement during my health-related difficulties. I would not have succeeded without their love and support.

ABSTRACT

Cervical cancer is a serious public health problem in both developed and developing countries. It is said to be the leading cause of death for women from developing countries as compared to other types of cancers.

The aim of the study was to determine the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital, Limpopo Province in South Africa. The objectives were to establish the demographic profile of cervical cancer patients, to identify the stage at initial clinical presentation, and to describe the factors that led to initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in Limpopo Province, South Africa.

The researcher conducted a quantitative retrospective cross-sectional survey by examining the records of cervical cancer patients seen for a period of three years from January 2012 to December 2014 at the Pietersburg.

The results indicated that most patients, particularly the elderly, presented for the first time at the hospital with advanced stages of cervical cancer. Factors, such as age and place of residence contributed to this late presentation.

There is a need for improved data capturing of information about marital status and parity to further assess the influence these two elements might have on the clinical presentation of cervical cancer. Furthermore, availability and facilities for screening should be improved because early detection of cervical cancer prevents progression to advanced stage of the disease. More awareness campaigns about risk factors of cervical cancer have to be implemented and a study is needed to establish why most patients with advanced stage cervical cancer are from Sekhukhune and Vhembe Districts, particularly the former Venda and Gazankulu Regions.

DEFINITION OF CONCEPTS

Biopsy

Biopsy is a procedure performed for removal and histological examination of tissue for diagnostic verification of a suspected malignancy (Rubin & Williams, 2001).

Biopsy in this study, refers to the procedure that is performed when tissue from the mouth of the cervix of a patient who presents for an initial consultation with suspected cervical cancer at the Pietersburg Hospital is removed and examined microscopically to determine whether it is cancerous or not.

Specimen

Specimen is a small sample or part taken to show the nature of the whole, for example a small quantity of urine for analysis, or a biopsy for microscopic study (Saunders, 1995). In this study, a sample means a piece of a tissue aspirated from the mouth of the cervix of a patient who visits the Pietersburg Hospital for an initial consultation.

Cancer

Cancer is also known as malignant neoplasm and a disease when a group of cells displays uncontrolled and uncoordinated growth, invasion, and sometimes spread to other locations in the body via lymph fluid or blood (Franco & Rohan, 2002).

Cervical cancer (cancer of the cervix)

Cervical cancer is the cancer of the neck of the uterus. The tumour may develop either from the surface epithelium of the cervix, or from the epithelial lining of the cervical canal. Cervical cancer can be detected at an early stage of its development (Oxford Concise Medical Dictionary, 2010). In this study, cervical cancer confirms cervical cancer cases that report at the oncology unit of the Pietersburg Hospital.

Pap smear

Pap smear is a test used to detect treatable preinvasive / precursor lesions that can progress to invasive carcinoma (Berek & Hacker, 2000). It uses exfoliative cytology as a method for the screening of cervical carcinoma. Optimal cytological samples include a cervical scrape, endocervical sampling with a brush, and collecting cells from the 'posterior vaginal pool' (Rubin & Williams, 2001). In this study, a pap smear describes the procedure performed in order to take a scraping off the surface of the cervix of a patient with a wooden spatula when she visits the Pietersburg Hospital for an initial consultation to check whether there are cancer cells or not.

LIST OF ABBREVIATIONS

ANOVA – Analysis of variance

DoH – Department of Health

FIGO – International Federation of Gynecology and Obstetrics

LRS – Late rectal sequelae

RVF – Rectovaginal fistula

TREC – Turfloop Research Ethics Committee

VVF – Vesicovaginal fistula

WHO – World Health Organization

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Cervical cancer is a serious public health problem in both developed and developing countries. Globally, cancer statistics show that of the 5.1 million estimated new cancer cases, cervical cancer accounted for 493 000 new cases and 273 000 deaths worldwide (Sankaranarayanan, 2006). Cervical cancer is said to be the leading cause of death of women from developing countries in comparison with other types of cancers. One important aspect is that patients present with locally advanced stage disease for which radiotherapy – an integral component of standard treatment – is less effective (Viegas, Arajo, Dantas, Froimtchuk, Oliveira, Marchiori & Souhami, 2004).

Cervical cancer was identified as the problematic type of cancer in Europe. Therefore, late 2003 the Council of European Union implemented population-based screening for cancer of the cervix in all member states of the European Union. That followed findings to the effect that cause-specific mortality could be reduced by offering cervical cytology screening to women (The Council of the European Union, 2003). However, an estimate of the cervical cancer burden in the European Union has indicated that the disease is still a public health crisis in Europe. This is exacerbated in new member states where the free Pap smear test is not yet available to a remarkable proportion of women. These results are seen in women consulting with an advanced stage of cervical cancer because they only consider medical treatment when they have symptoms.

Of the 31 000 diagnosed cervical cancer patients in countries in the European Union, about 45% die from the disease (Arbyn, Raifu, Autier & Ferlay, 2007). The conclusion of the above study suggests that the European member states should maintain cervical cancer programmes as proposed in the European Council Recommendation which proposes that women should do Pap smear screening for cervical abnormalities, starting between the ages of 20 and 30 and in cycles of 3 – 5 years. These results are similar to the observations by Levi, Lucchini, Negri, Franceschi, and Vecchia (2000) after observing variations in mortality across Europe with a decline in registered cervical cancer mortality in young women.

Cervical cancer is the most common gynaecological malignancy in China, with nearly 100 000 cases being diagnosed annually. This number accounts for one fifth of the total cases in the world (Maa, Zhub, Hana, Zhangc, Oua, Wanga, Zhao & Liua, 2012). In Uganda, cervical cancer is the most common malignancy with an estimated incidence of 46.5 per 100 000 of women. It is the leading cause of death due to gynaecological malignancies in that country. Most women are diagnosed with late-stage disease, when they are most likely to experience complications; such as anaemia, ureteric obstruction with hydronephrosis and hydroureter, uremia, and edema of the legs (Atuhairwea, Busingyeb, Sekikuboa, Nakimulia & Mutyabaa, 2011)

In South Africa, cancer of the cervix caused 3 700 deaths of women in 2002 (Denny, 2006). Cervical cancer screening guidelines are available in South Africa, which state that every woman attending public health facilities is entitled to three free Pap smears from the age of 30 years at intervals of ten years provided no smears have been taken within the previous five years (Department of Health (DoH), 2000). This is based on the progression from the precursor stage to cancer that takes approximately ten years. However, the uptake for cervical cancer screening remains very low based on these guidelines (Smith, Moodley & Hoffman, 2003). Studies conducted at the tertiary hospitals in developing countries report prevalence rates of 40% - 80% of cervical cancer (Basseyy, Ekpo & Abasiatai, 2007; Bowa, Wood, Chao, Chintu, Mudenda & Chikwenya, 2009; Agarwal, Malhorta, Sinha & Rajaram, 2012).

The Pietersburg Hospital is a referral hospital in the Limpopo Province that receives many patients, including patients suffering from different types of cancer. Most of the cancer patients, especially the ones with cervical cancer, come for treatment very late, when the cancer is already at an advanced stage. Monthly statistics at the oncology department illustrates that 70% of cervical cancer patients present with stage III and 10% with stage IV. Late presentation has negative consequences for the management and treatment of the disease. It was against this background that the study sought to examine the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in South Africa.

1.2 PRELIMINARY LITERATURE REVIEW

Worldwide, the number of new cases and deaths due to cervical cancer are 493 000 and 273 000 respectively. Cervical cancer is one of the most common cancers amongst women in many developing countries. It is estimated that more than 80% of all the new cases and deaths of cervical cancer will occur in the developing countries (Sankaranarayanan, 2006). This is due to factors associated with quality and coverage of Pap smear tests in developing countries and women who subsequently seek screening at a late stage of the disease. Developing countries have limited resources, infrastructure, and training. For example, a study conducted in Mexico City found that 55% of the women with cervical cancer seek care because they have symptoms (Lazcano-Ponce, Moss, DeRuiz, Castro & Avilla, 1999). In South Africa, a large number of women die due to cervical cancer (Bradshaw, Groenewald, Laubscher, Nannan, Nojilana, Norman, Pieterse, Scheneider, Bourne, Timaeus, Dorrington & Jihson, 2003).

1.2.1 Prevalence and demographic profile of cervical cancer patients

The screening programmes for cancer of the cervix were introduced in developing countries, but achieved very limited success in reducing the incidence and mortality of cervical cancer (WHO, 2001; WHO, 2002). In Botswana, a retrospective study of surgical biopsy specimens received at the National Health Laboratory illustrated that cervical cancer contributed 80% of all gynaecological cancers. The frequency of cervical cancer increased steadily over the four-year period of the study. The findings of this study illustrates that a large proportion (64%) of cervical cancer patients are between 30 and 59 years old (Tanko, Kayembe, Cainelli & Vento, 2012). Studies conducted in various hospitals in developing countries report cervical cancer as the leading gynaecological cancer among women. For example, in India, a study conducted between 1990 and 2004 demonstrates that cancer of the cervix is the second most common type of cancer (15%) in females (Sharma, Kumar, Jain, Jhahhria, Gupta, Gupta, Rawtani, Kohli, Prajapati, Gupta, Swamy, Pathak, Verma & Ratnawat , 2009). Another study conducted in India shows that cancer of the cervix (72%) is the commonest gynaecological cancer that affects patients between 45 and 49 years old (Agarwal *et al.*, 2012).

Bassey *et al.* (2007) conducted a study in Nigeria and found that cervical cancer is the commonest gynaecological cancer (49%). Another study at the Teaching University Hospital in Zambia reveals that cancer of the cervix (42%) is the most prevalent gynaecological cancer in women (Bowa *et al.*, 2009).

In South Africa, data about the incidence of cancer of the cervix had been unavailable until 1999 when the Cancer Registry was established. However, the Medical Research Council (MRC) reports cervical cancer (33.8%) as the commonest cancer among women in selected municipalities of the Eastern Cape Province between 1998 and 2002 (Somdyala, Bradshaw, Gelderbloem & Marasas, 2003).

1.2.2 Stages of cervical cancer

According to Kumar, Abbas, Fausto and Aster (2010); the stages of cervical cancer are:

Stage 0 – Carcinoma in situ, intraepithelial carcinoma;

Stage I – Carcinoma confined to the cervix;

Stage Ia – Pre-clinical carcinomas that is diagnosed only by microscopy;

Stage Ia1 – Stromal invasion no deeper than 3 mm and no wider than 7 mm (so-called micro invasive carcinoma);

Stage Ia2 – Maximum depth of invasion of stroma deeper than 3 mm and no deeper than 5 mm taken from the base of epithelium, horizontal invasion not more than 7 mm;

Stage Ib – Histologically invasive carcinoma confined to the cervix and greater than stage Ia2;

Stage II – Carcinoma extends beyond the cervix but not onto the pelvic wall. Carcinoma involves the vagina but not the lower third;

Stage III – Carcinoma has extended onto the pelvic wall. On rectal examination, there is no cancer-free space between the tumour and the pelvic wall. The tumour involves the lower third of the vagina; and

Stage IV – Carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder or rectum. This stage also includes cancers with metastatic dissemination that is spread to other organs.

1.2.3 Women’s knowledge of risk factors of cervical cancer

There are studies conducted in low and middle income countries to determine the knowledge and awareness of women with regard to cancer of the cervix (Anorlu, 2008; Hoque, Hoque & Kader, 2008; Snyman & Herbst, 2013; Ahmed, Sabitu, Idris & Ahmed, 2013). Anorlu (2008) finds that in Sub-Saharan Africa, more than 80% of women with advanced cervical cancer have never heard of cervical cancer before and believe that their advanced disease is curable. In Nigeria, Ahmed *et al.* (2013) reports that participants exhibited a fair knowledge of cervical cancer; however, their knowledge of risk factors was poor.

In South Africa, Snyman and Herbst (2013) reports in their study that knowledge and awareness of cervical cancer among women is poor; only 24% of the study participants had knowledge about the importance of cervical cancer screening. In a cross-sectional population based descriptive study about the knowledge and practices of risk factors for cervical cancer and Pap smear among rural community of South Africa, Hoque *et al.* (2008) have found that only 6% of the participants knew all the risk factors of cervical cancer while less than 50% of them knew that Pap smear was used for prevention and early detection of cervical cancer. The study also reports that 43% of the respondents received information about Pap smear from health care workers and 18% had never done a Pap smear test.

1.2.4 Presentation of cervical cancer patients in hospitals in different countries

Studies conducted in developing countries have shown that women often present at health care facilities with advanced stages (Stage III or IV) of cervical cancer. For example, a study conducted in Nigeria reports that 72% of women presented with Stage III cervical cancer at hospital (Anorlu *et al.*, 2004). A similar study at another hospital in Nigeria reports that 39.0% of women present with stage III and 17.1% with stage IV (Eze, Emeka-Irem & Edegbe, 2013). In India, the majority of cervical cancer patients present with Stage II (33%) and Stage III (35%) (Agarwal *et al.*, 2012). A study

conducted in Malaysian public hospitals reports 27% in 1998. The decline was due to improved coverage of the Pap smear tests. The coverage was 2% in 1992, 3.5% in 1995, 6.2% in 1996, and increased to 47.3% in 2006 (Devi, Tang & Cobrex, 2007). In South Africa, a descriptive study among patients diagnosed with cancer of the cervix at the Kalafong Hospital reports that 90% of women are diagnosed with advanced stage cervical cancer at their initial clinical presentation (Snyman & Herbst, 2013).

1.2.5 Complications associated with late presentation at hospitals

Complications associated with late presentation mostly are related to the damage that has already been done to the body and it becomes difficult to treat the patients with the standard treatment. In China, it is reported that a combination of external radiation therapy and intracavitary brachytherapy has been an effective standard treatment for advanced cervical cancer that improves local control and overall survival; however, it results in the incidence of late rectal sequelae (LRS). This is still a challenge for doctors and has a negative impact on the quality of life of the patients, especially when they report late stage LRS symptoms, such as rectovaginal fistulas (RVF). Interventions that help patients recognise the various early signs and symptoms of LRS may help control and prevent further deterioration of this complication. Therefore, recognition and reporting of early symptoms may contribute to lowering the incidence of RVF in Chinese patients (Maa *et al.*, 2012).

In a study conducted in Uganda, urologic complications including urinary tract infections, vesicovaginal fistula (VVF), ureteric obstruction, hydronephrosis, and renal failure have been found to increase the morbidity and mortality of women with advanced cancer. Some of the complications are due to the direct spread of the cancer and others arise as complications of surgery (Atuhairwea *et al.*, 2011).

1.3 PROBLEM STATEMENT

In developed countries, there has been a continual decline in the incidence and death rates of cervical cancer, mainly due to the establishment of organised cervical cancer screening programmes (Fisher & Brundage, 2009). In South Africa, the national guidelines for cervical cancer screening programmes clearly state that all asymptomatic women of at least 30 years of age should be offered three free lifetime Pap smears, up to 10 years apart (DoH, 2000). Despite these guidelines, the majority

of South African women are not screened and present late for treatment (Hoffmann, Cooper & Carrara, 2003; Hoque *et al.*, 2008; Snyman & Herbst, 2013; Peltzer & Phaswana-Mafuya, 2014).

Monthly statistics at the oncology department of the Pietersburg Hospital show that 70% and 10% of cervical cancer patients present with stage III and IV respectively (Pietersburg hospital, 2012). The stage at presentation influences the response to treatment (Pomros, Sriamporn, Tangvoraphonkchai, Kamsa-Ard & Poomphakwaen, 2007; Mascarello, Zandonade & Amorim, 2013). Early diagnosis, referral, and treatment of cervical cancer are of greater importance than any attempts to treat the disease in its late stages. However, at this rural tertiary hospital the extent and nature of stage at presentation remain unknown. Therefore, this study sought to determine the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital.

1.4 RESEARCH QUESTION

The research question guided the researcher throughout the study:

What is the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital?

1.5 AIM OF STUDY

The study sought to determine initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in South Africa.

1.6 OBJECTIVES

The objectives of this study were to:

- Establish the demographic profile (i.e. age, marital status, and place of residence) of cervical cancer patients during their initial presentation at the Pietersburg Hospital.
- Identify the stage at initial presentation of the cervical cancer patients at the Pietersburg Hospital.
- Describe factors that lead to the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in South Africa.

1.7 METHODOLOGY

The quantitative retrospective cross-sectional survey in this study was conducted in order to collect data by using a structured data collection tool (Brink, Van Rensburg & Van der Walt, 2012) to establish the stage of cervical cancer at initial clinical presentation of patients at the Pietersburg Hospital in South Africa.

1.7.1 Study site

The Pietersburg Hospital is a tertiary, referral, and academic hospital linked to the University of Limpopo. The hospital is situated in Polokwane City, Limpopo Province. The hospital has 500 beds with different specialties, including the oncology unit. The hospital has 24 wards. The oncology unit is divided into the radiation oncology and the medical oncology.

1.7.2 Study design

The study required a design to obtain survey data from a defined, random, cross-section of the population at the particular time of the study. That involved questioning respondents about their past and current behaviour (Ebrahim & Bowling, 2005). The retrospective cross-sectional survey were conducted in this study by checking the consultation records of cervical cancer patients for a period of three years from January 2012 to December 2014 at the Pietersburg Hospital. The records of cervical cancer patients who presented for the first time at the oncology unit of the Pietersburg hospital were studied to establish the initial clinical presentation of cervical cancer patients.

1.7.3 Study population and sampling

A population is a complete set of persons who share common characteristics that a researcher is interested to study (Brink *et al.*,2012). The study population was the records of all first time cervical cancer patients at the oncology unit of the Pietersburg Hospital from January 2012 to December 2014. The researcher used a probability random sampling technique to select the records of patients with initial presentation of cervical cancer at the Pietersburg hospital. The total number of 938 patients presented for the first time between January 2012 and December 2014. The records were stored

in numerically as electronic files and each patient was allocated a computer number when they first presented at the oncology unit. This computer number was used to create a profile for the patient and each time the patient visited the unit, information was just added chronologically. A total of 273 records that were in numerical order were selected by randomly selecting every third patient record for the purposes of this study. This sample was calculated by using the Krejcie and Morgan (1970) formula for determining the sample size for research activities.

1.7.3.1 Inclusion criteria

The survey included the records of females with cervical cancer who were registered for the first time in the oncology unit of the Pietersburg Hospital from January 2012 to December 2014.

1.7.3.2 Exclusion criteria

Records of females with cervical cancers who were not attended to for the first time in the oncology unit were excluded.

1.7.4 Data collection

The electronic files in the oncology unit were used to identify the records of patients who for the first time presented with cervical cancer problems at the Pietersburg Hospital between January 2012 and December 2014. The extended period of three years made it easier to determine trends. The researcher used the data collection tool to extract information from patients' records and recorded variables such as age, race, place of residence, parity, marital status, diagnosis and stage of cervical cancer at presentation. Since the study did not require face-to-face contact with the patients, the researcher requested consent from the hospital management for collecting data from the patients' records.

1.7.5 Data analysis

Data were analysed by using the Epi Info statistical software. The statistician at the University of Limpopo assisted and guided the researcher during the data analysis period. Data was interpreted in the format of frequencies and percentages. The researcher used appropriate tests to check the association between variables, for

instance the Chi-square test for categorical variables, e.g. age at diagnosis and parity. Comparison between groups (i.e. stage at presentation) was done by taking the t-test calculations into account for two groups and / or ANOVA for three or more groups. P-values of less than 0.05 were considered to be statistically significant.

1.7.5.1 Reliability and validity

Reliability refers to the consistency and dependability of a research instrument to measure a variable and validity refers to the ability of an instrument to measure the variable that it intends to measure (Brink, 2012).

The researcher had conducted a pilot study to evaluate the data collection tool before the actual data collection of the main study occurred. The pilot study also helped to determine whether the data collection tool was suited for accessing the patient files. Ten files were selected for the pilot study from the oncology unit at the Pietersburg Hospital and those files did not form part of the main study. That approach assisted in the researcher to restructure the data collection tool in preparation for the main study as some of the variables that were not that significant were dropped.

1.7.5.2 Bias

Selection bias was minimised by including all cervical cancer patients' records who presented for the first time to the oncology unit at the hospital through a random sampling method. Since most of the documentation was available from reports and clinical notes, it was possible to reconcile the information.

1.8 ETHICAL CONSIDERATIONS

Ethical clearance was sought from the Turfloop Research Ethics Committee (TREC) of the University of Limpopo. Permission to conduct the study was requested from Limpopo Department of Health Research Committee and the Pietersburg Hospital management. The researcher maintained confidentiality by not including the patients' name in the data collection tool and in the final research report. The researcher requested consent from the hospital management for collecting data from the patients' records, since the study did not involve direct contact with the patients.

1.9 SIGNIFICANCE OF THE STUDY

The Limpopo province is one of the rural provinces in South Africa and needs to take active measures to decrease mortality rates due to cervical cancer while decreasing the rate of late stage initial presentation of cervical cancer patients. The recommendations of this study might be utilised by Department of Health to address issues related to early screening for cervical cancer in order to assist local health care teams to develop proper interventions. Furthermore, the hospital management might assess the incidence of cervical cancer and identify the demographic profile of women who present late in order to assist them timely by planning appropriate interventions.

1.10 ARRANGEMENT OF CHAPTERS

Chapter 1: Overview of study;

Chapter 2: Literature view;

Chapter 3: Research methodology;

Chapter 4: Presentation and discussion of research results; and

Chapter 5: Conclusion, summary, limitations, and recommendations.

■ CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter contains the overview of this study and this chapter presents literature that relates to the initial clinical presentation of cervical cancer patients in different parts of the world, including South Africa and the context of this study. A literature review is conducted to comprehensively demonstrate the knowledge findings and methodologies from different studies about the issues in relation to cervical cancer and the cancer advancement stages at first clinical presentations (Brink *et al.*, 2012). The review also helps to link the research findings to the existing body of knowledge about the topic.

According to Brink *et al.* (2012), a literature review comprises a critical analytical appraisal of recent scholarly work on a particular topic. This approach assists a researcher with obtaining a comprehensive picture of the state of knowledge about the problem studied. It is also conducted to identify the research problem, refine the research questions, and place the study in the context of the general body of knowledge.

Furthermore, Creswell (2009) explains that a literature review is conducted to obtain clues about research methodology and instruments. A researcher obtains information about the research approaches and methods that he or she intends using. This literary foundation refines certain parts of a study; especially the problem statement, hypothesis, conceptual framework, design, and data analysis process.

Therefore, literature demonstrates the relevance of a study in the context of the existing body of knowledge and directs the planning and execution of a study. The literature review in this study focused on several aspects related to cervical cancer.

2.2 PREVIEW OF CERVICAL CANCER WORLDWIDE

Globally, cancer of the cervix is one of the most common cancers in women and the principal form of cancer found in women from developing countries (Muñoz, Bosch, De Sanjose, Herrero, Castellsagué, Shah & Meijer, 2003). Worldwide, the annual

number of new cervical cancer cases are reported to be 529 000 and the number of deaths due to cervical cancer are estimated at 275 000 (de Freitas, Gurgel, Chagas, Coimbra & Do Amaral, 2012). This shows an increase of 36 000 in new cases and 2 000 deaths due to cervical cancer in comparison to the projections of Sankaranarayanan (2006) who reported new cases and the number of deaths as 493 000 and 273 000 respectively. Cervical cancer is one of the most common cancers amongst women in many developing countries. It is estimated that more than 80% of all the new cases and deaths due to cervical cancer occurs in developing countries (Sankaranarayanan, 2006). This is due to factors associated with quality and coverage of Pap smear tests in developing countries that result in women seeking screening during the late stages of the disease. A study conducted in Mexico City found that 55% of women with cervical cancer sought care because they had symptoms (Lazcano-Ponce *et al.*, 1999). In South Africa, a large number of women die yearly due to cervical cancer because the patients seek medical help at the late stages of cancer (Bradshaw *et al.*, 2003).

2.3 PROBLEMS ASSOCIATED WITH RESOURCES AND CERVICAL CANCER STAGE PRESENTATION

Many epidemics around the globe are reported to have high rates in regions of low socioeconomic status. Cancer of the cervix still remains one of the most common health threats for women globally, and the principal form of threat for women in developing countries (Munoz *et al.*, 2003). Developing countries have limited resources, infrastructure, and socioeconomic inequities. The relations between non-communicable diseases – cervical cancer being one of them – are linked to education and income inequalities, since poverty and food insecurity are associated with poor personal health care (Drewnowski & Specter, 2004). Rates of non-communicable diseases are considered to follow a socioeconomic gradient with great prevalence noticed in people with limited resources and the poor (US Department of Health & Human Services, 2010). One study has shown that the rate of cervical cancer for women with a low income and low educational levels is higher than for their counterparts with a high income and high levels of education (Paeratakul, Lovejoy, Ryan & Bray, 2003). A study by Redman and Ravussin (2007) reveals that cancer is related to dietary, environmental, educational, and social behaviour, as well as the

income status of individuals. These factors play a vital role and influence clinical presentations of cervical cancer, mainly due to a lack of adequate knowledge about cervical cancer and the challenges that inhibit the ability to access and afford proper gynaecological health care.

2.4 PREVALENCE AND AGE GROUP PROFILES OF CERVICAL CANCER PATIENTS

Cancer remains one of the global health epidemics. The increasing prevalence of cancer remains a challenging factor in both developed and developing countries. Though studies indicate that the prevalence of cervical cancer is growing at an alarming rate in developing countries, new cases of cervical cancer are a remaining health problem in some regions of developed countries (Mohar & Frias-Mendivil, 2000; De Freitas *et al.*, 2012). Although screening programmes for cancer of the cervix have been introduced in developing countries, they are achieving very limited success rates of reducing the incidence of and mortality from cervical cancer (WHO, 2001; WHO, 2002). De Freitas *et al.* (2012) indicate that cervical cancer is highly prevalent in Sub-Saharan Africa (24%) when compared to eastern Europe (21.4%) and Latin America (16.1%). Research statistics show that the prevalence of cervical cancer globally stands at 11.7%; however, developing countries account for 85% of the cervical cancer population (Muñoz, Bosch, De Sanjose, Herrero, Castellsagué, Shah & Meijer, 2003; De Freitas *et al.*, 2012).

Research studies at various hospitals in mostly developing countries report cervical cancer as one of the leading gynaecological cancers among women (Munoz *et al.*, 2003; De Freitas *et al.*, 2012). A study conducted for a period of fourteen years (1990-2004) in India demonstrated that cancer of the cervix was a common malignancy in females at a prevalence of 15% (Sharma, Kumar, Jain, Jhajibhria, Gupta, Gupta, Rawtani, Kohli, Prajapati, Gupta, Swamy, Pathak, Verma & Ratnawat, 2009). Another study conducted in India showed that cancer of the cervix was the commonest form of cancer found in women, and that 72% of the affected patients were between 45 and 49 years of age (Agarwal *et al.*, 2012).

It is reported that Africa is the region with the highest risk of cervical cancer (Mohar & Frias-Mendivil, 2000). In Botswana, a retrospective study of surgical biopsy specimens

received at the National Health Laboratory by Tanko *et al.* (2012) illustrates that cervical cancer contributes 80% to all gynaecological cancers in the Batswana nation. The frequency of cervical cancer displays a steady increase over the four-year period of the study and the findings illustrate that a large proportion (64%) of cervical cancer patients are in the age group between 30 and 59 years (Tanko *et al.*, 2012). Bassey *et al.* (2007) have discovered in Nigeria that cervical cancer – as the commonest gynaecological cancer – has a prevalence rate of 49%. Another study at a Teaching University Hospital in Zambia reveals that cancer of the cervix has a prevalence rate of 42% while it is the most prevalent gynaecological cancer in women (Bowa *et al.*, 2009).

In South Africa, data on the incidence of cancer of the cervix had been unavailable until 1999 when the Cancer Registry was established. However, the Medical Research Council (MRC) reports cervical cancer (33.8%) as the commonest cancer among women in selected municipalities of the Eastern Cape Province between 1998 and 2002 (Somdyala *et al.*, 2003).

2.5 CAUSES OF CERVICAL CANCER

Due to the gap in literature, the mechanism of cervical cancer development remains poorly understood. However, several etiologic factors are regarded as playing a crucial role in the pathogenesis and development of cervical cancer. Epidemiological studies carried out throughout the years are supported by many molecular studies and have revealed considerable evidence that the Human Papillomavirus (HPV) plays a causal role in the development of cervical cancer (Bosch & Muñoz, 2002). Bosch and Muñoz (2002), explain that the HPV has been the first identified crucial cause of cervical cancer. They further explain that the association between cervical cancer and the causal role of HPV has been examined and evaluated under all the sets of causality, proposed and endorsed by major review institutions and the scientific community. Scientists widely regard HPV as the major cause of cervical cancer.

Amirian, Alder-Storthz and Scheurer (2013) indicate that some women infected with the HPV are able to clear infection and show no signs of adverse effects, while others do develop cancer as a result of their infection. Although infection with the HPV has been linked to the causal role of cancer of the cervix, the risks associated with the

different types of the papillomavirus have not yet been adequately evaluated (Muñoz *et al.*, 2003). Muñoz *et al.* (2003) describe some types of the papillomaviruses and classified them as high-risk, probable high-risk, or low-risk according to epidemiology and phylogenetic grouping (Table 2.1).

Table 2.1: Strain associated risks

Associated risk	HPV strain (type)
High-risk	16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, and 82
Probable High-risk	26, 53, and 66
Low-risk	6, 11, 40,42, 43, 44, 54, 61, 70, 72, 81, and CP6108

It is demonstrated and indicated that cervical cancer is a complex disease and that other factors play a role in the pathogenesis of the disease. Amirian *et al.* (2013) illustrate that the human herpes virus 6 (HHV-6) is present in the genital tract of most cervical cancer patients but there is little evidence to conclude that the HHV 6 could be a co-factor to the HPV associated and linked carcinogenesis. De Freitas *et al.* (2012) indicate that several environmental and genetic factors play an important role in a patient's susceptibility to cancer of the cervix. These researchers argue that the interaction of the HPV and its host relations are necessary but not significant to start cancer development. Hence, other factors are also considered to contribute to the development of cervical cancer; such as the HPV intra-type variability, genetic susceptibility, multiple HPV strain infections, host genome variability, co-infection with other agents (HIV, STIs, etc.), as well as an individual's lifestyle (De Freitas *et al.*, 2012).

2.6 STAGES OF CERVICAL CANCER

The clinical staging system for cervical cancer remains one of the key principal recommendations by the international Federation of Gynecology and Obstetrics (FIGO). Despite the known limitations (such as accuracy) of these recommendations with this system in comparison with pathological and surgical data, this system addresses fundamental parameters (Testa, Di Legge, De Blasis, Moruzzi, Bonatti, Collarino, Rufini & Manfredi, 2014). Testa *et al.* (2014) indicates that the FIGO classification includes important parameters; such as distant metastases, tumour

diameter, vaginal spread, parametrial involvement, infiltration of rectum mucosa or bladder wall, hydronephrosis, and hydroureter. Kumar *et al.* (2010) support Testa *et al.* (2014) when they describe the stages of cervical cancer according to the FIGO classification (Table 2.2 and Figure 2.1).

Table 2.2: Reflection of the FIGO classification of cervical cancer

Stage	Description
0	Carcinoma in situ, intraepithelial neoplasia.
I	Carcinoma confined to the cervix.
Ia	Pre-clinical carcinoma that is diagnosed only by microscopy.
Ia1	Stromal invasion no deeper than 3 mm and no wider than 7 mm in extension (so-called micro invasive carcinoma).
Ia2	Maximum depth of invasion of stroma deeper than 3 mm and no deeper than 5 mm taken from the base of the epithelium; horizontal invasion not more than 7 mm.
Ib	Histologically invasive carcinoma confined to the cervix and greater than stage Ia2.
Ib1/2	Tumour is clinically visible and greater than 4 cm.
Ila	Carcinoma extends beyond the cervix but not onto the pelvic wall. Carcinoma involves the vagina but not the lower third.
Ila1/2	Tumour is clinically visible and greater than 4 cm.
III	Carcinoma has extended onto the pelvic wall. On rectal examination, there is no cancer-free space between the tumour and the pelvic wall. The tumour involves the lower third of the vagina.
IIIa	Tumour involves the lower third of the vagina with no extension to the pelvic side wall.
IIIb	Extension to the pelvic side wall or causing obstructive uropathy.
IV	Carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder or rectum. This stage also includes cancers with metastatic dissemination that is spread to other organs.
Iva	Extension beyond pelvis or rectal/bladder invasion.
IVb	Distant organ spread.

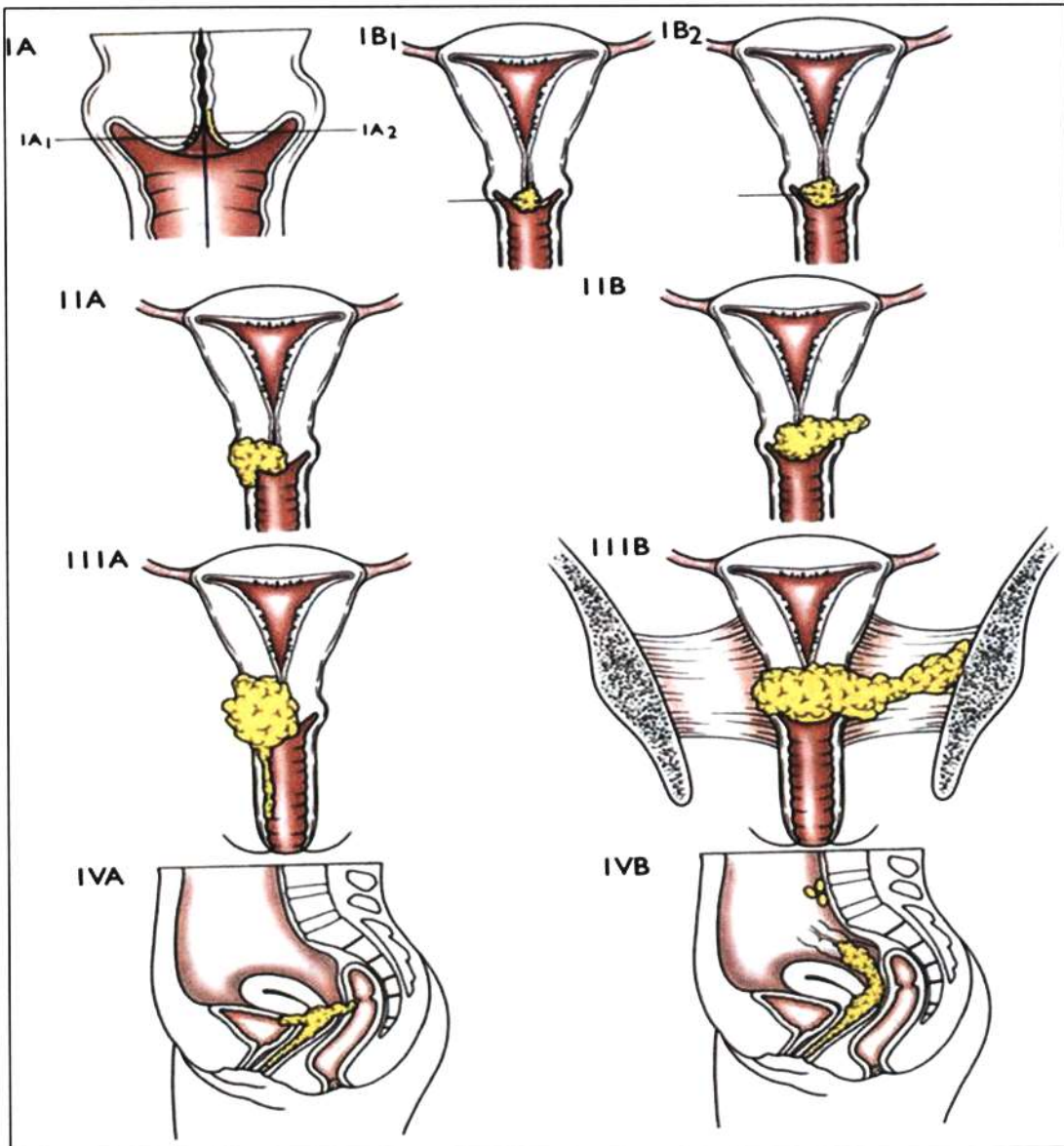


Figure 2.1: Reflection of FIGO stages of cervical cancer (Testa *et al.*, 2014)

2.7 SCREENING, DIAGNOSIS, TREATMENT, AND PREVENTION OF CERVICAL CANCER

Prevention, diagnosis, and treatment still remain the three pillars of medicine and medical technology, especially for the treatment of cervical cancer and other diseases. With advances in biomedical technology, diagnosis of cervical cancer is presently not solely dependent on physically examining the health of the cervical and vaginal walls but it also depends on other methods. In a study by Testa *et al.* (2014), the scientists describe the different technologies used today and the medical advantages of each technology. Screening and imaging technologies; such as ultrasound imaging,

magnetic resonance, and computed tomography are used in addition to the traditional Pap smear to screen and diagnose cancer (Testa *et al.*, 2014).

Treating the signs and symptoms of illness in order to improve the quality of life is a traditional principle and the foundation of medicine. The clinical commentary of Dizon, Sill, Schilder, McGonigle, Rahman, Miller, Mutch & Leslie (2014) in the gynaecological oncology journal describes the different forms of treatment available at different stages and compares both their effectiveness and severity. According to Dizon *et al.* (2014), cervical cancer treatment ranges from cervical colonisation or a simple hysterectomy in the early stage to combination cisplatin-based chemotherapy for metastatic cervical cancer. The degree of treatment severity is directly proportional to the stage of presentation.

Many viral and bacterial diseases could be prevented by medical means, such as vaccination. Yet, despite the great advances in medical technology and the availability of promising vaccines, vaccination rates still remain very low (Strohl, Mendoza, Ghant, Mendoza, Cameroon, Simon, Schink, & Marsh, 2015). Regular screening for cervical cancer is still the best preventative measure to date; in the United States, the incidence of cases dropped significantly with the establishment of many screening programmes (Dizon *et al.*, 2014).

2.8 PRESENTATION OF CERVICAL CANCER PATIENTS AT HOSPITALS IN DIFFERENT COUNTRIES

Early diagnosis and presentation of cervical cancer remain the ideal recommendation for successful treatment and therapy. Nevertheless, several studies in developing countries have shown that women often present at the health care facilities with advanced stages (stage III or IV) of cervical cancer. A research study in Nigeria reports that 72% of women's initial clinical presentation at tertiary facilities or hospitals is usually at stage III (Anorlu *et al.*, 2004). A similar study at a different hospital in another region of Nigeria has found that 39.0% presented with stage III and 17.1% with stage IV (Eze *et al.*, 2013). In India, the majority of cervical cancer patients present with stage II (33%) and stage III (35%) at health facilities (Agarwal *et al.*, 2012). A study at Malaysian public hospitals reports a decline of 40% of the late-stage presentation of cervical cancer from 70% in 1993 to 27% in 1998. The drop is attributed to improved

coverage of the Pap smear tests. The coverage has increased from 2% in 1992, 3.5% in 1995, and 6.2% in 1996 to 47.3% in 2006 (Devi *et al.*, 2007). In South Africa, a descriptive study among patients diagnosed with cancer of the cervix at the Kalafong Hospital reports that 90% of women are diagnosed with advanced stage cervical cancer at their initial clinical presentation (Snyman & Herbst, 2013).

2.9 COMPLICATIONS ASSOCIATED WITH LATE PRESENTATION OF CERVICAL CANCER AT HOSPITALS

Complications associated with late presentation of cervical cancer mostly relates to the damage that has already been done on the body, and it becomes difficult to treat the patients with the standard treatment. In China, a combination of external radiation therapy and intracavitary brachytherapy has been a standard treatment for advanced cervical cancer and is very effective and improves local control and overall survival. However, according to literature about studies in China this combination has resulted in the incidence of LRS. This weakness is still a challenge for doctors and has a negative impact on the quality of life of the patients, especially when they report late stage LRS symptoms, such as RVFs. Interventions that help patients recognise the various early signs and symptoms of LRS may assist with controlling and preventing further deterioration of these complications (Maa *et al.*, 2012).

A study in Uganda has found that urologic complications including urinary tract infections, vesicovaginal fistula (VVF), ureteric obstruction, hydronephrosis, and renal failure increase the morbidity and mortality of women with advanced cancer. Some of the complications are due the direct spread of the cancer while others arise from surgery (Atuhairwea *et al.*, 2011).

2.10 WOMEN'S KNOWLEDGE ABOUT RISK FACTORS OF CERVICAL CANCER

There have been studies conducted in low and middle income countries to determine the knowledge and awareness of women with regard to cancer of the cervix (Anorlu, 2008; Hoque *et al.*, 2008; Snyman & Herbst, 2013; Ahmed *et al.*, 2013). Anorlu *et al.* (2008) have found that in Sub-Saharan Africa, more than 80% of women with advanced cervical cancer have never heard of cervical cancer before and believe that their advanced disease is curable. Ahmed *et al.* (2013) reported that Nigerian

participants exhibited a fair knowledge of cervical cancer; however, their knowledge of risk factors was poor.

In their South African study, Snyman and Herbst (2013) report that knowledge and awareness of cervical cancer among women is poor; only (24%) of women know about the importance of cervical cancer screening. In relation to knowledge and practices of risk factors for cervical cancer and Pap smear among rural South Africa communities, Hoque *et al.* (2008) found that 6% of the participants knew about all the risk factors of cervical cancer; however, less than 50% of them knew that a Pap smear was used for prevention and early detection of cervical cancer. The study also reported that only 43% of the respondents had received information on Pap smears from health care workers while 18% had never done a Pap smear test (Hoque *et al.*, 2008). These statistics indicate the relation between knowledge and increased personal health care that is essential for the prevention and early diagnosis of disease.

2.11 BELIEFS, ATTITUDES, AND PERCEPTIONS ABOUT THE HPV, SCREENING, AND VACCINATION

The lack of knowledge about the HPV, screening, cervical cancer, and cancer risks is worrying; likewise, are barriers; such as perceptions, beliefs, and attitudes towards these topics. Literature indicates that these factors are like a wall between the women and preventive measures for cervical cancer development. Cultural beliefs, a lack of communication, and poor education are seen as barriers to health care among health care providers and patients, including cancer patients, such as women with cervical cancer (Strohl *et al.*, 2015).

A study in Kenya reveals that perceptions create alarming attitudes towards health care and cervical cancer screening. It is evident that most perceptions among Kenyan women are formed by emotions, cultural frameworks within the community, stigma fears, and misleading information. This particular study further points out that the perception of patients about their risk of developing cancer potentially might affect their behaviour towards cancer screening (Rosser, Njoroge & Huchko, 2015).

South Africa faces the same wall of beliefs, perceptions, and attitudes towards women's health. Indications are that a lack of knowledge and the inability to access screening facilities are creating negative attitudes towards women's health. On the

other hand, women in Ga-Rankua (South Africa) are aware of breast cancer but have little knowledge about cervical cancer (Maree & Wright, 2010). They further indicate that even after women have received information about cervical cancer, many still do not take the warning signs seriously, for example women would indicate that they need permission from their male partners before going for screenings. In contrast, women in Johannesburg are concerned about their children's and their own risk of developing cervical cancer while showing a keen interest in vaccination (Francis, Nelson, Liverpool, Soogun, Mofammere & Thorpe, 2010).

2.12 CONCLUSION

Women need to be educated about their individual health care and cervical cancer risks, other women cancers risks, causes, and possible vaccination programmes that are available (Francis *et al.*, 2010; Maree & Wright., 2010; Rosser *et al.*, 2015). Education about these health issues will reduce mortality due to cervical cancer, since an early diagnosis could lead to either prevention or appropriate treatment.

■ CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter explains the reviewed literature that relates to the initial clinical presentation of cervical cancer patients worldwide with a specific focus on Sub-Saharan countries to contextualise this study at the Pietersburg Hospital, Limpopo Province, South Africa. This chapter presents the research methodology of the study that had taken the set goals and objectives into account. Furthermore, the chapter looks at the study site, study design, population, sampling method, data collection method, data analysis method, validity, and reliability.

A quantitative retrospective cross-sectional survey was conducted in this study; data were collected by using a structured data collection tool. A quantitative retrospective cross-sectional survey is a survey that aims at explaining phenomena by collecting numerical data on an outcome that is occurring at the present and linking the data retrospectively to the determinants that happened in the past (Brink *et al.*, 2012; LoBiondo-Wood & Haber, 2010). The data collection process focused on the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in South Africa.

3.2 STUDY SITE

The Limpopo Province health care system consists of 40 hospitals and 467 clinics. The hospitals are structured according to levels. There are two tertiary hospitals that are the referral hospitals, namely the Pietersburg Hospital and the Mankweng Hospital complex. There are five regional hospitals; namely the Mokopane, Letaba, St. Ritas, Tshilidzini, and Philadelphia hospitals. The Limpopo Province also has three specialised hospitals; i.e. Evuxakeni, Hayani, and Thabamopo. Finally, there are 30 district hospitals in the five districts of the province. The Waterberg district has seven hospitals, the Capricorn district has six hospitals, the Sekhukhune district has five hospitals, the Mopani district has six hospitals, and the Vhembe district also has six hospitals. All the health care facilities have an existing referral system from clinics to district and regional hospitals, and finally to the two tertiary referral hospitals according

to the type of illness and treatment needed (Limpopo Province department of health, 2004).

The Pietersburg Hospital is a tertiary, referral, and academic hospital associated with the University of Limpopo. It is also part of a hospital complex called the Pietersburg-Mankweng Hospital Complex; there is good cooperation between the two hospitals in the complex. Each hospital has its own specialities. Oncology is one of the specialities at the Pietersburg Hospital that is situated in Polokwane City, Limpopo Province. The hospital has 24 wards with a bed capacity of 500. This is the only hospital in the province that treats cancer patients, thus many patients are referred daily for treatment at this hospital. There are specific clinic days that the majority of patients are able to attend depending on the type of treatment they require. For example, parenteral chemotherapy is normally provided on Tuesdays and Thursdays but special cases are treated on daily basis.

3.3 STUDY DESIGN

A retrospective cross-sectional survey was conducted that involved collecting data from patients' records by perusing the files of all the discharged patients who had satisfied the selection criteria. Cross-sectional surveys are used to examine data at one point in time with different respondents instead of the same participants at several points in time (Brink *et al.*, 2012; Burns & Grove, 2007). The items on the checklist that were used to collect data focused on the problem studied (Ebrahim & Bowling, 2005). The survey was conducted in this study by checking, reviewing, and recording the information on a checklist of cervical cancer patients seen for a period of three years from January 2012 to December 2014 at the Pietersburg Hospital.

3.4 STUDY POPULATION AND SAMPLING

A population is a complete set of persons that has common characteristics that a researcher is interested in studying (Brink, 2012; Polit & Beck, 2012). The study population of this research project was the records of all cervical cancer patients seen for the first time at the oncology unit of the Pietersburg Hospital from January 2012 to December 2014. The researcher used a probability random sampling technique to select the records of patients who initially presented with cervical cancer at the Pietersburg Hospital. The technique allowed all the patients' files to have an equal

chance of being included in the sample (Botma, Greeff, Mulaudzi & Wright, 2011). The technique also assisted the researcher to estimate the sampling error and to reduce bias. Also, if the researcher's primary concern was to obtain findings that could be generalised to the population, a probability sample technique was the best choice for this study (Brink *et al.*, 2012; LoBiondo-Wood & Haber, 2010). In this case, the total number of patients seen for the first time between January 2012 and December 2014 was 938. A total of 273 records were selected by using every third patient's record for the purpose of this study. This was calculated by using the Krejcie and Morgan (1970) formula for determining the sample size for research activities:

$$S = \frac{X^2 NP (1 - P)}{d^2 (N - 1) + X^2 P (1 - P)} \text{ where}$$

S = required sample size;

X^2 = the table value of chi-square for one degree of freedom at the desired confidence level;

N = the population size;

P = the population proportion (assumed to be .50 since that would provide the maximum sample size); and

d = the degree of accuracy expressed as a proportion (.05).

The calculation of the sample size of this study was:

$$S = \frac{3.841 \times 938 \times 0.5(1 - 0.5)}{(0.05)^2(938 - 1) + 3.841 \times 0.5(1 - 0.5)}$$

$$S = 900.7145 \div 3.30275$$

$$S = 272.7 \text{ (rounded up to 273).}$$

3.4.1 Inclusion criteria

Brink *et al.* (2012) and De Vos, Delpont, Fouché and Strydom (2005) explain that it is critical for a researcher to define the population and stipulate the criteria for inclusion. These inclusion criteria should be used to decide whether a subject belongs to the desired population or not. The survey included only records of females with cervical

cancer who were registered for the first time at the oncology unit of the Pietersburg Hospital from January, 2012 to December, 2014.

3.4.2 Exclusion criteria

Records of female patients with cervical cancer who were not visiting the oncology unit for the first time were excluded, since those patients were not satisfying the requirements according to the problem studied, namely the initial clinical presentation of cervical patients at the hospital and not follow up visits of cervical cancer patients.

3.5 PILOT STUDY

A pilot study was conducted at the Pietersburg Hospital during which patients' files of an initial cervical cancer visit were used to collect data. The constructed data collection instrument enabled the researcher to verify whether the instrument needed to be adapted for the main study. The process ascertained whether the items in the data collection tool would capture the data that it intended to collect. During the pilot study, the researcher established that the instrument did not need any changes. Only 10 patients' files which satisfied the inclusion criteria were used for the pilot study.

3.6 DATA COLLECTION

De Vos *et al.* (2005) and Brink *et al.* (2012) suggest that researchers need to know what type of information is needed to answer the research question of the study while they are collecting data. In this study, the electronic files records of cervical cancer patients who presented for the first time at the oncology unit of the Pietersburg Hospital between January 2012 and December 2014 were studied to examine the initial clinical presentation of cervical cancer. It took the researcher a month to collect the data. The data collection tool of the study extracted and recorded variables such as age, race, place of residence, referral hospital, parity, marital status, diagnosis, and stage from the patients' electronic files. Consent was requested from and granted by the hospital management in order to collect data from the patients' records, since the study was conducted without face-to-face contact with the patients.

3.7 DATA ANALYSIS

Data was analysed by using the Epi Info statistical software and both the university and the hospital statisticians were requested to provide guidance during the data analysis process. Data was interpreted and presented in the format of frequencies and percentages. Appropriate tests were used to check the association between the variables; i.e. age, stage, parity, place of residence, referral hospital, diagnosis, marital status. The Chi-square test enabled the researcher to interpret the categorical variables, e.g. age at diagnosis and parity. Comparisons between groups in relation to the stage of clinical presentation were analysed by using student t-test for two groups and the ANOVA test for three or more groups. A P-value of less than 0.05 was considered statistical significant.

3.8 RELIABILITY AND VALIDITY

Reliability refers to the consistency and dependability of a research instrument to measure a variable that it had intended to measure. The researcher personally collected the data; her consistent capturing of the information in the electronic files greatly enhanced the reliability of the data. When the researcher found any data that was unclear, she consulted the oncologist for clarity. Validity refers to the ability of an instrument to measure the variable that it intends to measure (Brink, 2012; De Vos *et al.*, 2005). There are different types of instrument validities; namely content validity, face validity, criterion-related validity (predictive and concurrent validity), and construct validity (contrasted groups and the multi-trait approach). Content validity tells one how well an instrument represents all the components of the variables to be measured. It is normally used to validate questionnaires and interviews (Brink *et al.*, 2012; De Vos *et al.*, 2005). In this study, this type of validity was not relevant, since the researcher was working with records. Face validity was also not relevant as it is based on intuitive judgement. The multi-trait approach is the most preferred method because it is based on the two-fold premise that different measures of the same construct should produce similar results (Brink *et al.*, 2012; De Vos *et al.*, 2005). This type of validity was achieved in this study, since different variables were collected and the variables yielded the same results, for example age versus the stage at presentation were related.

The data collection tool was validated during a pilot study before the actual data collection of the main study took place. The pilot study also assisted to determine whether the data collection tool was suited to access the patient files. Ten files were selected for the pilot study at the oncology unit of the Pietersburg Hospital and those files did not form part of the main study. This helped in restructuring the data collection tool. Some of the variables that did not have significant information were dropped.

CHAPTER 4

PRESENTATION AND DISCUSSION OF RESEARCH RESULTS

4.1 INTRODUCTION

Chapter 3 presents the research methodology that the researcher followed. The discussion includes the study site, research method and design, study population, sampling method, inclusion and exclusion criteria, data collection and analysis, as well as the principles of reliability and validity. In this chapter, the results of the study are presented, discussed, and literature is presented to support the findings.

4.2 DATA ANALYSIS AND DISCUSSION OF RESULTS

The findings of this study was based on all variables that were collected using the checklist which was the data collection tool for this study.

4.2.1 Demographic profile of the patients

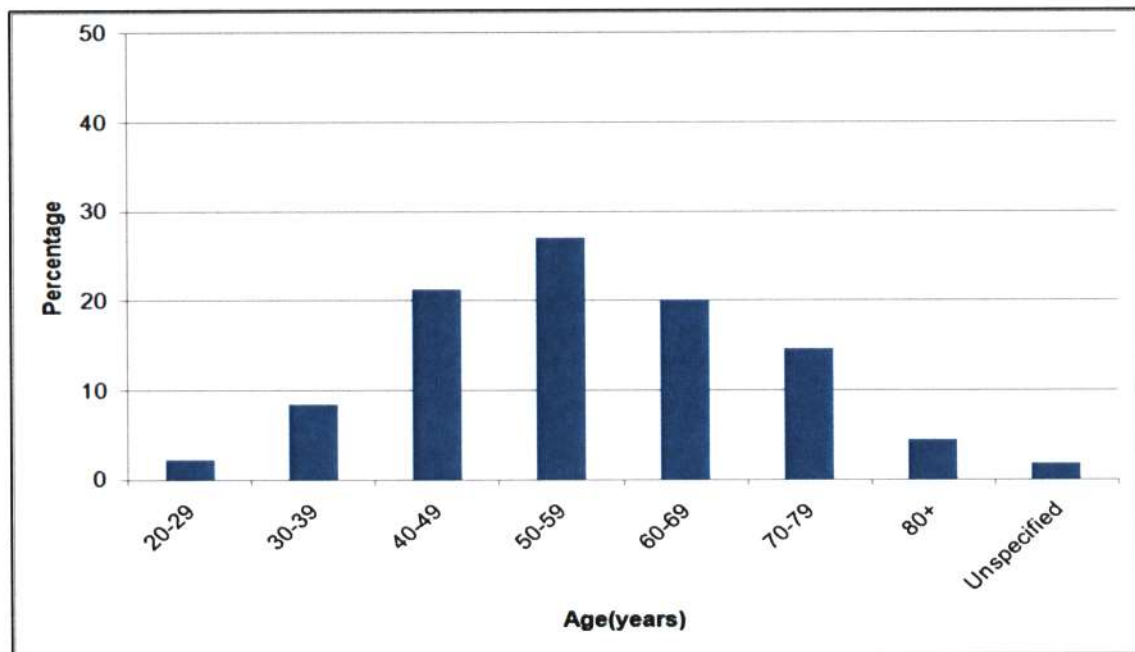


Figure 4.1: Age distribution

A total of 273 of cervical cancer patients' records were studied. The mean age of the patients was 56.3 years (SD = 13.7), the youngest patient was 25 years old and the eldest 89 years. Figure 4.1 illustrates the distribution of patients' age. Most of the patients' ages were between 50 and 59 years, followed by those whose ages were

between 40 and 49 years, then those between 60 and 69 years of age. That indicated that the women aged 50 years and older were presenting late with initial presentation of cervical cancer. The mean age of the patients that presented with FIGO stage III cervical cancer was 56.9 years and for the patients that presented with FIGO stage IV was 62.5 years. That concurred with the study in Sudan that has found that nearly 46% of advanced cervical cancer cases (FIGO stages III and IV) were older than 55 years (Ibrahim, Rasch, Pukkala & Aro, 2011).

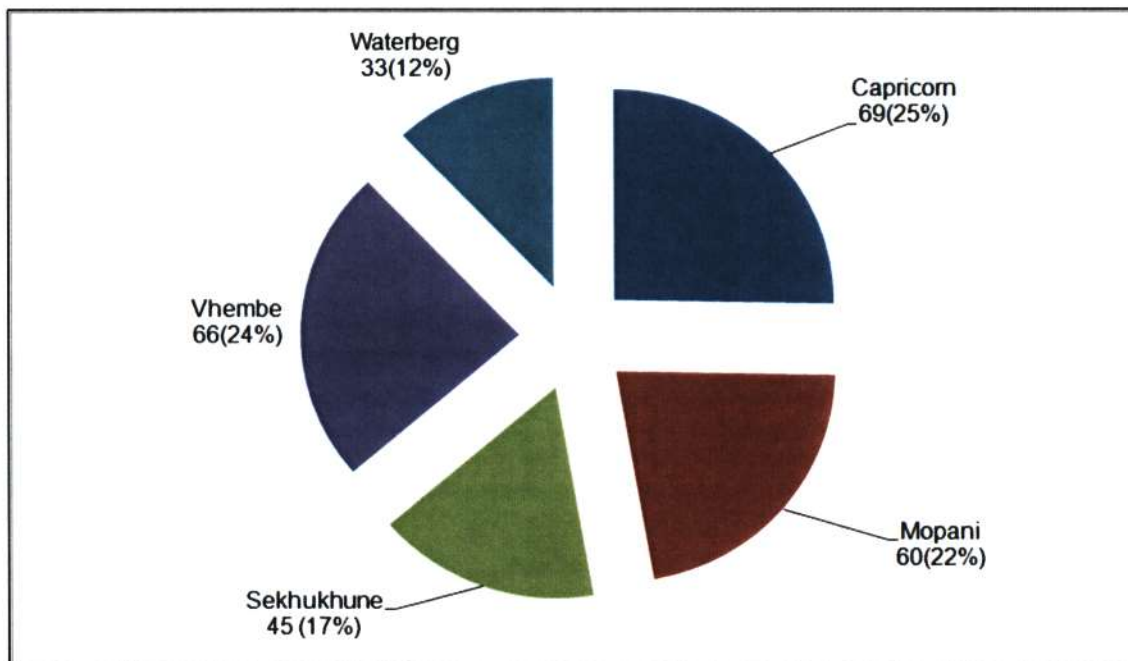


Figure 4.2: Place of residence

Figure 4.2 shows the regions of residence of the women whose files were reviewed. A larger number of the cases as compared to the others (25%) were from the Capricorn district, 24% from the Vhembe district, 22% from the Mopani district, 17% from the Sekhukhune district, and 12% were from the Waterberg district.

Table 4.1 shows the hospitals in the Limpopo Province that the patients were referred from, as well as the distribution per hospital - district. The hospitals that the patients were referred from represented the place of residence. The 37 hospitals fall under 5 districts. Therefore, the results indicate that most patients with initial presentation of cervical cancer who were admitted at the Pietersburg Hospital were residing in the district where the hospital is situated.

Table 4.1: Hospital referred from, depicting the place of residence

Hospital – district	Frequency	Per cent
Belabela – Waterberg	6	2.2
Botlokwa – Capricorn	3	1.1
Dilokong – Sekhukhune	6	2.2
Donald Fraser – Vhembe	7	2.6
Dr C. N. Phatudi- Mopani	5	1.8
Elim – Vhembe	15	5.5
Ellisras – Waterberg	6	2.4
F. H. Odendaal – Waterberg	2	.7
George Masebe – Waterberg	1	.4
Grobliersdal – Sekhukhune	2	.7
Helena Franz – Capricorn	9	3.3
Jane Furse - Sekhukhune	4	1.5
Kgapane – Mopani	6	2.2
Lebowakgomo – Capricorn	12	4.4
Letaba – Mopani (regional)	26	9.5
Louis Trichardt Memorial – Vhembe	2	.7
Malamulele – Vhembe	12	4.4
Mankweng – Capricorn (tertiary)	18	6.6
Maphutha L Malatji – mopani	5	1.8
Matlala – Sekhukhune	5	1.8
Mecklenburg – Sekhukhune	8	2.9
Mokopane – Waterberg (regional)	13	4.8
Musina – Vhembe	4	1.5
Nkhensani – Mopani	8	2.9
Philadelphia – Sekhukhune	8	2.9
Pietersburg – Capricorn (tertiary)	7	2.6
Sekororo – Mopani	7	2.6

Hospital – district	Frequency	Per cent
Seshego – Capricorn	8	2.9
Siloam – Vhembe	11	4.0
St. Ritas –Sekhukhune	12	4.4
Tshilidzini – Vhembe (regional)	15	5.5
Van Velden – Mopani	3	1.1
Voortrekker – Waterberg	4	1.5
W. F. Knobel – Capricorn	8	2.9
Witpoort –Waterberg	1	.4
Zebediela – Capricorn	4	1.5
Total	273	100.0

Table 4.1 shows the hospitals in the Limpopo Province that the patients were referred from, as well as the distribution per hospital. The hospitals that the patients were referred from represented the place of residence. The 37 hospitals are grouped according to the districts in Figure 4.2. Therefore, the results indicate that most patients with initial presentation of cervical cancer who are admitted at the Pietersburg Hospital are residing in the district where the hospital is situated.

4.2.2 Distribution of marital status

The distribution of the marital status of the women is shown in Table 4.2. Information about the marital status of 90.5% of the women was not recorded. The information that was recorded indicated that 4% of the women were single, 5.1% married, and 0.4% divorced. Although the results show the above percentages, they are not conclusive because they are based on a small percentage of the cases. A study by Joy, Sathian, Bhattarai, and Chacko (2011) in India, Nepal, and Sri Lanka about the awareness of cervix cancer risks factors in the educated youth, has found that the awareness of cervical cancer was 66% in India, 58.8% in Nepal, and 57.7% in Sri Lanka. Despite the awareness, the educated youth from the three countries have less knowledge about the risk factors, such as multiple sex partners and sex at an early age. Their study also reveals that females who have multiple sex partners show a 60%

HPV infection in the genital region and 40% in anorectal region. Therefore, whether a woman is married or not is an important risk factor that leads to cervical cancer and needs to be recorded in order to assess the influence it has on the late presentation of cases at health care institutions.

Table 4.2: Distribution of marital status

Marital status	Frequency	Per cent
No information	247	90.5
Single	11	4.0
Married	14	5.1
Divorced	1	.4
Total	273	100.0

4.2.3 Distribution of parity

The distribution of parity of the women is shown in Table 4.3. Information about 95.2% of the women was not recorded. In terms of parity, the results indicate that 0.4% had no children, 0.7% had two children, 1.1% had three children, 0.4% had five children, 1.8% had six children, and 0.4% had eight children. The results are not conclusive because they are based on a small percentage of the women. A study about the role of parity and human papillomavirus in cervical cancer by Munoz, Franceschi, Bosetti, Moreno, Herrero, Smith, Shah, Meijer & Bosch (2002) indicates that a high parity increases the risk of squamous cell carcinoma of the cervix. Therefore, women who have many children are at a higher risk of contracting cervical cancer.

Table 4.3: Distribution of parity

Parity	Frequency	Per cent
No information	260	95.2
0	1	0.4
2	2	0.7
3	3	1.1

Parity	Frequency	Per cent
5	1	0.4
6	5	1.8
8	1	0.4
Total	273	100.0

4.2.4 Stage at initial presentation of the cervical cancer patients

The FIGO stages at initial presentation are shown in Figure 4.3. Almost two-thirds (62.2%) of the patients were at stage III at initial presentation followed by 27.8% at stage II, 7.3% at stage IV, and only 1.8% at stage I. The stage of cervical cancer was unspecified for 0.7% of the patients. Furthermore, Table 4.4 presents the detailed description of the stages at presentation. Stage II was dominated by IIB, while IIIB was the commonest in stage III. In stage IV, the most dominant stage was IVA. Therefore, the results revealed that most of the patients who at initial presentation of cervical cancer were on stage III. A study about factors associated with diagnosis of cervical cancer in Nepal (Gyenwali, Pariyar & Onta, 2013) has found that 80.9% of the patients have a late stage diagnosis (stage \geq IIB).

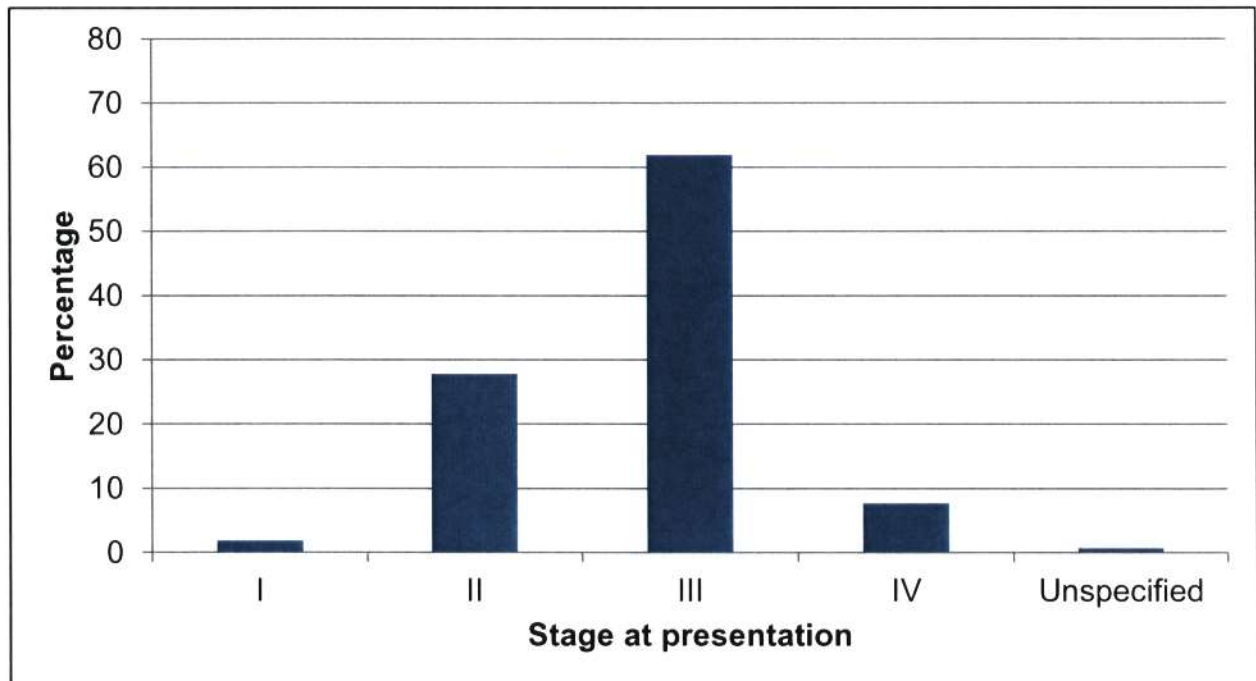


Figure 4.3: FIGO stage at presentation

Table 4.4: Detailed description of stage at presentation

Stage at initial presentation	Frequency	Per cent
Unknown	2	.7
IA2	1	.4
IB	2	.7
IB1	1	.4
IB2	1	.4
IIA	14	5.1
IIB	61	22.3
IIB2	1	.4
IIIA	32	11.7
IIIB	95	34.8
IIIB1	16	5.9
IIIB2	27	9.9
IVA	15	5.5
IVB	5	1.8
Total	273	100.0
Total unspecified	2	.7
Total I	5	1.8
Total II	76	27.8
Total III	170	62.2
Total IV	20	7.3
Total	273	100

4.3 RISK FACTORS THAT LEAD TO LATE PRESENTATION

4.3.1 Age

Table 4.5 presents the relationship between the stage of cervical cancer at presentation and the age of the patients. There was no statistical association between

the stage of cervical cancer at presentation and age ($p > 0.05$); however, the FIGO stage at presentation increased in relation to the age of the patients. The mean age of the patients who presented with FIGO stage III cervical cancer was 56.9 years and for the patients who presented with FIGO stage IV, it was 62.5 years. This finding concurs with a study in Sudan which has found that nearly 46% of advanced (FIGO stages III and IV) cervical cancer cases were older than 55 years (Ibrahim *et al.*, 2011).

According to Ibrahim *et al.* (2011), older women are less often diagnosed at an early stage of cervical cancer due to the lack of seeking obstetric and gynaecological services during their post-menopausal years. This normally happens with women in rural areas where health care services are not readily accessible. Another factor might be a lack of awareness about cervical cancer and screening services that are available. In another study about the screening history, presentation, diagnosis, pathway, treatment and outcomes of patients diagnosed with cervical cancer in Ireland, Ranaghan and Gavin (2010) have found that the most patients (74%) who present with stage I cervical cancer are between the ages of 25 and 49 years and their survival rate was 100%. A large number of older patients (41.7%) who are 70 years and older present with stage IV cervical cancer and their survival rate is 30%. Their conclusion indicates that of the older patients, 92% have no record of a Pap smear compared to only 14% of the younger women. Thus, patients with a history of Pap smear tests present earlier.

Table 4.5: Association between stage at presentation and age

FIGO Stage	n	Mean \pm SD	p-value
I	5	52.4 \pm 16.2	0.0931
II	75	53.6 \pm 12.7	
III	165	56.9 \pm 14.1	
IV	21	62.5 \pm 11.3	

4.3.2 Place of residence

The relationship between the FIGO stage at initial presentation and place of residence is shown in Table 4.6. A greater proportion of the patients from the Sekhukhune and Vhembe districts were at stage III and IV compared to other districts ($p > 0.05$). However, no statistical significant associated was observed between the stage of cervical cancer at the initial presentation and place of residence. These results might be influenced by the fact that the two districts (Sekhukhune and Vhembe) are more rural and less developed than the other three; accessibility to health care services in these two districts might be limited. This concurs with a study of predictors of cervical cancer at an advanced stage at diagnosis in Sudan in which Ibrahim *et al.* (2011) has found that spatial disparity exists between the urban and rural areas of Sudan. Furthermore, Ibrahim *et al.* (2011) discovers that the lack of access to health care services in rural areas contributes to late presentation resulting in diagnosis of cervical cancer at an advanced stage.

Table 4.6: Association between stage at presentation and place of residence

Place of residence	n	Stage at presentation				p-value
		I	II	III	IV	
Capricorn	69	3(4%)	22(32%)	40(58%)	4(6%)	0.150
Mopani	60	1(2%)	21(35%)	36(60%)	2(3%)	
Sekhukhune	45	-	7(16%)	30(66%)	8(18%)	
Vhembe	64	1(2%)	15(23%)	43(67%)	5(8%)	
Waterberg	33	-	11(33%)	20(61%)	2(6%)	

4.3.3 Histological diagnosis

In this study, squamous cell carcinoma was the commonest histological diagnosis accounting for 82.3% with Grade 2 invasive type being the highest (43.6%) as shown in Table 4.7. Adenocarcinoma accounted for 6.3% of the cervical cancer cases. The results were congruent to the study of factors associated with tumour stage at presentation in invasive cervical cancer done at government tertiary referral institutions in Harare, Zimbabwe by Ndlovu & Kambarami in 2003 who have found that squamous cell carcinoma is the commonest type of histological diagnosis (96.0%) while adenocarcinoma constitutes only 4%. Their study concludes that intrinsic tumour characteristics are the most important indicator of late stage at diagnosis.

Table 4.7: Histological diagnosis

Diagnosis	Frequency	Per cent
Adenocarcinoma	1	.4
Grade 1 invasive squamous cell carcinoma	18	6.6
Grade 1 squamous cell carcinoma	2	.7
Grade 2 invasive adenocarcinoma	8	2.9
Grade 2 invasive squamous cell carcinoma	119	43.6
Grade 2 squamous cell carcinoma	8	2.9
Grade 3 adenocarcinoma	1	.4
Grade 3 endometrial adenocarcinoma	2	.7
Grade 3 Infiltrating differentiated squamous cell carcinoma	2	.7
Grade 3 invasive adenocarcinoma	12	4.4
Grade 3 invasive clear cell carcinoma	1	.4
Grade 3 invasive squamous cell carcinoma	60	22.0
Grade 3 large cell invasive squamous cell carcinoma	1	.4
Grade 3 large cell neuroendocrine carcinoma	1	.4
Grade 3 squamous cell carcinoma	7	2.6
Grade 3 squamous cell carcinoma keratinizing int. nuclear	1	.4
High grade invasive squamous cell carcinoma	1	.4

Diagnosis	Frequency	Per cent
Infiltrating differentiated squamous cell carcinoma	5	1.8
Invasive intermediate glandular papillary adenocarcinoma	1	.4
Invasive squamous cell carcinoma	3	1.1
Large cell neuroendocrine invasive carcinoma	1	.4
Moderately differentiated invasive keratinizing squamous cell carcinoma	1	.4
Moderately differentiated squamous cell carcinoma	1	.4
Non-keratinizing high grade squamous cell carcinoma	1	.4
Non-keratinizing invasive squamous cell carcinoma	1	.4
Squamous cell carcinoma	3	1.1
no information on cell type	11	4.0
Total	273	100.0

4.3.4 Previous exposure to a Pap smear

The results about previous exposure to a Pap smear are shown in Table 4.8 below. In this study, there was no information recorded for 271 of the patients with regard to their previous exposure to a Pap smear test. Of the two patients who had done a Pap smear before, one presented with stage II cervical cancer and the other one presented with stage IV cervical cancer and thus the results were not conclusive. Screening is a very important factor in the early detection of cervical cancer. A study in Kolkata, India (Roy & Tang, 2008) indicates a limited knowledge of both cervical cancer (84%) and Pap smear tests (95%).

Table 4.8: Prior Pap smear tests

Prior exposure to pap smear	Frequency	Per cent
No information	271	99.3
Yes	2	.7
Total	273	100.0

4.3.5 Marital status

There was not enough information recorded about the marital status and parity of the patients; therefore, the results were inconclusive.

A study about the awareness of cervix cancer risks factors in educated youth in India, Nepal, and Sri Lanka by Joy *et al.* (2011) indicates that the awareness of cervical cancer is 66% in India, 58.8% in Nepal, and 57.7% in Sri Lanka. Despite the awareness, the educated youth from the three countries have less knowledge about the risk factors; such as multiple sex partners and sex at an early age. The study further reveals that females who have multiple sex partners show 60% HPV infection in the genital region and 40% in anorectal region.

Because the marital status information was not recorded, the researcher in this study was unable to make any findings about the association between the cervical cancer stage at presentation and marital status. However, for single women it is an important determinant, since they are more likely to have multiple sex partners than their married counterparts and are at a higher risk of developing cervical cancer.

4.4 CONCLUSION

Based on the results, it can be concluded that older women from more rural areas are more likely to present with advanced stage cervical cancer at the Pietersburg Hospital than their younger counterparts and women who reside in areas where health care facilities are more accessible and advanced. Squamous cell carcinoma was the commonest type of histological diagnosis. The results about marital status, parity and previous exposure to Pap smear tests were not conclusive, since the information accounted for a very small percentage of the cases.

■ CHAPTER 5

CONCLUSION, SUMMARY, LIMITATIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

In the previous chapter, the results of the study are presented and discussed. In this chapter, the researcher presents the conclusion, summary, limitations, and recommendations for improving the initial clinical presentation of cervical cancer patients at health care facilities.

5.2 THE AIM AND OBJECTIVES OF THE STUDY

The main aim of this study was to determine the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital, Limpopo Province, South Africa. The research question was: "What is the initial clinical presentation of cervical cancer patients at the Pietersburg Hospital?"

The three objectives of the study were to:

- Establish the demographic profile of cervical cancer patients at initial clinical presentation at the Pietersburg Hospital;
- Identify the stage at initial presentation of cervical cancer at the Pietersburg Hospital; and
- Describe the factors that lead to initial clinical presentation of cervical cancer patients at the Pietersburg Hospital in South Africa.

5.3 RESEARCH DESIGN AND METHODS

In this study, a quantitative retrospective cross-sectional survey was conducted. The Turfloop Research Ethics Committee (TREC) at the University of Limpopo, the Limpopo Department of Health Research Committee, and the Pietersburg Hospital Management granted permission for the study to be conducted. The researcher collected data from patients' records in electronic format by using the data collection tool that was designed according to the objectives of the study. The target population in this study was the records of cervical cancer patients seen at the Pietersburg

Hospital for a period of three years from January 2012 to December 2014. A total of 273 patient records were examined. Nobody else but the researcher collected the data. The collected data was analysed by using the Epi Info statistical software and the findings were presented in tables, graphs, and text.

5.4 SUMMARY OF RESEARCH RESULTS

The results indicate that most patients, particularly the elderly, present for the first time at the hospital with advanced stages of cervical cancer. Several factors contribute to this late presentation. The results of the study are discussed according to the objectives of the study.

5.4.1 Demographic profile of cervical cancer patients

The study found that the mean age of the patients was 56.3 years. Two-thirds (66%) of the women were 50 years and older while 32% were younger than 50 years. The patients came from the following districts: Capricorn (25%), Vhembe (24%), Mopani (17%), Sekhukhune (12%), and Waterberg (12%). Most of the patients' records (90.5%) did not contain any information about marital status. Of the information that was available, 4.0% of the women were single, 5.1% married and 0.4% divorced. A large number of patient records did not have information on parity either, constituting a total of 95.6%. The distribution parity was: 0.4% had no children, 0.7% had two children, 1.1% had three children, 0.4% had five children, 1.8% had six children, and 0.4% had eight children.

5.4.2 The stage of cervical cancer patients at presentation at the hospital

The study found that a total of 62% of the patients presented with stage III, 27.8% with stage II, 7.3% with stage IV, 1.8% with stage I, and 0.7% were unspecified. It was evident that most of the patients presented with advanced stage cervical cancer at the hospital.

5.4.3 Factors that lead to late presentation

The study found that age had an effect on late presentation of the patients at the hospital. The mean age of the patients who presented with stage III cervical cancer was 56.9 years and for the ones who presented with stage IV was 62.5 years. The

place of residence also played a role in late presentation of the patients at the hospital. More patients from remote areas of the province presented with advanced stage of cervical cancer as opposed to the ones who resided in areas that are nearer to the capital city of the province. Patients from the Vhembe District which is more rural and the furthest from the capital city of the province, presented with stage III (67%) and stage IV (8%) cervical cancer. Patients from the rural Sekhukhune District presented with stage III (66%) and stage IV (18%) cervical cancer. Patients from the Waterberg District presented with stage III (61%) and stage IV (6%) cervical cancer. Patients from the Mopani District presented with stage III (60%) and stage IV (3%) cervical cancer. Patients from the Capricorn District where the capital city of the Limpopo Province and the Pietersburg Hospital are situated presented with stage III (58%) and stage IV (6%) cervical cancer. In this study, there was no information recorded for 99.3% of the patients about their previous exposure to Pap smear tests. Of the 0.7% of patients who were previously exposed to a Pap smear test, one presented with stage II and the other one with stage IV cervical cancer. In this study, squamous cell carcinoma was the commonest type of histological diagnosis.

5.5 LIMITATIONS OF THE STUDY

The study was limited to public health care institutions and did not include any private sector facilities. Despite this limitation, the results can be generalised to the province due to the fact that Limpopo Province is a poor province, therefore, most patients consult at public hospitals. Lack of information about parity, marital status, and previous exposure to Pap smear tests was also a limiting factor.

5.6 RECOMMENDATIONS

Based on the findings of this study, the following are recommended for the improvement of initial clinical presentation of cervical cancer at health care institutions:

Marital Status

Data capturing of information about marital status of cervical cancer patients by hospital data capturers should be improved as the information might help to further assess the influence this element might have on the clinical presentation of cervical cancer.

Parity

Information on the parity of all cervical cancer patients should be captured in order to determine the effect that parity has on cervical cancer.

Pap smear

There should be more health care facilities for screening because early detection of cervical cancer might prevent progression to advanced stage of cervical cancer.

Age

More awareness campaigns by the Limpopo department of health about the risk factors of cervical cancer, especially at educational institutions, should be conducted for people in communities to become well informed and aware of the signs and symptoms of the disease.

Place of residence

A study should be conducted to determine why most patients with advanced stage cervical cancer are from the Sekhukhune and Vhembe districts, particularly the former Venda and Gazankulu regions, since most of the patients with advanced stage cervical cancer are from these districts.

5.7 CONCLUSION

The study found that the place of residence and age play an important role in the late presentation of cervical cancer patients at the Pietersburg Hospital. Most of the patients who came from more rural areas presented with stage III and stage IV cervical cancer. This might be due to factors, such as the lack of availability of screening facilities and a lack of awareness about the risk factors of cervical cancer. In order to reduce late stage presentation of cervical cancer at health institutions and thus reducing mortality due to cervical cancer, methods to encourage early detection should be improved. The establishment of better health care and screening facilities in poorer resourced areas is necessary.

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APPENDIX A: LETTER TO PIETERSBURG HOSPITAL MANAGEMENT

11 Apollo Street

Sterpark

0699

28 May 2015

The Manager

Pietersburg Hospital

Cnr Dorp & Hospital Streets

Polokwane

0699

Sir / Madam

Request for permission to conduct research at the Pietersburg Hospital

I hereby request permission to conduct a research study at the Pietersburg Hospital. The study is titled "Initial clinical presentation of cervical cancer patients at the Pietersburg Hospital, Limpopo Province, South Africa". This study is conducted in partial fulfilment of the requirements for the Master's of Public Health degree, in the School of Health Sciences at the University of Limpopo.

The aim of the study is to establish the stages that cervical cancer patients present with at the hospital during the initial consultation.

I am looking forward to your favourable response.

Yours faithfully

E. M. Mohuba

0829531550

Email: maitemohuba@vodamail.co.za

**APPENDIX B: LETTER TO THE DEPARTMENT OF HEALTH & SOCIAL
DEVELOPMENT**

11 Apollo Street

Sterpark

0699

28 May 2015

The Head of Department

Department of Health & Social Development

Private Bag X9302

Polokwane

0700

Sir / Madam

Request for permission to conduct research at the Pietersburg Hospital

I do hereby request permission to conduct a research study at the Pietersburg Hospital. The study is "Initial clinical presentation of cervical cancer patients at the Pietersburg Hospital, Limpopo Province, South Africa". This study is conducted in partial fulfilment of the requirements for the Master of Public Health degree in the School of Health Sciences at the University of Limpopo.

The aim of the study is to establish the stages that cervical cancer patients present with at the hospital during the initial consultation.

I am looking forward to a favourable response from you.

Yours faithfully

E. M. Mohuba

0829531550

Email: maitemohuba@vodamail.co.za

APPENDIX D: ETHICAL CLEARANCE CERTIFICATE



University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2212, Fax: (015) 268 2306, Email:noko.monene@ul.ac.za

**TURFLOOP RESEARCH ETHICS
COMMITTEE CLEARANCE CERTIFICATE**

MEETING: 06 May 2015

PROJECT NUMBER: TREC/47/2015: PG

PROJECT:

Title: Initial clinical presentation of cervical cancer patients at Pietersburg Hospital, Limpopo Province, South Africa

Researcher: Ms EM Mohuba

Supervisor: Prof TM Mothiba

Co-Supervisor: N/A

Department: Medical Sciences, Public Health and Health Promotion

School: Health Sciences

Degree: Masters in Public Health


PROF TAB MASHEGO

CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

Note:

- i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
- ii) The budget for the research will be considered separately from the protocol.
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

APPENDIX E: APPROVAL LETTER TO CONDUCT RESEARCH IN
LIMPOPO PROVINCE



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stols M.L.

Ref:4/2/2

Mohuba M
11 Apollo Street
Sterpark
Polokwane
0699

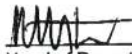
Greetings,

RE: Initial Clinical Presentation of Cervical Cancer patients at Pietersburg Hospital, Limpopo Province

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
 - Research must be loaded on the NHRD site (<http://nhrd.hst.org.za>) by the researcher.
 - Further arrangement should be made with the targeted institutions.
 - In the course of your study there should be no action that disrupts the services.
 - After completion of the study, a copy should be submitted to the Department to serve as a resource.
 - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - The above approval is valid for a 3 year period.
 - If the proposal has been amended, a new approval should be sought from the Department of Health.

Your cooperation will be highly appreciated.


Head of Department

15/06/2015
Date

18 College Street, Polokwane, 0700, Private Bag x9302, POLOLKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: <http://www.limpopo.gov.za>

For the people of Southern Africa - *one government, one destiny*

EDITING CONFIRMATION



* The stars that tell the spade when to dig and the seeds when to grow *

* Isilimela – iinkwenkwezi ezixelela umhlakulo ukuba mawembe nembewu ukuba mayikhule*

P O Box 65251
Erasmusrand
0165

06 November 2015

Dear Ms E. M. Edna Mohuba

**CONFIRMATION OF EDITING THE RESEARCH PROPOSAL WITH THE
TITLE INITIAL CLINICAL PRESENTATION OF CERVICAL CANCER
PATIENTS AT THE PIETERSBURG HOSPITAL, LIMPOPO PROVINCE,
SOUTH AFRICA**

I hereby confirm that I have edited the abovementioned document as requested.

Please pay particular attention to the editing notes for your revision.

The tracks copy of the document contains all the changes I have effected while the edited copy is a clean copy with the changes removed. Kindly make any further changes to the edited copy since I have effected minor editing changes after removing the changes from the tracks copy. The tracks copy should only be used for reference purposes.

Please note that it remains your responsibility to supply references according to the convention that is used at your institution of learning.

You are more than welcome to send me the document again to perform final editing should it be necessary.

Kind regards


Andre Hills
083 501 4124