KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN CONCERNING PROSTATE CANCER IN MULDERSDRIFT, SOUTH AFRICA

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A dissertation submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the Master's degree

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DECLARATION

I, Bontshwanetse Baaitse, declare that the content of this study represents my own work, and that the study has not previously been submitted for academic examination towards any qualification.

Moreover, it represents my own opinion and not necessarily those of my institution, the University of the Witwatersrand.

Signed_____ Date_____

DEDICATION

This study is dedicated to my wife, Sheilah Baaitse, for believing in me and for the endless support given to me my love. This degree is our pride, it is one of the goals we achieved together my love. God as always will see us through to achieve even more. Bongiwe and Anele, my beautiful princesses, Daddy loves you so much. I pray you become educated because education is the only weapon that can change circumstances. It changes behaviour if internalised as well.

To my mum, Segametsi Baaitse, I know you are smiling as I make you proud, especially because you are passionate about education.

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ABSTRACT

Background: Prostate cancer is one of the top diseases that are killing men world over and is the second common cancer that affects men. According to the 2012 Globocan statistics, approximately 1.1 million males were found to have prostate cancer globally, which was found to be at 15% compared to other cancers seen in males. The incidence and mortality rate of the disease in the Southern African Development Community region is 40.5 per 100 000 and 22.5 per 100 000 of the population per year, respectively. However, the National Cancer Registry of South Africa (2012) has indicated that in South Africa, 31.36 per 100,000 men were found to have this cancer.

Aim: The study aimed to describe the knowledge, attitudes and practices of men living in Muldersdrift, South Africa, concerning prostate cancer.

Method: The setting was Ward 23, commonly known as Video, a resource poor area, in Muldersdrift. A door-to-door survey was conducted. The convenience sampling method was used on a sample size of n=183. Data were collected by means of structured interviews and a questionnaire served as the data collection instrument. The data were analysed by means of descriptive statistics and the Fisher's Exact Test was used to calculate statistical significant differences between the variables.

Results: The sample (n=183) about half were above the age of 70 years (48.1%; n=88), mean 52.4, SD ±9.5 and median 50.Over a third of respondents were from the Tswana cultural group (36.6%; n=67) and the highest percentage never went to school (30.1%; n=55).The majority of respondents (90.2%; n=165) had never heard of prostate cancer and only 9.8% (n=18) had ever heard of the disease. When calculating the overall knowledge about prostate cancer, all respondents (n=183) scored between 0 and 49% (equates with low).The majority of the respondents (72.0%; n=132) had a positive attitude towards prostate cancer. Out of the 10 answers considered to be positive practices, approximately two-thirds of the respondents (60.7%; n=111) responded positively to two questions only.

Conclusion: The study provided evidence that the men living in the study setting had limited knowledge of prostate cancer. However, they presented with a positive attitude regarding prostate cancer, and high percentages were ready to perform prostate cancer screening and to learn about the disease.

ABBREVIATIONS

ACS	American Cancer Society
AJCC	American Joint Committee on Cancer
BMI	Body Mass Index
CANSA	Cancer Association of South Africa
CT	Computed Tomography
CRT	Conformal Radiation Therapy
DRE	Digital Rectal Examination
EBRT	External beam radiation therapy
HPCSA	Health Professions Council of South Africa
IMRT	Intensity Modulated Radiation Therapy
LHRHa	Luteinizing Hormone-Releasing Hormone agonist
MRI	Magnetic Resonance Imaging
NHLS	National Health Laboratory Service
PCFSA	Prostate Cancer Foundation of South Africa
PSA	Prostate Specific Antigen
TRUS	Trans Urethra Scan
SPCG	Scandinavian Prostate Cancer Group
WHO	World Health Organization

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CHAPTER ONE
OVERVIEW FOR THE STUDY

1.1 INTRODUCTION

This chapter provides an overview for the study. Prostate cancer is introduced and the research question, aim and significance of the study are described. In addition, a brief description is given of the methods and design utilised in this research.

1.2 BACKGROUND

Prostate cancer is one of the top diseases killing men world over and is the second common cancer that affects men (Mofolo et al., 2015). According to the 2012 Globocan statistics (WHO, 2012), approximately 1.1 million males were found to have prostate cancer globally, which was found to be at 15% compared to other cancers seen in males. Although 70% of men newly diagnosed lived in more developed regions, Africa has 52 000 men who were found to have confirmed cases of prostate cancer. This disease is commonly found in Blacks and Mixed Race males than in males of Western regions (Ogundele and Ikuerowo, 2015). According to Kangmennaang et al. (2016), the relatively lower trends in Sub-Saharan Africa understate the true magnitude of the disease due to the low detection rate. Many men go undiagnosed due to a lack of knowledge, diagnostic facilities, trained health personnel and screening, such as the Prostate Specific Antigen (PSA).

The incidence and mortality rate of the disease in the Southern African Development Community region is 40.5 per 100 000 and 22.5 per 100 000 of the population per year, respectively (Mofolo et al., 2015). However, the National Cancer Registry of South Africa (2012), has indicated that the incidence rate of prostate cancer among men in South Africa is 31.36 per 100 000 (NHLS, 2012). The South African National Cancer Registry (2010), recorded 4652 incidences of prostate cancer, which were histologically diagnosed in South Africa during 2010 (CANSA, 2016). White males were highly affected with 2864 incidences, followed by Black males with 2448 incidences, Coloured males with 702 and Asian males with 125 (CANSA, 2016).

According to So et al. (2014), the things that give rise to the occurrence of prostate cancer are not well known. It is however believed that risk factors such as advanced age, having a family history of prostate cancer and being a member of black ethnic group can contribute to this disease. In addition, prostate cancer is caused by a number of factors and both genetic and environmental/lifestyle factors contribute to its development. Ogundele and Ikuerowo

(2015) indicate that diet and lifestyle monitoring has shown to reduce the risk of prostate cancer development.

The screening methods utilised to test for prostate cancer in males who are asymptomatic are Prostate Specific Antigen (PSA) and a Digital Rectal Examination (DRE). Men are counselled prior to undergo these tests (Nakandi et al., 2013). These tests should be conducted in men who shows signs and symptoms of prostate cancer, or in men who consent to be tested for this disease (Horwich et al., 2010). The Prostate Cancer Foundation of South Africa (PCFSA, 2013) supports both tests and recommends that Black South African men, with a family history of prostate cancer, be screened from the age of 40 years and all other men from 45 years onwards. In South Africa, screening for prostate cancer is done in an opportunistic manner and not on a population-based manner. However, opportunistic screening has limitations because not all men are covered.

Prostate cancer has various symptoms, which include blood in the urine, urinating frequently especially during the night, delayed or prolonged urination, weak urine stream, incomplete emptying of the bladder, pain when passing urine, change in bowel habits, difficulty to start urinating, blood in the urine and new onset of erectile dysfunction. When prostate cancer is advanced, men may experience bone pain, often in the spine or pelvis, leg weakness and urinary incontinence if cancer has spread to the spine and compressed the spinal cord. Furthermore, the Prostate Cancer Foundation of South Africa (PCFSA, 2013) indicates that some men may experience painful ejaculation. Factors such as embarrassment, lack of knowledge, being asymptomatic and financial status contribute to late detection of prostate cancer(So et al., 2014). When prostate cancer is detected late the survival rate is low (Kabore et al., 2014).

1.3 RESEARCH PROBLEM

The research problem for this study focused on prostate cancer, specifically the knowledge, attitudes and practices pertaining to this disease. This disease is seen more often in South African men and the incidence rate of the disease is escalating in all men (NHLS, 2012). According to Kabore et al. (2014) and Nakandi et al. (2013), prostate cancer is detected at a more advanced stage in men living in Africa as they have limited knowledge and many hold myths concerning the disease and early detection services. Moreover, the lack of population-based screening in South Africa aggravates the problem.

Little is known about the knowledge, attitudes and practices of men relating to prostate cancer, as no South African study seems to be available investigating all these factors.

Studies conducted in South Africa, which focused primarily on knowledge, found that men have limited knowledge concerning prostate cancer (Mofolo et al., 2015, Matshela et al., 2014), whilst attitudes and practices of men in terms of prostate cancer itself and screening for this disease does not seem to have been investigated. With this study, the researcher wishes to provide baseline data to address the knowledge gap.

1.4 RESEARCH QUESTION

The research question for this study was:
What are the knowledge, attitudes and practices of men living in Muldersdrift, South Africa, concerning prostate cancer?

1.5 AIM OF THE STUDY

The study aimed to describe the knowledge, attitudes and practices of men living in Muldersdrift, South Africa, concerning prostate cancer.

1.6 SIGNIFICANCE OF THE STUDY

The significance of the study pertains to the little information available about the knowledge, attitudes and practices of men concerning prostate cancer in South Africa. The prevention of diseases is a national priority for improving patient care (Mofolo et al., 2015),therefore, the findings of the study could provide important information that could be used for planning preventive campaigns.

1.7 SETTING AND METHODS

More details about the setting and methods will be presented later in the report. The setting was Ward 23, commonly known as Video, a resource poor area, in Muldersdrift. The population consisted of all men which are 40 years and older. According to South African profile database(Frith, 2011), Ward 23 has 436 males. The Raosoft sample size calculator was used to calculate the sample size: population n=436, margin error 5%, confidence level of 95% gave a sample size of n=183, and convenience sampling, which involves using participants who happen to be in the right place at the right time (Grove et al. (2013), was used to select the sample. A door-to-door survey was conducted and data were collected by means of structured interviews, and a questionnaire served as the data collection instrument. The data were entered into an Excel spreadsheet and analysed by means of STATA version 15.0 computer programme. Data were analysed using descriptive statistics and Fisher's Exact Test.

The Fishers Exact Test was used to determine the association between variables with the significance level set at 0.05 (p=0.05) (Greenland et al., 2016).

1.8 OPERATIONAL DEFINITIONS

Prostate: is a reproductive system organ that is found directly under the urinary bladder, in front of the rectum. It is almost the size of a walnut (PCFSA, 2013).

Prostate cancer: The condition whereby cell mutation starts in the prostate gland. The cancer develops when prostate gland tissues start multiplying without regulation (ACS, 2016).

Prostate specific antigen (PSA) test: This test detects the blood level of PSA, a protein produced and released by the prostate gland in to the blood circulation (ACS, 2016).

Digital Rectal Examination (DRE): is an examination of the lower rectum by a physician or nurse to examine the prostate for any abnormalities in size, lesions, symmetry, shape and texture (Itano et al., 2016).

Attitude: is the way of responding towards a certain idea or situation (Dictionary, 2017).

Practices: usual or customary actions (Collins, 2006).

1.9 CHAPTERS OF THE STUDY

The chapters of this study are as follows:

Chapter1: Overview of the study
Chapter2: Literature review
Chapter3: Research methods
Chapter 4: Discussion of results and data analysis
Chapter5: Justification, limitations, recommendations and conclusions

1.10 SUMMARY

The introduction of prostate cancer and the overview of the study were presented here. In addition, the research question, aim, significance, setting, methods and statement of a problem were explained. Chapter 2 will present the literature review for this study.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

Chapter 1 focused on the overview of the study, Chapter 2 will focus on the review of the literature related to prostate cancer worldwide, in sub-Saharan Africa and in South Africa. Primary prevention, secondary prevention, diagnosis and staging, signs and symptoms, knowledge, attitudes and practices of men and treatment of the disease will be discussed.

2.2 PROSTATE CANCER INCIDENCE WORLDWIDE

This disease is very common and has a high mortality rate globally (Adeloye et al., 2016). Other studies, such as by Agalliu et al. (2015), state that prostate cancer is one of the top cancers that cause death in males and found more often in males globally. According to the 2012 Globocan statistics (WHO, 2012), approximately 1.1 million males had prostate cancer in the world, which was found to be at 15% compared to other cancers seen in males. In addition, 307,000 deaths were recorded in 2012, putting prostate cancer at the top of all cancers that cause death in men (6%) (WHO, 2012).

The estimated incidences and mortality rate of prostate cancer according to the 2012 Globocan statistics (WHO, 2012), are as follows:

Table2.1 Prostate Cancer Estimated Incidence and Mortality Worldwide in 2012.

Regions	Estimated incidence	Estimated mortality
Europe	420,000	101,000
America	413,000	85,000
Western pacific	153,000	46,000
China	47,000	23,000
South east Asia	39,000	25,000
East Mediterranean	19,000	12,000

Prostate cancer is seen more often in men in the United Kingdom, with 41736 incidences in 2011, and is one of the top cancers that causes death in the United Kingdom with 10837 mortalities in 2012 (Nderitu et al., 2016). Furthermore, in 2008, South America had 334,000 incidences of prostate cancer with a 76,000mortality rate and the United States recorded 238,590 incidences and a mortality rate of 29,720 (Torre et al., 2015, Siegel et al., 2013, Lozano et al., 2013). Nearly three-quarters (644,000) of the total registered incidences of

prostate cancer occur in developed countries. It was noted that this disease varies by continent, because of the differences in the utilisation of screening services and subsequent investigations that are widely used in North America and Europe (Torre et al., 2015). The Middle east, Southern African and Caribbean regions have the highest mortality rate of prostate cancer (Torre et al., 2015, Agalliu et al., 2015) and a very low incidence in Asia and Europe. According to Agalliu et al. (2015), prostate cancer is found at great intensity in the Black community, but no reason is available to explain why, although it might be attributed to genetic makeup.

According to studies carried out in Namibia, Sub-Saharan Africa (SSA) has a low prevalence of prostate cancer. According to the GLOBOCAN statistics (2012), prostate cancer has 23.2 per 100,000 incidence and a mortality of 17.0 per 100,000 in SSA (WHO, 2012). Furthermore, in Sub-Saharan Africa, Nigeria is ranked first, followed by Democratic Republic of Congo and Uganda respectively, when considering the incidence of this disease (Atulomah et al., 2010).The high incidences and mortality rate of prostate cancer in Sub-Saharan Africa have been associated with the low socio-economic status and genetic makeup as compared to other regions (Adeloye et al., 2016). Even though the prostate cancer incidence and mortality rate in Sub-Saharan Africa is high compared to the United States of America, there is a lack of data available in SSA (Kabore et al., 2014).

According to GLOBOCAN statistics (2012), the number of new cases for this disease in Southern African men is relatively large at 61.8 per 100,000 (WHO, 2012). In addition, Mofolo et al. (2015) found that the incidence and mortality rate of the disease in the Southern African Development Community region is 40.5 per 100 000 and 22.5 per 100 000 of the population per year, respectively. The South African National Cancer Registry (2010), recorded 4652 incidences of prostate cancer, which were histologically diagnosed in South Africa during 2010 (CANSA, 2016). Moreover, White males are highly affected with 2864 incidences, followed by Black males at 2448 incidences, Coloured males (702) and Asian males (125) (CANSA, 2016). A study conducted in the Western Cape by Heyns et al. (2011), at the Urology Clinic, Tygerberg Hospital, concluded that Black men presented with higher grade disease and higher serum Prostate Specific Antigen, received less potentially curative treatment and had a shorter follow-up than Whites and Coloureds. Furthermore, the incidence rates of prostate cancer in South Africa is an underestimation of the burden of this disease, because not all geographic areas and socio-demographic groups have equal access to healthcare services and the National Cancer Registry (NCR) records include only microscopically verified cases (Babb et al., 2014). According to Babb et al. (2014), the

number of the new cases for this disease will increase in South Africa due to lifestyle changes and the fact that the South African population advances in age with life expectancy rising.

2.3 PREVENTION AND EARLY DETECTION OF PROSTATE CANCER

The incidence of this disease continues to rise in many countries. According to the American Cancer Society (ACS, 2016), some risk factors for prostate cancer cannot be prevented, such as age, being male, and having a family history of this disease. However, the risk of developing this disease can be minimised by lifestyle modification, such as smoking cessation, exercise and weight control measures (Cuzick et al., 2014). The high mortality rate of prostate cancer worldwide (307 per 100,000) could be reduced by effective implementation of primary prevention measures. Prostate cancer screening is an attempt to detect disease in asymptomatic men, even though screening and management of early prostate cancer is one of the most challenging issues in healthcare (Cuzick et al., 2014). Many healthcare professionals are unable to notice the early signs and symptoms of prostate cancer. Several studies conducted across the world have different findings concerning the use of PSA and the disagreement about the utilisation of this method still exists (Nakandi et al., 2013).

2.3.1 Primary prevention of prostate cancer

Primary prevention of prostate cancer is an effort by healthcare professionals to increase public knowledge and to decrease prostate cancer incidence by encouraging lifestyle modification (Cuzick et al., 2014). Given the high incidence of prostate cancer globally, it is very important to prevent the disease; eating unhealthy food, high body weight, high alcohol drinking and more body fat, all contribute towards the high number of new cases of the disease (ACS, 2016).

Primary prevention interventions for prostate cancer that are recommended by several studies around the world include the prevention of environmental factors, such as ionising radiation, ultraviolet radiation from the sun and cadmium, which have been linked to prostate cancer (Cuzick et al., 2014). The connection between increased levels of PSA and cadmium was found in a study carried out in 295 men(Cuzick et al., 2014), therefore, men need education on reduction of exposure to ionising radiation and cadmium metal.

Several studies and organisations have indicated that, in order to reduce the incidence of prostate cancer, it is important to monitor diet, manage weight and to engage in exercises. According to Cuzick et al. (2014), high body-mass index (BMI) plays a role in increasing the

incidence of Stage 4 prostate cancer. Analysis of the Prostate Cancer Prevention Trial (PCPT) showed similar findings that prostate cancer is linked to increased BMI (Cuzick et al., 2014). The best nutritional and exercise assurance that can be given to minimise the risk of the disease is to eat different kind of fruits and vegetables daily, exercise and to maintain a normal body-mass index(Kushi et al., 2012). The link between exercise and this disease was investigated in a study conducted in western countries by putting together the results of two studies (Kushi et al., 2012). Overall, the risk of prostate cancer can be reduced by engaging in regular exercise. According to Kushi et al. (2012), some studies have shown that tomato products and soybeans are associated with decreased risk, even though the evidence is not convincing. Furthermore, men are advised to eat white meat rather than red meat as an attempt to reduce prostate cancer incidence. In addition, the American Cancer Society (2012) has recommended regular exercises, cutting down on alcohol consumption, maintaining a normal weight, not eating food high in calories and that organisations should work together to avail an affordable and balanced diet to people in rural areas (Kushi et al., 2012).

Smoking can also lead to the development of this disease. According to Cuzick et al. (2014), men who smoke have a higher chance of dying from this disease than men who don't smoke. Therefore, encouragement of cessation of tobacco smoking is paramount when addressing prostate cancer prevention.

Finally, educating men about treating urinary tract infection is important. Studies have shown that males who have experienced urinary tract infections have a higher possibility of having prostate cancer (Cuzick et al., 2014). The study conducted by Cuzick et al. (2014)concurred that urinary tract infection increases the chances of developing this disease.

2.3.2 Early detection

Early detection is defined as any intervention implemented to identify potential for existence of a disease in asymptomatic individuals (Itano et al., 2016). The main aim of secondary prevention or screening is to reduce the possibility of developing the disease at the asymptomatic stage as a screening service. The screening tests used to investigate this disease are the prostate specific antigen (PSA) and digital rectal examination (DRE) (Nakandi et al., 2013). According to the American Urological Association (2012), PSA is the only method recognised to control prostate cancer through early detection (Brett, 2013). Furthermore, several studies have shown that PSA can discover the disease at an infant stages (Brett, 2013).

Men who have siblings who are diagnosed with prostate cancer should commence testing when they reach 40 years, because they have a high chance of developing this disease since it runs in the family (ACS, 2016). The screening for prostate cancer, based on PSA biomarkers, is the most cost-effective method for the detection of early disease (Kushi et al., 2012). In addition, the PSA screening for prostate cancer is seen as very important as it can reveal results that may lead to recommendations for biopsy and other tests that can also help to diagnose disease.

The American Urology Association (2013) states that PSA screening should not be done for men below 40 years or over 70 years, or those with less than 10 to 15 years life expectancy. However, for men between 55 and 64 years, the decision to perform screening should be individualised and the benefits and harm be weighed (Brett, 2013). Men who are between ages of 40 and 75 are encouraged to perform PSA screening tests even though some organisations leave the decision to the patients and the health professional.

Despite the controversies surrounding PSA screening, large population-based studies have shown increased survival benefits in the early detection of prostate cancer when compared with no active therapy in men with moderately and poorly differentiated disease (Nakandi et al., 2013). In addition, the study conducted in South African Black men suggested that a lack of PSA testing, more especially in rural areas, is contributing to late presentation of prostate cancer (CANSA, 2016). According to the same study, men in rural areas present to the healthcare setting when the disease has spread (CANSA, 2016).

According to the Cancer Association of South Africa (CANSA), secondary prevention plays a vital role in reducing the number of deaths caused by prostate cancer. PSA testing can reduce the chances of developing the disease by 31% when compared to men who are not screened (CANSA, 2016). Some studies have also shown that the recent decline in cancer mortality observed in several countries was due to early detection (Nakandi et al., 2013). Moreover, the American Cancer Society (2013) states that a prospective randomised trial from Canada suggests that prostate cancer mortality can be minimised widely through PSA screening (Brett, 2013).

Variation in guidelines concerning prostate cancer prevention and limited knowledge amongst men, contribute to the challenges that are faced by health professionals when dealing with the disease prevention. This lack of knowledge has been confirmed by several studies conducted in Africa (Mofolo et al., 2015, Nakandi et al., 2013, Kabore et al., 2014), which state that men are not aware of prostate cancer symptoms and it is difficult for them to respond when experiencing these symptoms. A recent study conducted in Uganda on 295 respondents, indicated that 47.9% of men were not aware of the screening services for this

disease (Nakandi et al., 2013). An additional study was conducted in Burkina Faso by Kabore et al. (2014), which showed only 8.2% of men were aware of the PSA test.

The uptake of prostate cancer screening was investigated in many studies globally. The low uptake of screening services was due to fear of the disease, lack of knowledge, embarrassment and perceived low risk, as shown by So et al. (2014), who indicated that in the Chinese and Taiwanese populations the uptake of prostate cancer screening was 12.4% and 29.4% respectively. The study further indicated that amongst African Americans and Canadians, the uptake is 36% and 47.5% respectively (So et al., 2014).

Another method commonly used by physicians for screening for this disease is DRE. According to the Cancer Association of South Africa (CANSA, 2016), DRE is an examination of the prostate gland by a physician to check for any changes that might have occurred on the prostate. Benign Prostate Hyperplasia is differentiated from prostate cancer through inserting a finger into the anus of the patient by a health professional. The DRE has some advantages, because it can detect large masses when they are present, is less expensive when incorporated into routine screening and the method is quick to perform (Winterich et al., 2009). However, the method has the disadvantages of missing small prostate tumours, having relatively poor specificity for prostate cancer and the effectiveness depends largely on the skill and competence of the healthcare professional (Winterich et al., 2009).

The mortality benefit of DRE when used alone is not yet established, because no trials have been done (Bell et al., 2014). However, DRE is performed on well-counselled men and those who have elevated PSA levels and wish to be screened (Horwich et al., 2010). Even though the method is widely used, men are not aware of this screening method, as several studies have indicated a small percentage of men mentioned the method. A study carried out by Kabore et al. (2014), indicated only 6.2% of respondents within the group stated to be aware of the DRE screening method.

2.3.3 Cancer prevention and detection campaigns

In South Africa, CANSA focuses its campaigns on the most common cancer affecting men such as prostate, colorectal, Kaposi sarcoma, lung and bladder cancer. However, there is no information that could be found on the prostate cancer campaigns internationally and in South Africa. Information available is about breast cancer and cervical cancer.

2.4 SIGNS AND SYMPTOMS OF PROSTATE CANCER

Prostate cancer usually grows slowly and some of the symptoms may not necessarily indicate it, therefore no clear defined signs and symptoms are known (PCFSA, 2013).

Ejaculation and prostatitis have signs similar to those of prostate cancer. Moreover, no symptoms are seen on men while the cancer is starting to grow.

Prostate cancer usually shows symptoms when the growing tumour is blocking the urine pipe, hence interrupting the flow of urine. The well-known symptoms of this disease are: back pain, blood stained urine, experiencing problems with urination, inability to hold back urine, itching urine, having pain during ejaculation and urinating more often at night (PCFSA, 2013). According to the Canadian Cancer Society (2014), the signs of early stage prostate cancer are problems with urination and difficulty in achieving or maintaining erection and painful ejaculation. The American Cancer Society (2016) indicates that more advanced prostate cancer causes symptoms such as painful hips, back pain, chest pain and mentions that men can also experience weakness of lower extremities, urine incontinence and bladder problems (ACS, 2016).

2.5 DIAGNOSIS AND TREATMENT OF PROSTATE CANCER

Many procedures can be performed to diagnose prostate cancer; however, microscopic examination and biopsy are used to confirm the presence of this disease, as well as trans-rectal ultrasound and cystoscopy. Before taking a biopsy for examination, DRE can be performed to assess the state of the urine pipe and the prostate for size, texture and position. Cystoscopy is used for examining the bladder and trans-rectal ultrasonography is used for examining the picture of the prostate. However, studies are on-going, searching for new ways of improving the diagnostic accuracy of trans-rectal ultrasound-guided biopsy, which currently is the basic way to diagnose prostate cancer (Tefekli and Tunc, 2013) and recently, magnetic resonance imaging (MRI) is playing a pivotal role in diagnosing prostate cancer (Tefekli and Tunc, 2013). The utilization of MRI in diagnosing prostate cancer was confirmed by many published studies. Finally, several interventions are available for treating prostate cancer.

2.5.1 Diagnosis of prostate cancer

According to the American Cancer Society (2016), biopsy is the removal of the small sample of the prostate gland for examination using a microscope (ACS, 2016). The main method utilised to diagnose this disease is a core needle biopsy, which is normally done when certain symptoms are present or when DRE suggests any changes in the prostate gland and when the PSA is elevated. A general surgeon and urologists perform this procedure.

Prostate biopsy is done with the help of trans-rectal ultrasound (TRUS), which helps the healthcare professional to visualise the prostate gland (ACS, 2016). The procedure is

performed under general anaesthesia and it is the precise way of coming up with the diagnosis of prostate cancer. Most men can experience blood stained semen, which normally lasts some weeks after biopsy. The American Cancer Society (2016) states that prostate cancer can still be missed if biopsy needles fail to pass through it, hence giving a false, negative result, which may force healthcare professionals to repeat the biopsy (ACS, 2016). Barrett and Haider (2017) state in their recent study that trans-rectal ultrasound is prone to sampling error because it randomly samples 1% of the gland. Several studies have established that TRUS biopsy under estimates prostate cancer aggressiveness in approximately one-third of cases.

Computed tomography is an instrument used by many healthcare professionals for the diagnosis and management of cancer. The computed tomography scan (CT) uses X-rays and computers to make 3-dimensional images of inside the human body (ACS, 2016). CT scans, compared to traditional X-rays, can produce detailed images of the bones, organs and tissues therefore, they can indicate if the disease is growing into other organs, such as the pelvis. It is also done to estimate prostate size by showing detailed images of the prostate gland. MRI is an imaging method that uses both radio waves and a computer to make a detailed image of the body organs and structures to evaluate extra-capsular penetration beyond the gland itself (ACS, 2014). In addition, MRI scans can indicate if the cancer has spread to other nearby organs and has the ability to produce good images of the prostate.

According to Barrett and Haider (2017), MRI scans have now been extensively validated for the detection of prostate cancer, and they indicate that MRI should be used as a baseline diagnosing method to identify the misclassified patients. An MRI scan is important because it offers additional information on the accuracy of tumour localisation and staging and it identifies the anterior disease, which has systematically been missed by standard trans-rectal ultrasound-guided biopsy (Tefekli and Tunc, 2013, Barrett and Haider, 2017, ACS, 2016). Moreover, Tefekli and Tunc (2013) indicated dynamic contrast-enhanced MRI by up to 90% in detection and localisation of prostate cancer.

According to Tefekli and Tunc (2013), a more recent study investigating the role of MRI-targeted TRUS-guided trans-perineal fusion biopsy in the diagnosis of this disease, identified that 58% of samples, which had a history of negative TRUS-guided biopsies, had prostate cancer. The study, based on the above findings, concluded that MRI-targeted TRUS-guided trans-perineal fusion biopsy provides high detection rates of clinically significant tumours. Furthermore, the enhanced MRI is better than conventional CT and MRI in detecting lymph nodes that contain cancer (Tefekli and Tunc, 2013).

MRI accuracy however depends on certain variables, such as patient selection criteria, grade and stage of disease, MRI sequences used, and healthcare professional expertise, which support the recent attempts to standardise MRI acquisition and interpretation (Barrett and Haider, 2017). Tefekli and Tunc (2013) also indicated that this technique still has some limitations, and therefore systematic biopsies should be used to diagnose prostate cancer. This conclusion was made based on a recent meta-analysis report, which showed a median prostate cancer detection rate of 42% (Tefekli and Tunc, 2013).

The most commonly used diagnostic tests for prostate cancer in South Africa are trans-rectal ultrasound, cystoscopy and trans-rectal biopsy (PCFSA, 2013). The cystoscopy is a procedure whereby the interior of the urethra and bladder are examined (PCFSA, 2013).These tests are available in hospitals in South Africa

2.5.2 Treatment of prostate cancer

To start treatment of this disease different factors are taken into consideration, such as performance status, grade and stage of the cancer, age and the preference of the patient (PCFSA, 2013, ACS, 2016). Each treatment option has side effects that can have an impact on the patient's quality of life and sometimes treatment options are used in combination. Horwich et al. (2010) indicated that before men start treatment for prostate cancer, the side effects of treatment should be explained to them, they should know they might experience sexual dysfunction, infertility and incontinence. Furthermore, Barrett and Haider (2017) also indicated in their study that approximately 60% of patients will develop erectile dysfunction after radical therapy and 30% of men will experience severe urinary incontinence. During treatment of prostate cancer, men are observed and closely monitored with PSA blood tests, DRE, and trans-rectal ultrasound at regular intervals to determine the progress of the disease. If any changes are shown in the test results, further treatment modalities will be planned and discussed (ACS, 2016, Horwich et al., 2010).

Watchful waiting is one of the methods used in the management of this disease. According to the American Cancer Society (2016) and Prostate Cancer Foundation of South Africa (2013), 'watchful waiting,' is a period when men with prostate cancer are monitored closely by healthcare professionals through regular DRE and repeated biopsies. Other countries perform MRI to identify early signs of disease progression and PSA blood tests without treating the disease (ACS, 2016, PCFSA, 2013).The 'watchful waiting' approach is recommended for men who have Stage I prostate cancer and are elderly with other co-morbidities that may limit their lifespan. In addition, males found to have this disease at a younger age and are not experiencing any prostate cancer symptoms may be considered for active surveillance (ACS, 2016). Some men opt for this approach because of the fear of side

effects from surgery, chemotherapy and radiation. Many studies have not approved hormonal therapy, an approach that can be used with 'watchful waiting' in men who are not ready for active treatment even though there are experiencing some symptoms of the disease (Horwich et al., 2010). Although there is growing agreement for men with no symptoms of prostate cancer to be offered 'watchful waiting' as a management approach, some men and their families find it inappropriate to choose this approach. These men state they are ready to face the side-effects of radiotherapy, chemotherapy and/or surgery with the aim of removing or destroying the prostate cancer (Brett, 2013). Finally, different countries implement different criteria to include men into active surveillance protocol and most countries include patients with a PSA <10ng/mL (4ng/mL and lower) and those who have less than three positive TRUS biopsies (Tefekli and Tunc, 2013).

Surgery is the most common method used in the management of prostate cancer, by removing all or part of the prostate. The main type of operation conducted for prostate cancer at an infant stage is radical prostatectomy (ACS, 2016, PCFSA, 2013), which is seen as the gold standard while managing localised cancer. In addition, this surgery can be utilised in many ways for treatment of prostate cancer. The radical prostatectomy used in the past by surgeons was open approach surgery, whereby the surgeon cut the skin to remove the prostate and nearby tissues, and during the operation, the seminal vesicles were removed. This treatment approach is used when the cancer is confined to prostate. According to the American Cancer Society (2016), this procedure can be performed in two ways, such as radical retro-public prostatectomy and radical perineal prostatectomy (ACS, 2016). The radical retro-public prostatectomy is when the surgeon or oncologist makes an incision in the lower abdomen while the patient is under general anaesthetic, and a lymph node biopsy can be taken during the operation based on the results of the PSA level and prostate biopsy. In radical perineal prostatectomy, the surgeon makes an incision in the perineal region, however, in this approach lymph nodes cannot be removed and it is not used often because it leads to erection problems (ACS, 2016).

Presently, modern technology and techniques are used to carry out prostatectomy. Two minimally invasive laparoscopic approaches are used to remove the prostate. According to the American Cancer Society (2016), robotic-assisted laparoscopic radical prostatectomy is performed with the help of the Da Vinci system (ACS, 2016), which is controlled from the operating room by an experienced surgeon to remove the prostate. Furthermore, radical prostatectomy is a dominant technique among surgeons in the United States because of widespread advertisements and because it makes the operation more easy for the surgeons to perform using the arms of the machine (Tefekli and Tunc, 2013). According to Tefekli and

Tunc (2013), cancer that is still confined to the prostate can be managed best by the use ofrobotic-assisted radical prostatectomy.

Another approach is laparoscopic radical prostatectomy, whereby the doctor's uses equipment inserted through the openings done in the abdomen. The surgeon is able to see inside the body through a video camera, which is part of the instrument (ACS, 2016). These modern technological advances have raised the expectations of patients with localised prostate cancer. However, a randomised controlled trial comparing radical prostatectomy and active waiting conducted by the Scandinavian Prostate Cancer Group (SPCG) has shown that 80% of patients who underwent radical prostatectomy developed erectile dysfunction (Horwich et al., 2010).

Radiotherapy, another radical treatment for prostate cancer, is a local treatment that uses high-energy waves similar to x-rays to eliminate cancer cells or make the tumor smaller. Advances in technology has made it easy for radiation oncologists to come up with other treament ways, such as conformal radiation therapy (CRT), proton beam radiation and intensity modulated radiation therapy,which do not interfere with nearby organs(Tefekli and Tunc, 2013). These methods help to reduce side-effects of radiation while increasing the effectiveness of the therapy. Moreover, radiotherapy is used for localised prostate cancer and when the cancer is still at a low stage (ACS, 2016). Radiotherapy can be used as adjuvant therapy after surgery and/or to keep prostate cancer under control if it is more advanced.

Radiotherapy can be given in two different ways, such as external beam radiation or internal radiation (brachytherapy). With external beam radiation therapy (EBRT), the precise dose is given to a patient from outside his body. EBRT can be used to relieve some symptoms when the cancer is found in other organs and can be utilised to cure cancer when it is detected at an early stage (ACS, 2016). Before a patient starts treatment, he undergoes a simulation session, which helps with creating an image of the defined treatment volume;in addition, the CT and MRI scans and making of a body cast prior treatment is very important (ACS, 2016, PCFSA, 2013). Treatment is given in fractions and it lasts only a few minutes in an out-patient clinic over a period of 7 to 9 weeks, and the patient does not experience any pain or discomfort during the delivery of treatment.

According to the Prostate Cancer Foundation of South Africa (2013), external beam radiation can be delivered through different methods, such as three-dimensional conformal radiation therapy (3D-CRT) and intensity modulated radiation therapy (IMRT) (PCFSA, 2013). The 3D-CRT is used to aim radiation beams at the prostate from different angles and normal

tissues are avoided to limit doses to them, while IMRT is complex method of 3-dimensional therapy. On top of creating good beams from different angles, the machine is computer-driven and it moves around the patient as the radiation doses are delivered (ACS, 2016). Finally, the new machine that is in use is image-guided radiation therapy, which has imaging scanners built into it. The radiation therapist is able to create pictures of the treament field and make some changes before delivering the dose. However, external beam radiation has some side-effects such as diarrhea, rectal leakage, frequency of urination, burning sensation while passing urine, blood in the urine and fatigue, while late side effectsare urinary incontinence and proctitis (ACS, 2016).

Brachytherapy, which is called seed implantation by other sources, is a method in which radiotherapy materials are placed directly into the prostate with the guide of imaging tests, such as trans-rectal ultrasound, CTscans or MRI (PCFSA, 2013). According to the American Cancer Society (2016), brachytherapy is utilised in males with low-grade prostate cancer and can be used together with teletherapyin those with greater chances of deveolping stage 3 or 4 of prostate cancer (ACS, 2016). However, brachytherapy use in prostate cancer is limited due to factors such as urinary problems and large prostate glands. When the prostate gland is enlarged, it is not easy to insert the radioactive materials in the required place of treatment. Brachytherapy is done in two approaches, being permanent and temporary. With the permanent approach, radioactive material, such as iodine-125, is placed through the perineal region into the prostate gland with the help of thin needles (ACS, 2016). The needles will be removed, while the seeds are left in the prostate for months to discharge low doses of radiation.This technique is not commonly used in hospitals,however, the technique causes less problems for the patients because it does not affect other organs which are not part of treatment field (ACS, 2016). Patients may only experience some pain in the insertion area and urine may be reddish-brown.

Cryotherapy (cryo-ablation) is utilised to manage low-grade prostate cancer through the utilisation of extremely low temperatures to destroy cells that cause cancer (PCFSA, 2013). The technique is used when the cancer recurs after primary treatment with radiation therapy. This procedure is done by a doctor using the trans-rectal ultrasound to guide needles through the perineum into the prostate (ACS, 2016). During the procedure, the urethra is kept from freezing by circulating warm salt water through a catheter inserted into the bladder through the penis. Cryotherapy can cause some problems for the patient, such as erectile dysfunction, urinary problems and blood in the urine, for some days after the procedure (ACS, 2016).

The other treatment option for prostate cancer is hormonal therapy. Also known as androgen suppression therapy, hormonal therapy prevents the production of testosterone from the testicles and adrenal gland, thus shrinking the prostate cancer and slowing down its growth (Horwich et al., 2010). This treatment option does not provide a cure for prostate cancer; however, it can be given prior to other treatment modalities with the aim of reducing the size of the tumour. In addition, hormonal therapy can be used in metastatic disease where surgery is seen as impossible to perform and/or when the prostate cancer comes back after primary treatment (ACS, 2016).

According to Horwich et al. (2010), luteinizing hormone-releasing hormone agonist (LHRHa) should be recommended to men receiving radiation therapy for high-risk disease. Examples of LHRHa commonly used in the United States of America include, Leuprolide (Lupron, Eligard), Goserelin (Zoladex), Triptorelin (Trelstar) and Histrelin (Vantas). LHRH agonists can be given as an injection and again the surgeon can insert small implants underneath the patient's skin from once a month up to once a year (ACS, 2016). Luteinizing hormone - releasing hormone antagonists, such as the Degarelix (Firmagon), work like the LHRH agonists, the only difference is it has no potential to make the tumour grow fast as compared to the LHRH agonists (PCFSA, 2013). Furthermore, CYP17 inhibitors such as Abiraterone (Zytiga) can be used as a hormone therapy because it blocksCYP17, therefore stopping the cancer cell from producing androgens (ACS, 2016).

Chemotherapy is an agent used to destroy cancer cells and slow the growth of prostate cancer. More research

studies are being done to establish the effectiveness of chemotherapy after surgery when the disease is still at an early stage, however, these agents are not standard treatment of early state prostate cancer (ACS, 2016). Chemotherapy is a systemic treatment, which is utilised when the disease is not responding to hormonal therapy, and can be used at an early stage to slow down the progression of the disease (Tefekli and Tunc, 2013).

According to the American Cancer Society (2016), there are various kinds of agents utilised to treat prostate, such as Docetaxel (Taxotere), Cabazitaxel (Jevtana), Mitoxantrone (Novantrone) and Estramustine (Emcyt). Docetaxel is the first drug given in the chemical management of this disease, used together with other agents like Prednisone. This agent is used for patients who shows signs and symptoms of castration-refractory disease (Horwich et al., 2010). According to a large international multicentre stage III trial (TAX327), Docetaxel is the best compared to other treatments in prolongation of survival rate, as shown by a 50% decrease in PSA for half of the patients who took part in the study (Horwich et al., 2010).

However, Mitoxantrone can be used if it is impossible to use Docetaxel, because of contra-indications (ACS, 2016). This drug is important in the sense that it reduces symptoms, leading to a better quality of life and it also helps men to live longer (PCFSA, 2013).There are however many problems, such as myelosuppression, mucositis, nausea and vomiting and alopecia, associated with chemotherapy.

The last method for treating prostate cancer is vaccination. Sipuleucel-T, also known as Provenge, is the only vaccine utilised to manage prostate cancer when it is advanced (Horwich et al., 2010). While the vaccine is used to improve the immune system of the body, it is also aimed at treating advanced disease that is not responding to hormonal therapy. This vaccine is not readily available in the market and is manufactured from the patient's own blood (Horwich et al., 2010).

2.6 STAGING AND GRADING OF PROSTATE CANCER

Staging in oncology is a procedure used by health professions when describing the magnitude of the disease and the state of metastasis. The healthcare professionals estimate the likelihood of spread of prostate cancer before treatment is given to the patient (Cosma et al., 2016). Normally cancer-staging evaluation happens before and after the tumour is removed, which is called clinical and pathological staging respectively. Clinical staging relies on DRE results, while pathological staging depends on the estimate made through examination of the removed tissue (Cosma et al., 2016). Pathological staging is more accurate compared to clinical staging, because it can provide direct insight into the extent of the disease.

The commonly used staging system for prostate cancer is the TNM system, which is recognised by the Union for International Cancer Control (UICC) and also the American Joint Committee on Cancer (AJCC) (Cosma et al., 2016). This cancer staging system is based on determining the size of the tumour (T stage), the involvement of nearby lymph nodes (N stage) and the spread, or not, to other organs (M stage) (Cosma et al., 2016, ACS, 2016). In addition, the PSA level at the time of diagnosis and the Gleason score based on the prostate biopsy can be used to determine the stage of the tumour. See Table 2.2 for the TNM staging below.

Table 2.2: AJCC (2010) staging of prostate cancer

Primary tumour (T)	
TX	Tumour cannot be assessed
T0	No evidence of primary tumour
T1	Cancer present but not palpable on DRE nor visible by imaging
T1a	Tumour incidentally found in 5% or less of tissue resected
T1b	Tumour incidentally found in more than 5% of tissue resected
T1c	PSA elevated, not palpable however tumour identified by needle biopsy
T2	Tumour confined within prostate
T2a	Tumour confined to half of one lobe or less
T2b	Tumour confined to more than half of one lobe, but not both lobes
T2c	Tumour is in both lobes but within the prostatic capsule
T3	Locally extensive cancer
T3a	Penetration of prostate capsule on one or both sides
T3b	Tumour invades seminal vesicles
T 4	Tumour invades adjacent organs, such as the urethral sphincter, the bladder and the rectum
Regional lymph nodes (N)	
NX	Nearby lymph nodes not sampled
N0	No regional lymph node metastasis
N1	Regional nodes involvement
Distant metastasis (M)	

MX	Distant metastasis cannot be evaluated
MO	The disease has not metastasised
M1	Distant metastasis
M1a	The cancer has spread to regional lymph nodes (outside the pelvis)
M1b	The cancer has spread to the bones
M1c	The cancer has spread to other parts of the body, such as lung, liver and brain, with or without bone disease

Source: (Itano et al., 2016)

Prostate cancer is categorised in four stages being Stage I, II, III and IV. Stages I and II are called early, while Stage III is when the cancer has spread to nearby tissues and Stage IV is when cancer has metastasized (Cosma et al., 2016, PCFSA, 2013). Prostate cancer Stages I and II are confined to the prostate, while Stages III and IV are extra-prostatic stage. In addition, the Prostate Specific Antigen and Gleason score are also used in the disease staging by the American Joint Committee on Cancer (AJCC) (PCFSA, 2013).

Table 2.3: Stage grouping

Stage I	T1a	N0	M0
Stage II	T1a	N0	M0
	T1b	N0	M0
	T1c	N0	M0
	T1	N0	M0
	T 2	N0	M0
Stage III	T3	N0	M0
Stage IV	T4	N0	M0
	Any T	N1	M0

	Any T	Any N0	M1

Source: (Itano et al., 2016)

Finally, the prostate cancer cells can be graded by looking at them through a microscope. According to the PCFSA (2013), grading of prostate cancer determines how abnormal the cancer cells appear when examined under the microscope. A pathologist examines the genotype or phenotypes of both normal and abnormal cells. The abnormal cells do not resemble the mother cells and look abnormal. Based on the results, abnormal cells are graded. According to the PCFSA (2013), prostate cancer is classified as grade one or grade four. Grade one, is when the abnormal cells looks like normal ones and the cells are not multiplying very fast, while grade 4 cancer cells look different and if not treated, they spread quickly (PCFSA, 2013).

2.7 KNOWLEGDE, ATTITUDE AND PRACTICES OF PROSTATE CANCER AMONG MEN

Men have shown limited knowledge concerning prostate cancer (Nakandi et al., 2013). A study conducted in Uganda has shown that 37.4% of men were not aware of people affected by this disease, but 21.1% were able to identifiy the age that is commonly affected. Half of the men who were part of the study could not identify predisposing factors of this disease but 10.3% knew symptoms,while 50.1% were not aware of prostate cancer symptoms (Nakandi et al., 2013). In addition, the study conducted in South Africa by Mofolo et al. (2015) also identified a poor knowlegde in Black African men.The educational status is playing a role in their knowledge regarding this disease (Kabore et al., 2014). Furthermore, a study conducted in Nigeria by Ogundele and Ikuerowo (2015) shares the same sentiment when stating there is poor knowledge of the disease within male population and voluntary screening for the disease is very low. In addition, disbelief and misconception among African men concerning prostate cancer has also been reported as a contributing factor to late reporting to healthcare settings (Ogundele and Ikuerowo, 2015, Kabore et al., 2014). Despite the poor knowledge regarding prostate cancer, men also have a negative attitude toward prostate cancer screening. Studies in Uganda have indicated that 77% of men had never considered undertaking screening due to a negative attitude towards prostate cancer (Nakandi et al., 2013). Another prominent reason for men not to take part in any cancer preventative measures is the feeling that they cannot get prostate cancer, which is accompanied by a lack of knowledge and avoidance of fear and anxiety (Azubuike and Okwuokei, 2013, Kabore et al., 2014).

Many people, men included, tend to involve religious practices in dealing with cancer and health-related issues because the church provides a social network of support, coping and an interpretive framework for distress or suffering (Allen et al., 2014). A survey done on churches of various sizes and socio-economic strata, dimensions of religiousness and cancer screening behaviour among church-going Latinos in the United States of America, found that 89% of men know of screening services for prostate cancer (Allen et al., 2014). Religions usually influence beliefs and cultural values and this in turn influences health behaviour of men towards screening (Allen et al., 2014). Furthermore, religious and cultural beliefs, lack of knowledge, access to hospitals, financial constraints and fear are the most common reasons for non-participation in prostate cancer screeening among men in Africa (Rebbeck et al., 2011). In Africa no information is available about the association between religious and cultural beliefs concerning non-participation in prostate cancer screening.

2.8 SUMMARY

This chapter discussed the literature focusing on the incidence worldwide, in particular Africa and South Africa. Prevention, screening, risk factors and signs and symptoms of prostate cancer were also presented.

CHAPTER THREE
RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

Chapter 2 focused on the literature review, Chapter 3 will explain the design and methods, setting, sampling and population, process of data gathering, data management and storage, instrument development, validity and reliability and finally the ethical considerations for the study.

3.2 RESEARCH SETTING

A research setting is a physical location in which data collection takes place (Grove et al., 2013). The setting for this study was Muldersdrift, in an area called Ward 23, also known as Video, which forms part of the West Rand District Municipality. The West Rand District Municipality is situated on the south-western edge of the City of Tshwane and City of Johannesburg metropolitan areas respectively (MCLM, 2017). Muldersdrift is a semi-urban area with few developments. According to Rwamugira et al. (2017), Muldersdrift has a population of approximately 19,959, with a high number of the population ranging from 20 to 34 years of age. According to the South African community profile database (Frith, 2011), Ward 23 has 436 males. The majority of the men are in the age group of 20 to 35; this is an estimated figure, as it is not easy to know how many people actually live in Ward 23, because more than one family can occupy one house.

Muldersdrift is comprised of people from different cultural backgrounds and who speak different languages, such as isiZulu, Setswana, isiXhosa, Northern Sotho and Tsonga. The most common languages are Setswana, English and isiZulu. In addition, the majority of people in this area have obtained some secondary school education (MCLM, 2017). Ward 23 consists of an informal settlement with an unknown number of informal dwellings, as homes are continuously being erected, as well as 214 small brick houses built as part of the Reconstruction and Development Programme of the National Government. The informal houses have no running tap water and residents use communal taps, which provide water fit for drinking. Residents in the informal houses use pit latrines, even though it is not clear how many yards have them. The informal homes do not have electricity, but some have illegal electricity connections, which are taken from the small brick houses constructed by the Government; the illegal electricity lines are seen in the small passages of the informal settlement. The internal roads are tarred and well labelled.

The residents of Ward 23 use the Muldersdrift Primary Health Clinic for accessing healthcare. The clinic is nurse-led and provides a wide range of services, such as awareness of non-communicable diseases, training and prevention services, psychosocial support and treatment-related services. An enrolled nurse visits Ward 23 on a daily basis to provide health education to its residents.

3.3 RESEARCH DESIGN

The research design is a plan utilised to address the research question and the aim of the study (Grove et al., 2013). This method constitutes the collection, measurement and analysis of data.

A door-to-door survey, designed for the purposes of this study, was utilized (described below). According to Grove et al. (2013), a survey is a method of collecting data as reported by respondents through a survey questionnaire administered to them, who then answer the questions asked. This non-experimental design is used to collect data about people via direct questioning or use of questionnaires (Grove et al., 2013). According to Creswell (2013), a survey is used to collect data about attitudes and common practices of a population. In addition, it may be used to generalise results to a larger population and study relationships between variables (Creswell, 2013).

During a door-to-door survey, the researcher visits respondents in their household. The method was applicable to this study because it allowed the researcher to interact with the respondents, which had the potential to improve the accuracy of the data (Grove et al., 2013).This verbally administered survey was better because the population have low literacy level. This design was selected due to the fact it can gather data from a big sample size in a less expensive manner. In addition, the design has the ability to compare the association between two variables, but the causes of these two variables are not determined (Creswell, 2013).

3.4 RESEARCH METHODS

This section includes description of the study population, sampling, data analysis and information gathering process.

3.4.1 Population

The population is the total number of people that the researcher has an interest in studying (Grove et al., 2013). The population was all men in Ward 23, Muldersdrift, whilst the target

population was all men who met the sampling criteria (Grove et al., 2013).The target population for this study comprised all men, who were 40 years and above residing in the semi-rural area called Muldersdrift. Men 40 years and older were selected for this study because prostate cancer is seen more often in men in this age group (PCFSA, 2013).

3.4.2 Sampling and Recruitment

The part of the population selected to take part in the study is known as a sample. The researcher utilised convenience sampling, which involves using community members who are seen at the study setting during data collection time (Grove et al., 2013). Convenience sampling is less expensive, easy, and community members are readily available (Etikan et al., 2016).

A calculated sample size was used. The Raosoft sample size calculator was used to calculate the sample size: population was 436; margin of error 5%, confidence level of 95% giving a sample size of 183 (n=183).

The researcher knocked on the doors of houses and invited all men, 40 years and older, to be part of the study. Recruitment continued until the sample size (n=183) was realised. Community healthcare workers and the community leader accompanied the researcher, however, only the researcher collected the data.

3.4.3 Data collection method and instrument

This is the process of collecting information, with the intention of addressing the research question and achieving the research aim and the purpose (Grove *et al*., 2013). The researcher used structured interviews to collect the data. A questionnaire served as data collection instrument. Structured interviews have the advantage of asking the same questions to every respondent, questions are standardised, and respondents do not have to be literate or able to write to be included in the study (Levashina et al., 2014).

According to Grove et al. (2013), an instrument utilised by the researcher to write the responses of the respondents is called a questionnaire. When using a survey questionnaire, data can be collected quickly from a big sample size, it is time efficient and less expensive and does not depend on the mood of the researcher. In addition, although the questions are easy to design, the information obtained has less depth and the respondents are unable to elaborate their answers.

A questionnaire (**Annexure A**) containing both open- and closed ended questions was developed from the literature (Arafa et al., 2015, Ashford et al., 2001, Arnold-Reed et al., 2008, Matshela et al., 2014, Paiva et al., 2010), in collaboration with the supervisor, and submitted to radiation oncologists to ensure that the questionnaire was complete and to

enhance face- and content validity. The questionnaire was designed to be administered verbally to the participant and the responses recorded by the researcher.

The questionnaire was also pre-tested. Pre-testing is where the instrument is used in a small simple size to see if it is user friendly and measures the effectiveness of the questions (Grove et al., 2013). The pre-test was conducted on 10% of the eligible respondents in the study setting to determine whether the questionnaire was applicable and clear:

Total population: 183

Simple size: 10% of 183

Total: 18 respondents

The pre-test respondents were not part of the study. No modifications were made to the questionnaire because it was found to be clear and applicable.

The questionnaire consisted of four sections (**Annexure A**). The first section (A) comprised the variables (Table 3.1) and had six questions.

Table 3.1: The independent variables contained in the questionnaire

QUESTION	VARIABLE	GENERAL INFORMATION
1.	Age	
2.	Cultural group	Northern Sotho; Zulu; Xhosa; Tswana; others specify:
3.	Educational levels	Never went to school; Grade 1 to7; Grade 8 to 10; Grade 11 to 12; Tertiary education
4.	Source of income	No income; Self-employed; Employed; Government grant; Other
5.	Income per month	No income; Less than R 779.00; More than R 779.00
6.	Preferred healthcare provider	Doctor; Primary healthcare clinic; Traditional healer; Spiritual healer; others

The variables for this study are illustrated in Table 3.2. Section two (B) collected information on the respondents' knowledge of prostate cancer. This section consisted of 13 questions.

The first question asked was about “having ever heard of prostate cancer”. However, due to the risk of giving a socially acceptable answer, the other questions were asked even if the respondent answered that he had never heard of prostate cancer.

Table 3.2: The dependent variable contained in the questionnaire

Question	Focus	Dependent variable	Characteristics
1	Awareness	Awareness of prostate cancer	Yes; no; unsure
2	Knowledge	Knowledge of prostate cancer	Cancer in men; cancer that spread to other organs if left untreated; cancer of the prostate gland; do not know
3	Knowledge	Anatomical position of the prostate	Beneath the urinary bladder; in front the rectum; it surrounds the urethra; other; do not know
4	Knowledge	Screening	Men older than 40 years; men with family history of prostate; men presenting with urinary problems; do not know
5	Knowledge	Changes in the body	Urinating frequently especially during the night; delayed or prolonged urination; weak urine stream; incomplete emptying of the bladder; pain when passing urine; blood in the urine; change in bowel habits; new onset of

			erectile dysfunction; do not know; others(specify)
6	Knowledge	Position about the influence on sexual functioning	Yes; no; unsure
7	Knowledge	Influence on sexual functioning	Erectile dysfunction; loss of fertility; partner dissatisfaction; diminished libido; do not know; others(specify)
8	Knowledge	Risks of prostate cancer	Family history of cancer; age; consumption; race; other (specify)
9	Knowledge	Decreasing the risk of developing prostate cancer	Balanced diet; a low fat diet; reduce intake of red meat; exercise; screening; others (specify)
10	Knowledge	Position about prevention	Yes; no; unsure
11	Knowledge	Tests done to check presence of prostate cancer	Blood test (PSA); digital rectal examination (DRE); biopsy; do not know; other
12	Knowledge	Knowledge about treatment of prostate cancer	Yes; no; unsure
13	Knowledge	Knowledge about treatment modalities of prostate cancer	Surgery; radiotherapy, chemotherapy; hormone therapy; do not know

Section three (C) was used to collected information on the attitudes of men regarding prostate cancer (Table 3.3). In this section, the focus was on determining how men think about prostate cancer and screening methods.

Table 3.3: The dependent variables contained in the questionnaire

Question	Focus	Dependent variable	Characteristics
1	Attitude	The impact of prostate cancer as compared to HIV/AIDS	Yes; no; unsure
2	Attitude	Perception about consequences of prostate cancer	Yes; no; unsure
3	Attitude	Perception about treatment	Yes; no; unsure
4	Attitude	Perception about screening	Yes; no; unsure
5	Attitude	Position about screening only men with urinary problem	Yes; no; unsure

Lastly, Section four (D) collected the information on practices of men regarding prostate cancer (Table 3.4). The section was intended to establish if men had ever experienced signs and symptoms of prostate cancer, and if they were prepared to go for screening.

Table3.4: The dependent variables contained in the questionnaire

Question	Focus	Dependent variable	Characteristics
1	Awareness	Awareness of prostate cancer screening	Yes; no; unsure
2	Practice	Procedure of prostate cancer screening	Health professional insert gloved finger in the anal opening; taking blood; taking tissues for laboratory analysis; do not know
3	Practice	Preparation for screening	Yes; no
4	Practice	Past experience concerning prostate cancer	Urinating frequently especially during the night; delayed or prolonged urination; weak urine stream; incomplete emptying of the bladder; pain when passing urine; blood in the urine; change in bowel habits; new onset of erectile dysfunction; do not know; others
5	Practice	History of screening	Yes; no; unsure
6	practice	Healthcare centre for screening	Private doctor; primary health care clinic; hospital; other
7	Practice	Procedure performed: Blood test (PSA); digital rectal examination	Yes; no; unsure
8	Practice	Collection of results	Yes; no; unsure

3.4.4 Process of data collection

Data were collected after obtaining ethical clearance from the University of Witwatersrand (#M170519) (**Annexure B**). The researcher notified the Muldersdrift clinic manager and community representative about the planned study and obtained their support. During data collection, the respondents were visited in their houses. The researcher introduced himself and the research topic to the men in a pleasant, positive, informative, culturally sensitive and non-aggressive manner. During this meeting, the respondents received an explanation about the study's importance, their value and how much of their time would be required. The researcher was unable to ensure privacy due to the social structure of the community.

A written consent was taken from respondents after the researcher read the information letter (**Annexure C**). It took ± 20 to 30 minutes to complete the questionnaires and adequate time was allowed to ensure the questionnaire was completed in full. The data were collected from August to September 2017.

3.4.5 Data management and analysis

The completed questionnaires were placed in a box and the individual data collected were numbered sequentially from 01to183.Data were cleaned and entered onto an Excel spreadsheet. Cross tabulation and grouping of the data was performed using statistical software STATA version 15.0.According to Grove et al. (2013), computer systems are commonly used globally for data analysis and are easy to access and use. Data were also analysed in consultation with a statistician.

Descriptive statistics were used to analyse the data. The description of study variables and general characteristics of the sample were summarised using descriptive statistics (Grove et al., 2013). Measures of central tendency, for instance mode, median and mean, and measures of variability, such as range and standard deviation, and frequency were calculated to achieve patterns and trends. The simple Fisher's Exact Test of independence was utilised to see if there was an association between variables. These tests are used when researchers want to know whether the proportion of one variable is different among values of the other variables. The p-value for this study was set at 0.05 (p=0.05).

3.5 VALIDITY AND RELIABILITY

Validity is defined as the extent to which the data collection tool is able to measure what was intended to be examined (Grove et al., 2013). More specific, validity is concerned with whether the data presents a true picture of what is being studied. However, validity makes sure that the results are accurate and well interpreted. The form of validity that can be

identified is content validity and face validity. Content validity is defined as the degree to which an instrument represents every single element of a construct and adequately covers the construct domain (Polit & Beck, 2012). Content validity ensures the instrument covers all the elements of the theoretical contrast. In addition, no specific criteria exist that is used to ascertain the content validity of the instrument, however, experts in the specialised area are used to examine the content validity of the tool (Polit & Beck, 2012).

Face validity is defined as the extent to which an instrument appears to measure the appropriate variable (Polit & Beck, 2012). The questionnaire was submitted to experts in the field of prostate cancer to ensure it was complete. For accuracy in recording of data, the researcher was careful when entering the data into the instrument.

Reliability is defined as the extent to which a data collection instrument is able to obtain the same result when used repeatedly (Lai, 2012).

3.6 ETHICAL CONSIDERATIONS

The Health Professions Council of South Africa's guidelines on ethics (2008) were followed in this study. The principles of respect, justice and interest were considered throughout the research process (HPCSA, 2008). However, ethics is defined as the appropriateness of behaviour in relation to the rights of respondents as demonstrated by the researcher's work, or affected by it (Wilkinson et al., 2012). The ethical principles considered in this study are described below.

3.6.1 Informed consent

Informed consent is described as the ethical principle used to guide respondents in making the decision whether to take part or not in a study (Koutoukidis et al., 2016).The researcher ensured that information about the topic and the purpose of the study were made known to the respondents. Furthermore, respondents were informed that participation in the study was voluntary and they could decline to answer any questions as well as discontinue participation without incurring any penalty. The respondents who agreed to take part in the study were given a consent form to sign (**Annexure D**).

3.6.2 Anonymity and confidentiality

The researcher ensured that the identity of the respondents and information given were kept anonymous, which was achieved by giving respondents code numbers and not indicating their names. Research respondents were informed that data collected would be analysed in groups and not as individuals. Furthermore, signed consent forms were not attached or

stapled to data collection instruments. Lastly, data collected and consent forms were kept safe in a well-labelled box.

3.6.3 Justice

The principle of justice in research focuses on equal and fair treatment of respondents during the study period and equal benefits and burden of the research. Justice was achieved through selection of respondents based on the proposed inclusion criteria. It is also anticipated that the results might help the healthcare professionals to have an insight of the knowledge of men concerning prostate cancer, which will enable them to provide evidence-based services to all men.

3.6.4 Non-maleficence

The principle of non-maleficence focuses on the protection of research respondents from harm. No harm was intended. Interview questions were structured in a polite manner to avoid emotional distress. The notion of other people being present could have added to distress for the respondent and influenced his answers.

3.6.5 Ethical approval

The study was submitted to the University of the Witwatersrand, Human Research Ethics Committee (Medical) and written approval was granted (**Annexure B**).

3.7 SUMMARY

This chapter provided details of the research design and method used. The research design, setting, population, sampling and recruitment of respondents were elaborated. The data collection process, survey questionnaire, data analysis the validity and reliability of the study and ethical issues were explained. The next chapter focuses on the results of the study.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The previous chapter (Chapter 3) provided details of the research design and method used, while this chapter describes the results of the study, including general information, knowledge, attitudes and practices concerning the disease.

4.2 GENERAL INFORMATION

Nearly half (48.1%; n=88) was primarily above the age of 70 years. The mean age was 52.4, SD ±9.5 and median 50. Just over a third of respondents were from the Tswana cultural group (36.6%; n=67) and the highest percentage never went to school (30.1%; n=55). Sources of income varied and the highest percentage of respondents (36.6%; n=67) reported no income, 33.3 % (n=61) were employed and 18.0 % (n=33) received a government grant. However, close to a half of respondents (58.5%; n=107) lived above the South African bread line index of R779.00 per month. When asked which healthcare facility they preferred, the majority (73.8%; n=135) indicated primary health clinics. The Muldersdrift Primary Health Clinic, which is the nearest to the community, was the only clinic mentioned. The general information of the study sample is summarised in Table 4.1.

Table 4.1: The general information of sample (n=183)

Age groups	**n**	**%**
40-49	13	7.1
50-59	30	16.4
60-69	52	28.4
70+	88	48.1
Cultural group		
Northern Sotho	36	19.7
Zulu	37	20.2
Xhosa	26	14.2
Tswana	67	36.6
Other	17	9.3
Level of education		
Never went to school	55	30.1

Grade 1-7	52	28.4
Grade 8-10	37	20.2
Grade 11-12	37	20.2
Tertiary education	2	1.1
Source of personal income		
No income	67	36.6
Self-employed	22	12.0
Employed	61	33.3
Government grant	33	18.0
Monthly personal income		
No income	65	35.5
R778.00 and less	11	6.0
R779.00 and more	107	58.5
Preferred healthcare provider		
Doctor	21	11.5
Primary health clinic	135	73.8
Traditional healer	16	8.7
Spiritual healer	10	5.5
Other	1	0.5

4.3. KNOWLEDGE OF PROSTATE CANCER

The majority of the respondents (90.2%; n=165) had never heard of prostate cancer and only 9.8 % (n=18) had ever heard of the disease. When the respondents were asked to explain what they understood about prostate cancer, the majority (92.9%; n=170) reported they did not know. Those who provided explanations mentioned “cancer of the private parts” (3.3%; n=6), “cancer of the penis” (2.2%; n=4), “cancer of the kidney” (0.5%; n=1), “cancer of the testicles” (0.5%; n=1) and “cancer of the urine pipe” (0.5%; n=1).

When asked about the location of the prostate, the majority of the respondents (90.2%; n=165) failed to answer the question. Those who indicated they knew (4.8%; n=9) mentioned, “Located in the penis” (2.2%; n=4), in “men’s private parts” (1.1%; n=2), “in the testicles” (0.5%; n=1), “below the stomach” (0.5%; n=1) and “in the kidney” (0.5%; n=1).

The majority of the respondents (99.5%; n=182) indicated they did not know the function of prostate, however, 0.5% (n=1) indicated the prostate “helps with ejaculation” (Table 4.2).

Table 4.2: Knowledge of men regarding understanding, function, location of prostate and prostate cancer (n=183)

Variable	n	%
Heard of prostate cancer		
Yes	18	9.8
No	165	90.2
Unsure	0	0
Understanding of prostate cancer		
No answer	170	92.9
Cancer for the private parts	6	3.3
Cancer of the penis	4	2.2
Cancer of the kidney	1	0.5
Cancer of the testicles	1	0.5
Cancer of the urine pipe	1	0.5
Location of prostate		
No answer	173	94.5
Located in the penis	4	2.2
Located in man’s private parts	2	1.1
Located in the testicles	1	0.5
Located below the stomach	1	0.5
Located in the kidney	2	1.1
Function of prostate		
No answer	182	99.5
Helps with ejaculation	1	0.5

4.3.1 Association between educational level and age group and had heard of prostate cancer

When cross tabulating ‘had ever heard of prostate cancer’ and educational level and age, it was found that the highest percentage of the men who indicated ‘ever heard of this disease’ (38.9%; n=7), were within the Grade 11 to 12group. In addition, most of the respondents in

the age group 40 to 49 (72.2%; n=13) indicated they 'had ever heard about prostate cancer.' However, the Fisher's Exact Test found no statistically significant differences between 'had ever heard of prostate cancer' and educational level (*p*=0.418) and age (*p*=0.249) (Table 4.3).

Knowledge of location and function of the prostate was low across all educational levels and age groups. Although 4.9% (n=9)answered the question about location and 0.5% (n=1) answered the question about the function of the prostate, only one respondent, who was in the age group 40 to 49, gave a correct answer by stating it helps with ejaculation.

Table 4.3 Association between educational level and age group and 'heard of prostate cancer' (n=183)

Variable	**Heard of prostate cancer**				**P-value**
	Yes (n=18)		**No (n=165)**		
Educational status	n	%	n	%	
Never went to school	4	22.2	51	30.9	
Grade 1 to 7	4	22.2	48	29.1	0.418
Grade 8 to 10	3	16.7	34	20.6	
Grade 11 to 12	7	38.9	30	18.2	
Tertiary	0	0.0	2	1.1	
Age group					
40-49	13	72.2	75	45.5	
50-59	3	16.7	49	29.7	0.249
60-69	2	11.2	28	17.0	
70+	0	0.0	13	7.9	

4.3.2 Knowledge of screening, symptoms and the influence of prostate cancer on sexual functioning

When asked 'who should be screened for prostate cancer,' (no list of answers were provided) the highest percentage of respondents (46.5%; n=85) reported men presenting with urinary problems, 42.6% (n=7) did not know, 6.0% (n=11) indicated men with a family history of prostate cancer and 4.9% (n=9) answered men older than 40 years.

When asked to 'identify the symptoms of prostate cancer,' more than half (57.4%; n=105) indicated they did not know, however, 45.9% (n=84) were able to identify all seven symptoms presented. New onset of erectile dysfunction was the most known symptom

(13.7%; n=25), whilst the incomplete emptying of the bladder was the least known (1.1%; n=2).

When asked whether respondents thought prostate cancer could 'influence a man's sexual functioning,' the majority (62.3%; n=114) agreed, 20.8% (n=38) reported that prostate cancer had no influence on a man's sexual functioning, whilst 16.9% (n=31) were not sure. When asked how prostate cancer could 'influence sexual functioning,' half of the respondents (50.8%; n=93) indicated it could cause erectile dysfunction, 32.8% (n=60) answered that they did not know what the disease could cause, while 19.7% (n=36) indicated that prostate cancer could lead to partner dissatisfaction. Less than one third of the respondents (18.0%; n=33) indicated that prostate cancer could lead to loss of fertility, while 12.6% (n=23) indicated it could lead to diminished libido (Table 4.4).

Table 4.4 Knowledge of screening, symptoms of prostate cancer and the influence of prostate cancer on sexual functioning (n=183)*

Variable	**n**	**%**
Who should be screened for prostate cancer		
Men older than 40 years	9	4.9
Men with a family history of prostate cancer	11	6.0
Men presenting with urinary problems	85	46.5
Do not know	76	42.6
Symptoms of prostate cancer		
Urinating frequently especially during the night	9	4.9
Delayed or prolonged urination	9	4.9
Weak urine stream	15	8.2
Incomplete emptying of the bladder	2	1.1
Pain when passing urine	8	4.4
Blood in the urine	16	8.7
New onset of erectile dysfunction	25	13.7
Do not know	105	57.4

Influence of prostate cancer on sexual functioning (if any)		
Yes	114	62.3
No	38	20.8
Unsure	31	16.9
How prostate cancer influences sexual functioning		
Erectile dysfunction	93	50.8
Loss of fertility	33	18.0
Partner dissatisfaction	36	19.7
Diminished libido	23	12.6
Unsure	60	32.8
Other	1	0.5

* More than one answer was allowed

4.3.3 Association between educational level, age group, who should be screened, symptoms and influence of prostate cancer on sexual functioning.

When cross tabulating 'who should be screened for prostate cancer' and educational level and age, it was found that the highest percentage of respondents who indicated they knew which men should be screened (28.6%; n=30) never went to school. In addition, most of the respondents in the age group 40 to 49, (58.1%; n=61) gave correct answers by indicating men older than 40 years, men with a family history of prostate cancer and men presenting with urinary problems.

However, the Fisher's Exact Test, found no statistically significant difference between educational level and knowledge of men who are supposed to be screened for this disease. The association between age groups and knowledge of men who are supposed to be screened and symptoms of this disease showed a statistically significance, (p=0.007) and (p= 0.032) respectively. Once again there was a statistically significant difference between educational status and knowledge about the influence of prostate cancer on sexual functioning (Fisher's Exact Test (p=0.001) (Table 4).

Table 4.5 Association between educational level, age group, knowledge about who should be screened, symptoms and influence of prostate cancer on sexual functioning (n=183)

	Able to identify at least one element of screening for prostate cancer				
	Yes (n=105)		**No (n=78)**		
Educational status	**n**	**%**	**n**	**%**	**P-value**
Never went to school	30	28.6	25	32.1	0.296
Grade 1 to 7	25	23.8	27	34.6	
Grade 8 to 10	24	22.9	13	16.7	
Grade 11 to 12	24	22.9	13	16.7	
Tertiary	2	2.0	0	0.0	
Age group					
40-49	61	58.1	27	34.6	0.007*
50-59	27	25.7	25	32.1	
60-69	13	12.4	17	21.8	
70+	4	3.8	9	11.5	
	Able to identify at least one prostate cancer symptom				
	Yes (n=78)		**No (n=105)**		
Educational status	n	%	n	%	
Never went to school	30	28.6	25	32.0	0.296
Grade 1 to 7	25	23.8	27	34.6	
Grade 8 to 10	24	22.9	13	16.7	
Grade 11 to 12	24	22.9	13	16.7	
Tertiary	2	1.9	0	0.0	
Age group					
40-49	47	60.3	41	39.0	0.032*
50-59	19	24.4	33	31.4	
60-69	8	10.3	22	21.00	
70+	4	5.1	9	8.6	
	Able to identify atleast one Influence of prostate cancer on sexual functioning				
	Yes (n=113)		**No (n=70)**		
Educational status	n	%	n	%	

Never went to school	30	54.6	25	45.5	0.001*
Grade 1 to 7	24	46.2	28	53.9	
Grade 8 to 10	26	70.3	11	29.7	
Grade 11 to 12	32	86.5	5	13.5	
Tertiary	1	50	1	50	
Age group					
40-49	59	52.2	29	41.4	0.472
50-59	31	27.4	21	30.0	
60-69	16	14.2	14	20	
70+	7	6.2	6	8.6	
	Able to indicate how prostate cancer influences sexual function				
	Yes (n=113)		**No (n=70)**		
Educational status	n	%	n	%	
Never went to school	30	54.6	25	45.5	0.001*
Grade 1 to 7	24	46.2	28	53.9	
Grade 8 to 10	26	70.3	11	29.3	
Grade 11 to 12	32	86.5	5	13.5	
Tertiary	1	50.0	1	50.0	
Age group					
40-49	59	52.2	29	41.4	0.346
50-59	32	28.3	20	28.6	
60-69	16	14.2	14	20.0	
70+	6	5.3	7	10	

Key: *= statistical significance

4.3.4 Knowledge about the risk factors, prevention, diagnostic tests and treatment of prostate cancer

When asking the respondents about the ‘risk factors of prostate cancer,’ the majority (88.5%; n=162) indicated they did not know, less than a third (6.0%; n= 11) mentioned family history of cancer, whilst 4.4% (n=8) and 1.1% (n=2) mentioned age and race respectively. When asked to mention ‘factors minimising the risk of developing this disease,’ the majority (86.9%; n=159) indicated they did not know; those who indicated they knew (13.1%; n=24) mentioned a balanced diet (5.5%; n=10), exercise (2.2%; n=4), a reduced intake of red meat (2.7%; n=5), screening (1.6%; n=3) and only two respondents (1.1%; n=2) mentioned a low fat diet.

When asked whether ‘prostate cancer can be prevented,’ most of the respondents (42.8%; n=78) reported they were not sure, 29.0% (n=53) reported the disease can be prevented, whilst almost one third (28.4%; n=52) indicated that prostate cancer cannot be prevented at all. The majority of the respondents (76.0%; n=139) stated they were unaware of any screening tests for this disease. The blood test and biopsy was mentioned by 16.4% (n=30) and 6.6% (n=12) respectively, while 1% (n=2) stated urine tests. The DRE was not mentioned at all.

When asked ‘if prostate cancer can be cured,’ the highest percentage of the respondents (45.9%; 84), indicated it was a curable disease, while 36.6% (n=67) indicated they did not know and 17.5% (n=32) were not sure. When further asked about ‘curative treatment’ and what they ‘considered to be the adequate treatment for early diagnosed prostate cancer,’ 30.1% (n=55) of the respondents mentioned surgery, 2.2% (n=4) chemotherapy, 1.1% (n=2) hormone therapy, 0.5% (n=1) radiotherapy, whilst 66.1% (n=121) did not know (Table 4.6).

Table 4.6Knowledgeabout risk factors, prevention, diagnostic tests and treatment of prostate cancer (n= 183)

Variable	**n**	**%**
Risks for prostate cancer		
Family history of cancer	11	6.o
Age	8	4.4
Consumption of red meat	0	0
Race	2	1.1
Other	0	0
Unsure	162	88.5
Factors decreasing risk of developing prostate cancer		
A balanced diet	10	5.5
A low fat diet	2	1.1
Reduced intake of red meat	5	2.7
Exercise	4	2.2
Screening	3	1.6
Other	0	0

Do not know	159	86.9
Prostate cancer is preventable		
Yes	53	29.0
No	52	28.4
Unsure	78	42.6
Tests done to diagnose prostate cancer		
Blood test (PSA)	30	16.4
Digital rectal examination (DRE)	0	0
Biopsy	12	6.6
Unsure	139	76.0
Other	2	1.0
Prostate cancer can be treated		
Yes	84	45.9
No	67	36.6
Unsure	32	17.5
Treatment of prostate cancer		
Surgery	55	30.1
Radiotherapy	1	0.5
Chemotherapy	4	2.2
Hormone therapy	2	1.1
Do not know	121	66.1

4.3.5 Association between educational level and age groups and risk factors, prevention measures, diagnostic tests and treatment.

When cross tabulating those who were able to identify at least one risk factor for prostate cancer and educational level and age group, it was found that the highest percentage (28.6%; n=6) who identified the risk factors had never attended school. Most of the respondents in the age group 40 to 49 (66.7%; n=14) were able to identify at least one factor. Furthermore, when cross tabulating those who were able to identify at least one factor which decreases the risk of developing prostate cancer and educational level and age, 33.3% (n=8) had Grade 11 to 12, and those who were within the age group 40 to 49 (54.2%;

n=13) were able to identify atleast one factor decreasing the risk of developing prostate cancer.

However, the Fisher's Exact Test yielded non-significant results between knowledge of the risk factors and educational level, (p = 0.508) and age group (p = 0.328). In addition, there were no statistically significant differences between knowledge of factors decreasing the development of prostate cancer and educational level status and age group, (p=0.408) and (p=0.919) respectively. However, there was statistically significant difference between prevention of prostate cancer and educational status, p= 0.046 (Table 4.7).

Table 4.7 Association between educational level and age group and knowledge about risk factors, prevention measures, diagnosing tests and treatment (n=183).

	Able to identify atleast one risk factor for prostate cancer				
	Yes (n=21)		**No (n=162)**		
Educational status	**n**	**%**	**n**	**%**	
Never went to school	6	28.6	49	30.3	0.508
Grade 1 to 7	5	23.8	47	29.0	
Grade 8 to 10	4	19.0	33	20.4	
Grade 11 to 12	5	23.8	32	19.8	
Tertiary	1	4.8	1	0.6	
Age group					
40-49	14	66.7	74	45.7	0.328
50-59	3	14.3	49	30.3	
60-69	3	14.3	27	16.7	
70+	1	4.8	12	7.4	
	Able to identify atleast one factor decreasing risk of developing prostate cancer				
	Yes (n=24)		**No (n=159)**		
Educational status	**n**	**%**	**n**	**%**	
Never went to school	7	29.2	48	30.2	0.408
Grade 1 to 7	4	16.7	48	30.2	
Grade 8 to 10	5	20.8	32	20.1	
Grade 11 to 12	8	33.3	29	18.2	
Tertiary	0	0.0	2	1.3	
Age group					

40-49	13	54.2	75	47.2	0.919
50-59	7	29.2	45	28.3	
60-69	3	12.5	27	17.0	
70+	1	4.2	12	7.6	
	Able to identify atleast one prevention measure of prostate cancer				
	Yes (n=53)		**No (n=130)**		
Educational status	**n**	**%**	**n**	**%**	
Never went to school	17	32.1	38	29.2	0.046*
Grade 1 to 7	9	17.0	43	33.1	
Grade 8 to 10	11	20.7	26	20.0	
Grade 11 to 12	14	26.4	23	17.7	
Tertiary	2	3.8	0	0.0	
Age group					
40-49	25	47.2	63	48.5	0.323
50-59	17	32.1	35	26.9	
60-69	10	18.9	20	15.4	
70+	1	1.9	12	9.2	
	Able to identify atleast one test done to diagnose prostate cancer				
	Yes (n=43)		**No (n=140)**		
Educational status	**n**	**%**	**n**	**%**	
Never went to school	13	30.2	42	30.0	0.198
Grade 1 to 7	7	16.7	45	32.1	
Grade 8 to 10	10	23.8	27	19.3	
Grade 11 to 12	12	28.6	25	17.9	
Tertiary	1	2.4	1	0.7	
Age group					
40-49	23	54.7	65	46.4	0.729
50-59	11	25.6	41	29.3	
60-69	7	16.7	23	16.4	
70+	2	4.8	11	7.9	
	Able to identify atleast one treatment method of prostate cancer				
	Yes (n=84)		**No (n=99)**		

Educational status	**n**	**%**	**n**	**%**	
Never went to school	27	32.1	28	28.3	0.206
Grade 1 to 7	17	20.2	35	35.3	
Grade 8 to 10	20	23.8	17	17.2	
Grade 11 to 12	19	22.6	18	18.2	
Tertiary	1	1.2	1	1.0	
Age group					
40-49	39	46.4	49	49.5	0.862
50-59	26	30.9	26	26.3	
60-69	14	16.7	16	16.2	
70+	5	5.9	8	8.1	

Key: *= statistical significance

4.3.6 Summary of knowledge scores

The number of correct answers in the knowledge section was 38.When calculating respondents' marks for the correct answers, a total mark between 30 and 38 (80-100%) was considered good, between19 and 29 (50-79%) average, and between 0 and 18 (0-49%) poor. All respondents (n=183) scored between 0 and 49%, while no respondent scored between 50 to 79%or 80% and more (Table 4.8).

Table 4.8 Summary of knowledge scores (n=183)

Total score	**n**	**%**
Between 0 and 49 %	183	100
Between 50 to 79 %	0	0
80 % and more	0	0
Total	183	100

4.4 ATTITUDES REGARDING PROSTATE CANCER

The majority of the respondents (66.1%; n=121) agreed that prostate cancer was a 'dangerous illness, like HIV/AIDS.' However, 29.5% (n=54) thought prostate cancer was not dangerous and 4.4% (n=8) said they were not sure. The majority (83.6%; n=153) agreed that prostate cancer 'could kill a man', whilst 10.4% (n=19) mentioned prostate cancer 'could not kill a man' and 6.0% (n=11) were not sure

When asked if prostate cancer 'could be treated,' half of the respondents (50.3%; n=92) stated it could be treated, 36.1% (n=66) disagreed whilst 13.7% (n=25) were not sure. When the respondents were asked whether they thought 'all men above 40 years should go for prostate cancer screening,' 47.5% (n= 87) agreed, 14.2% (n=26) disagreed and 38.3% (n=70) were not sure.

When asked whether 'only men with urinary problems should go for screening,' half of the respondents (50.8%; n=93) agreed, 32.8% (n=60) mentioned that not only men with urinary problems should go for screening, whilst 16.4% (n=30) were not sure. When asked 'if it is important to go for screening at least every 5 years,' 46.4% (n=85) answered it was important, 17.5% (n=32) stated it was not important, whilst 36.6% (n=66) were not sure. The attitudes of men concerning prostate cancer were illustrated in Table 4.9.

Table 4.9: Attitudes towards prostate cancer (n=183)

Variable	**n**	**%**
Prostate cancer is a dangerous illness like HIV/AIDS		
Yes	121	66.1
No	54	29.5
Unsure	8	4.4
Prostate cancer can kill a man		
Yes	153	83.6
No	19	10.4
Unsure	11	6.0
Prostate cancer can be treated		
Yes	92	50.3
No	66	36.1
Unsure	25	13.7
Men above 40 years should go for screening		
Yes	87	47.5
No	26	14.2
Unsure	70	38.3
Only men with urinary problems should go for screening		
Yes	93	50.8

No	60	32.8
Unsure	30	16.4
It is important to go for screening at least every 5 years		
Yes	85	46.4
No	32	17.5
Unsure	66	36.1

4.4.1 Association between attitude and educational level and age groups of respondents

The total number of correct answers in the attitude section was six, therefore respondents who scored less than three were considered as having a negative attitude while those who scored between three and six were regarded as having a positive attitude toward prostate cancer. The majority of the respondents (72.0%; n=132) had a positive attitude towards prostate cancer.

It was primarily respondents who never went to school who had a negative attitude towards prostate cancer (34.9%; n=19), followed by the age group 70+ (53.9%; n=7), however, there was no statistically significant difference between educational status and attitudes (p=0.632), as summarised in Table 4.10.

Table 4.10 Association between attitude and educational level and age groups(n=183)

Variable						
Attitude towards prostate cancer	**Negative (n=51)**		**Positive (n=132)**		**Total**	**P- value**
	n	**(%)**	**n**	**(%)**	**n**	
Educational status						0.632
Never went to school	19	34.9	36	65.5	55	
Grade 1 to 7	15	28.9	37	71.2	52	
Grade 8 to 10	9	24.3	28	75.7	37	
Grade 11 to 12	8	21.6	29	78.4	37	
Tertiary	0	0	2	100	2	
Age group						
40-49	23	26.1	65	73.9	88	0.219

59	13	25.0	39	75.0	52	
60-69	8	26.7	22	73.3	30	
70+	7	53.9	6	46.2	13	

4.5 PRACTICES REGARDING PROSTATE CANCER AND SCREENING

When asked about prostate cancer screening, only 3.3% (n=6) of the respondents had heard about it whilst the majority (96.7%; n=177) indicated they had never heard about it. Those who indicated that they had heard about screening explained the screening as “blood collection” (1.6%; n=3) and “doctor or nurse inserting gloved finger in the anus” (0.5%; n=1).

When asked whether the respondents were willing to ‘have prostate cancer screening,’ the majority (78.1%; n=143) indicated they were willing, whilst 21.9% (n=40) stated they were not willing to be screened. Reasons such as they “are not sick” and they “are taking traditional medicine” were presented. The reasons given by the respondents for being ‘willing to be screened’ were “to know my status” (7.1%; n=13), “to treat cancer before it spreads” (4.4%; n=8), “to prevent cancer” (1.1%; n=2) and “having weak urine stream” (0.5%; n=1).

When asked whether they had ‘experienced prostate cancer symptoms,’ some respondents indicated urinating frequently especially during the night (22.4%, n=41). Only a few (19.1%; n=35) indicated they did not know whether they had ever experienced any of the symptoms, while new onset of erectile dysfunction was mentioned by 13.7% (n=25) and lastly blood in the urine (1.1%; n=2).

When asked whether the men had ‘been screened for the disease in the past,’ a high percentage (99.5%; n=182) responded negatively and only 0.5% (n=1) had ever been screened; this respondent however indicated he never went back to the healthcare facility for the results (Table 4.11).

Table 4.11 Practices regarding prostate cancer and screening (n=183)

Variable	**n**	**%**
Heard about prostate cancer screening		
Yes	6	3.3
No	177	96.7
Unsure	0	0
How screening is done		

Blood collection	3	1.6
Digital rectal examination (DRE)	1	0.5
Do not know	179	97.8
Prepared to go for prostate screening		
Yes	143	78.1
No	40	21.9
Reasons for having prostate cancer screening		
To know status	118	64.5
Prostate is a dangerous illness	13	7.1
To treat cancer before it spreads	8	4.4
To prevent prostate cancer	2	1.1
Weak urine stream	1	0.5
Reasons for not having screening		
Not sick	19	10.4
Feeling fine	19	10.4
Take traditional medicine	1	0.5
Test not available	1	0.5
Old age	1	0.5
History of prostate cancer symptoms		
Urinating frequently especially during the night	41	22.4
Delayed or prolonged urination	21	11.5
Weak urine stream	29	15.8
Incomplete emptying of the bladder	14	7.7
Pain when passing urine	19	10.4
Blood in the urine	2	1.1
Change in bowel habits	2	1.1
New onset of erectile dysfunction	25	13.7
Do not know	35	19.1
Other	1	0.5
Had prostate cancer screening		
Yes	1	0.5
No	182	99.5
Unsure	0	0
Place prostate cancer screening was performed		

Private doctor	0	0
Primary health clinic	0	0
Hospital	0	0
Other	1	0.5
Procedure performed for prostate cancer screening		
Blood test (PSA)	1	0.5
Digital rectal examination	0	0.5
Received prostate cancer screening results		
Yes	0	0
No	1	0.5

4.5.1 Summary of individual scores

Out of the 10 answers considered to be positive practices, most of the respondents (60.7%; n=111) responded positively to two questions only, less than half of the respondents (32.8%; n=60) responded positively to one question, whilst one respondent (0.6%; n=1), who indicated he had once undergone prostate cancer screening, responded positively to seven questions (Table 4.12).

Table 4.12 Summary of practice scores (n=183)

Number of positive answers	n	%
0	8	4.37
1	60	32.79
2	111	60.66
3	3	1.64
7	1	0.55
Total	183	100.00

4.6 DISCUSSION

The study provided evidence that the respondents had limited knowledge of the disease. Not only had 90% not heard of this disease, those who indicated they had heard of prostate cancer had no idea what it really was. Unfortunately, the current study is similar with other studies conducted in Africa, where researchers also found a lack of knowledge. For instance, Kabore et al. (2014), in their study in Burkina Faso, found 62% of the men had

never heard of the prostate or prostate cancer, Nakandi et al. (2013), through a study carried out in Uganda, found 45.9% of the men were unaware of the existence of prostate cancer, Atulomah et al. (2010), through a study carried out in Nigeria, found 60.8% of respondents were aware of prostate cancer, while the South African study of Mofolo et al. (2015) found only 46% of the men had heard of it.

The study provided evidence that the respondents did not know where the prostate was situated in the body or the function of this organ. In contrast, the study done by Mofolo et al. (2015) indicated good knowledge about the location of the prostate. However, according to Mofolo et al. (2015), their positive results could have been due to the Sesotho translated questionnaire, which might have had an influence on the respondents concerning the location of prostate.

Knowledge about who should be screened for prostate cancer was also low, as less than 7.0% of the respondents mentioned men older than 40 years and men with a family history of prostate cancer. The only relatively well-known indication for screening was urinary problems, as identified by 46.5% of the respondents. Other studies found similar trends. A study conducted in Uganda by Nakandi et al. (2013) also found that men were not aware of the age when early detection services for this disease commences, as only 15.4% of men thought prostate cancer screening should commence at age 40 and above.

It was interesting to find that age and educational level did not influence knowledge about who should be screened for prostate cancer. It would be quite reasonable to expect men with a higher educational level and those older to have more knowledge of who should be screened, as found in the study by (Kabore et al., 2014). However, this finding is supported by study conducted in United States of America by Williams and Sallar (2014), which also found no correlation between age and educational level and knowledge about who should be screened for prostate cancer.

Considering the small number of respondents who indicated they had heard of prostate cancer, it comes as no surprise that their knowledge about prostate cancer symptoms was also low. This finding corresponds with a Nigerian study done by Atulomah et al. (2010), who found only 1.5% of their respondents knew the specific symptoms of prostate cancer.

This study provided evidence that men had a limited knowledge of the disease risk factors as more than 85% experienced challenges in identifying any risk factor. The same trend was found in the studies of (Nakandi et al., 2013, Kabore et al., 2014) who reported poor knowledge of the risk factors, such as consumption of red meat and age. In contrast, (Odedina et al., 2009) in a study done in Abeokuta, Nigeria, reported good knowledge of the

risks amongst the Black men included in the study. However, it seems as if men living in the developed world are more knowledgeable about the risk factors, as Horwood et al. (2014), through the study carried out in the UK, found the majority of respondents believed lifestyle, such as diet, smoking and exercise, could impact on the risk of disease.

Knowledge concerning screening services was equally low, as 76% of the respondents were unable to identify any. However, Nakandi et al. (2013) found similar trends and reported that nearly half (47.9%) of the men in their study were unaware of methods used to investigate for the presence of the prostate cancer. Unlike the current study, where the DRE was not mentioned at all, 9.5% of the respondents in Nakandi et al. (2013) mentioned the DRE. Similarly, knowledge about prostate cancer treatment was low, as the majority of respondents (66.1%) reported they did not know of the treatment for prostate cancer. These findings were consistent with findings of Ogunsanya et al. (2017), whose study conducted in Austin, Texas, indicated that rural respondents scored significantly lower on their knowledge of prostate cancer treatment, which could be explained by their type of settlement, economic status and cultural groups.

What is of great concern is the fact that none of the respondents achieved more than 50% for the total knowledge score. Various studies (Mofolo et al., 2015, Kabore et al., 2014, Nakandi et al., 2013) support this finding; for instance, the study conducted in Uganda by Nakandi et al. (2013) and in Ouagadougou, Burkina Faso, by Kabore et al. (2014) found the knowledge of prostate cancer was generally poor.

It was positive to find that the majority of the respondents (72.0%) showed a positive attitude towards prostate cancer and that this positive attitude applied across all educational levels and to a lesser extent, all age groups. In addition, the respondents in the current study considered prostate cancer screening as an important aspect because half (50.8%) stated that men with urinary problems should go for screening. However, Nakandi et al. (2013), in their study, found a negative attitude towards prostate cancer screening by men in the study conducted in Uganda, as 77% of men in their study never thought of going for early detection services for this disease. Additionally, when exploring the attitude towards prostate cancer amongst Brazilian men, Paiva et al. (2010) found that 40.6% of respondents had an attitude towards prostate cancer, which showed that men had negative attitudes in their study.

This study found the majority of respondents (66.1%) considered prostate cancer as dangerous as HIV/AIDS. However, this finding contrasted with a study done in Uganda by Nakandi et al. (2013), which found the majority of respondents never looked at prostate cancer as a bad disease like HIV/AIDS, and were only worried about going for HIV testing.

The majority of respondents (83.6%) thought prostate cancer could kill a man, even though less than half (46.4%) mentioned that it was important to go for screening at least every 5 years. This finding confirmed the results of a study in Brazil by Paiva et al. (2010), which also found that 40% of respondents considered screening for prostate cancer important.

It was clear that respondents in the current study did not have positive practices concerning prostate cancer, as out of 10 answers considered positive for practices, 60.7% of men responded positively to two questions only. These findings are similar to the Brazilian study, which reported only 28.1% of the men had a positive practices (Paiva et al., 2010). Furthermore, in this study only one man had been screened for prostate cancer, however the study that was carried out in Nigeria found that 79.5% of men had never undergone early detection services for prostate cancer (Ogunsanya et al., 2017).

4.7 SUMMARY

This chapter described the results of the study. The general information, knowledge, attitude and practices regarding prostate cancer were discussed. The next chapter (Chapter 5) will present the justifications, limitations, recommendations and conclusions of the study.

CHAPTER 5

JUSTIFICATION, LIMITATIONS, RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

Chapter 4 described the results of the study and discussed the general information, knowledge, attitudes and practices regarding prostate cancer. Chapter 5 presents the justification, limitations, recommendations and conclusions of the study.

5.2 JUSTIFICATION

The aim of the study was to describe the knowledge, attitudes and practices of men living in Muldersdrift, South Africa, concerning prostate cancer. Chapter 1 provided the orientation for the study, Chapter 2 described the literature pertaining to prostate cancer, Chapter 3 described the research setting, design and methods used in this study and Chapter 4 presented the results and a discussion of the results. The researcher can therefore state that the aim of the study, to describe the knowledge attitudes and practices of men living in Muldersdrift concerning prostate cancer has been achieved.

5.3 LIMITATIONS

The study has various limitations. The study was conducted within one semi-rural area, hence making it difficult to generalise to all men in South Africa. Even though the sample was adequate for data analysis, the total number of men in South Africa was not well represented. In addition, a questionnaire was used as data collection instrument, which could have led to recall bias and socially desirable answers. In addition, a survey tends to reflect relatively superficial knowledge and not deep understanding of the topic investigated. Lastly, the presence of others could have also influenced the results. However, the researcher believes that the rigorous process followed in this study resulted in the provision of authentic baseline data

5.4 RECOMMENDATIONS

The researcher wishes to recommend the following:

- Men in this semi-urban area should be educated about prostate cancer regarding risk factors and screening. It is recommended that education be carried out at Muldersdrift

Primary Health Clinic since the majority of men indicated they use the clinic to access healthcare services.

- The study should be done again in other rural areas of South Africa, so that generalisation can be made to the whole population.

5.5 CONCLUSIONS

The study provided evidence that the men living in the study setting had limited knowledge of prostate cancer. Not only had most never heard of the disease, but knowledge of what prostate cancer was, its symptoms and the risk factors were also low. However, men have shown a positive attitude towards prostate cancer, since majority was willing to undertake prostate cancer screening and learn more about the disease. Furthermore, the study has shown that men did not have a positive practice concerning prostate cancer, since most of them scored low on the 10 answers considered as positive practices. Only one man in this study indicated having been screened, but never went back for results. Lastly, it is recommended that education about prostate cancer be conducted at the local clinic to men, to increase knowledge about the disease in the study setting.

5.6 Summary

This chapter was a summary of the study. It presented the justification, limitation, recommendations and conclusions.

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ANNEXURE A

DATA COLLECTION INSTRUMENT

Date..... Participant number.....

SECTION A: DEMOGRPHIC CHARACTERISTICS			OFFICIAL USE
1. How old are you?			Q1=
2. To Which cultural group do you belong?	Northern Sotho	1	Q2=
	Zulu	2	
	Xhosa	3	
	Tswana	4	
	Others specify	5	
3. What level of education did you complete?	Never went to school	1	Q3=
	Grade 1 to 7	2	
	Grade 8 to 10	3	
	Grade 11 to 12	4	
	Tertiary education	5	
4. What is your personal main source of income at the moment?	No income	1	Q4=
	Work for myself	2	
	Employed	3	
	Government grant	4	
	Other	5	
5. If you have a personal income, how much is it per month?	R779.00 and less	1	Q5=
	More than R779.00	2	
6. Where would you go if you need healthcare?	Doctor	1	Q6=
	Primary Health Care clinic	2	
	Traditional Healer	3	
	Spiritual healer	4	
	Other (specify)	5	

SECTION B: KNOWLEDGE OF PROSTATE CANCER			
1. Have you ever heard of prostate cancer?	Yes= 1	No= 2	Unsure= 3	Q1=
1.1 If yes, what do you understand prostate cancer is?				
1.2 If yes, where do you think is the prostate is situated in the body?				
2. If yes, what do you think is the function of the prostate is?				

3. Who do you think should be screened for prostate cancer? *(Read options)*	Men older than 40 years= 1	Men with a family history of prostate cancer= 2	Men presenting with urinary problems= 3	Do not know= 4	Q3=

4. What changes in your body would make you think that you might have prostate cancer? (*Do not read answers, only tick what respondent says*)	Urinating frequently especially during the night	1	Q4=
	Delayed or prolonged urination	2	
	Weak urine stream	3	

	Incomplete emptying of the bladder			4	
	Pain when passing urine			5	
	Blood in the urine			6	
	Change in bowel habits				
	New onset of erectile dysfunction			7	
	Do not know			8	
	Other (specify)			9	
5. Do you think prostate cancer can influence a man's sexual functioning?	Yes= 1	No=2	Unsure=3		Q=5
5.1. If yes how? (*Do not read answers, only tick what respondent says*)	Erectile dysfunction			1	Q5.1=
	Loss of fertility			2	
	Partner dissatisfaction			3	
	Diminished libido			4	
	Do not know			5	
	Others(specify)			6	
6. What would increase a man's risk of developing prostate cancer? (*Do not read answers, only tick what respondent says*)	Family history of cancer			1	Q6=
	Age			2	
	Consumption of red meat			3	
	Race			4	
	Other (specify)			5	
	Do not know			6	
7. What would decrease your risk of developing prostate cancer? (*Do not read answers, only tick what respondent says*)	Balanced diet			1	Q7=
	A low fat diet			2	
	Reduce intake of red meat			3	

	Exercise		4	
	Screening		5	
	Other (specify)		6	
	Do not know		7	
8. Do you think prostate cancer can be prevented	Yes= 1	No= 2	Unsure= 3	Q 8=

9. Which tests can be done to check for presence of prostate cancer? (*Do not read answers, only tick what respondent says*)	Blood test (PSA)		1	Q9=
	Digital Rectal Examination(DRE)		2	
	Biopsy		3	
	Do not know		4	
	Others(Specify)		5	
10. Do you think prostate cancer can be treated?	Yes= 1	No= 2	Unsure=3	Q10=
11. If yes how? (*Do not read answers, only tick what respondent says*)	Surgery		1	Q11=
	Radiotherapy		2	
	Chemotherapy		3	
	Hormone therapy		4	
	Do not know		5	

SECTION C: ATTITUDES TOWARDS PROSTATE CANCER

1. Do you see prostate cancer as a dangerous illness, just like HIV/AIDS	Yes= 1	No=2	Unsure=3	Q1=
2. Do you think prostate cancer can kill a man?	Yes=1	No=2	Unsure=3	Q2=
3. Do you think prostate cancer can be treated?	Yes=1	No=2	Unsure=3	Q3=
4. Do you think all men above 40 years should go for screening?	Yes=1	No=2	Unsure=3	Q4=

5. Do you think only men with urinary problems should go for screening?	Yes=1	No=2	Unsure=3	Q5=
6. Do you think it is important to go for screening at least every 5 years?	Yes=1	No=2	Unsure=3	Q=6

SECTION D: PRACTICES OF MEN REGARDING PROSTATE CANCER AND SCREENING

1. Have you ever heard about prostate cancer screening?	Yes=1	No=2	Unsure=3	Q1=

1.1 If yes, can you please tell me how it is done?		
2. Would you be prepared to go for prostate cancer screening?	Yes	
	Why?	
	No	
	Why?	

3. Have you ever experienced the following? (Read all possibilities)	Urinating frequently especially during the night	1	
	Delayed or prolonged urination	2	Q3=
	Weak urine stream	3	
	Incomplete emptying of the bladder	4	
	Pain when passing urine	5	

	Blood in the urine			6	
	Change in bowel habits			7	
	New onset of erectile dysfunction			8	
	Do not know			9	
	Others (Specify)			10	
4. Have you ever had prostate cancer screening?	Yes=1	No=2	Unsure=3		Q4=
4.1. If yes, where? (*Do not read answers, only tick what respondent says*)	Private Doctor			1	Q4.1=
	Primary Health Clinic			2	
	Hospital			3	
	Others (Specify)			4	
5. What procedure did you have?	5.0.Blood test	Yes=1	No=2	Unsure=3	Q5=
	5.1.Digital Rectal Examination	Yes=1	No=2	Unsure=3	Q5.1=
6. If yes, did you go back to the healthcare facility to receive the results?	Yes=1	No=2			Q6=

ANNEXURE B

R14/49 Mr Bontshwanetse Baaitse

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170519

NAME: (Principal Investigator)	Mr Bontshwanetse Baaitse
DEPARTMENT:	Nursing Education Muldersdrift, South Africa
PROJECT TITLE:	Knowledge, Attitudes and Practices of Men Concerning Prostate Cancer in Muldersdrift, South Africa
DATE CONSIDERED:	26/05/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Prof Lize Maree
APPROVED BY:	Professor P. Cleaton-Jones Chairperson, HREC (Medical)
DATE OF APPROVAL:	12/07/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004,10th floor, Senate House/3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. in this case, the study was initially review May and will therefore be due in the month of May each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

ANNEXURE C

INFORMATION LETTER

Good day

My name is Bontshwanetse Baaitse, I am a second year student at University of the Witwatersrand, in the Department of Nursing Education doing a degree of Master of Science in Nursing (Oncology and Palliative care). I am hoping to conduct a research project to describe the current knowledge, attitudes and practices of men in Muldersdrift regarding prostate cancer. It is important for you to understand the aim of the study, risks if any, rights, and benefits before taking part in the study.

Aim

The aim of the study is to describe the knowledge, attitudes and practices of men concerning prostate cancer to gather information, which will be able to guide preventive campaigns as health professionals and healthcare educators would be able to utilise this information when planning such campaigns.

Rights of respondents

Participation in the study is voluntary and your decision not to participate will not attract any penalty or affect your access to healthcare services.

Benefits

Please note there will be no personal benefits attached to participating in this study, however, the information will help the health professionals and healthcare educators in planning preventive campaigns.

Risks

No risks are anticipated in this study, however, should you have any emotional distress regarding participation in this study, do not hesitate to inform me and you will be referred to Psychiatric nurse, Agnes Huiskamp (contact number: 083 2388084).

Confidentiality

Information collected during this study, including personal data and research data, will be kept strictly confidential. However, the Human Research Ethics Committee (HREC), University of the Witwatersrand, and my supervisor might inspect the information. Your name will not be on the data collection instrument therefore you will be given a number in order to maintain your right to confidentiality and privacy.

Consent

You will be required to give consent in this study, however, it will be taken that you have agreed to take part in the study if you agree to sign the consent form. If you have any questions about the study, do not hesitate to ask me in person. You should not agree to participate in this study unless you are satisfied with the procedures involved.

Reimbursement for the study participation

This study is voluntary; therefore, you will not be paid for participating in the study.

Ethical approval

This study has been submitted to the University of the Witwatersrand, Human Research Ethics Committee (Medical) and that committee has granted written approval. The study is sponsored by the Government of Botswana and partly by the researcher himself. The sponsor has no influence in this study, therefore may not bias my action.

Contact details of researcher

Thank you for taking the time to listen to the information letter. For further information regarding the study or your rights as a study respondent, please contact me in the Department of Nursing Education or on the following telephone number 076 1555620, or email me using the following address,bbontshwanetse@yahoo.com

Contact details of Human Research Ethics Committee chairperson

If you would like further information regarding your rights as a research respondent, or have complaints regarding this research study, you may contact Prof. Cleaton-Jones, Chairperson of the University of the Witwatersrand, Human Research Ethics Committee (HREC), and an independent committee established to help protect the rights of research respondents, on (011) 717 2301.

ANNEXURE D

KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN CONCERNING PROSTATE CANCER IN MULDERSDRIFT, SOUTH AFRICA

CONSENT FORM

I _____ (name), give permission to be included in the study.

I have read and understood the information sheet and I have been given the opportunity to ask questions I might have regarding the procedure and my consent to me being included in the study.

_____ _____

Date Signature

_____ (Witness)

Annexure E

Gill Smithies

Proofreading & Language Editing Services

59, Lewis Drive, Amanzimtoti, 4126, Kwazulu Natal

Cell: 071 352 5410 E-mail: moramist@vodamail.co.za

Work Certificate

To	Prof L. Maree, RN DCUR (Pret)
Address	Wits Dept of Nursing Education
Date	11/01/2018
Subject	Research Report: KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN CONCERNING PROSTATE CANCER IN MULDERSDRIFT, SOUTH AFRICA
Ref	LM/GS/054

I, Gill Smithies, certify that I have edited the following for language and style,

Research Report: Knowledge, Attitudes and Practices of men concerning Prostate Cancer in Muldersdrift, South Africa,

to the standard as required by Wits Dept. of Nursing Education.

Gill Smithies

11/01/2018