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Knowledge and beliefs of male university students regarding prostate cancer screening in Zambia

by

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DECLARATION

I, Fredy Chanda Ng'uni, hereby declare that the contents of this dissertation represent my own unaided work and that the dissertation has not been previously submitted for academic examination towards any qualification. It represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Sign: 

Date: 28 /10/ 2021

ABSTRACT

Non-medical male university students' knowledge and beliefs regarding prostate cancer (PC) screening in Zambia were studied. PC is the most frequently occurring cancer in men and is an endemic problem worldwide. Screening is the most common method of early detection of the disease in an asymptomatic population. The purpose of this study was to describe the knowledge and beliefs of non-medical male students at the University of Zambia regarding PC screening in Zambia. A descriptive cross-sectional research design was used for this study to describe knowledge and beliefs of non-medical male students at the University of Zambia with regard to PC screening. The population consisted of all male students at the University of Zambia. The sample comprised all non-medical male students at the University of Zambia aged between 18 and 35, selected through a convenience-sampling technique. Questionnaires were used as the data-collection tool for this study. Descriptive quantitative statistical analysis was used to analyse the data. The ages of respondents ranged from 18 to 35 years, with a mean age of 22.8 years and median of 23.5 years. Medium knowledge (53.3% of accurate knowledge) of PC and PC screening was observed among the university students in this study. The study revealed accurate knowledge about the gender affected by PC, 142 (71%), and awareness of the symptoms of PC, 139 (69.5%). The majority of the respondents, 137 (69%), were knowledgeable about and able to identify PC symptoms as excessive urination, 39 (19.5%) in the night, and blood in the urine, 99 (49.5%). Strong positive cultural beliefs on PC screening were also noted. The majority of respondents,134 (67%), concurred that PC screening was not a taboo in their culture; 167 (83.5%) believed PC screening to be good which significantly associated with religion (p=0.000) and marital status (p=0.038); while 164 (82%) noted that PC screening did not invite more problems with significant association with religion (p=0.027) observed. A similar number of respondents (*n*=170, 85%) believed that men ought to undergo PC screening and that PC screening was not a waste of time. The application of the Integrated Behavioral Model (IBM) anticipated that knowledge and skills regarding PC would enable respondents to make healthier decisions by undergoing PC screening and that beliefs had an impact on moral decision making. The study recommended the following: the development of health education and promotion of programmes to increase awareness of PC risk factors and the benefits of prevention; increased information dissemination about PC in the media; training of more oncology specialists; and the urgency of establishing population-based cancer registries in all the ten provinces of Zambia.

Key words: Prostate cancer; Knowledge, Beliefs, Non-medical male university students, Lusaka, Zambia.

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DEDICATION

This dissertation is dedicated to God, my family, and my late father, Mr Wilson Ng'uni. I believe your soul is resting in internal peace. To my children, Wilson Chanda Ng'uni and Raphael Chimwemwe Ng'uni, you are a blessing, and to my loving wife, Mary Zulu, you are the source of my strength. To my mother, Mrs Ng'uni, thank you for raising me into the man I am today.

ABBREVIATIONS AND ACRONYMS

ACS	American Cancer Society
ASCO	American Society for Clinical Oncology
AUA	American Urological Association
CCPPZ	Cervical Cancer Prevention Program in Zambia
CDC	Centers for Disease Control and Prevention
CDH	Cancer Diseases Hospital
COMESA	Common Market for Eastern and Southern Africa
DRE	Digital Rectal Examination
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
IBM	Integrated Behavioral Model
INCTR	International Network for Cancer Treatment and Research
MOH	Ministry of Health, Republic of Zambia
NCCN	National Comprehensive Cancer Network
NCI	National Cancer Institute
PC	Prostate Cancer
PCA	Prostate Cancer Africa
PSA	Prostate-Specific Antigen
SADC	Southern African Development Community
SPSS	IBM® SPSS® Statistics (Statistical Package for the Social Sciences)
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UNZA	University of Zambia
USPSTF	US Preventive Services Task Force
WCRFI	World Cancer Research Foundation International
WHO	World Health Organization
ZCSO	Zambia Central Statistical Office

DEFINITIONS

TERMS	DEFINITIONS
Behaviour	Any observable action or response of an individual (Merriam-Webster, 2019).
Belief	An acceptance that something exists or is true, especially one without proof (Merriam-Webster, 2019). For this study, belief is the acceptance that PC exists or not, and PC screening is beneficial or not.
Framework	A conceptual structure for supporting or enclosing something else, especially a skeletal support used as the basis for something being constructed (Lutkevich, 2020).
Knowledge	Knowledge is defined as a justified true belief (Bolisani & Bratianu, 2018). For this study, knowledge is the familiarity with or awareness of prostate cancer and/or prostate cancer screening.
Prostate cancer	Cancer that occurs in the prostate (Mayo Clinic, 2020).
Prostate cancer screening	This is the process of looking for prostate cancer before a person has any symptoms (NCI, 2019).

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CHAPTER 1: ORIENTATION TO THE STUDY

1.1 Introduction

The incidence rate of prostate cancer (PC) varies from region to region globally, with reports ranging between 6.3 to 83.4 per 100 000 men (Sung et al., 2021). According to Sousa (2017), the ten countries with the highest age-standardised rate for PC in the world were France, Martinique recorded 227.2 per 100 000, followed by Norway with 129.7 per 100 000; France, Metropolitan followed with 127.3 per 100 000, Trinidad and Tobago with 123 per 100 000, Barbados with 123.1 per 100 000, Sweden with 119 per 100 000, Australia with 115.2 per 100 000, New Caledonia with 114.9 per 100 000, French Polynesia with 114.6 per 100 000, and Ireland with 114.2 per 100 000 (Sousa, 2017). According to Rawla (2019:63), there were 1 276 106 new PC cases recorded in 2018 worldwide, with the highest age-standardized rate in regions being recorded in Oceania (79.1 per 100 000 people) and North America (73.7 per 100 000 people), followed by Europe (62.1 per 100 000 people). Africa and Asia had lower incidence rates than those from developed countries and as reported by Sung and colleagues (2021), the age standardised incidence rate for PC worldwide was 30.7 per 100 000 men. The incidence rate of PC represented 7.3% of all cancers in 2020 (Sung et al., 2021), a slight increase from 7.1% in 2018 (Rawla, 2019:66). PC has been noted to be the second common cancer in men, and ranks as the fifth cause of cancer deaths in men (Sung et al., 2021). According to Cancer.Net (2019), PC is the most common type of cancer in males in the United States, with an estimated 174 650 new cases and 31 620 deaths expected a year from 2019. About 60% of all PC occurred in men above the age of 65, with the average diagnosis age of 66 (Cancer.Net, 2019). PC was the second leading cause of cancer death in men and it was second only to lung cancer in America (American Cancer Society, 2019). This type of cancer is associated with a number of physical, emotional, social, and financial problems that come as a result of the disease and its treatment, and based on GLOBOCAN 2016 estimates: 1 276 106 PC new cases were recorded worldwide (ACS, 2019; Rawla, 2019:63-89). In 2017, it was estimated that 16 665 new cases of PC were diagnosed in Australia with the age standardised rate of 151 per 100 000 males. It was also estimated that the incidence rate of PC in Australia would increase by 23% in 2017 (Weiner et al., 2016:395).

In Zambia there are some estimates that indicate that there are about 355 new cases of PC every year and that 300 men die from the disease each year (Mutale, 2016:2). The annual mortality rate

per 100 000 people from PC in Zambia has increased by 106.4% since 1990, an average of 4.6% a year (Mutale, 2016:2).

1.2 Background to the study

Prostate Cancer has become a significant problem worldwide, ranking as the second most frequently occurring cancer in men (Sung et al., 2021). Early detection and treatment of PC is associated with long survival rate and the fifth most common cause of cancer related death in men worldwide (Rawla, 2019:63; Smith-Palmer et al., 2019; Sung et al., 2021). However, PC mortality is steadily declining in some developed countries because of the introduction of screening and early detection of the asymptomatic disease (Rawla, 2019:63-89).

One of the problems in early detection of PC is the lack of consensus guidelines regarding screening and early detection. Various organisations and regulatory bodies such as the European Society for Medical Oncology, the Urological Society of Australia and New Zealand, and the National Comprehensive Cancer Network recommend different screening techniques for PC. Furthermore, there is a belief that men are less likely to seek medical assistance when they face health problems, compared with women, and according to Hooper and Quallich (2016:163-172), men have poor health seeking behaviour compared with women. This leads to men presenting with PC in advanced stages (ACS, 2016:26). Moreover, compared with women or with any other group of men, black men are less likely to seek help or to participate in health-related activities (ACS, 2016:26). African American men have the highest incidence rate of PC worldwide (Rawla, 2019:65). This is influenced by the lack of participation in screening due to various cultural factors, lack of knowledge, health beliefs, barriers, and relationships with primary healthcare givers (ACS, 2016:26).

PC is the has the highest incidence and mortality in men and the incidence has been raising sub Saharan Africa (Rawla, 2019:63). Global Cancer Observatory (GLOBOCAN), the estimated number of new cancer patients both sexes in Zambia was 12 052 in 2018 (Rawla, 2019:65). As in many other countries in the world, PC is a growing health concern in Zambia. PC accounts for 10.2% of all cancers treated in Zambia (Rawla, 2019:65). According to Kalubula et al., (2018:8) there were 1651 new prostate cancer patients recorded in Zambia between 2007 and 2014 with the prevalence rate of 22.1 new patients per 100 000 men. Prostate cancer ranked third among all cancers between 2007 and 2014 representing 7.7% of all cancers recorded in Zambia.

The Cancer Diseases Hospital 2019 annual report for 2019 indicated that there was an annual increase in the number of new cancer cases seen at Cancer Diseases Hospital from 2734 in 2018 to 3009 new cancer cases in 2019 (Cancer Diseases Hospital (CDH), 2019:7). The CDH 2019 annual report further reveals that cervical cancer had the highest number of new patients in 2019 with 890 new patients, followed by breast cancer which had 410 patients, and PC with 358 new patients seen in 2019 (CDH, 2019:8).

This study focused on describing the knowledge and beliefs regarding PC screening among university male students. The knowledge of PC in Zambia is generally poor, and very little is known about the screening procedures of PC. This is attributable to the fact that limited formal studies have been conducted in Zambia to assess the knowledge of and beliefs regarding PC and PC screening. The study by Egbera (2015) revealed that some men in Nigeria had poor knowledge with regard to screening for PC, while others still believed it to be a disease of white men. The study further revealed that some cultural beliefs in Benin City, Nigeria, did not allow men to go for screening, and some men still lived in denial that PC existed (Egbera, 2015). Lack of knowledge, negative attitudes, past negative experiences, lack of adequate health insurance, traditional attitudes about male gender roles, high fatalistic beliefs, and fear of prostate cancer screening affect the uptake of cancer screening among men. Furthermore, fear of prognosis that screening will identify more health problems, together with all the aforementioned cultural and religious beliefs, has a negative effect on the uptake of PC screening (ACS, 2016:26; Abamara et al. 2017:148).

It was blieved that patients in the sub-Sahara region of Africa present with locally advanced or metastatic disease due to limited screening programmes, inadequate diagnostic facilities, and the lack of health education, as well as limited skilled oncology personnel, and ignorance (Black & Richmond, 2019).

1.3 Statement of the problem

Prostate cancer remains the second most frequently diagnosed cancer and the second leading cause of cancer death in men worldwide, with an estimated 0.9 million new patients and 0.26 million deaths annually (Sahil et al., 2017; Sung et al., 2021). PC is a growing concern in Zambia, and according to literature there has been a rise in the number of PC incidences in the country. A study by Singh and Bolla (2019) revealed that PC is the second most common cancer in males in Zambia, and the incidence rate of PC was reported to have increased from 22% of all male cancers

to 56% in the last 20 years from 1988 to 2018. Studies done on PC in Zambia by researchers such as Banda et al. (2019:3) have focused on prevalence. No formal study has been done on assessing knowledge and beliefs of young men on PC screening in Zambia. Hence, this study intends to bridge the gap by describing the knowledge and beliefs among non-medical male students about PC screening in Zambia.

The researcher is a professional nurse with a degree in oncology nursing and is currently working at the CDH in Lusaka, Zambia. CDH is the only oncology centre in Zambia, serving the entire nation and neighbouring countries which do not have specialist oncology healthcare services, such as Malawi, Mozambique, Tanzania, and the Democratic Republic of Congo. CDH conducts cancer screening campaigns during commemorations. The researcher has worked at the centre for ten years. In that same period, he noticed an increase in patients with PC from 40 new patients in 2004 to over 150 patients in 2017 (Cancer Diseases Hospital, 2019). Most of the patients had advanced PC. PC is one of the screenable cancers, thus, individuals adhering to the screening policy would normally present with early stage disease. Hence, if young men could be equipped with knowledge of PC and PC screening, it could be detected early and could be treated. However, one needs to first establish the baseline level with regard to their knowledge and beliefs on PC screening. That would provide an opportunity to plan intervention to foster positive attitudes and increase knowledge, which could contribute to regular and timely PC screening. The incidence of presenting with advanced PC would be reduced. The mortality rate of men with PC could therefore be reduced, as early detection could lead to good treatment outcomes. This motivated the researcher to assess the knowledge and beliefs of male students at the UNZA PC screening programme, as these are potential PC patients in the near future.

Additionally, previous efforts have indicated that knowledge, attitudes and beliefs have implications on PC screening and health-seeking behaviours (Ogunsanya et al., 2017). Hence the following research question will be answered.

1.4 Research question

What is the knowledge and beliefs of male students regarding prostate cancer screening at the University of Zambia?

1.5 The purpose of the study

The purpose of this study was to describe the knowledge and beliefs of non-medical male university students regarding prostate cancer screening in Zambia.

1.6 Objectives of the study

a) To describe the knowledge of non-medical male university students of prostate cancer and prostate cancer screening.

b) To describe the beliefs of non-medical male university students regarding prostate cancer screening.

1.7 Literature review

According to Paré and Kitsiou (2017), a literature review is an overview of research and other sources on a selected topic. The aim is to provide a critical written account of the extant knowledge on a selected topic. In this study, while conducting the literature review, the researcher consulted current available research, including books and reports on knowledge and beliefs of male students regarding PC screening.

In this study, the literature review comprises current information on the demographics and history of Zambia, and also presents current global, regional and local information on knowledge, attitudes and beliefs of young men in respect of PC screening. Furthermore, the literature review also provides current information on PC screening recommendations and PC health education worldwide. Lastly, current information on the prevention and screening of PC in men, the treatment of PC, and the nursing management of PC globally, regionally and locally, are also presented in the literature review in Chapter 2.

1.8 Theoretical framework

Behavioural change theories attempt to explain why people's behaviours change. These theories cite environmental, personal, and behavioural characteristics as the major factors in behavioural determination (Bornstein et al., 2020). Each behavioural change theory or model targets different factors with a view to explain behavioural change. Of the many that exist, the most prevalent are the learning theories: Social Cognitive Theory, Transtheoretical Model, Health Action Process

Approach, Theory of Reasoned Action, Integrated Behavioral Model (IBM), Health Belief Model (HBM) and Theory of Planned Behaviour (Branscum & Lora, 2017:32). The IBM has been applied in this study to assess the knowledge and beliefs of male students at the University of Zambia regarding PC screening.

The IBM combines constructs represented in the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB) and other behavioural theories. IBM also presents new or changed determinants that has an effect on the intention to perform a behaviour, and they include experiential attitude, descriptive norm, personal agency, and self-efficacy (Branscum & Lora, 2017:32). According to Montaño and Kasprzyk (2015), the most important determinants of behaviour in the IBM are intention and motivation to perform a behaviour. Without motivation/intention, an individual is less likely to carry out a behaviour. In addition to motivation and intention, a person needs to have knowledge and the skills to act (Montaño & Kasprzyk, 2015).

The IBM, compared with the TRA and TPB, has four additional factors that should be considered for an intervention that promotes behavioural change. These factors directly affect whether or not behaviour can be carried out. These are knowledge and skills to perform the behaviour, salience of the behaviour, environmental constraints, and habits (Branscum & Lora, 2017:32).

These factors will now be elaborated upon as applied in this study.

1. Knowledge and skills to perform the behaviour – knowledge is familiarity with or awareness of someone or something gained by experience of a fact or experience (Bolisani & Bratianu, 2018). Knowledge can be acquired differently and from many sources, and may include experience, education, reason, memory, scientific enquiry exploration and practice among others (Bolisani & Bratianu, 2018). Even if a person has a strong behavioural intention, there is need for knowledge and skills to carry out the behaviour. A male person may have the intention to go for PC screening, but if he has no knowledge of PC and the availability of PC screening, he may not go for PC screening (Branscum & Lora, 2017:32). This aspect of the framework is applied in the study by describing knowledge of PC and PC screening.
2. Salience of the behaviour – this behaviour is important for a person to undergo PC screening. A person (male student) should know that it is important to go for PC screening as it may have considerable health benefits (Montaño & Kasprzyk, 2015). This aspect of the framework

will be applied in this study through the description of the respondents' beliefs regarding PC screening

3. Environmental constraints – environmental constraints that may make behavioural performance very difficult or impossible should be very few or none at all. A person (male student) may know that PC screening has considerable health benefits as it can lead to early cancer diagnosis which makes the cancer easily be treated. However, the screening centre is not readily available or the cost is prohibitive for these men (male students). Hence, they may not have a desire to go for PC screening because of the concomitant high cost (Montaño & Kasprzyk, 2015). This aspect relates to the belief component of the study, especially with regard to religion and the role of the church.

4. Habit – performing the behaviour frequently may make one gain experience and the behaviour may become a habit. Men (male students) find it easy to go for PC screening if they have been going every year as required. This may then become a habit (Branscum & Lora, 2017:32).

1.9 Research methodology

Research methodology constitutes the specific techniques employed to identify, select, process, and analyse information on a topic (Walliman, 2018:9).

1.9.1 Research philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used (Thakurta & Chetty, 2015). Post positivism is a branch of philosophy which uses strict logical rules, laws, truths, predictions and axioms to operate, and recognises that the truth cannot be fully discovered (Polit & Beck, 2017:11). The quantitative research approach emerges from post-positivism. The study adopted the post-positivist research philosophy as it is a dominant paradigm in nursing studies (Polit & Beck, 2017:11). The role of the researcher is very limited in the post-positivism paradigm in respect of an objective interpretation of the research findings (Polit & Beck, 2018:7). Findings from this study were quantifiable and resulted in statistical analysis.

1.9.2 Research strategy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used (Thakurta & Chetty, 2015). Post positivism is a branch of philosophy which uses strict logical rules, laws, truths, predictions and axioms to operate, and recognises that the truth cannot be fully discovered (Polit & Beck, 2017:11). The quantitative research approach emerges from post-positivism. The study adopted the most dominant paradigm used in nursing research studies called post-positivist research philosophy (Polit & Beck, 2017:11). In respect of an objective interpretation of the research findings, the role of the researcher is very limited in the post-positivism paradigm (Polit & Beck, 2018:7). Findings from this study were quantifiable and resulted in statistical analysis.

1.9.3 Population and sampling

The total population used in this study consisted of all male students at UNZA, and the target population was non-medical male students at UNZA. The research setting was at UNZA. UNZA is Zambia's largest university, located in the heart of Lusaka, the capital city of Zambia. A convenience sampling technique was used to select a sample of 254 male non-medical students for the study. The sample size for this study was calculated using SurveyMonkey® (2016) sample size calculator at 90% confidence level and 5% margin of error. The study included all non-medical male university students and excluded all female university students and medical male university students.

1.9.4 Methods of data collection

Quantitative data were collected through a self-administered questionnaire. Structured questionnaires were used as data-collection tools for the study after acquiring ethical clearance from the Cape Peninsula University of Technology (CPUT) Faculty of Health and Wellness Sciences Research Ethics Committee, and from the University of Zambia Biomedical Research Ethical Committee [UNZA-BREC] (refer to Appendix B and C). The researcher distributed the questionnaires to those participants who met the inclusion criteria, and sufficient time was given to the participants after signing consent to complete the questionnaires.

1.9.5 Data analysis

The IBM Statistical Package for the Social Sciences (SPSS) Version 26 was used to analyse data for the study. After completion of data collection, the researcher reviewed the questionnaires to ensure accuracy and check for omissions. The questionnaires were entered into IBM® SPSS® Version 26 for analysis. Frequency tables and graphs were generated by IBM® SPSS® Version 26. Frequency, mean and standard deviations were also generated by IBM® SPSS® Version 26.

1.9.6 Ethical considerations

Research ethics are moral rules that guide researchers to conduct and report research without deception or harm to the research participants or members of society as a whole, whether intentionally or unintentionally (Resnik, 2015). The following ethical principles were observed in the study to protect the respondents and the general public's welfare. Ethics clearance for the study was obtained from CPUT and UNZA-BREC in Zambia.

Confidentiality was maintained throughout the course of the study as respondents' names were not written on any document. Each respondent was allocated a number and the information provided was not accessed by anyone other than the researcher and supervisors. Respondents were allowed to make informed, voluntary decisions to ensure that autonomy was maintained during the study. Beneficence was ensured in the course of the study as no respondent was harmed. Non-maleficence was ensured in the course of the study as respondents were protected from any form of harm and discomfort. Respondents were allowed to read through the information sheet before informed consent was obtained. Justice was also observed during the study as respondents had the right to fair treatment and privacy. All respondents identified to be at risk of developing the disease and all those who had lost a relative or friend to the disease were referred to the onsite clinic for counselling.

After data collection, the researcher ensured that data were protected by ensuring that no other person other than the researcher and supervisors had access to the completed questionnaires and that the computer where data were captured had a secured password. The questionnaires were kept under lock and key by the researcher and will be transferred to the Department of Nursing Sciences where they will be kept for five years after completion of the study. Ethical principles are discussed further in Chapter 3.

1.10 Chapter divisions

Chapter 1 presented the orientation to and overview of the study. This comprised: introduction, background to the research problem, statement of the research problem, rationale for the study, and purpose and objectives of the study. Furthermore, the theoretical framework, paradigm and approach, research design and methods, and ethical considerations were discussed.

The literature review is presented in Chapter 2, and comprises demographic and historic information of Zambia. It further examines the knowledge and beliefs of men regarding PC screening globally, and nationally in Zambia. Lastly, the chapter describes prevention and screening of PC in men, the treatment of PC, and the nursing management of PC globally and locally.

Chapter 3 describes the research methodology used in this research. The methodology was discussed under the following major headings: quantitative research approach; research design; research setting, population and sampling; methods of data collection; the process of data collection; data protection; data analysis; and measures to ensure validity and reliability. Ethical considerations are also presented in this chapter.

Chapter 4 presents a quantitative analysis of the collected data based on the self-administered questionnaires, while Chapter 5 provides a discussion of the findings of this study compared with previous literature reviewed and concludes with guidelines to address the phenomenon under study. The last chapter describes the conclusions and recommendations emanating from the study. The limitations are also noted.

1.11 Summary of chapter

Chapter 1 contextualised the study and provided the reader with the background to PC screening, highlighting the causes and incidence of PC. The chapter also presented the research question and aims and objectives of the study, while the problem statement was highlighted. For the research methodology, a deductive approach within a post-positivism paradigm was selected. Data were collected using self-administered questionnaires and analysed by quantitative descriptive data analysis. The theoretical framework was described. A discussion of ethics was also provided, and the chapter concluded with the delineation and contribution of the research, definition of terms, and chapter overview.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This second chapter of the dissertation presents a review of the literature related to this study. In conducting this literature review, a numerous of databases such as Scopus, EBSCO host, Google Scholar and Medline were searched. This provided sufficient peer-reviewed, current and relevant literature to inform this study. The presentation of the literature commences with the demographic and historic information of Zambia and of Lusaka. Furthermore, the knowledge and beliefs of men regarding PC screening globally and nationally in Zambia were reviewed and are presented. Lastly, the chapter furnishes information related to prevention and screening of PC in men, the treatment of PC, and the nursing management of PC within Lusaka and environs.

2.2 Demographics of Zambia

Zambia is a landlocked country in southern Africa, located between latitudes 8° and 18° south and longitudes 22° and 34° east, and covers a total area of 752 612 square kilometres. Bordering the republic of Zambia are the Democratic Republic of Congo to the north; Tanzania to the north-east; Malawi to the east; Mozambique, Zimbabwe, Botswana, and Namibia to the South; and Angola to the west (Zambia Central Statistical Office, 2018:6).

2.3 Demographics of Lusaka

The population of Lusaka Province, as captured during the 2017 census of population and housing, was 3 002 530. The population in rural areas was 336 318 and 1 854 907 in urban areas. Of the total population in the province, 49.4 percent (1 483 249) was male and 50.6 percent (1 517 280) female (Zambia Central Statistical Office, 2018:42). The population of Lusaka Province grew at an average rate of 4.6 percent per annum during the inter-census period 2000–2010. Lusaka District, with a population of 1 747 152, was the fastest growing district, with an annual population growth of 4.9 percent, followed by Kafue District at 4.2 percent per annum (Zambia Central Statistical Office, 2018:10).

Lusaka District had the highest percentage of the total provincial population, with 79.7 percent (1 747 152). Kafue District was second with 10.4 percent (227 466). Lusaka District was also the most densely populated district in the province with a population density of 4 853 persons per square kilometre, followed by Kafue District with 24.2 persons per square kilometre (Zambia

Central Statistical Office, 2018:10). This study was conducted in Lusaka city, the capital of Zambia. Lusaka has a high proportion of health services (Loewenson et al., 2017:2). The capital has all levels of healthcare facilities, ranging from health posts to tertiary healthcare facilities offering specialised health services (Loewenson et al., 2017:2). Loewenson et al. (2017:2) further state that Lusaka has four tertiary hospitals, 22 government urban health centres, 144 private health providers, and over 1000 traditional healers and birth attendants offering health services to the community.

2.4 Health care system in Zambia

Zambia has a well-functioning public and private healthcare system which provides general and specialised medical services. Zambia based its health system on decentralisation, as provinces and districts are empowered to manage their own affairs for effective social and economic development (International Insulin Association, 2019). The government of the Republic of Zambia declared the healthcare system a priority sector. The healthcare system in Zambia is classified into three major categories. The first level comprises health posts, rural health centres, and district hospitals. At the second level, it consists of provincial and general hospitals. The third level comprises tertiary central hospitals, the CDH, and the national University Teaching Hospital, among others (Muwabelwa, et al., 2017:6). CDH is the main hospital providing cancer treatment in Zambia.

2.4.1 Roles of men in healthcare in Zambia

Access to quality healthcare is a basic human need, therefore men and women have the right to enjoy the highest attainable standards of physical and mental health (WHO, 2017). In Zambia, women have specific roles, and they face special needs in respect of reproductive health and breast and cervical cancer screening, as well as other factors which result in ill-health (WHO, 2017).

In Zambia, as in most sub-Saharan countries, men are perceived to be providers of food and supplies as well as giving physical and emotional support to women and children (Muloongo et al., 2019). It is thus fitting that the WHO recommends that men should be involved in maternal and child health as well as in many health promotion activities. However, this proposal has not brought any changes regarding men's health (WHO, 2015). The Zambian government, through the Ministry of Health of the Republic of Zambia (MOH), encourages men to become involved in health

promotion activities like participation in family planning, antenatal care, under-five child monitoring, and PC screening for those above the age of 40 (MOH, 2016:8). There have been no serious advocacy programmes developed or implemented for PC and PC screening in Zambia. There is one newly formed non-governmental organisation called the PC Foundation of Zambia, whose aim is to advocate PC screening for all men above the age of 40 in Zambia. This is also mentioned in the National Health Strategic Plan (Chimba, 2016).

2.5 Global perspective on cancers

In 2018, 18.1 million new cancer patients were diagnosed worldwide (Bray et al., 2018), while 19.3 million were reported for year 2020 (Sung et al., 2021). In 2018, 9.6 million people died of cancer and 32.6 million people were five-year cancer survivors (people been alive five years after being diagnosed with cancer), and by 2025, 19.3 million new cancer patients are expected to be diagnosed each year (Bray et al., 2018).

In 2018, the most common cancers worldwide for both sexes were: lung cancer (11.6% of all cancers diagnosed, 2.1 million people); breast cancer (11.6% of all cancers diagnosed, 12.1 million people); colorectal cancer (10.2 % of all cancers diagnosed, 1.8 million people); PC (7.1% of all cancers diagnosed, 1.3 million people); stomach cancer (5.7% of all cancers diagnosed, 1 million people); liver cancer (8.2% of all cancers diagnosed, 1.4 million people); and cervical cancer (4% of all cancers diagnosed, 827 624 people) (WHO, 2018b). The figures are shown in Table 2.1 below.

Table 2.1: Estimated number of incident patients of the top ten common cancers, both sexes, worldwide in 2018 (Bray, et al., 2018)

	Type of cancer	New patients	Men	Women
1	Lung	2 093 849	1 368 524	725 352
2	Breast	2 088 849	-	2 088 849
3	Colorectal	1 800 977	1 006 019	794 958
4	Prostate	1 276 106	1 276 106	-
5	Stomach	1 033 701	688 754	349 947
6	Liver	841 080	596 574	244 506
7	Oesophagus	572 034	399 699	172 335
8	Cervical	569 847		569 847
9	Thyroid	567 233	130 889	436 344
10	Bladder	549 393	424 082	125 311

In the same year (2018), according to the Centers for Disease Control and Prevention (CDC), the most commonly diagnosed cancers worldwide were lung, prostate, colorectal, stomach, and liver cancers in men, while breast, colorectal, lung, cervical, and stomach cancers were more common in women (Siegel, et al., 2021). According to the World Cancer Day report (2015), cancer now accounts for more deaths worldwide than HIV/AIDS, tuberculosis, and malaria combined.

2.5.1 Cancer in developed countries

According to Firger (2015), lung cancer is now the leading cause of cancer deaths in both men and women in developed counties. PC for men and breast cancer for women are the most diagnosed cancers in men and women respectively (Firger, 2015). The highest incidence of lung cancer, about 50.8 per 100 000 for women, was seen in North America, Northern and Western Europe, Australia and New Zealand, and East Asia. For men, the highest lung cancer rates were in Europe, East Asia, and North America, while the lowest rates were in sub-Saharan Africa (Firger, 2015). Sung et al. (2021) noted that the incidence of cancer increased as countries' Human Development Index level increased, with up to 335.3 per 100 000 in more developed countries, with mortality rates being twice as high in more developed countries. For reasons that are still unknown, African American men are more likely to develop PC than men of any other race. Having one or more close relatives with PC also increases a man's risk of having PC (WHO, 2018b).

2.5.2 Cancer in developing countries

The incidence of all cancers is increasing in developing countries and is now comparable to that of developed countries (Frenk, 2018). About 50% of all cancer patients occur in developing countries and the number is expected to increase to 60% by 2020 and 70% by 2050 (Frenk, 2018). Of the 7.6 million global deaths from cancer in 2008, more than 55% occurred in less-developed regions of the world. By 2030, 60–70% of the estimated 21.4 million new cancer patients per year are predicted to occur in developing countries (World Cancer Day, 2015). India is the country with the second highest population in the world and has an incidence of about 100 000 new cervical cancer cases annually, with a mortality of about 60 000 cervical cancer deaths annually (Bruni et al., 2019:7). The cervical cancer rate is the lowest in West Asia, Australia, New Zealand, and North America (Bruni et al., 2019:7).

Cervical cancer is just one example of the disproportionate burden borne in the developing world, which includes Zimbabwe, Burundi, Mozambique, Comoros, Malawi, Zambia, Swaziland, Tanzania, and Mali, among others (World Cancer Day, 2015). Over 85% of the 275 000 women who die every year from cervical cancer are from these developing countries. If left unchecked, by 2030 cervical cancer will kill as many as 430 000 women per year (World Cancer Day, 2015).

World Health Organization (2021) noted that approximately 70% of cancer deaths occurred in low- and middle-income countries. Low- and middle-income countries have a lower cancer incidence rate despite having a high death rate (WHO, 2021; Sung et al., 2021). The high death rate is attributed largely to lack of regular screening and delays in diagnosis, leading to presentation with advanced disease, with reports of up to 77% of all staged cancer cases being in Stage 3 or 4 in 17 sub-Saharan countries (Sung et al., 2021). Many impoverished patients receive available treatment rather than optimal treatment, and those with advanced disease are sent home to die without being placed on palliative care (WHO, 2021). Many patients who remain uncounted never reach a centre capable of providing appropriate cancer treatment. Even so, approximately 50% of cancers in developing countries occurs in individuals younger than 65 years (WHO, 2021).

2.5.3 Cancers in Africa

According to Bray, et al., (2018) Africa had about 1 055 172 new cancer patients and 693 487 cancer deaths in 2018 alone. Of the 1 055 172 patients, 446 556 were males while 608 616 were females (Bray, et al., 2018). The cancer incidence rate for Africa is expected to double in the next 20 years. Despite this growing burden, cancer continues to receive low public health priority in Africa, largely because of limited resources and other pressing public health problems. Cervical, breast, liver, prostate, Kaposi's sarcoma and non-Hodgkin's lymphoma are the most common cancers in Africa (WHO, 2018b).

The rise in the number of cases of cancer is associated with ageing populations as well as an increase in risk behaviours such as unhealthy diets, lack of physical exercise, and harmful use of alcohol and tobacco (WHO, 2018b). According to Health24 (2011), one in six South African men and one in seven South African women will get cancer during their lives. The cancers affecting all South African men, in order of prevalence, are: PC, lung cancer, oesophageal cancer, bladder cancer and colorectal cancer (Health24, 2011).

According to WHO (2018b), PC is ranked the third highest among all cancers in Africa, with 80 971 new cases recorded in 2018. The incidence rate in South Africa, according to statistics from the National Cancer Registry, showed that 1 in 24 South African men would develop PC in their lifetime (WHO, 2018b). The highest incidence was among the white South African male population, with a higher risk compared with the black male population (WHO, 2018b).

In other sub-Saharan countries like Uganda and Zimbabwe, PC has the highest incidence rate of 38.1 and 37.1 per 100 000 respectively (WHO, 2018b). This figure is still below the incidence of black American men, which is 172.8 per 100 000 (Okuku et al., 2016). PC remains the most common cancer among men and one of the highest causes of cancer deaths in men (Okuku et al., 2016). Prostate cancer has now surpassed oesophageal cancer in terms of male mortality burden, and is the second leading cause of cancer death among men (Torre, et al., 2015). The probability of getting PC increases with age as most PCs are found in men over the age of 65 (WHO, 2018b).

2.5.4 Cancers in men

The world's older male population continues to grow and age due to a growing world population and economy and slow but steady improvement in public health. This trend is expected grow in decades to come (Cooperberg & Chan, 2017). In this context, PC is a growing concern in global epidemiology. More than one million patients are expected to be diagnosed annually, and the mortality burden has risen to 300 000 deaths per year (Cooperberg & Chan, 2017).

The incidence of other cancers like colorectal cancers, lung cancers, skin cancers, and others, has also increased (Bray, et al., 2018). Most colorectal cancers are found in people aged 50 or older (Bray, et al., 2018). People with a personal or family history of this cancer, or who have polyps in their colon or rectum, or those with inflammatory bowel disease, are more likely to have colon cancer (ACS, 2020). Contributing factors to cancer in men include obesity, and a sedentary lifestyle increases the probability of cancer (Bray, et al., 2018). Lung cancer is the most common cancer affecting both sexes and accounts for about 13% of all cancers (Bray, et al., 2018). About eight out of ten lung cancer deaths result from smoking (ACS, 2020). Spending time in the sun can predisposing anyone to develop skin cancer. The most vulnerable group of people to develop skin cancer are people with a fair skin especially those with blond or red hair as compared to people with darker colouring. People who have had a close family member with melanoma and

those who had severe sunburn are likely to develop skin cancer (WHO, 2018b). Prostate cancer remains the second most common cancer in men (Bray, et al., 2018).

2.6 Prostate cancer

Prostate cancer is cancer that occurs in men's prostate, a small walnut-shaped gland that produces the seminal fluid that nourishes and transports sperm (Singh & Bolla, 2019). PC generally grows very slowly and sometimes treatment may not be required, but other types of PC are very aggressive and can spread very quickly (Taitt, 2018:1808).

The prostate gland is a small (20–25g) exocrine gland located in the pelvis, situated between the urinary bladder and the external urethral sphincter surrounding the urethra (Singh & Bolla, 2019). The urinary bladder is located superiorly and interiorly, and the rectum is located posteriorly of the prostate gland (Singh & Bolla, 2019). The cavernous nerve that is critical for erection of the penis runs along its posterolateral surface on either side (Singh & Bolla, 2019).

The adult prostate gland found in men is organised in a zonal fashion. The transition zone surrounds the urethra and makes up 5% of the glandular tissue of the prostate gland. This is the most common site for benign prostate hypertrophy (Singh & Bolla, 2019). Only 15% of PCs originate in the transitional zone. The central zone surrounding the ejaculatory ducts makes up 20% of the glandular tissue of the prostate gland, and PC rarely originates in the central zone (Singh & Bolla, 2019). The peripheral zone is responsible for the bulk of the prostate tissue. It makes up 70% of glandular tissue and it is the most common site for PC (Singh & Bolla, 2019).

2.6.1 Prostate cancer in Zambia

As noted by Kalubula et al. (2018), Zambia recorded 21 512 new cancer patients from 2007 to 2014, of which 7 560 (35.14%) were males and 13 952 (64.86%) were females. Most cases of cancer that were notified were for patients aged 25 years or older (21.9% among males in the 64-year or older age group, and 25.6% among females in the 34 to 44-year age group). The most common cancers reported in females were cervical cancer (48.5%) and breast cancer (11.4%). The most common cancers reported in males were Kaposi's sarcoma, followed by PC, with a respective proportion of 23.3% and 21.8% among males in Zambia (Kalubula et al. 2018). Literature has noted that PC is on the rise in Zambia, with a standardised incidence rate of 60.03 per 100 000 males (95%CI = 57.03–63.03). In addition, Kalubula and colleagues noted that mortality rates of PC are high, with a 13% case fatality rate (Kalubula et al. 2018). Prevention,

treatment and control interventions should be focused on cervical and breast cancers in females, and PC and Kaposi's sarcoma in males (Kalubula et al., 2018).

According to the Zambian Ministry of Health (MOH), in the National Cancer Control Strategic Plan for Zambia (MOH, 2016:50), the incidence of PC in Zambia and Zimbabwe is above average, with an age standardised incidence rate of 21.9 and 32 per 100 000 men respectively compared with other countries in the region, such as 9.7 for Nigeria, 4.4 for Senegal, and 4.3 for Uganda (Taitt, 2018:1817). Histological reports recorded from 1990 to 2005 at the University Teaching Hospital in Lusaka revealed that PC was the most common urological malignancy in Zambia as it accounted for 56% of all urological malignancies (Chilando, 2019:7). Chilando (2019:29) further revealed that 61% of patients who underwent prostate biopsy had PC and 56% had advanced PC. Zambia is estimated to have one of the highest mortality rates in the world. The incidence of and mortality rate for PC is 21.9 and 18.2 per 100 000 men respectively (MOH, 2016:50).

Prostate cancer mortality rate in Zambia was the second highest among all cancer deaths between 2007 and 2014 as the country recorded 215 deaths (Kalubula et al., 2018). Zambia is ranked number 37 in the world on the age-adjusted death rate, which is 25.59 per 100 000 of population. The NCCSP estimates that PC patients represent 5% of all cancer cases recorded in Zambia, and the average age of men diagnosed with PC is 71 (MOH, 2016:50).

2.6.2 Prostate cancer in younger men

Prostate cancer is the second most common cancer in men and is generally considered a cancer of the elderly; the average age of presentation is 68 years (Sahil et al., 2017). However, 10% of the PC cancers diagnosed in the United States of America occurs in younger men, and the cancer tends to be undifferentiated and more aggressive (Salinas et al., 2014; Sahil et al., 2017).

According to Gupta et al. (2017:212), the majority of men below the age of 50 believe that the risk of developing PC does not exist, as PC affects mostly men above the age of 65 years. A study by Kimura et al., (2021) which assessed the prevalence of PC in men globally, revealed that the prevalence of latent PC has decreased in the Western world but has increased in Asian men (Kimura, et al., 2021). The study findings further reveals that the tumors found in Asian men was higher in grade (Kimura, et al., 2021).

The number of younger men diagnosed with PC has increased in the last 20 years, and the cancer tends to be more aggressive in this age group compared with men above the age of 60 (Howlader

et al., 2019). The prognosis and cure for PC is good when the cancer is identified at an early stage, as 100% of men diagnosed with early PC live for over five years (Bleyer et al., 2020).

According to Bleyer et al. (2020), there has also been an increase in PC among adolescents and young adults in the USA. The increase was 2% per year for those aged between 15 and 39 years, 9% among those aged between 25 and 40 years, and 4% for those aged between 40 and 80 years (Bleyer et al., 2020). There are a number of risk factors that contribute to the continued increase in PC.

2.6.3 Risk factors and causes of PC

The exact causes of PC are the subject of much research and remain unknown (Rawla, 2019:73; Sung et al., 2021). PC may develop because of genetic variation (ACS, 2020). There are several major factors that influence and increase the risk of PC, and unfortunately some of them cannot be changed (Rawla, 2019:73). The major risk factors include advancing age, ethnicity, genetic factors, diet, and lifestyle (Rawla, 2019:73; Sung et al., 2021).

Rebbeck, (2017:8) claims that the prevalence of PC varies among different racial groups. In the USA, African American men have the highest incidence of PC, about three to four times more compared with Native Americans and Indian Americans (Rawla, 2019:78; Sung et al., 2021). Studies have revealed that African American men have a common chromosome 8q24 variant which has been associated with increased risk of PC (Rawla, 2019:78). The major risk factors for PC are discussed below.

Although the risk of PC in young men has increased, Prostate cancer is mostly diagnosed in older men as the risk increases after 50 years of age for white men and 40 years of age for black men with a family history of PC (Rawla, 2019). The average age for PC diagnosis is 70 years (ACS, 2019). The characteristics of age for PC are slowly changing as there is an increase in young people diagnosed with PC (ACS, 2019; Bleyer et al., 2020:47).

According to Rawla (2019:79), it has been estimated that about 20% of patients diagnosed with PC reported a family history of PC. This family history may be the result of shared genes or a similar pattern of exposure to certain environmental carcinogens (Rawla, 2019:79). Men who have had an immediate blood relative with PC, are twice as likely to develop the disease. The chances of developing PC increases if there are more family members diagnosed with the disease (ACS, 2020).

Dietary factors play a very important role in the development of PC (ACS, 2020, Sung et al., 2021). A diet high in saturated fat has been associated with increased risk of PC as opposed to a diet high in healthy fats like omega-3 fats (Rawla, 2019:79). Lack of exercise, smoking and excessive alcohol consumption have also been associated with increased risk of developing PC (Taitt, 2018).

2.6.4 Effects of PC

According to Romanzini et al. (2018), PC has a number of negative effects on those diagnosed. The effects go beyond the individual's physical well-being, as they also affect their emotional and psychological well-being. In addition, they affect the family as well as the affected person's financial status (Romanzini et al., 2018).

2.6.4.1 Effects on physical and psychological well-being

According to Perkins (2017), PC causes prostate enlargement, which affects urination because the prostate wraps around the urethra, the tube that carries urine from the bladder. The study by Romanzini et al. (2018) revealed that PC patients experienced some psychological symptoms such as anxiety and depression, and these elements had negative effects on treatment outcome as well as quality of life. The emotional distress that PC patients experienced was related to fear of treatment complications as well as of dying (Romanzini et al., 2018). According to Ross et al. (2016:901), patients experienced reduced mental and physical health, especially in their first month after treatment, although this improved after a few months to a year, but did not return to pre-disease health (Ross et al., 2016:901).

2.6.4.2 Effects of PC on family

According to Ross et al. (2016:901), patients are not the only ones affected by PC. The disease also has a significant effect on those closest to them, most often spouses (Ross et al., 2016:901). Family members of PC patients also experience as much emotional distress as the PC patient himself (Robinson, 2018). Apart from the emotional distress that family members experience, their productivity is reduced, and monetary resources used for feeding the family are diverted towards medicines and other requirements of the PC patient (Robinson, 2018).

2.6.4.3 Effects of PC on employment

The number of cancer survivors has increased owing to earlier diagnoses, improvements in cancer treatment, and better follow-up care (Jeon, 2017:672). Likewise, PC survival rates have also risen following improved cancer medication and treatment (Jeon, 2017:672). The effects of cancer on employment and earnings differ depending on survivor rates for different cancers (Jeon, 2017:672). The probability of working three years after the cancer diagnosis reduces by 5% compared with non-cancer patients (Jeon, 2017:672). According to McLennan, Ludvik, Chambers and Frydenberg (2019:289), a good number of PC patients return to work after treatment, although there may be a problem with retention that warrants early retirement (McLennan et al., 2019:289; Wellam, John, Joy, Johnson & Joan, 2018).

According to Wellam, et al. (2018), there are linkages between men's work and their experiences with PC. Work is central to the masculine identity of men, and it affords financial stability, social status, and a sense of personal growth; hence, the diagnosis of PC diminishes the importance of work (Wellam, et al., 2018). The study by Jeon (2017:673) compared labour market outcomes for cancer survivors and non-cancer patients. The findings revealed that malignancy lowered the likelihood of working in the first year following the time of cancer diagnosis, and that the income of cancer survivors on average is 40% less in the second year after diagnosis compared with their income pre-disease (Jeon, 2017:672). The findings further revealed that cancer effects on market outcomes differ for different survival categories, which in this investigation serves as proxies for cancer severity (Jeon, 2017:673). The probability of working and earning was lower for survivors in the low-survival category than for those in the high-survival category in all patients after cancer treatment (Jeon, 2017:673).

2.6.5 Knowledge of PC

Literature has documented that knowledge of PC differs in various populations as it has been shown that PC knowledge levels are higher in developed countries compared with developing countries (Taitt, 2018:1810). For instance, Morlando et al. (2017) noted moderate knowledge of PC and its prevention, with 84% of Italian men responding correctly to PC risk factors and prevention questions. However, Mincey et al. (2017:1099) and Ogunsanya et al. (2017:1018) documented lower levels of knowledge of PC among black men in the USA as they were unaware of their risk of developing PC as well as what the prostate gland is and what it does to their bodies.

According to Adibe et al. (2017), PC knowledge levels are higher in developed countries than in developing countries and higher in cities than in rural areas. Adibe et al. (2017) demonstrated that male staff at the University of Nigeria had an appreciable knowledge of PC as the majority knew the risk factors of PC, although they did not know the screening test for PC. However, Ogunsanya et al. (2017:1018) revealed that knowledge levels of PC of young multi-ethnic black men in Austin, Texas in the USA, were very low, especially in areas related to risk factors and the age to be screened for PC.

Gift et al. (2020) also demonstrated that black men from African and Caribbean backgrounds had very poor knowledge of PC and were misinformed about PC screening procedures as they had pronounced confusion between PC screening and colon cancer screening. Furthermore, Ojowolo et al. (2017) documented that Nigerian men in the southwest had very poor knowledge of PC signs and symptoms as well as of the screening test for PC. Similar findings were also documented by Egbera (2015:98-99), who revealed that over 50% of young men did not know the risk factors of PC when she assessed the knowledge, attitudes and beliefs of university students aged 18–35 in Benin City, Nigeria. Morlando et al. (2017) documented that Italian men had moderate knowledge of prostate cancer and had a very good propensity to undergo prostate cancer screening tests.

More documented literature has supported the theory that men in developed countries and cities are more knowledgeable about PC than men in developing countries and in rural settings. This limited knowledge was documented in a number of developing countries. For instance, Mbugua, et al., (2021) documented that 40.6% of men in Nairobi Kenya rural setting were aware of PC screening, compared to 57.6 % who had no knowledge on PC. In addition, Makado et al. (2015:49) had similar findings in Zimbabwe that concluded that 76% of men had no knowledge of PC screening. According to Bugoye (2019), knowledge of PC and PC screening services among men in Dar es Salaam, Tanzania, was very low, as the majority of the respondents had no knowledge of the risk factors of PC. In addition, the majority of men did not use screening services because they lacked knowledge of PC (Bugoye et al., 2019). Knowledge among men in Obio Akpor LGA, River State, Nigeria, was poor, with approximately 23% of the participants being able to identify PC screening methods (Enemugwem et al., 2019).

There have been no known published studies on knowledge of PC screening in Zambia. The few studies conducted in Zambia on cancer documented a paucity of information on cancer aimed at the general public. Banda et al. (2019:3) revealed a lack of information on cancer aimed at the

general public as well as health workers. This led to poor health-seeking behaviour by the general population (Banda et al., 2019:3).

Low health literacy is regarded a risk factor for poor health and poor decision making (Wellborn, 2019). Knowledge of PC has been associated with increased screening for PC, which in turn leads to prevention and early detection of PC and improved overall outcomes (Enemugwem et al., 2019). Establishing the knowledge levels of non-medical male university students at UNZA regarding PC and PC screening would help plan programmes on PC education for men to improve their knowledge of PC and PC screening as well as the importance of prevention and early detection of PC.

2.6.6 Traditional beliefs about and practices with regard to prostate cancer

The beliefs and traditions of community members have a profound effect on the health of the community (Morisky, 2019). Culture, socio-economic factors, generational practices, and current trends affect patients' and families' health beliefs and practices (Morisky, 2019).

According to Merriam and Muhamad (2014), traditional healers are a major source of healthcare in developing countries. For instance, in Malaysia, 80% of people requiring health services, including cancer patients, are attended to by traditional healers (Merriam & Muhamad, 2014). Cancer diagnosis and treatment generally are delayed in Africa and Malaysia as people prefer to visit a traditional healer rather than a hospital (Merriam & Muhamad, 2014).

Traditional barriers to communication have been associated with lack of access to some health-related activities such as PC screening (Woods et al., 2004:389). Literature has further revealed culture and tradition also come into play in men's decisions to undergo PC screening (Woods et al., 2004:389). PC is perceived as a threat to black manhood because of the fear of impotence; thus, men are afraid of screening for fear of becoming impotent (Woods et al., 2004:389). Furthermore, digital rectal examination (DRE) was considered a threat to the sexuality of black men, was deemed embarrassing, and associated with homosexual tendencies (Woods et al., 2004:389).

According to Caspar et al. (2017), beliefs have an impact on moral decision making. People are more likely to engage in health promotion behaviours if they believe that a behaviour has the stated benefits (Caspar et al., 2017). Therefore, establishing the beliefs of male UNZA students

regarding PC and PC screening would help devise strategies for PC prevention and early detection.

2.6.7 Public health interventions for PC

According to Rawla (2019:88), PC is a common cancer affecting men worldwide, although only a few men access health services with regard to early detection. The ultimate goal of PC public health interventions is to prevent men from developing PC as well as diagnosing PC early (Rawla, 2019:88). Effective PC prevention strategies have many health benefits for men and may reduce the lifetime risk of developing PC (Rawla, 2019:88). According to the ACS (2016), understanding the aetiology of PC is key to PC prevention. Diet modification by reducing high-fat diets and increasing consumption of fruit and vegetables, coupled with exercise, helps in preventing PC (Rawla, 2019:88). On the other hand, literature shows that early diagnosis and treatment of PC reduces the risk of advanced disease as well as the risk of dying of PC, thus increasing life expectancy (Kangmennaang et al., 2016). Therefore, targeted screening and population screening, as well as active public health sensitisation, may be key to men's health promotion (Kangmennaang et al., 2016).

2.6.8 Prostate cancer screening

According to the ACS (2020), PC screening is testing to detect PC in people before they have symptoms. Documented literature is still not conclusive on whether the benefits of PC screening outweigh the risks for most men (ACS, 2020). According to Rawla (2019), there are three common tests for PC screening: Prostate-Specific Antigen (PSA), Digital Rectal Examination (DRE), and prostate ultrasonography. There are several factors to be considered before a particular PC screening method is suggested for each person requiring PC screening, such as age and family history of PC (Pavlovich, 2020).

There are varied guidelines from different health organisation on PC, and there is still a need to reach full agreement (Pavlovich, 2020; Sung et al., 2021). For instance, the American Society for Clinical Oncology (ASCO) recommends that people with no PC symptoms are expected to live longer and should not be screened for PC, while the US Preventive Services Task Force (USPSTF) recommends that men between 55 and 69 years should be advised of the risks and benefits of PSA screening, and men above the age of 70 years should not be screened routinely for PC (Araujo & Oliveira, 2018). The American Urological Association (AUA) and the ACS

recommend that men be told the risks and benefits of testing before PSA is conducted on them (Araujo & Oliveira, 2018). Furthermore, the National Comprehensive Cancer Network (NCCN) considers a patient's age, PSA value, DRE results, and other factors in their recommendations for PC screening (Araujo & Oliveira, 2018).

There has been no consensus on the guidelines for PC screening among health organisations (Pavlovich, 2020). However, even if the NCCN, AUA, ACS, and USPSTF differ in several ways on PC screening guidelines, there is some evidence that their guidelines are starting to concur, as they all support shared decision making between patients and clinician on PC screening (Carroll & Mohler, 2018).

In Zambia, there are two common ways of screening for PC. In the Digital Rectal Examination (DRE), a doctor or nurse inserts a gloved, lubricated finger into the rectum to estimate the size of the prostate and feel for lumps or other abnormalities. The second method is a test which measures the level of Prostate-Specific Antigen (PSA) in the blood. PSA is a substance made by the prostate. The levels of PSA in the blood can be higher in men who have PC. The PSA level may also be elevated in other conditions that affect the prostate. When the PSA measurement is above the normal range of 0–4 ng/ml, the doctor will recommend a prostate biopsy (CDH, 2019).

The PSA is only recommended for men above the age of 40 years in Zambia. The PSA is offered at the University Teaching Hospital, the Cancer Diseases Hospital in Lusaka, and at most private hospitals in the country. DRE is offered at most hospitals in Zambia, as it does not require any equipment (only a lubricated glove), and trained medical personnel (a medical doctor, nurse practitioner or medical licentiate) can perform the procedure (Chilanda, 2019:10).

Prostate cancer is one of the screenable cancers, and as such, individuals adhering to the screening policy will normally present with the disease in an early stage. However, most of the patients in Zambia with PC usually present late. This can be seen from the Cancer Disease Hospital database that shows that 60% of all PC patients presented with late disease (Cancer Diseases Hospital, 2019). Major factors associated with late presentation include non-availability of screening facilities, the lack of national policy, social-cultural factors, and education status (Mutua et al., 2017).

According to ACS (2019), PC has been known to be rare in men younger than 40, and chances of developing PC rise rapidly after the age of 50. However, literature has noted a sharp increase in PC among young men and adolescents (Salinas et al., 2014; Bleyer et al., 2020:46). Hence the

need to establish if men have the appropriate knowledge, as well as assessing their beliefs while they are still young. The incidence of PC among men younger than 40 years has increased globally (Gupta et al., 2017). In Zambia, among the leading non-communicable diseases, cancer was one of the conditions with a high morbidity and mortality (Mukanu et al., 2017). Lusaka Province had the highest prevalence in the country, with 281 cases per 100 000 population (Kalubula et al., 2018). PC is among the top three common cancers in Zambia, representing 11% of all new cancer cases seen at CDH in 2019, and is now one of the major health concerns in Zambia with a growing incidence and mortality rates of 22.8% and 21.6% respectively (Kalubula et al., 2018; Cancer Diseases Hospital, 2019:8). However, in Zambia, there is insufficient information about young men's knowledge and beliefs on PC screening. It is therefore important to assess the knowledge and beliefs of young men regarding PC screening, as such information has the potential to facilitate early screening.

2.6.9 Management of patients with PC

According to Eilers et al. (2016:110), whether treatment for PC is needed or not is the first decision to be made in managing PC. Low grade in elderly me grows very slow and may need any form of treatment. If a person is expected to live long enough without symptoms or has other serious health problems, treatment may not be necessary (Eilers et al., 2016:110).

PC treatment options usually depend on the stage of the disease, the Gleason Score which is the evaluation of the prognosis, and the PSA level (Eilers et al., 2016:110). Other important factors are age, general health, and a person's views on potential treatments and their possible side effects (ACS, 2021). Other forms of treatments can have severe side effects, such as erectile dysfunction and urinary incontinence. Therefore, focus should be on balancing the goals of therapy with the risks of lifestyle adjustments. A combination of the treatment options is often recommended for managing PC (Eilers et al., 2016:112).

According to Parker et al. (2015:69), there is no consensus regarding optimum management of a localised PC. Patients should be informed of the potential benefits and detrimental effects of the available options for treatment of PC (Parker et al., 2015:69-77). Given the range of treatment options and their side effects, men should be offered the opportunity to consult a urologist and a radiation oncologist before any treatment option is given (Parker et al., 2015:69-77). Men should be informed of the effects of PC and be counselled with regard to how the effects of treatment of

PC may affect their daily lives. The treatment of PC may lead to sexual dysfunction, infertility, and bowel and urinary problems (Parker et al., 2015:69-77).

According to Mottet et al. (2020) and ACS (2021), there are different types of treatment modalities for patients with PC. Currently, there are seven types of standard treatment types in use. These are watchful waiting, surgery, radiotherapy and radiopharmaceutical therapy, hormonal therapy, chemotherapy, immunotherapy, and bisphosphonate. Watchful waiting, also called active surveillance, is the type of treatment usually used for older men with PC who are asymptomatic or have other conditions that can make active treatment not possible (ACS, 2020). Active surveillance means no active treatment is given to a patient unless the patient becomes symptomatic. However, the patient's condition is closely monitored (Mottet et al., 2020:27).

Surgery, with the intent of removing the whole tumour, is provided to PC patients whose tumours are localised in the prostate gland (Mottet et al., 2020:27). Various surgical procedures are performed, depending on the treatment intent. These include radical prostatectomy, which may be open, laparoscopic or robotic-assisted laparoscopic, pelvic lymphadenectomy, or transurethral resection of the prostate (ACS, 2019).

Radiotherapy and radiopharmaceutical therapy are cancer treatments using high energy X-rays or other types of radiation (ACS, 2020). There are different types of radiation therapy such as extremal radiotherapy, which uses the machine located at a distance from a patient and emits radiation rays towards the patient. Hypofractionated radiation therapy involves giving a larger dose of radiation once a day, over a shorter period of time. Internal radiation therapy, also called brachytherapy, involves placing a radioactive seed into the prostate gland using needles through the skin between the scrotum and the anus (Mottet et al., 2020:27). Radiopharmaceutical therapy is radiation therapy that involves injecting a radioactive substance like radium-223 into a vein of a PC patient for cancer treatment (NCI, 2020).

Hormonal therapy is a cancer treatment modality that stops cancer cells from growing by removing hormones or blocking their action (Mottet et al., 2020:40). Hormone therapy for PC includes abiraterone acetate that prevents cells from making androgens, oestrogen and luteinising hormones, releasing hormones that prevent the testicles from producing testosterone and anti-androgens which block the action of androgens (NCI, 2020).

Chemotherapy is the use of drugs to stop the cancer cells from growing or from dividing (Mottet, et al., 2020:42). Chemotherapy drugs like docetaxel, cabazitaxel, and darolutamide are some of

the approved chemotherapy drugs for PC (NCI, 2020). Immunotherapy is a treatment modality that uses the patient's own immune system to fight cancer (NCI, 2020). Substances made by the body or made in the laboratory may be used to boost, restore or direct the body's natural defence system to fight cancer (Mottet et al., 2020:51). Sipuleucel-T is a type of immunotherapy substance used to treat metastatic PC (NCI, 2020). Bisphosphonate therapy is a treatment given to cancer patients to control bone disease. PC patients treated with antiandrogen therapy or orchidectomy are at increased risk of bone loss and they may benefit from bisphosphonates like zoledronate or codronate (Mottet et al., 2020:52).

In Zambia, like many other countries across the world, the treatment of PC depends on the stage of the cancer and the treatment modalities offered. Treatments include watchful waiting, surgery, radiotherapy, and hormonal therapy, as discussed above (CDH, 2019:76).

Zambia has only one oncology centre, CDH, which is situated in Lusaka, the capital city of Zambia. This study was conducted in Lusaka.

2.6.10 Nursing management of men with PC

According to Meade (2017), PC nursing management must be well understood because in Zambia PC is the second most common cancer in men after skin cancer. The role that oncology nurses play in caring for patients undergoing treatment for PC is very important as the treatment and the disease has an effect on sexual and urinary function (Cal et al., 2018:408). Knowledge deficit, altered sexual patterns, body image disturbance, altered urinary elimination, diarrhoea, impaired skin integrity, pain, fatigue, bleeding, and infection, all of which are related to surgery, pathologic fractures, spinal cord compression, and oedema of the scrotum/lower extremities are some of the nursing diagnoses (Cal et al., 2018:409). CDH is the only centre in Zambia that treats cancer, and it receives referrals from all parts of Zambia. It offers specialised oncology nursing care to all cancer patients treated at the hospital, including PC patients (Sakala, 2015).

Nursing care at CDH focuses on providing patients necessary information regarding the disease and its treatment, preventing and managing treatment and disease-related complications. The nursing fraternity has embarked on outreach programmes to the community by doing health education on PC as well as offering free screening for PC to the community. This is done through the health promotion team at the institution to improve communities' knowledge of cancer as well as to foster good belief systems regarding PC. The limitation is that these outreach programmes are held only when there is a main event such as World Cancer Day, World AIDS Day, and others.

Pre and post-operative nursing care for PC patients is also offered at the UTH in Lusaka where most of PC surgeries are conducted. Bleeding, and infection, all of which are related to post surgery, are nursed at UTH and other hospitals in Zambia which performs PC screening.

2.7 Summary of chapter

This chapter presented a review of literature for this study, comprising the demographics as well as the history of Zambia's medical care. The chapter also outlined the demographics of Lusaka, the roles of men in Zambia, the population, ethnic groups, and culture in Zambia. Healthcare for men in Zambia focused on a global, regional and local perspective of cancer. Furthermore, the chapter discussed the effects of PC on family and employment. Knowledge, attitudes, practices and beliefs of men regarding PC around the world were also elucidated in this chapter. The chapter also discussed PC screening recommendations worldwide, and health education on cancer globally and locally. Finally, the chapter noted prevention and screening of PC in men, treatment of PC, and nursing management of PC. The next chapter (Chapter 3) presents the research methodology.

CHAPTER 3: METHODOLOGY

3.1 Introduction

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. Methodology is made up of the theoretical analysis of the body of methods and principles associated with a branch of knowledge (Chinelo, 2016). In this chapter the quantitative research approach, advantages and disadvantages of the research approach, research design, population, and sampling method, as well as inclusion and exclusion criteria, are discussed as applied in this study. The method of data collection used in the study and its advantages/disadvantages, process of data collection, data management and storage, and validity and reliability of the instrument are also elaborated upon. Lastly, ethical considerations, constraints and limitations of the study are discussed.

3.2 Research paradigm

A paradigm is a basic belief system with assumptions about ontology, epistemology and methodology. It is one way of understanding the reality of the world and studying it (Rehman & Alharthi, 2016). According to Babbie (2016), paradigms are the fundamental models or frames of reference we use to organise our observations and reasoning. He further stresses that paradigms are often difficult to recognise as such because they are so implicit, assumed, and taken for granted. Additionally, paradigms are neither true nor false; as ways of looking, they are only more or less useful (Babbie 2016). The paradigm that forms the foundation of the research project will guide the research approach and design.

According to Corry et al. (2019), there are five major paradigms. They are classified as the positivist, the interpretivist, the transformative, the realist, and the post-positivist. In this study, the post-positivist paradigm was adopted. The term ‘positivism’ refers to a branch of philosophy that came to prominence during the early nineteenth century because of the works of the French philosopher Auguste Comte (Rehman & Alharthi, 2016). Positivism has a notion that reality is independently of humans (Rehman & Alharthi, 2016). According to Rehman and Alharthi, (2016:55), interpretivism is not in agreement with a belief that a single, verifiable reality exists independent of our senses. Interpretive methodology needs are that social phenomena should be known through the eyes of the participants, and not the researcher (Rehman & Alharthi, 2016).

The goal of interpretive methodology is to understand social phenomena in their context. According to Kivunja and Kuyini (2017), the transformative paradigm positions its research in social justice problems and seeks to address the political, social and economic problems which lead to social oppression, conflict, struggle and power structures at any levels these might happen. This paradigm presumes a transactional epistemology in there is interaction between the researcher and the participants (Kivunja & Kuyini, 2017). According to Allmark and Machaczek (2018), realism is at the centre of ontological thesis, affirming the reality of the objects of science which includes observable and non-observable and detectable and non-detectable. It also strongly supports the epistemological proposition that scientific theories aim at reality, as its purpose is to provide a correct description of a mind-independent world (Allmark & Machaczek, 2018).

Acceptance of interpretivist, transformative or realist approaches necessarily entails total rejection of positivism, while agrees with post-positivism involves. Post-positivism has replaced positivism as the guiding paradigm of the scientific method. The application of post-positivist assumptions in randomised controlled trials shows that even on the methodological ground it once dominated, positivism has been rendered redundant as an appropriate paradigm for contemporary nursing research (Corry et al., 2019).

The actual term, ‘post-positivistic’, was coined in the 1960s and assumes there are many ways of knowing, aside from the scientific method. According to Panhwar, Ansari and Shah (2017), post-positivism emerged as a result of educational researchers to the limitations of positivism as a paradigm. Educational researchers found out that positivism could not match the requirements of social sciences research as it (positivism) bases itself on observable and empirical analytic facts.

According to Bhattacherjee (2012), post-positivism does not agree that one can make reasonable inferences about a phenomenon by adding empirical observations with logical reasoning. Post-positivism is a certain pluralism which balances both positivist and interpretive approaches (Panhwar, Ansari & Shah, 2017). Post-positivists look at science as not certain, but probabilistic (i.e., based on many contingencies), and frequently intends to explore these contingencies to understand social reality well. The post-positivist camp has further fragmented into subjectivists and critical realists. Subjectivists look at the world as a subjective construction of our subjective minds rather than as an objective reality. On the other hand, critical realists are with a view that there is an external reality that is independent of a person’s thinking, but it has never been known that such reality certainty exist (Bhattacherjee, 2012). In post-positivistic research, there is a place

for the voices of the researcher and of the study respondents in pursuing objectivity by recognising the possible effects of biases (Panhwar, Ansari & Shah, 2017). Humans are seen as central to the research process, rather than isolated from it (Panhwar, Ansari & Shah, 2017). It is important for a researcher to clarify the paradigm, as that guides the research approach and design applied in the study.

3.3 Quantitative research approach

The research approach provides guidance with regard to the comprehensive plan of how the study will be conducted in an empirical research project (Bhattacharjee, 2012). It is a plan for empirical research targeted on answering specific research questions or testing specific hypotheses, and must specify at least three processes. These include the sampling process, instrument development, and data-collection process (Bhattacharjee, 2012). In addition, the choice of a research approach is guided by the paradigm guiding the study (Kivunja & Kuyini, 2017). There are three main research approaches: qualitative, quantitative and mixed methods (Panhwar, Ansari & Shah, 2017). Many educational researchers have limited educational research to qualitative perspectives only, and ignore the objective or quantitative side (Panhwar, Ansari & Shah, 2017). However, others consider mixed methods to be appropriate, where both quantitative and qualitative aspects are amalgamated equally (Panhwar, Ansari & Shah, 2017). In this study, the quantitative approach was applied, as it was suited to the post-positivist paradigm guiding the study.

Quantitative research is a master plan that emphasises quantification in the collection and analysis of data (Rehman & Alharthi, 2016). The difference between quantitative and qualitative data in social research is essentially the difference between numerical and non-numerical data (Babbie, 2016).

In using a quantitative approach, data were quantified and presented in the form of tables and graphs. Quantification often makes our observations more explicit; it also makes it easier to aggregate, compare and summarise (Babbie, 2016; Apuke, 2017). Furthermore, it opens up the possibility of statistical analyses ranging from simple averages to complex formulas and mathematic models (Babbie, 2016). As noted by Queirós et al. (2017), the added advantage of quantitative methods is that they compress a time frame, which allows study of the behaviour of the system more quickly. Quantitative research enables data collection to occur rapidly because

the data points of quantitative research involve surveys, experiments and real-time gathering (Gaille, 2019). This also means that the information under study can be analysed very quickly when compared with other research methods (Gaille, 2019). In addition, with a quantitative approach, data analysis is less time consuming, as it uses statistical software such as IBM® SPSS® to assist with the analysis of data (Rahman, 2017). Quantitative research offers reliable and repeatable information. It validates itself by offering consistent results when the same data points are examined under randomised conditions. Quantitative research is also suited to large-scale research (Queirós et al., 2017). It Collects information from a larger sample, whereas qualitative research must use small sample sizes as it uses in-depth data points to be collected by the researchers (Gaille, 2019). This is time-consuming it also reduces the number of people involved. The structure of quantitative research allows for bigger studies to be conducted, which allows better accuracy when attempting generalisations about the subject matter involved (Gaille, 2019).

On the other hand, quantitative research also has the disadvantages that numbers have, including the loss of richness in meaning (Babbie, 2016). Quantitative data also posit a limitation of the reliability of data, being mostly dependent on the quality of findings and on the survey structure (Queirós et al., 2017). Another limitation of quantitative research is that it does not account for how the social reality is shaped and maintained, or how human beings interpret their actions and actions of other people. Quantitative research overlooks the respondents' experiences and perspectives in highly controlled settings because it does not have a direct connection between researchers and respondents when collecting data (Rahman, 2017). In addition, quantitative research has a rigid structure, and does not capture emotions, behaviour and changes of emotions of respondents (Queirós et al., 2017).

3.4 Descriptive cross-sectional research design

According to Akhtar (2016), research design can be considered as the structure of research. It is what attaches all the elements in a research project together. In short, it is a master plan of the proposed research work. There are four main types of research designs: exploratory or formulative research; descriptive research or statistical research; explanatory research and experimental research; or analytical research (Akhtar 2016). Exploratory research is the primary stage of research and the aim is to discover new insights into phenomena. This research has the purpose of formulating a problem for more accurate investigation or the development of a hypothesis.

Descriptive research describes phenomena as they exist (Akhtar, 2016). Descriptive research characterises the world or phenomena by identifying patterns in data to answer questions about who, what, where, when, and to what extent (Loeb et al., 2017). Descriptive analysis is data simplification (Loeb et al., 2017:1). It is used to identify and obtain information on characteristics of a particular issue like a community, group or people (Akhtar, 2016). Explanatory research design is conducted when the aim is to explore a new world, a field that has never been studied. It is mainly concerned with causes or 'why' factors about some phenomenon (Akhtar, 2016). Experimental design is a research design that is used to test a research design of causal relationships under controlled situations (Akhtar, 2016).

In order to achieve the objectives of this study, a descriptive cross-sectional design was employed. A cross-sectional study involves observations of a sample, or cross-section of a population, or phenomena that are made at one point in time (Babbie, 2016). Exploratory and descriptive studies are often cross-sectional. A descriptive cross-sectional design was suitable as data were collected at one point in time.

3.5 Research setting

The research setting refers to the place where the data were collected. In this study, data were collected at the University of Zambia (UNZA). UNZA is Zambia's largest university, located in the heart of Lusaka, the capital city of Zambia. UNZA was inaugurated on 13 July 1966, following the appointment of President Kenneth D Kaunda as the first vice-chancellor of the university on 12 July 1966. UNZA offers a wider range of degree programmes than any other university in Zambia on its two campuses. Its main campus is located on the Great East Road and the Ridgeway campus on Nationalist Road. The Ridgeway campus is essentially a medical campus. The university has five major schools of study: natural sciences, humanities and social sciences, education, engineering, and agriculture. The study was conducted at the main campus as it offers non-medical courses. Non-medical male university students were recruited to participate in the study to describe their knowledge and beliefs regarding PC.

3.6 Population and sampling

3.6.1 Population

According to Babbie (2016), a population is a specified aggregation of study elements. A study population is a total number of elements from which the sample is actually selected (Babbie, 2016:). UNZA has a population of about 24 676 students, with only 10 500 students studying full time (Mkandawire & Ilon, 2019). The percentage of male students at the university is estimated to be 59.3% (6 226), compared with 40.7% (4 274) female students (Mkandawire & Ilon, 2019).

According to Alvi (2016:10), a target population refers to all the members who meet the particular criteria specified for a research investigation. In this study, the target population comprised all male students who were not studying for a medical or medical-related degree, and aged between 18 and 35 years. It is necessary to describe the knowledge and beliefs regarding PC screening of this young population at an early stage. This is because several studies have indicated that the number of younger men diagnosed with PC has increased six-fold in the last 20 years, and the cancer tends to be more aggressive in this age group compared with men above the age of 60 (Bleyer et al., 2020).

3.6.2 Sampling technique

According to Alvi (2016), a sample can be defined as a relatively small group of people selected from a population for investigative purposes. The members of a sample are called participants. The process through which a sample is extracted from the population is called sampling. Sampling techniques are broadly categorised into two major types. Firstly, there are probability sampling methods, and secondly, non-probability sampling methods (Alvi, 2016). In probability sampling, every member has a known (non-zero) probability of being included in the sample. On the other hand, in non-probability sampling, every unit of the population does not get an equal chance of participation in the investigation (Alvi, 2016).

The sampling technique used in this, study was non-probability sampling to select non-medical male students at a university in Zambia. Different types of non-probability sampling techniques exist. Babbie (2016) examines four types of non-probability sampling: reliance on available subjects (convenience sampling), purposive or judgemental sampling, snowball sampling, and quota sampling. In this study, convenience sampling was employed. It is a type of non-probability

or non-random sampling where members from a target population who meet a certain practical criterion, such as easy accessibility, geographical proximity, availability at a particular time, or willingness to participate, are included in the study.

Convenience sampling is applicable to both qualitative and quantitative studies, although it is most frequently used in quantitative studies (Etikan et al., 2016). It is also affordable, and easy, and subjects are readily available (Etikan et al., 2016).

The researcher used convenience sampling because the respondents had different timetables for lectures: some students attended lectures and tutorials in the morning, while others attended afternoon lectures. Hence, the researcher did not inconvenience students who wanted to attend their classes, but also showed interest in participating in the study.

3.6.3 Sample size

The calculated sample size for this study was 254 study respondents from the 6226 male students at the university. This was according to the SurveyMonkey® (2016) sample size calculator, and was determined by using the population of all male non-medical students at this university. The confidence level of the researcher was 90% and margin of error was 5%. The sample size was calculated from the formula shown below. 200 study respondents completed the questionnaire out of the 254 study respondents that were sampled, providing a response rate of 79%.

$S = (z^2 (d (1 - d))/ e^2) / 1 + (z^2 (d (1 - d)) / e^2)$

where S = sample size (n=254)

P = population size (P=6226)

z = z-score

e = margin of error

d = standard deviation (SurveyMonkey®.)

3.6.4 Inclusion criteria

The following served as the inclusion criteria for the study;

- Male students who were available and were in non-medical courses at a university of Zambia.
- Non-medical male students within the age range of 18-35 years as respondents in this study.

3.6.5 Exclusion criteria

The following served as the elusion criteria for this study:

- All medical male students were excluded from the study.
- All male students aged 18-35 years were excluded from the study.
- All female students were excluded from the study

3.7 Data-collection tool

According to Walliman (2018), data come in two main forms, according to their closeness to the event recorded. Firstly, primary data are data that have been observed, experienced or recorded close to the event, and are the nearest one can get to the truth (Walliman, 2018). Secondly, written records that interpret or record primary data are called secondary sources (Walliman, 2018). According to Horne (2018), data-collection tools are modes of administration used by researchers to ask people questions face to face or by telephone, using self-administered written questionnaires and web-based surveys. This study collected primary data using a structured questionnaire.

The questionnaire used for this study was developed by the researcher to gather information that answered questions related to knowledge and beliefs of young men regarding PC screening. It was based on the variables and objectives of the study. The panel of experts included research experts (supervisors) from CPUT and from the UNZA-BREC. The CPUT supervisors (doctors specialised in research) assessed the data-collection tool critically during its development. The researcher was frequently sent back to work on the questionnaire until the tool was acceptable and deemed to have face validity as agreed to by the supervisors. The questionnaire (attached in Appendix A) was divided into three sections in alphabetical order. Section A collected data on respondents' demographic characteristics. It had six questions that included age of respondent in years and marital status. Section B collected data on respondents' knowledge of PC and contained seven questions. In order to determine knowledge, these questions were further subdivided into

15 questions. The questions included “PC affects which gender?” and “Do you know the symptoms of PC?”

For the questions on knowledge and the first two questions on beliefs, response options were ‘yes’, ‘no’, or ‘don’t know’. ‘Don’t know’ and blank responses were coded as wrong responses. Based on the correct responses to the 15 items on knowledge, this variable was stratified into three levels: low level of knowledge (0 to 6 correct answers out of 15); medium level of knowledge (7 to 10 correct answers); and high level of knowledge (11 to 15 correct answers). The decision on the categories of levels of knowledge was guided by the study conducted by Kaninjing et al. (2017), who measured knowledge by categorising the knowledge variable into three levels: low knowledge (0 to 4 correct answers out of 10); medium knowledge (5, 6, or 7 correct answers); and high knowledge (8, 9, or 10 correct answers).

Section C, which was partly developed in the form of a Likert scale, collected data on beliefs related to PC. Nine questions described prevailing cultural beliefs among study respondents. Respondents were asked to respond to the following statements: “Whether or not PC screening is a taboo in my culture”, and “PC screening is good”. The possible answers according to the Likert scale were ‘strongly agree’, ‘agree’, ‘neutral’, ‘disagree’ and ‘strongly disagree’. The researcher also borrowed ideas from some previous similar studies. This included the study by Egbera (2015) who conducted a similar study on male university students’ knowledge, beliefs and attitudes regarding screening for PC in Benin City, Nigeria.

There are three main ways of administering survey questionnaires to targeted respondents. These are self-administered questionnaires in which respondents are requested to complete the questionnaires themselves; surveys administered by interviews in a face-to-face encounter; and surveys conducted by telephone (Babbie, 2016). In this study, the researcher used self-administered questionnaires because the respondents were literate and could read and understand the questions.

The use of a questionnaire provided the researcher with several benefits. As a method of data collection, the questionnaire is a very flexible tool that allows one to ask many questions on a given topic and it gives the researcher considerable flexibility when doing analyses (Babbie, 2016). The questionnaire also has the advantages of having a structured format, and being easy and convenient for respondents (Walliman, 2018). Surveys, especially self-administered ones, make

large samples feasible (Babbie, 2016). They are also cheap and quick to administer to a large number of respondents, covering large geographical areas (Walliman, 2018). For instance, the researcher did not find the respondents in the same location. Some students were in classrooms and others in residences. There is also no personal influence by the researcher, and embarrassing questions can be asked with a fair chance of a true reply (Walliman, 2018). Self-administered questionnaires also avoid social desirability bias which occurs in face-to-face interviews (Horne, 2018). For example, face-to-face encounters might tempt a respondent to give answers he thinks you want to hear or that makes him seem like a nice, smart, witty guy – hence the problem of social desirability bias (Horne, 2018).

However, some of the main limitations of questionnaires are that they provide little scope for probing and clarifying respondents' answers (Walliman, 2018). To mitigate this, the researcher ensured that the questionnaire was simplified in its formulation and that no technical jargon words were included. Low response rates and incomplete questions can affect the quality and generalisability of the data (Walliman, 2018). To avoid this limitation, the researcher allowed respondents to choose a time convenient to them to complete the questionnaire. It is also difficult to ascertain if respondents complete a questionnaire without being influenced by other respondents. Questionnaires need to be short and simple, so complex question structures are not possible. Not everyone is able to complete questionnaires or respond (Walliman, 2018). The researcher allowed sufficient time for completion of the questionnaires. After a respondent had completed the questionnaire, the researcher checked it to ensure that all questions had been completed.

3.8 Pre-testing of the Instrument

According to Hilton (2017), a pre-test is method of checking that questions work as intended and are understood by those respondents who are likely to respond to them. A pre-test was conducted on ten UNZA students prior to data collection. Those respondents who participated in the pre-test were excluded from the main study. Some errors were identified during the pre-test, such as ambiguity, relevance, and consistency of the questions. These were corrected before the rest of the data collection commenced. Furthermore, additional questions, inter alia, "Have you ever heard of the term PC?" and "What are the signs and symptoms associated with PC?" were added. After errors were corrected, the questionnaire was again pre-tested on the other ten UNZA students until the results were consistent, relevant and error free.

3.9 Recruitment of participants

Once ethics approval was granted by the Faculty of Health and Wellness Sciences Research Ethics Committee (HWS-REC) certificate number CPUT/HWS-REC 2015/1107 of CPUT and the UNZA-BREC reference number 004-04-15 (See Appendix B and C), the researcher approached the heads of departments who in turn informed the research respondents of the study. The role of the head of department was to introduce the researcher to the respondents. The heads of departments were briefed by the researcher not to coerce the respondents to participate in this research study. After introducing the researcher, the head of department left the classroom, leaving the researcher with the respondents. The researcher formally introduced himself and made appointments with the respondents, setting a date, time, and when it was convenient for them to meet. The participants' privacy was also ensured.

The researcher went from class to class in the departments and in the residences on the university campus to recruit respondents individually through their indicated availability. Some respondents were recruited before classes began and others were recruited after classes ended. The researcher provided information to the study respondents by taking them through the information sheet (See Appendix F). Respondent consent was sought before the actual day of data collection, according to the dates and times set. A total of 254 respondents were recruited to participate in the study, as estimated by the sample size.

3.10 Process of data collection

The process of data collection followed after the pre-testing of the instrument. The purpose and aim of the study were explained to the students who had agreed to participate in the study. Respondents were given time to read through an information sheet and sign the consent forms (refer to Appendix F). Two hundred and fifty-four questionnaires were distributed to the study respondents who voluntarily consented to participate in the study at the university. They were allowed to complete the questionnaires in privacy, as well as independently in the classrooms and residences. The respondents were allowed sufficient time, ranging from 15 to 30 minutes, to complete the questionnaires. The researcher waited and collected the distributed questionnaires on completion. The data-collection process was carried out within five days, from Monday to Friday, in a week in June 2016. The researcher collected data between one and five hours per day from Monday to Friday until all the questionnaires were completed; these were collected on

the same day. Of the 254 questionnaires distributed, only 200 questionnaires were completed. This represented a 79% response rate. According to Babbie (2016), while a 100% response rate is preferred, 70% and above are acceptable. The purpose of this survey was to describe knowledge or behaviours, a 60% response rate might be acceptable, although 70% would be preferable. In this study, a 79% response rate was achieved and found acceptable (Babbie, 2016).

3.11 Data management

According to Chigwada et al. (2017), research data management concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. In this study, the researcher collected quantitative data from questionnaires and entered it into the computer using IBM® SPSS® software Version 26 (2020). Quality control was done to ensure accurate capturing of the collected data by conducting verification and audit of captured data. The questionnaires were then locked in a cupboard until they were handed to the school authorities. In this study, the researcher reviewed the questionnaires to ensure accuracy and that there were no omissions. Data were password protected, stored on a computer and backed up on Google Drive to ensure safety. Data were organised and formatted with the help of IBM® SPSS® Version 26 (2020). The report was written and organised in a Microsoft Word document. The hard copy questionnaires were kept securely under lock and key in a safe at the researcher's workplace. On completion of the study, all data and hardcopies of completed questionnaires were handed to the supervisors in the Department of Nursing Sciences at CPUT for safekeeping in line with the school guidelines. The data will be distributed to provide information on the results to academics at various institutions in private and public sectors. Various presentations to the university community at the University of Zambia will be done to relay the results and to further create awareness of PC among university students. Data use will foster better knowledge and beliefs regarding PC screening. The researcher will further publish the data in several formats once the report is ready and approved for publication.

3.12 Data analysis

The analysis conducted in this study was quantitative. Quantitative analysis works with data in the form of numbers and uses mathematical operations to investigate their properties (Walliman, 2018). Some of the primary purposes of quantitative data analysis are to: measure, make comparisons, examine relationships, explore, control, and explain (Walliman, 2018:131).

Univariate descriptive analysis was conducted. According to Babbie (2016), univariate analysis is the simplest form of quantitative analysis. It involves describing a case in terms of a single variable. Additionally, the researcher also conducted bivariate chi-square test of significance at the p-values of 0.05. This was performed in order to describe the relationship among background variables; age, marital status and school with other variables of knowledge and beliefs of PC screening. Descriptive statistics were generated in IBM® SPSS® Version 26 in form of frequency, mean and standard deviation.

In this study, descriptive statistics were produced on the socio-demographic, knowledge and belief variables. The descriptive results were presented in tables and charts by using frequency and percentage distributions respectively. Only descriptive univariate analysis was presented and the bivariate chi-square square test was just stated. However, no inferences were made about the population of the students at the university, as convenience sampling was done which does not allow making inferences to the population where the sample was obtained (Etikan et al., 2016). The study did not conduct a one-sample *t*-test distribution of the analysis, as no comparison was intended. In this regard, the study was purely descriptive. The findings were presented according to the layout of the study objectives. The results of the study were presented in graphs and tables, and supported with narrations.

3.13 Data validity and reliability

The following aspects pertaining to data validity and reliability were applied to this research study:

3.13.1 Validity

According to Wagner and Skowronski (2019), two principles are fundamental to measurement. The first is that the tool must be valid. In conventional usage, validity refers to the extent to which an empirical measure (tool) adequately reflects the real meaning of the concept under consideration (Babbie, 2016). Furthermore, validity is the degree to which the interpretations and concepts have mutual meanings between the participants and the researcher (Sileyew, 2019). According to Wagner and Skowronski (2019), three major forms of validity can be identified: face validity, criterion-related validity, and construct validity.

According to Wagner and Skowronski (2019), face validity is the extent to which a data- collection tool appears to measure the construct. This study applied a tool that measured the knowledge

and beliefs of male university students regarding PC screening; the tool had high face validity because it measured the object of interest and also received approval from the panel of experts.

In addition to face validity, content validity was established in the study. According to Babbie (2016), content validity looks at how much a measure (data-collection tool) encompasses a range of meanings included within a concept. For instance, a test of mathematical ability cannot be limited to addition but also needs to cover other parameters in mathematics like subtraction, multiplication, division, and others. In order to assess content validity, the questionnaire was subjected to the same panel of experts that assessed face validity, who then evaluated each question contained in the questionnaire for content validity. The questionnaire was structured in such a way that a measure of knowledge measured knowledge and a measure of belief measured belief.

The table overleaf shows the relationship between the objectives, questions and information required from the respondents. It also assesses the construction validity of the data-collection tool.

Table 3-1: Content validity – Relationships between objectives, questionnaires and information required from respondents

Objectives	Framework	Question	Accurate/preferred answer
To establish the knowledge of university students of prostate and PC screening.	Knowledge and skills to perform the behaviour	3. PC cannot be cured (Knowledge)	Yes
	Knowledge and skills to perform the behaviour	4. PC affects which gender?	Men only
	Knowledge and skills to perform the behaviour	5. Which age group does PC affect?	Above 40 years
		6. Which factors are associated with the development of PC?	
	Knowledge and skills to perform the behaviour	a. Family history of the disease condition.	Yes
	Knowledge and skills to perform the behaviour	b. Drinking excessive alcohol.	No
	Knowledge and skills to perform the behaviour	c. Exercise	No

Objectives	Framework	Question	Accurate/preferred answer
	Knowledge and skills to perform the behaviour	d. Age	Yes
	Knowledge and skills to perform the behaviour	e. Through unprotected sex	No
	Knowledge and skills to perform the behaviour	f. Do not know	No
		8. Which symptoms are associated with PC? Kindly tick as applicable options	
	Knowledge and skills to perform the behaviour	a) Excessive urination at night	Yes
	Knowledge and skills to perform the behaviour	b) Headache	No
	Knowledge and skills to perform the behaviour	c) Blood in urine	Yes
	Knowledge and skills to perform the behaviour	d) High temperature	No
	Knowledge and skills to perform the behaviour	10. Which PC screening do you know?	
	Knowledge and skills to perform the behaviour	a. Digital rectal examination	Yes
	Knowledge and skills to perform the behaviour	b. Full blood count	Yes
	Knowledge and skills to perform the behaviour	c. Prostate-specific antigen	Yes
	Knowledge and skills to perform the behaviour	11. An abnormal prostate-specific antigen (PSA) blood test means I have cancer.	Yes
To determine the beliefs of male students regarding PC screening.	Salience of the behaviour	1. PC screening is a taboo in my culture	No
	Salience of the behaviour	2. PC screening is good	Yes
	Salience of the behaviour	3. Being diagnosed with PC means death	No

Objectives	Framework	Question	Accurate/preferred answer
	Salience of the behaviour	4. I think the stress of screening outweighs the benefits for men above the age of 40	Strongly agree or agree
	Salience of the behaviour	5. People who undergo PC screening just invite more health problems in their lives	Strongly disagree or disagree
	Salience of the behaviour	6. My church does not allow men to go for screening	Strongly disagree or disagree
	Salience of the behaviour	7. There is no need for men to go for screening because they are naturally strong	Strongly disagree or disagree
	Salience of the behaviour	8. You can only go for PC screening if you have symptoms	Strongly disagree or disagree
	Salience of the behaviour	9. PC screening is a waste of time	Strongly disagree or disagree

3.13.2 Reliability

According to Wagner and Skowronski (2019), the second fundamental principle besides validity is that a measure must be reliable. The term 'reliability' refers to the extent to which a measure yields the same results in repeated trials (Wagner & Skowronski, 2019).

One of the approaches to reliability is the test-retest method (Wagner & Skowronski, 2019). The findings can be said to be reliable if anyone else repeated the research and obtained the same or similar results. In this study, a pre-test of the data-collection tool was conducted to determine the reliability of the data-collection instrument. The pilot study was conducted within the research setting of the University of Zambia and only students that met the inclusion criteria participated.

The results collected from the pilot study were found to be consistent and similar after conducting the test-retest reliability. The value of the Cronbach's alpha was 0.752, which is acceptable reliability (Glen, 2016). The test was conducted on ten respondents at two different points in time in the space of three days. The responses were good, and no difficulties were faced by any of the ten respondents recruited for the pilot study. The researcher ensured that the respondents were in a standardised environment, free from distractions from external sources. In addition, the questionnaires had clear and standard instructions for the study respondents. Furthermore, the researcher ensured that questions were accurate and systematic.

3.14 Ethical considerations

Research, however novel its discoveries, is only valuable if it is carried out honestly (Walliman, 2018). Ethics provides rules and guidelines to the researcher on behavioural expectations and conduct towards respondents, co-researchers, research assistants, fieldworkers, institutions and sponsors. Ferrero and Pinto (2019) identified five broad values, in addition to integrity, that shape the professional conduct of the researcher. These include honesty, objectivity, accountability, authenticity, and compliance. Research involves humans, and hence ethical research conduct cannot only be about rules to be followed, but also concerns the application of informed moral reasoning founded on a set of principles.

The World Medical Association (2018) developed the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects as a guideline for researchers focusing on human subjects. Before commencing a study, the protocol for research should be submitted for consideration, comment, guidance and approval to the specific research ethics committee. This committee must be independent and transparent in its functioning. The committee must have rights to monitor studies as they proceed. The researcher should provide monitoring information to the committee, especially information on possible adverse events (World Medical Association, 2018). There should be no amendment to the protocol without consideration and approval by the ethics committee. Researchers must submit a final report to the committee containing a summary of the study findings and conclusions at the end of the study (World Medical Association, 2018). In this study, ethics clearance was granted by the Faculty of Health and Wellness Sciences Research Ethics Committee of CPUT and the UNZA-BREC (See Appendix B and C). The researcher was also granted permission to access the departments at the University of Zambia. The researcher went from department to department to seek permission to talk to the students in

classes and residences. The heads of departments gave consent to the researcher and further introduced the researcher to students in classes before and after classes began. The following ethical principles were observed throughout the duration of this study.

3.14.1 Anonymity and confidentiality

Protecting the anonymity and confidentiality of research respondents is a practical component of research ethics. A research project guarantees anonymity when the researcher, not just the people who read the research, cannot identify a given response with a given respondent (Babbie, 2016). On the other hand, a researcher guarantees confidentiality when the researcher can identify a given person's responses but essentially promises not to do so publicly. In this study, the researcher ensured that the information respondents provided was not accessed by anyone other than the researcher and the supervisors. Participants' anonymity was ensured by allocating code numbers to the respondents and not indicating respondents' names. Further, the data collected were analysed collectively and the respondents' identities were not published as part of the study findings.

3.14.2 Autonomy

A person with autonomy is capable of deliberation on his/or her personal goals and can act under the direction of such deliberation (Barrow et al., 2020). The faith in autonomy is the central in the concept of informed consent and shared decision making (Kingdon et al., 2017:23). To ensure participants have the autonomous right to self-determination, researchers must see to it that potential respondents knows that they have the right to decide whether or not to participate in research studies voluntarily (Barrow et al., 2020). The researcher provided respondents with an information sheet and all the necessary information about the study (Appendix F). This allowed all the respondents to make an informed decision whether to participate in the study or not. The respondents were informed that questionnaires would be used as a data-collection tool. Written consent was requested and obtained from each respondent before data collection was done. In addition, participants were assured that they could withdraw from the study at any time without any negative consequences. The researcher approached the heads of departments who in turn informed the research respondents of the study. The heads of departments were informed of the research before the respondents were informed. The heads of departments were apprised of the study ethics and requested not to coerce respondents' participation in the study (see Appendix F).

According to Ferrero and Pinto (2019:253), the dignity of the person precludes any form of coercion obliging an individual to participate in a research project. Participation must be freely undertaken on the basis of informed written consent. Thirty respondents withdrew from the study during data collection after giving consent to participate. Their reasons for withdrawing from the study included responses such as “I am not interested”, “The questions are too many”, “I am too busy” and “I will participate some other time”. Respondents were advised to read the information sheet and sign the consent form if they felt comfortable participating in the study (see Appendix F).

3.14.3 Beneficence and non-maleficence

According to Liphart and Cena (2016), beneficence is an ethical principle that the researcher’s action should promote good. Doing good is considered doing what is best for the respondents. The researcher explained to the respondents that there would be no direct benefit of the study to them, but that the information gathered would be useful for future research and might lead to devising proper strategies to improve PC awareness. According to Sileyew (2019), it is important to take into consideration, and protect the feelings, welfare, and rights of the respondents. The potential risk from this study was emotional stress due to the sensitivity of the nature of some of the research questions as they involved disclosing personal health information. Respondents were informed that should they feel stressed, they had the right to withdraw from the study and psychological support would be provided (see Appendix F).

It is vital to ensure that no research project involves serious harm or injury to any human subjects in the study, be it physical, psychological or moral (Ferrero & Pinto, 2019:253). The researcher ensured that the benefits to the respondents outweighed the harm by protecting the respondents from any form of harm and discomfort in the study. The study was conducted within a university environment in Zambia. The study respondents were also asked to decide where they opted to answer the questionnaire. The researcher ensured that the environment was safe, quiet and private. The researcher also established a good rapport with the respondents during the study. After completion of the questionnaire, the respondents were asked if they had experienced stress or other negative effects when answering the questionnaire. No negative information regarding stress or sensitivity to any questions was reported by any of the respondents.

In this study, the respondents were also given the opportunity to ask for clarification of any questions or issues concerning the research topic. This was also especially necessary for screening and management of participants prior to data collection. During the course of study, 13 respondents expressed interest in undergoing screening and counselling. Among the respondents, some had lost relatives due to PC and were referred to the university onsite clinic for counselling (see Appendix E).

3.14.4 Justice

According to Walliman (2018:49), respondents should be treated with due ethical consideration in their selection, personal interaction, and use of information provided. The principle of justice includes respondents' right to fair treatment and privacy (Barrow et al., 2020). It also includes fairness in the selection of research respondents (Barrow et al., 2020). Selection of the types of respondents desired for a research study should be guided by research questions and requirements to not exclude any group (Barrow et al., 2020).

The research was conducted on a group of young men who potentially may benefit from the findings. The researcher ensured that the selection of respondents was fair. Everyone was treated equally without any discrimination. Selection was directly related to the study. Everyone recruited by the researcher in the study population was given a chance and had the right to participate at their convenience.

3.15 Summary of chapter

This chapter comprised descriptions of the quantitative research approach; advantages and disadvantages of the research approach; research design; population and sample; inclusion and exclusion criteria; methods of data collection and their advantages/disadvantages; process of data collection; data management and storage; validity, reliability of instruments and pilot study; ethical considerations; and finally, constraints and limitations of the study. The next chapter (Chapter 4) presents the results of the study.

CHAPTER 4: PRESENTATION OF FINDINGS

4.1 Introduction

This study describes the knowledge and beliefs regarding PC screening among non-medical male students at the University of Zambia. Of the 254 recruited, 200 respondents consented to participate in the study and completed the questionnaires, giving a 79% response rate. This accords with Babbie (2016:271), who claims that it is acceptable to achieve response rates of 70% or more when a survey is used. Descriptive statistics were conducted on the variables age range, marital status, religion, and school. The descriptive results were presented in tables and charts by using frequency and percentage distributions respectively.

4.2 Socio-demographic characteristics of respondents

The mean age of the respondents was 22.8 years with a median of 23.5 years. The majority of respondents were single (*n*=177; 88.5%), followed by married (*n*=11; 5.5%), and divorced (*n*=4; 2.0%); one was separated (*n*=1; 0.5%). The majority (*n*=184; 92.0 %) were Christian, followed by Muslim (*n*=7; 3.5%), traditional believers (*n*=2; 1.0%), Buddhism and Judaism (*n*=1; 0.5%) each. Slightly above half of respondents (*n*=101; 505%) were in education school, followed by *n*=79 (39.5%) who were in humanities and social sciences school, then *n*=9 (4.5%) in natural sciences school, *n*=5 (2.5%) in engineering school, and *n*=3 (1.5%) in agriculture school. Table 4.1 depicts the socio-demographic characteristics of the respondents.

Table 4-1: Socio-demographic characteristics of respondents

Respondents= 200 Characteristics		Mean	Median	*n*	%
Age		22.8	23.5	200	100
Marital status					
	Single			177	88.5
	Married			11	5.5
	Divorced			4	2
	Separated			1	0.5
	Missing			7	3.5
	Total			193	100
Religion					
	Christian			184	92
	Muslim			7	3.5
	Traditional beliefs			2	1.0
	Buddhism			1	0.5
	Judaism			1	0.5
	Missing			5	2.5
	Total			195	100
School					
	Education			101	50.5
	Humanities and social sciences			79	39.5
	Natural sciences			9	4.5
	Engineering			5	2.5
	Agriculture			3	1.5
	Missing			3	1.5
	Total			197	100

4.3 Awareness of PC

On awareness of PC, the majority (*n*=146; 73%; *n*=197) of the respondents had heard of PC, and almost a quarter (*n*=46, 23%, *n*=197) of the respondents indicated knowing someone with PC (Table 4.2). Almost three-quarters had heard of PC, while fewer than half knew someone with PC.

Table 4-2: Awareness of PC (*n*=197)

ITEM	YES		NO		Missing	
	n	%	*n*	%	N	%
Heard of PC	146	73.	51	25.5	3	1.5
Knows anyone with PC	46	23	154	77	0	0

4.4 Access to information about PC and its sources (n=200)

In this study, just over half the respondents indicated they had received information about PC (*n*=109; 54%) and 45.5% (*n*=91) respondents had not received information about PC.

The sources of information varied, and included media (*n*=47; 43.1%), friends (*n*=33; 30.3%), healthcare provider (*n*=19; 17.4%), and family members (*n*=10; 9.2%) (Figure 3.1).

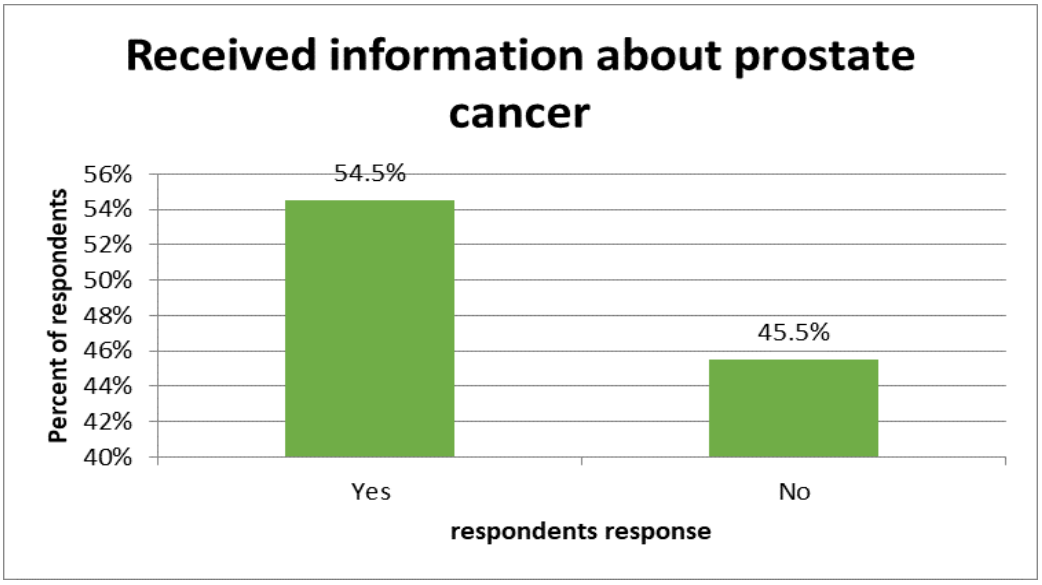

Figure 4-1: Received information about PC (n=200)

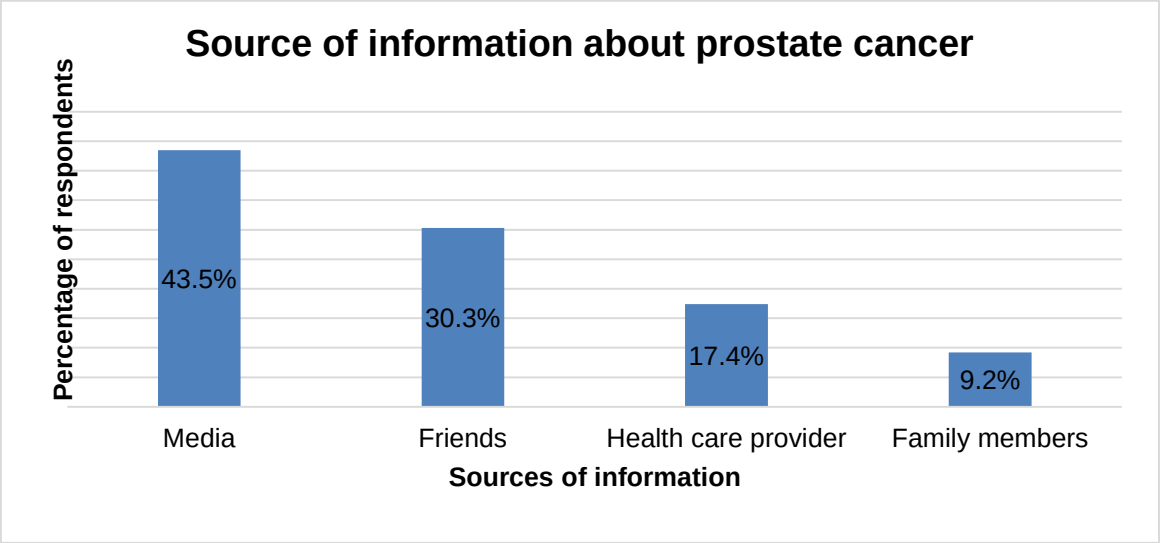

Figure 4-2: Source of information about PC (n=109)

4.5 Knowledge of PC among male students at the University of Zambia

4.5.1 Prostate cancer cannot be cured (n=200)

The study found that only *n*=43 (21.5%) respondents indicated that PC cannot be cured, with only 8% (*n*=16) indicating strong agreement, in contrast to *n*=79 (39.5%) who strongly disagreed that PC is incurable.

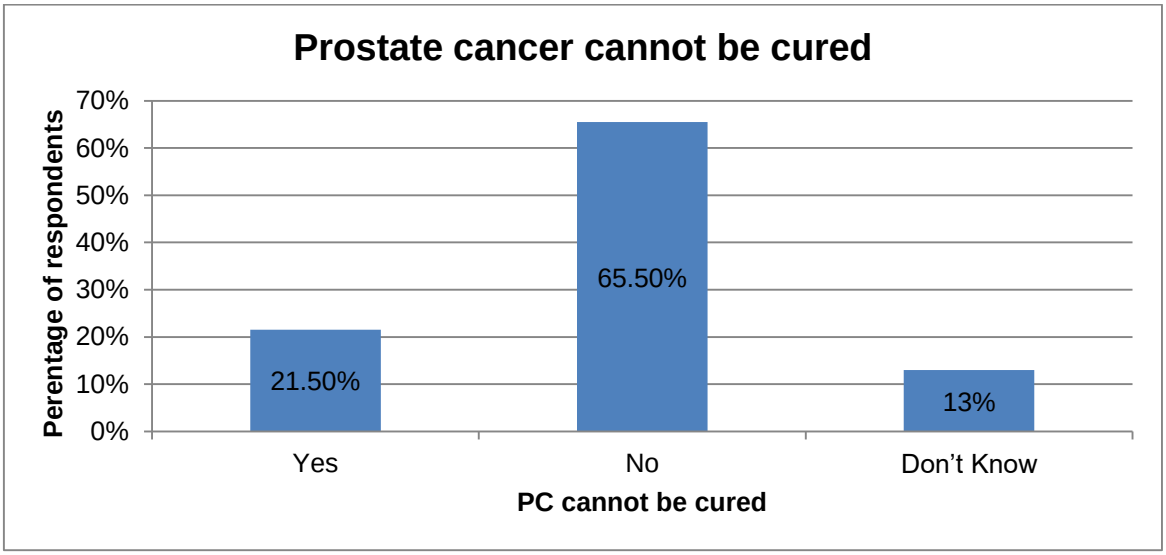

Figure 4-3: PC cannot be cured (n=200)

4.5.2 Age group affected by PC (n=200)

On the knowledge about the age group at higher risk of developing PC, *n*=69 (34.7%) of the respondents stated that PC affects ages above 40 years, *n*=98 (49%) of respondents stated that PC affects all ages, while only *n*=69 (34.7%) stated it affects persons 40 years and above; *n*=24 (12.1%) stated 20–30 years, *n*=8 (4%) below 20 years and *n*=1 (0.2%) of respondents did not respond to the question as indicated in Figure 4.4. Age group affected by PC significantly associated with religion (p=0.024).

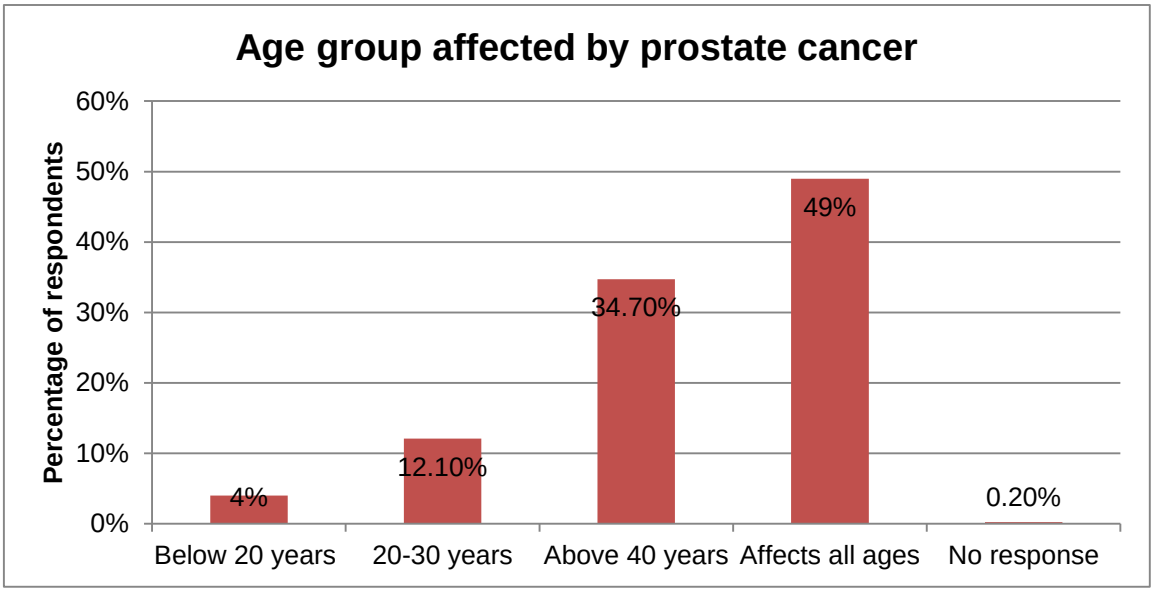

Figure 4-4: Age affected by PC (n=200)

4.5.3 Gender affected by PC (n=200)

On the gender affected by PC, *n*=142 (71%) respondents stated that PC affects men only, *n*=14 (7%) thought it affects women, *n*=16 (8%) thought it affects both men and women, while *n*=27 (13.5%) did not know at all (Figure 4.5).

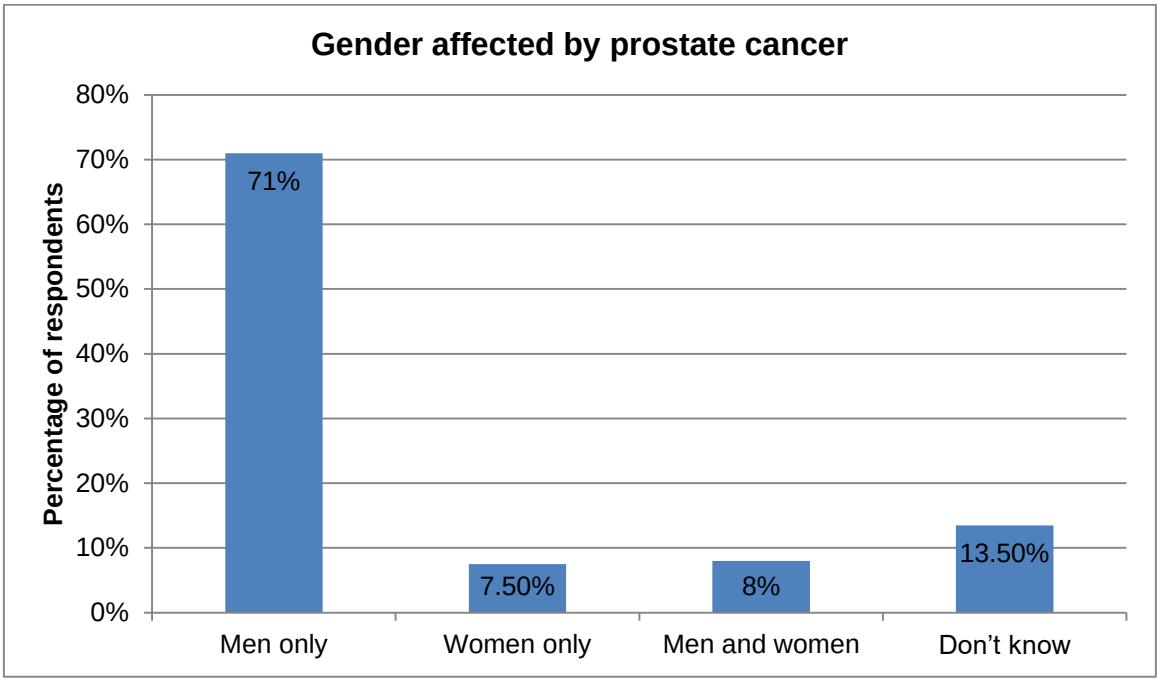

Figure 4-5: Gender affected by PC (n=200)

4.5.4 Awareness of any symptoms of PC (n=200)

As part of relevant knowledge of PC, one needs to be able to identify the signs and symptoms, as these give an indication of the need to consult health services.

The majority of respondents (*n*=139; 69.5%) knew the symptoms of PC compared with *n*=61 (30.5%) who did not know (Figure 4.6). The good level of knowledge of the symptoms of PC may be attributed to the literacy of the student population.

However, 69% (*n*=138) of respondents aware of the PC symptoms (*n*=39; 19.5%) respondents stated excessive urination in the night, and *n*=99 (49.5%) respondents stated blood urine, respectively. In this study, *n*=13 (6.5%) respondents stated the PC symptoms as headache, *n*=21 (10.5%) respondents stated high temperature, and *n*=28 (14%) respondents did not even answer the question (Figure 4.7). Excessive urination in the night was significantly associated with the marital status of respondents (p=0.019).

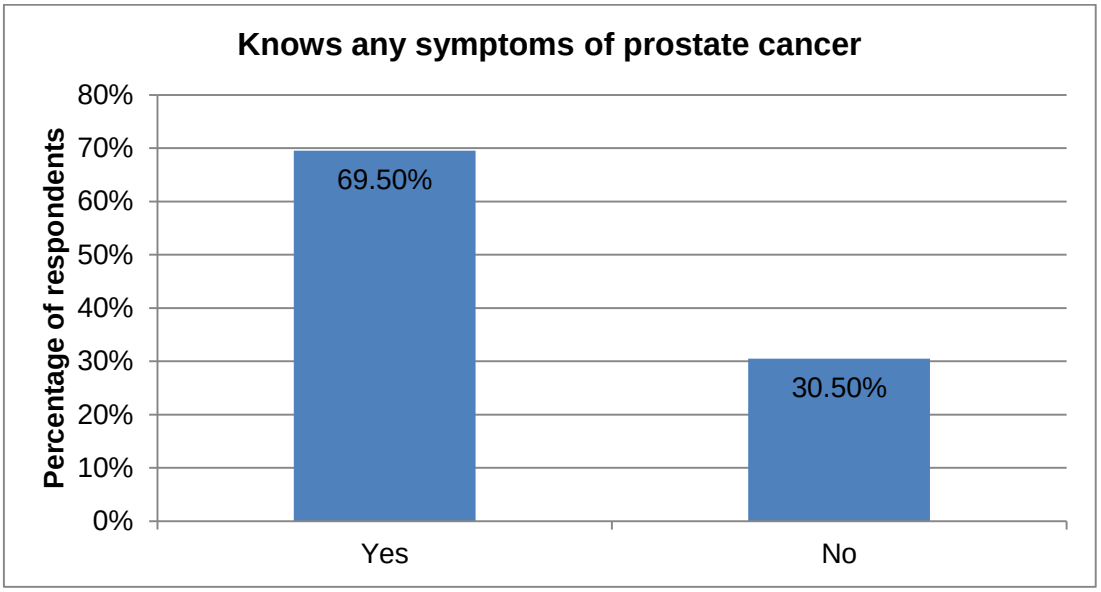

Figure 4-6: Knows any symptoms of PC (n=200)

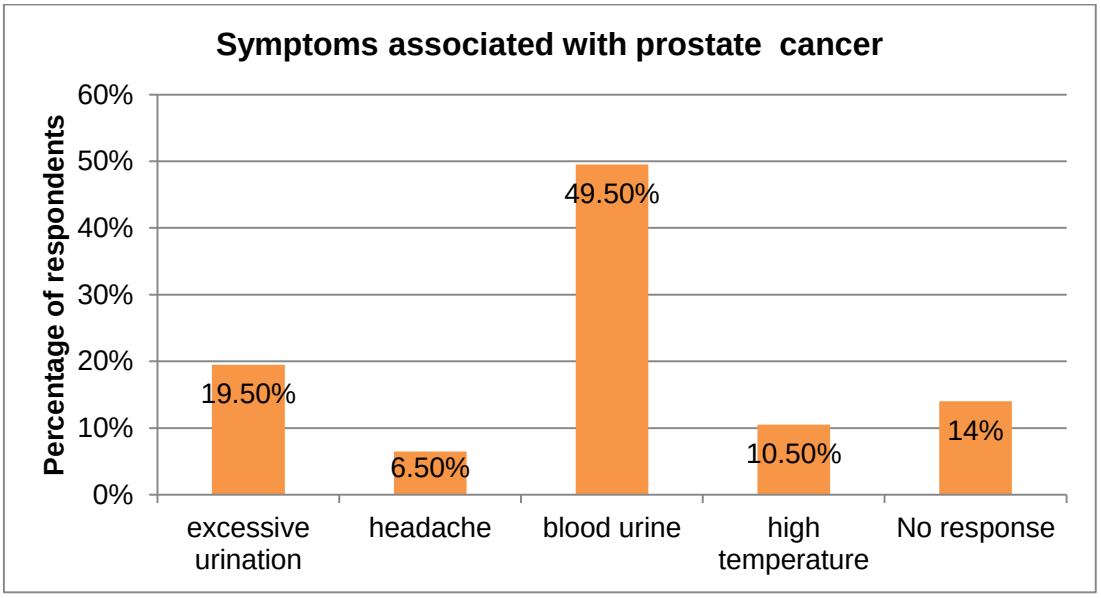

Figure 4-7: Symptoms associated with PC (*n*=200)

4.5.5 PC development risk factors (n=200)

On PC development risk factors, 25.5% (*n*=51) of respondents stated that an advanced age of 40 years and above is a potential PC development risk factor, and *n*=64 (32%) respondents stated

family history as a PC development risk factor. In addition, *n*=38 (19%) respondents stated excessive alcohol, *n*=2 (1%) stated lack of exercise, *n*=80 (40%) stated unprotected sex, and *n*=53 (26.5%) respondents did not know as indicated in Figure 4.8. Furthermore, the majority (*n*=80; 40%) of students thought unprotected sex to be a risk factor of PC. Advanced age as a PC development risk factor significantly associated with marital status of respondents (p=0.045) and age of respondents (p=0.008).

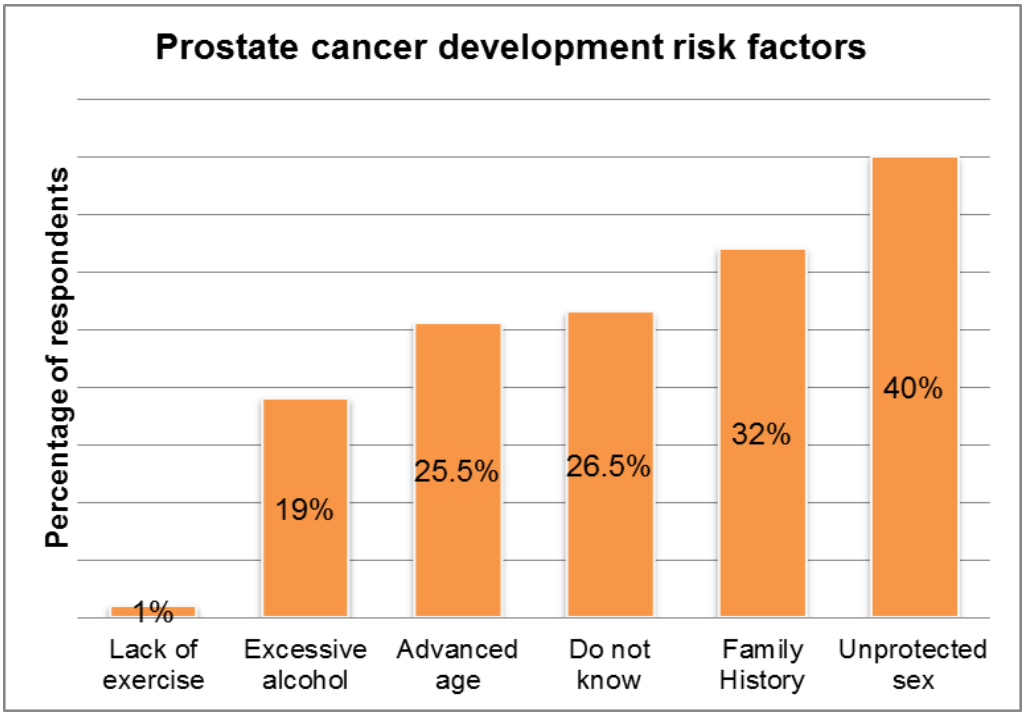

Figure 4-8: PC development risk factors (n=200)

4.6 Knowledge of PC screening

Screening is used to diagnose cancer even before one has any symptoms or signs. When cancer is diagnosed at an early stage of development, there is a better chance of successfully treating it. Hence, it was imperative to describe the knowledge of PC screening among University of Zambia non-medical male students.

4.6.1 Awareness of PC screening (*n*=200)

On awareness of PC screening, majority of respondents (*n*=139; 69.5%) were not aware of screening, while only *n*=61 (30.5%) were aware. When asked about tests to detect PC, the

majority of respondents indicated they did not know of any test to detect PC. In this study, awareness of PC screening significantly associated with age of respondents at (p=0.031) (Figure 4.9).

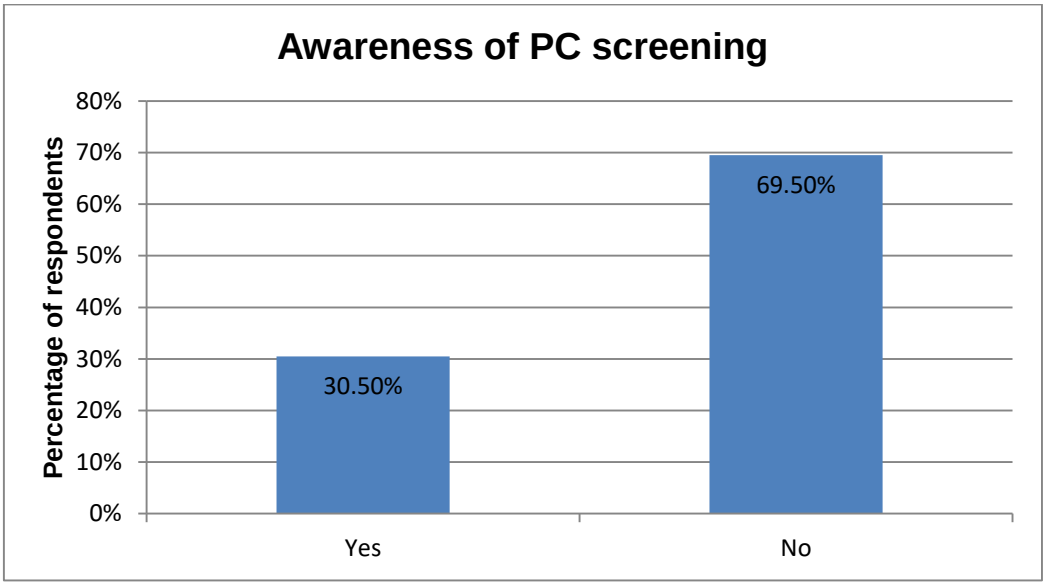

Figure 4-9: Awareness of PC screening (n=200)

4.6.2 Awareness of PC screening methods (*n*=61)

In this study, almost half (*n*=30; 49.2%) of the respondents aware of cancer screening had knowledge of digital rectal examination (DRE) as a PC screening method. Fourty-three (70%) respondents had knowledge of full blood count not being a screening method and *n*=27 (44.3%) of prostate-specific antigen as PC screening methods respectively (Figure 4.10).

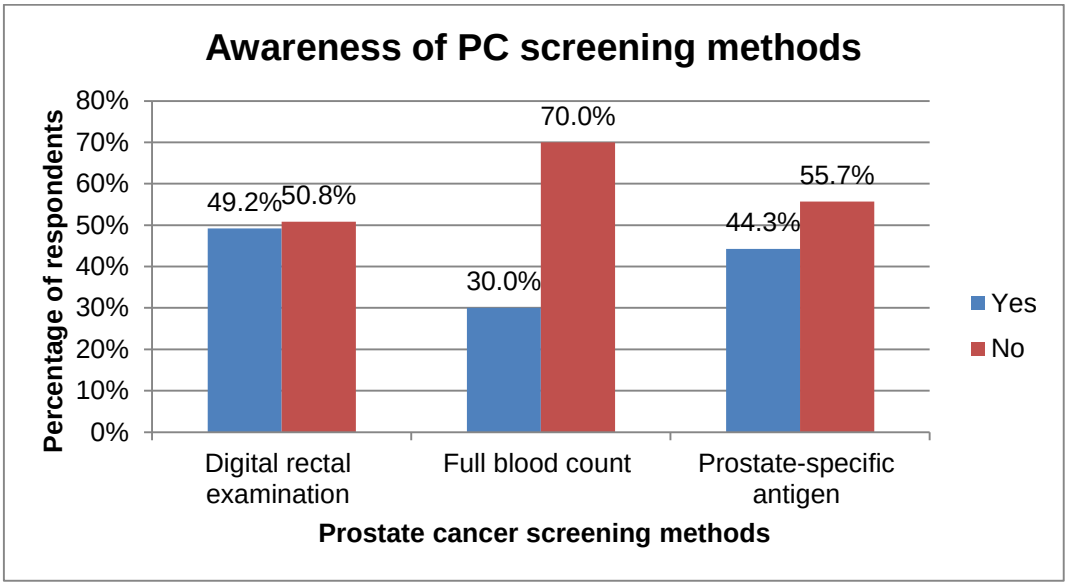

Figure 4-10: Awareness of PC screening methods (n=61)

4.6.3 Abnormal prostate-specific antigen signifies presence of PC (n=200)

The majority (*n*=138; 69%) respondents stated that they do not know that abnormal prostate specific antigen signify PC, and only *n*=37 (18.5%) stated "Yes" and n=24 (12%) respondents stated "No", respectively (Figure 4.11). A significant association was observed between abnormal PSA signifies PC and school of respondents (p=0.000).

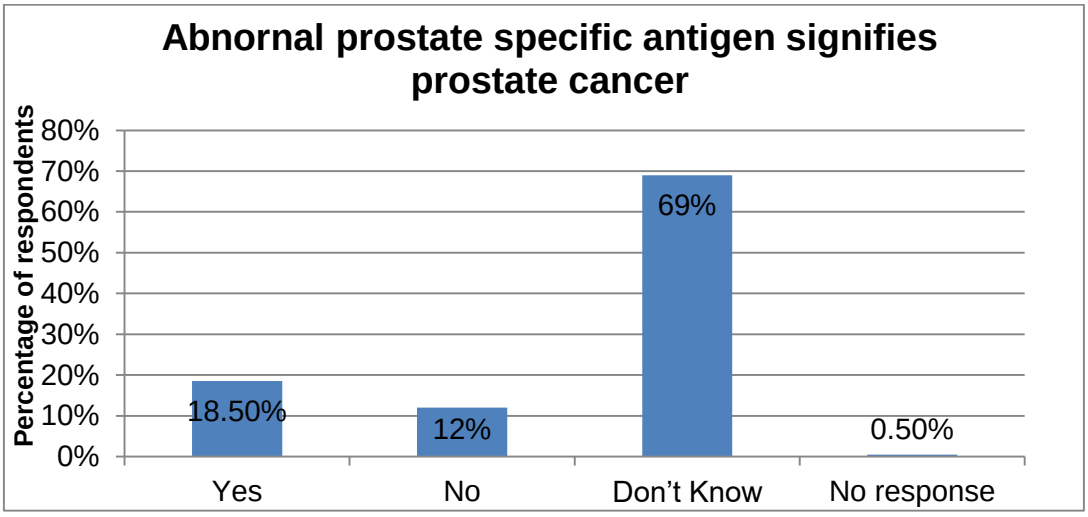

Figure 4-11: Abnormal prostate-specific antigen signifies PC (n=200)

4.6.4 Levels of knowledge of PC and screening

In general, a medium level knowledge of PC screening was observed among the non-medical male university students in this study, with an average score of 6.95 (SD=1.43). Of the 15 questions describing knowledge, eight questions were correctly answered, representing 53.3% accurate knowledge. From the measure, eight correct responses fell under the medium knowledge range of 7 to 10 correct answers. The study found that *n*=142 (71%) of respondents were aware that PC only affected the male gender, compared with *n*=59 (29%) who had inaccurate knowledge of the gender affected by PC. In this study, only *n*=139 (69.5%) were aware of any symptoms of PC. However, *n*=39 (19.5%) correctly identified excessive urination at night, and *n*=99 (49.5%) identified blood urine as PC development risk factors, respectively. In PC development risk factors, a considerable amount of inaccurate knowledge was reported, with *n*=38 (19%) reporting excessive alcohol, and *n*=2 (1%) reporting lack of exercise. Inaccurate knowledge was found on PC cannot be cured. Only *n*=43 (21.5%) gave a correct response. In this study, only *n*=69 (34.7%) correctly identified that the age at greater risk of developing PC was 'age 40 years and above'. In this study, *n*=51 (25.5%) respondents expressed accurate knowledge of PC development risk factors. Awareness of PC screening was also low, with only *n*=61 (30.5%) aware of PC screening, and *n*=37 (18.5%) also aware that abnormal prostate-specific antigen signifies PC.

4.7 Beliefs about PC screening

Nine questions described prevailing cultural beliefs among study respondents. The rest of the questions on belief variables were measured with a Likert-type scale that ranged from 'strongly disagree' (1) to 'strongly agree' (5). However, during data analysis, the responses to the Likert-type scale were modified to 'yes' or 'no' and 'don't know'-type responses. The ranges 'strongly agree' and 'agree' were combined to make 'yes', and 'strongly disagree' and 'disagree' were combined to make 'no', while 'do not know' was left unchanged. There were nine questions in the belief section, and each question carried a score of one for the correct response and a score of zero for the wrong response. The belief variable was stratified into three levels: negative cultural beliefs, 1–3 correct answers out of 9; moderate cultural beliefs, 4–5 correct answers; and positive cultural beliefs, 6–9 correct answers, similar to the grouping of Kaninjing et al. (2017:342).

4.7.1 PC screening is not a taboo and PC screening is good

The study found that only *n*=134 (67%) respondents stated that PC screening is not a taboo in their culture, compared with *n*=167 (83.5%) indicating that PC screening is good. In this study, more than three-quarters (*n*=167; 83.5%) had positive beliefs that PC screening is good. On the other hand, the minority (*n*=13; 6.5%) had negative beliefs, stating that PC screening is not good, while *n*=20 (10%) respondents were not sure if PC screening is good. Furthermore, PC screening is good, associated significantly with religion (p=0.000) and marital status (p=0.038) of respondents.

4.7.2 PC screening does not invite more problems and being diagnosed with PC does not mean death

The majority of the respondents believed positively that PC screening does not invite more problems (*n*=164; 82%). This finding associated significantly with religion of the respondents (p=0.027). In addition, the majority of the respondents stated that being diagnosed with PC does not mean death (*n*=152; 76%), that associated significantly with school of the respondents (p=0.027). However, only a few respondents (*n*=64; 32%) still had negative beliefs that screening stress outweighs the benefits for men above the age of 40 years compared with *n*=82 (41%) respondents who had positive beliefs about the same aspect. However, *n*=26 (13%) respondents strongly agreed and *n*=38 (19%) agreed with that aspect, in contrast to *n*=38 (19%) who strongly disagreed and *n*=45 (22.5%) who disagreed that PC screening stress outweighs the benefits.

Generally, positive beliefs were noticed, *n*=164 (82%) respondents stated that people who undergo PC screening do not invite more health problems into their lives compared with *n*=26 (13%) who stated contrary on that aspect. In detail, *n*=9 (4.5%) respondents strongly agreed, *n*=17 (8.5%) agreed, *n*=104 (52%) strongly disagreed, *n*=60 (30%) disagreed, and *n*=10 (5%) did not respond.

4.7.3 The need for PC screening and PC screening is not a waste of time

In this study, slightly more respondents believed positively that there is a need for men to go for PC screening (*n*=170; 85%) compared with those who believed positively that religion allows men to undergo PC screening (*n*=154; 77%). The need for men to go for PC screening associated significantly with religion of respondents (p=0.000). However, *n*=154 (77%) respondents had

positive beliefs and thus confirmed that religion allowed men to undergo PC screening in comparison with *n*=19 (9.5%) who contradicted this. Additionally, *n*=11 (5.5%) strongly agreed, while *n*=8 (4%) agreed, *n*=93 (46.5%) strongly disagreed, *n*=61 (30.5) disagreed, and *n*=27 (13.5%) did not respond. Noticeably, religion allowed men to go for PC screening associated significantly with marital status of respondents (p=0.000). In this study, *n*=170 (85%) respondents believed positively that there is need for men to go for PC screening, contrary to *n*=40 (20%) respondents who believed negatively. More than half of the respondents (*n*=113; 56.5%) strongly disagreed compared with *n*=8 (4%) who strongly agreed with this aspect.

A similar number (*n*=170; 85%) of respondents positively believed that PC screening is not a waste of time and that men can go for PC screening, compared with *n*=139 (69.5%) who believed positively that one can go for PC screening whether one has symptoms or not. PC screening is not a waste of time associated significantly with religion (p=0.000) and marital status (p=0.012) of respondents.

4.7.4 One cannot go for PC screening only if he has symptoms.

Positive belief was noticed with *n*=139 (69.5%) respondents affirming that one cannot go for PC screening only if one has symptoms. In contrast, *n*=51 (25.5%) respondents reported negative beliefs with regard to the aspect of going for PC screening only if one has symptoms. Only *n*=19 (9.5%) respondents strongly agreed, *n*=32 (16%) agreed, *n*=65 (32.5%) strongly disagreed, *n*=74 (37%) disagreed and *n*=10 (5%) did not respond to the aspect of going for PC screening only if one has symptoms. In this study, the majority (*n*=170; 85%) of respondents had positive beliefs, compared with *n*=17 (8.5%) respondents who negatively believed that PC screening is a waste of time. Among the respondents, *n*=11 (5.5%) strongly agreed, *n*=6 (3%) agreed, *n*=106 (53%) disagreed, *n*=64 (32%) disagreed, and *n*=13 (6.5%) gave no response to the aspect of going for PC screening only if one has symptoms.

4.7.5 Overall belief on PC

In summary, the study found positive beliefs on PC screening for all the aspects included in the study as illustrated in table 4.3. There were strong cultural beliefs on PC screening, as out of nine questions asked to described beliefs, all had a high percentage of respondents who indicated preferred answer for positive belief of nine (100%) correct answers as illustrated by Kaninjing et al. (2017:342).

This represented a 100% preferred answer for positive belief to the questions asked to describe beliefs on PC screening among the study respondents, with *n*=170 (85%) respondents believing positively that men ought to undergo PC screening and that PC screening is not a waste of time. Almost the same number of respondents who reported that PC screening is not a waste of time (*n*=170; 85%) also reported that PC screening is good (*n*=167; 83.5%).

Table 4-3: Beliefs about PC

ITEM	Yes	No	Do not know
PC screening is a taboo	23 (11.5%)	**134 (67%)**	43 (21.5%)
PC screening is good	**167 (83.5%)**	13 (6.5%)	20 (10%)
PC means death	36 (18%)	**152 (76%)**	12 (6%)
Stress of screening outweighs the benefits	64 (32%)	**82 (41%)**	47 (23.5%)
PC screening invites more problems	26 (13%)	**164 (82%)**	10 (5%)
Religion does not allow screening	19 (9.5%)	**154 (77%)**	24 (12%)
No need to go for screening	10 (20%)	**170 (85%)**	10 (5%)
Screening only symptoms	51 (25.5%)	**139 (69.5%)**	10 (5%)
Screening is a waste of time	17 (8.5%)	**170 (85%)**	13 (6.5%)

As illustrated in Figure 4.12, the belief that PC screening is not a waste of time and that there is a need to go for screening had the highest number of respondents with preferred answer for positive belief (85%), followed by the number of those who agreed that PC screening is good (83.5%), and those who disagreed that PC screening invites more problems (82%). The lowest report of positive beliefs was on the belief that stress of screening outweighs the benefits (41%).

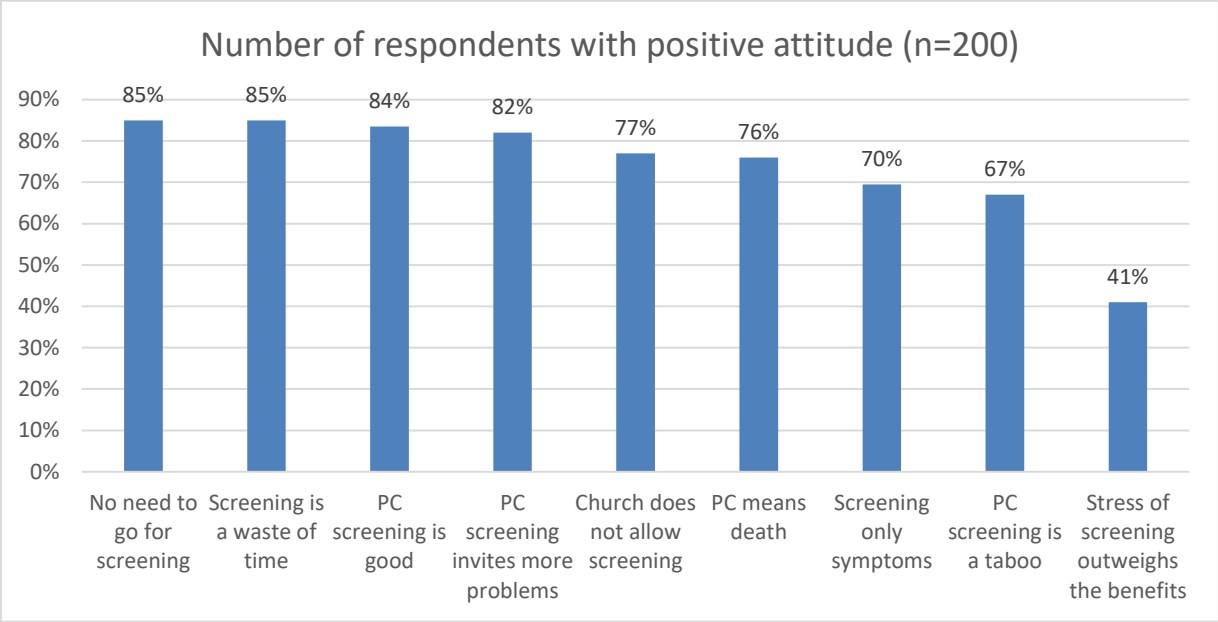

Figure 4-12: Number of respondents with positive attitude

In this study, the belief variable was stratified into three levels: negative cultural beliefs = <4 preferred answer for positive belief out of nine; moderate cultural beliefs = 4–5 preferred answer for positive belief; and positive cultural beliefs = 6–9 preferred answer for positive belief, similar to the grouping done by Kaninjing et al. (2017:342). The results of this study showed that up to 66.3% of respondents had positive beliefs, while 22.8% had moderate beliefs, with only 10.9% of respondents displaying negative cultural beliefs.

Table 4-4: Belief categories

Value	Frequency	Percentage
Negative belief	20	10.9
Moderate belief	42	22.8
Positive belief	122	66.3
Valid total	184	
Missing	16	

4.8 Summary of chapter

This chapter presented the findings of the study. The socio-demographic characteristics of the respondents were outlined. Awareness of PC, access to information on PC, knowledge of PC and beliefs on PC screening were also shown in the chapter. Charts and tables were used in the presentation of results. The next chapter, chapter 5, discusses the study findings.

CHAPTER 5: DISCUSSION OF FINDINGS, CONCLUSION RECOMMENDATIONS AND LIMITATIONS

5.1 Introduction

In this study, the Integrated Behavioral Model (IBM) was used to describe the knowledge and beliefs of university students regarding prostate cancer screening. IBM was also used to anticipate whether the respondents would be able to adopt healthier behaviour. According to Montaño and Kasprzyk (2015:77), the most important determinant of behaviour in the IBM is intention and motivation to perform a behaviour. In addition, IBM has four other factors that promote behavioural change and these factors directly affect whether or not behaviour can be carried out. The four factors are knowledge and skills to perform the behaviour, salience of the behaviour, environmental constraints, and habits (Branscum & Lora, 2017:32). In this study, the aspect of knowledge and skills was applied through a description of the knowledge of PC and PC screening. The salience of the behaviour was applied through the description of the respondents' beliefs on PC screening. The environmental constraints relate to the belief component of the study. The integrative model further anticipates that people act on their intentions when they have the necessary skills and when environmental factors do not impede behavioural performance (Yzer, 2012:23). This chapter begins by discussing knowledge of and beliefs regarding PC and PC screening. In this chapter, the study is also concluded, recommendations are provided, and the limitations of the study presented.

5.2 Knowledge of PC

Literature has documented that knowledge of PC differs in various populations, as it has been shown that PC knowledge levels are higher in developed countries compared with developing countries (Taitt, 2018:1810). However, in the current study, medium knowledge (53.3%) of PC screening was observed among the university students. The finding of this study is similar to the study by Morlando et al. (2017), who found that Italian men had moderate knowledge of prostate cancer and had a very good propensity to undergo prostate cancer screening tests. On the other hand, the findings of this study are contrary to the study by Mincey et al. (2017:1099), and Ogunsanya et al. (2017:1018), which documented lower levels of knowledge of PC among black men in the USA as they were unaware of their risk of developing PC as well as what the prostate gland is and what it does in their bodies. The IBM explicates that a lack of knowledge of PC will

impede the respondents from performing healthier behaviours such as undergoing PC screening. On the other hand, increased knowledge of PC screening among university students will increase their intention to undergo PC screening and should also help in informing their community of the importance of PC screening. This is because people act on their intentions when they have the necessary knowledge and skills (Yzer, 2012:23). In this study, just over half (*n*=109; 54%) of the respondents had received information on PC. The majority of the respondents stated that they had received information on PC from the media (*n*=47; 43.1%) and their friends (*n*=33; 30.3%). In this study, only 17.5% of the respondents had received information on PC from health providers. This is higher than what was reported in the study by Kaninjing et al. (2017:346), which reported that about 9.9% of the participants had received information from health providers. When asked if they had received information from their healthcare providers on PC, 90.1% of study participants denied this (Kaninjingi et al. (2017:346).

5.2.1 Knowledge of age groups affected by PC

This study revealed inaccurate knowledge of the age group affected by PC. Only 34.7% (*n*=69) of the respondents correctly identified the age group at risk of PC, which is 40 years and above. The difference in knowledge of the age groups affected by PC significantly associated with religion of respondents (p=0.024) with most respondents not aware of the age group affected by PC. However, according to Rawla (2019), PC is mostly diagnosed in older men as the risk increases after 50 years of age for white men and 40 years of age for black men with a family history of PC. The average age for PC diagnosis is 70 (ACS, 2019). The characteristics of age in respect of PC are slowly changing as there is an increase in young people diagnosed with PC (ACS, 2019; Bleyer et al., 2020:47). The knowledge of the age group affected by PC, according to the IBM, will enable respondents to adopt healthier behaviours such as undergoing PC screening early, as literature portrays an increase in young people diagnosed with PC (Bleyer et al., 2020). In contrast, in the current study, the inaccurate knowledge of the age group affected by PC will militate against the respondents undergoing PC screening or encouraging their relatives to do so. Therefore, interventions on educating and encouraging men to undergo PC screening early are to be put in place. These interventions may include increased information dissemination through the media, such as television, radio, newspapers, booklets and social media platforms.

The current study also revealed a considerable amount of knowledge of the gender affected by prostate cancer, with over 71% of the respondents stating that prostate cancer affects men.

According to Singh and Bolla (2019), PC is a cancer that occurs in a man's prostate, a small walnut-shaped gland that produces the seminal fluid that nourishes and transports sperm. Knowledge of the gender affected by PC will enable the respondents to adopt good health behaviours, such as going for PC screening, knowing that PC affects only men. It should be noted that over a quarter of respondents did not have accurate knowledge that PC is a male health problem.

5.2.2 Knowledge of the symptoms of PC

In this study, when asked about the symptoms of PC, the majority of the respondents (69.5%) indicated that they were aware of the symptoms. However, the finding of this study is contrary to the study by Ojowolo et al. (2017), which documented that Nigerian men in the southwest had very poor knowledge of PC signs and symptoms. According to Leslie, et al, (2021) the symptoms of PC include difficulties in urinating, a frequent urge to urinate, especially at night, blood in the urine or semen, decreased force in the stream of urine, discomfort or pain in the pelvic area, bone pain, and erectile dysfunction. In this study, accurate knowledge was reported with 69% (*n*=138) of respondents correctly identifying the PC symptoms, as 19.5% (*n*=39) reported excessive urination at night and 49.5% (*n*=99) reported blood in the urine respectively, while others had incorrect knowledge such as headache (*n*=13; 6.5%), and high temperature (*n*=21; 10.5%), with up to 14% (*n*=28) not answering the question. Knowledge of the symptoms of PC will enable the respondents to adopt health behaviours and undergo PC screening. This is consistent with the findings of Enemugwem et al. (2019), that knowledge of PC was associated with increased screening for PC, which in turn leads to prevention and early detection of PC and improved overall outcome.

5.2.3 Prostate cancer development risk factors

Adibe et al. (2017) demonstrated that male staff at the University of Nigeria had an appreciable knowledge of PC as the majority knew the risk factors of PC, although they did not know the screening test for PC. In contrast, the current study found that the majority of respondents were unaware of the risk factors of PC, with some knowledge ranging from as low as 25.5% of respondents identifying advanced age and as high as 32% of respondents identifying family history as risk factors. This is, however, higher compared with that reported by Egbera (2015:98-

99), who revealed that over 50% of young men aged 18–35 did not know the risk factors of PC when describng the knowledge, attitudes and beliefs of university students in Benin City, Nigeria.

This study revealed that 32% of respondents stated family history as a risk factor for PC. The study by Rawla (2019:79) estimated that about 20% of patients diagnosed with PC reported a family history of PC, thus indicating their knowledge of family history as a probable development risk factor of PC. This family history may have been as a result of shared genes or a similar pattern of exposure to certain environmental carcinogens (Rawla, 2019:79). In this study, the majority (*n*=146; 73%) had heard of PC, and almost a quarter (*n*=46; 23%) indicated knowing someone with PC. This study finding of 73% of respondents who have heard about PC is higher in comparison to the study by Gift et al. (2020), which revealed that 67 (33.5%) of the men that took part in the study had heard about PC and 58 (29%) expressed knowledge of PC.

Therefore, the application of the IBM entails that with the low levels of knowledge of the risk factors of PC, the majority of respondents must be sensitised on risk factors, and when this is achieved, their intention and motivation to undergo PC screening should increase. This accords with Yzer (2012:26), that if people have formed appropriate intentions but are not acting on them, then an intervention should aim to help people act on their intentions by addressing a possible lack of skills (knowledge) or environmental barriers. This is supported by the study by Sakala et al. (2020), which indicated that increased public sensitisation campaigns on PC and its screening tests would improve public understanding of the disease with the aim of early detection.

In addition, they will adopt healthier behaviours such as a good diet and lifestyle. The integrative model anticipates that people act on their intentions when they have the necessary knowledge and skills, and when environmental factors do not impede behavioural performance (Yzer, 2012:23). Literature further reveals that dietary factors play a very important role in the development of PC (ACS, 2020). For instance, a diet high in saturated fat has been associated with increased risk of PC as opposed to a diet high in healthy fats like omega-3 fats (Rawla, 2019:79). Lack of exercise, smoking and excessive alcohol consumption have also been associated with increased risk of developing PC (Taitt, 2018).

5.2.4 Knowledge of PC screening

The current study revealed a low level of knowledge of PC screening, with 30.5% (*n*=61) of respondents aware of PC screening. This finding is, however, lower than that in the study by Mbugua, et al., (2021), which documented that 46% of men in Kenya rural setting, were aware of

PC screening but only 10% knew the screening method for PC. However, the levels of knowledge of PC screening for this study were higher compared with the study by Makado et al. (2015:49), who had similar findings in Zimbabwe that concluded that only 24% of men had knowledge of PC screening.

Furthermore, in this study, when asked about the tests that can be done to detect PC, the majority (*n*=139; 69.5%) of the respondents indicated that they did not know of any test to detect PC. Similarly, the study of Alexis and Worsley (2018:165) also demonstrated that black African and Caribbean men had very poor knowledge of PC screening and were misinformed on PC screening procedures as they had pronounced confusion between PC screening and colon cancer screening. The IBM suggests that the lack of knowledge of PC screening is an impediment to men's developing healthier behaviours, such as going for PC screening. This is supported by the study by Kaninjing et al. (2017:346) which indicates that men in Bamenda, Cameroon, needed information about the benefits and risks of PC prevention to be able to make informed decisions about screening. Therefore, there is a need to inform men regarding the importance of PC screening and its procedure in order to influence their intention and motivation to perform PC screening.

However, a considerable amount of accurate knowledge was observed in this study. Almost half (*n*=30; 49.2%) of the respondents who indicated knowing about PC screening, indicated that they were aware of DRE as a PC screening method. Twenty-seven (44.3%) of the respondents that indicated knowing about PC screening also had accurate knowledge of prostate-specific antigen as a PC screening method. The study by Kaninjing et al. (2017:346) found that awareness of the two main screening methods for PC (DRE and PSA) was low among study participants, with 11.1% reporting they were aware of the PSA test and 8.9% reporting awareness of DRE.

5.3 Beliefs on PC screening

The current study demonstrated positive beliefs on PC screening. There was a positive belief among respondents in this study. Responses from all the questions asked to describe belief among the study respondents were appropriate and positive. According to Morisky (2019), the beliefs and traditions of community members have a profound effect on the health of the community. This concurs with the findings of this study, that there is a positive belief in PC screening. It is believed that it is not a taboo, that PC screening is good, that men ought to go for PC screening, and that PC screening is not a waste of time. Detailed discussions on these items

are in the preceding paragraphs. Furthermore, in this study, there is potential for good intention and motivation to perform the behaviour, as evinced by the positive belief in the findings of the current study. In the current study, the positive beliefs about PC screening will result in adoption of positive and healthier behaviours among men, because beliefs have an impact on moral decision making (Caspar et al., 2017).

5.3.1 Prostate cancer screening is not a taboo and PC screening is good

This study demonstrated good cultural beliefs towards PC screening. The majority (*n*=134; 67%) of respondents agreed that PC screening is not a taboo in their culture and *n*=167 (83.5%) indicated that PC screening is good. With PC screening is good significantly associated with religion of respondents (p=0.000) and more respondents reporting that PC screening is good. However, these study findings are contrary to the study by Kaninjing et al. (2017:347), which found that a vast majority of study participants (67.8%) exhibited weak or low cultural beliefs about screening for PC. Culture, socio-economic factors, generational practices, and current trends affect patients' and families' health beliefs and practices (Morisky, 2019). Therefore, in this study, the application of IBM suggests that salience of behaviour would enable the respondents to adopt better health behaviours because they believe that PC screening is good and therefore important. This is also consistent with the study by Caspar et al. (2017) which found that beliefs have an impact on moral decision making.

In addition to the salience of behaviour, is that the habit of PC screening would increase because beliefs are often more influential in the daily, spontaneous, decision-making process of the students (Pember, 2017:130). Eventually, the respondents would begin to go for PC screening often, which could be aided by the belief that PC screening is not a taboo in their culture. This is consistent with Branscum and Lora (2017:32), who stated that performing the behaviour frequently may make one gain experience and the behaviour may become a habit.

5.3.2 PC screening does not invite more problems and being diagnosed with PC does not mean death

In this study, the majority of the respondents (*n*=164; 82%) believed positively that PC screening does not invite more problems. The study also demonstrated that respondents believed that being diagnosed with PC does not mean death (*n*=152; 76%). This is in contrast to the study by Egbera (2015) which revealed that respondents feared that diagnosis means death, and that screening

will identify more health problems. Furthermore, other studies also reveal that cultural and religious beliefs have a negative effect on the uptake of PC screening (ACS, 2016:26; Abamara et al., 2017:148).

The IBM implies that if the intention and motivation of performing PC screening is there, it would lead the respondents to go for PC screening. The study by Pember (2017:130) on the application of the Integrated Model of Behavioral Prediction to graduates' eating behaviours found that beliefs are often more influential in the daily, spontaneous, decision-making processes of the students. This is also supported by De Vries (2017), who stated that health behaviour theories and models can be used for various reasons such as trying to understand health behaviour and its determinants, and to change health behaviour. Early detection and treatment of PC is associated with a long survival rate. However, it is the second most common cause of cancer-related deaths in men worldwide (Smith-Palmer et al., 2019). The current study also found that 82 (41%) respondents had positive beliefs that screening stress outweighs the benefits for men above the age of 40 years. This finding is lower compared with the study by Mutua et al. (2017), who found that close to 90% of the men agreed that the benefits of PC screening outweigh any discomfort they might have in testing, and that PC screening was an effective way to detect and treat PC early.

Literature further reveals that African American men have the highest incidence rate of PC worldwide (Rawla, 2019:65). This is influenced by the lack of participation in screening due to various cultural factors, lack of knowledge, health beliefs, barriers, and relationships with primary healthcare givers (ACS, 2016:26). The application of the IBM model will enhance behaviour change through the salience of the behaviour. A person (male student) should know that it is important to go for PC screening as it may have many health benefits (Montaño & Kasprzyk, 2015).

5.3.3 Going for PC screening and PC screening is a waste of time

Of the respondents, 170 (85%) believed positively that men ought to undergo PC screening and that PC screening is not a waste of time. In contrast, the study by Egbera (2015) revealed that some cultural beliefs in Benin City, Nigeria, did not allow men to go for screening and some men still lived in denial that PC existed. According to Woods et al. (2004:389), culture and tradition also come into play in men's decisions to undergo PC screening. PC is perceived as a threat to black manhood because of the fear of impotence; thus, men are scared of PC screening owing to fear

of becoming impotent (Woods et al., 2004:389). However, with the positive belief revealed in this study, it suffices to say that the respondents would tend to undergo PC screening because beliefs are often more influential in the daily, spontaneous, decision-making processes of the students (Pember, 2017:130). This is also supported by the salience of behaviour, intention and motivation to perform the behaviour because the respondents consider PC screening important and will tend to adopt healthier behaviours (Montaño & Kasprzyk, 2015).

In this study, almost the same number of respondents who stated that PC screening is a waste of time, 170 (85%), also stated that PC screening is good (167; 83.5%). The application of the IBM suggests that the respondents would make healthier decisions by undergoing PC screening. This is supported by the study by Caspar et al. (2017), where it was reported that beliefs have an impact on moral decision making. Hence, it is understood that people are more likely to engage in health-promotion behaviours if they believe that behaviour has the said benefits (Caspar et al., 2017).

5.4 Conclusion

The study described the knowledge and beliefs of non-medical male university students regarding prostate cancer screening in Zambia. The following were the objectives of the study:

- To describe the knowledge of non-medical male university students of prostate cancer and prostate cancer screening.
- To describe the beliefs of non-medical male university students regarding prostate cancer screening.

The first chapter gave an overview of the research study. A comprehensive literature review relevant to the study was provided in the second chapter. The third chapter discussed the research methodology and design, and the study findings were presented in Chapter 4.

5.4.1 Conclusion to Objective 1

With regard to the first objective, the following conclusions were derived from the findings and discussion.

The majority of the respondents (146, 73%, *N*=197) had heard about PC, and almost a quarter (*n*=46, 23%, *N*=197) indicated knowing someone with PC. Slightly over half the respondents indicated that they had received information about PC *(n*=109, 54%). However, inaccurate knowledge that PC cannot be cured was observed as the majority (*n*=131; 65.5%) of the

respondents reported that PC can be cured. Furthermore, knowledge of the age group at risk of developing PC was inaccurate; only 34.7% correctly identified the age group at risk of PC. The findings of this study highlight good knowledge on the gender affected by PC, with 71% (*n*=142) of respondents reporting accurate knowledge. The majority (*n*=139; 69.5%) knew the symptoms of PC compared with *n*=61 (30.5%) who did now know; however, there were low levels of knowledge of PC development risk factors, with accurate knowledge being reported by only 25.5% (*n*=51) for advanced age (40 years and above), and 32% (*n*=64) for family history as a PC risk development factor. Similarly, low levels of knowledge of PC screening were observed in this study, with the majority of respondents (*n*=139; 69.5%) indicating that they were not aware of PC screening, while only *n*=61 (30.5%) were aware. Such low levels of knowledge concur with the finding that the majority (*n*=138; 69%) reported inaccurate knowledge of abnormal prostate-specific antigen signifying PC. In the current study, a medium knowledge level (53.3%) of PC screening was observed among the university students. The finding of this study is similar to that of Morlando et al. (2017), who found that Italian men had moderate knowledge of prostate cancer and had a very good propensity to undergo prostate cancer screening tests.

The IBM explicates that knowledge of and skills regarding prostate cancer have the potential to impact intention to adopt healthier behaviour among the respondents, such as going for PC screening. Moreover, when people have appropriate intentions but are not acting on them, an intervention should aim to help people act on their intentions by addressing a possible lack of knowledge and skills (Yzer, 2012:26)

5.4.2 Conclusion to Objective 2

With regard to the second objective, the following conclusions emerge from the findings and discussion.

The majority (*n*=134; 67%) of the respondents stated that PC screening is not a taboo in their culture, and 167 (83.5%) stated that PC screening is good. Of the respondents, 164 (82%) believed positively that PC screening does not invite more problems, while *n*=152 (76%) believed that being diagnosed with PC does not necessarily imply death. The majority of the respondents (*n*=170; 85%) believed positively that there is need for men to go for PC screening, whereas *n*=154 (77%) believed positively that religion allows men to undergo PC screening. More than three-quarters of the respondents (*n*=170; 85%) believed positively that PC screening is not a waste of time. Almost 70% of the respondents (*n*=139; 69.5%) believed positively that one can go for PC

screening whether one has symptoms or not. The study found positive beliefs among the respondents and according to Morisky (2019), the beliefs and traditions of community members have a profound effect on the health of the community. In addition, the positive beliefs regarding PC screening will transcend into adoption of positive and healthier behaviours among men, because beliefs have an impact on moral decision making (Caspar et al., 2017).

The outcomes confirm that the traditional, religious and health beliefs of respondents have a direct relationship with whether they undergo PC screening or not. The salience of the behaviour entails that if the respondents believe that PC screening is important, then they will go for PC screening; this is because beliefs have an impact on moral decision making (Caspar et al., 2017). In addition, if the habit of screening is developed, then more respondents will go for PC screening. Performing the behaviour frequently makes one gain experience, and the behaviour in turn becomes a habit (Branscum & Lora, 2017:32).

4.4.3 Conclusion summary

The study findings demonstrated medium knowledge levels of respondents regarding PC screening as it revealed that over half of the respondents indicated receiving information on PC and also had good knowledge on the gender affected by PC. However, respondents had inadequate knowledge on the risk factors associated with PC as well as having low knowledge on whether PC can be cured regardless of the stage.

The study also revealed positive beliefs among the respondents regarding PC screening. The outcome confirmed that traditional, religious and health beliefs have a direct relationship with whether they undergo PC screening or not.

5.5 Recommendations

Prostate cancer is a significant public health issue in Zambia and the world at large. It is important that the recommendations be included for use in research, planning and policy formulation, among others. In the light of the study findings, the following recommendations are made:

5.5.1 Recommendations for policy makers and higher education institutions

The development of health promotion programmes by policy makers and higher education institutions is imperative. In order to increase awareness of PC risks factors, benefits of prevention should be formalised and instituted by student health clinics on campus, as well as by local health

facilities in communities. This intervention should target men, especially those from the lower socio-economic group and men with less than a high school education. Furthermore, health education on prostate cancer should be provided to the general public, starting at high school, in churches, and at other social gatherings whenever possible. The low levels of knowledge found in this study suggest the possibility of even lower levels in the general population

There is the need for the government through the Ministry of Health (MOH) and other stakeholders such as non-governmental organisations to increase information dissemination on PC on media platforms such as television, radio, newspapers, and social media platforms. Posters on PC screening should also be put up in public places and on campuses. In order to deal with the environmental constraints, more health facilities need to be brought closer to the people for them to access PC services. Furthermore, health organisations should reach consensus on screening guidelines for PC.

5.5.2 Recommendations for healthcare workers

There is a need to sensitise healthcare providers (doctors, nurses and traditional healers) on PC-related issues and encourage them to have conversations with their male patients when appropriate and provide objective information to help these men decide whether or not to screen. There is also an urgent need to train more oncology specialists to help with health promotion and education on cancers as well as their treatment. Oncology specialists should be in the forefront in encouraging prostate cancer health promotion and education in every association, at every gathering, and in all religious faiths.

5.5.3 Recommendations for researchers

Further research at other universities in Southern African Development Community (SADC) countries should be encouraged to create further awareness of PC among university students, as well as in the general population.

Furthermore, more research should focus on publishing information to communities and the general public about the importance of prostate cancer screening. Equally, healthcare professionals should not be overlooked, as they equip the masses with benefits of PC screening. A lack of knowledge regarding PC screening may result in health professionals not encouraging men to be screened. Interventional research should be conducted to increase knowledge and

change beliefs of men regarding PC screening. A better understanding of the negative factors contributing to disparities about PC and screening should be identified by further research.

5.6 Limitations

The limitations of the current study included the following: During data collection, some of the students that agreed to participate in the study did not return the questionnaires that were given to them. Of the 254 questionnaires distributed, only 200 questionnaires were returned, despite follow-up by the researcher. This affected the representativeness of the sample and the response rate. However, the sample size and response rate were within acceptable limits (Babbie, 2016:271). This study was limited to one university and one campus within the university, and convenience sampling was applied to recruit respondents. Therefore, the study cannot be generalised to all the universities in Zambia. The study was limited to only non-medical, non-medical male university students, who were residing on the selected campus of the university where the study took place. The study was expensive and time consuming. It was very expensive for the researcher to collect the data and also time consuming to conduct the analysis. However, the quality of the study was not affected in the process because the researcher had to cope with the limited resources and managed to conduct the study successfully.

5.7 Benefits

This study provided benefits, as well as bridged the information gap in society, as very little was known about the knowledge and beliefs regarding PC screening in Zambia.

5.7.1 Benefits for the community

This study gives insight into and information on knowledge and beliefs regarding PC screening to the University of Zambia community. It equips the community with knowledge of PC and PC screening, more especially to men at risk of acquiring PC. It also gives information on the positive beliefs of the community regarding prostate cancer. Furthermore, the study provides information that the community can access once published.

5.7.2 Benefits for health staff

The study will benefit health staff to understand the information gap in the University of Zambia community on PC and will therefore help health workers to develop and implement appropriate

health education and promotion awareness of PC to the university community. This will in turn increase the uptake of PC screening services.

5.8 Summary of chapter

This chapter discussed the results of the study on knowledge and beliefs regarding PC screening; findings were compared with previous studies, allowing the researcher to situate the study in extant literature. The results were presented in various sections indicating non-medical male university students' knowledge and beliefs regarding PC screening. The section on knowledge included: knowledge of the age affected by PC, gender affected by PC, symptoms of PC, PC development risk factors, and PC screening. The section on beliefs encompassed PC screening acceptance and the value of PC screening: PC screening is a taboo; PC screening is good; PC means death; screening invites problems, is stressful and not beneficial; one should go for PC screening; and PC screening is a waste of time. The chapter also presented the conclusions, recommendations, limitations, and benefits of the study.

The respondents in this study had moderate knowledge of PC screening and positive beliefs about PC screening. The IBM states that if people have sufficient knowledge of and skills regarding a condition, they will tend to adopt better health behaviours and take the requisite action. The model should be used to guide studies aimed at increasing male awareness of PC and the benefits of screening. Male students should be encouraged to adopt health-seeking behaviours, and the government and other organisations should design an intervention programme through innovative health education strategies, and include cancer education in the secondary school curriculum.

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LIST OF APPENDICES

Appendix A: Data collection tool: Questionnaire

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Knowledge, Attitudes and Beliefs towards Prostate Cancer Screening of Male Students at the University of Zambia

Part 1: QUESTIONNAIRE

Section A: Demographic data.

1.1. Age in Years: …… [recorded as: 18–25 ( ) 26–30 ( ) 31–35 ( )]

1.2. Marital Status: Single ( ) Married ( ) Divorced ( ) Separated ( )

1.3. Religion: Christian ( ) Muslim ( ) Traditional Beliefs ( ) Buddhism ( )
Hinduism (Judaism ( )

1.4 Education: Education ( ) Humanities and Social Sciences ( ) Natural Sciences ( ) Engineering ( ) Agriculture ( )

Section B: Knowledge

1. Have you heard about prostate cancer?

Yes ( ) No ( )

2. Do you know anyone that has or has had prostate cancer?

Yes ( ) No ( )

3. Prostate cancer affects which gender?

Men only ( ) Women only ( ) Both men and women ( ) Do not know ( )

4. Which age group does prostate cancer affect?

Below 20 years ( ) 20 to 30 years ( ) Above 40 years ( ) All of the above ( )

5. Which of the following factors could make a person more likely to develop prostate cancer?

	Yes	**No**
c) Family history of the disease condition		
d) Drinking excessive alcohol		
e) Exercise		
d. Age		
e. Through unprotected sex		
f. Do not know		

6. Have you ever received information from any source about prostate cancer?

Yes ( ) No ( )

7. If 'yes' to Question 6, which source did you receive the information from?

a. Healthcare professionals	
b. From the media	
c. From family members	

d. From friends	

8. Do you know the symptoms of prostate cancer?

Yes ( ) No ( )

9. Which symptoms are associated with prostate cancer? Kindly tick as applicable options below: For these factors 1 (Yes) 2 (No)

	Yes	No
a) Excessive urination at night		
b) Headache		
c) Blood in urine		
d) High temperature		

10. Are you aware of any form of screening for prostate cancer?

Yes ( ) No ( )

11. If 'yes' to question 10, which prostate cancer screening do you know? Tick more than one option if necessary.

Digital rectal examination ( ) Full blood count ( ) Prostate specific antigen ( )

12. An abnormal prostate specific antigen (PSA) blood test means I have cancer.

Yes ( ) No ( ) Do not know ( )

Section C: Beliefs (Ask scale: Agree/Disagree).

For Question 13 to 22 responses, please tick once per question: Strongly agree (1) Agree (2) Strongly disagree (3) Disagree (4) No response (5)

13. Being diagnosed with prostate cancer means death	1	2	3	4	5
14.Prostate cancer cannot be cured	1	2	3	4	5

15. My culture talks about prostate cancer screening	1	2	3	4	5
16. I think the stress of screening outweighs the benefits for men above the age of 40	1	2	3	4	5
17. Prostate cancer is only for white men	1	2	3	4	5
18. People who undergo prostate cancer screening just invite more health problems in their lives	1	2	3	4	5
19. My church does not allow men to go for screening	1	2	3	4	5
20.There is no need for men to go for screening because they are naturally strong	1	2	3	4	5

Section D: Attitudes Questions

For Question 22 And 23 responses, please tick once per question: Strongly agree (1) Agree (2) Strongly disagree (3) Disagree (4) No response (5)

21.You can only go for prostate cancer screening if you have symptoms	1	2	3	4	5
22.Going for prostate cancer screening is a waste of time	1	2	3	4	5

23. The royal families can't visit a hospital for prostate cancer screening.

Yes ( ) No ( ) Not sure ( )

24. Prostate cancer screening is a taboo in my culture.

Yes ( ) No ( ) Not sure ( )

25. Prostate cancer screening is good

Yes ( ) No ( ) Not sure ( )

Appendix B: Ethics approval from CPUT

Cape Peninsula
University of Technology

HEALTH AND WELLNESS SCIENCES RESEARCH ETHICS COMMITTEE (HW-REC)
Registration Number NHREC: REC- 230408-014

P.O. Box 1906 • Bellville 7535 South Africa
Symphony Road Bellville 7535
Tel: +27 21 959 6917
Email: sethn@cput.ac.za

7 May 2019
REC Approval Reference No:
CPUT/HW-REC 2015/H07 (renewal)

Dear Mr Fredy Chanda Ng'uni

Re: APPLICATION TO THE HW-REC FOR ETHICS CLEARANCE

Approval was granted by the Health and Wellness Sciences-REC on 17 April 2015 to Mr Ng'uni for ethical clearance. This approval is for research activities related to student research in the Department of Nursing at this Institution.

TITLE: **Knowledge, attitude and beliefs of male University of Zambia students towards prostate cancer screening**

Supervisor: Dr R Modeste

Comment:

Approval will not extend beyond 8 May 2020. An extension should be applied for 6 weeks before this expiry date should data collection and use/analysis of data, information and/or samples for this study continue beyond this date.

The investigator(s) should understand the ethical conditions under which they are authorized to carry out this study and they should be compliant to these conditions. It is required that the investigator(s) complete an **annual progress report** that should be submitted to the HWS-REC in December of that particular year, for the HWS-REC to be kept informed of the progress and of any problems you may have encountered.

Kind Regards

Dr. Navindhra Naidoo
Chairperson – Research Ethics Committee
Faculty of Health and Wellness Sciences

Cape Peninsula
University of Technology

HEALTH AND WELLNESS SCIENCES RESEARCH ETHICS COMMITTEE (HWS-REC)
Registration Number NHREC: REC- 230408-014

P.O. Box 1906 • Bellville 7535 South Africa
Symphony Road Bellville 7535
Tel: +27 21 959 6917
Email: sethn@cput.ac.za

24 April 2015
REC Approval Reference No:
CPUT/HWS-REC 2015/H07

Faculty of Health and Wellness Sciences

Dear Mr Fredy Chanda Ng'uni

Re: APPLICATION TO THE HWS-REC FOR ETHICS CLEARANCE

Your application for ethics approval has reference. This serves to inform you that approval was granted by the Health and Wellness Sciences-REC on 17 April 2015 to Mr Ng"uni for ethical clearance. This approval is for research activities related to the MTech: Nursing at this Institution.

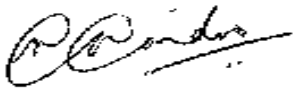
TITLE: Knowledge, attitude and beliefs of male students in higher education institution towards Prostate Cancer Screening in Zambia.

Internal Supervisor:
1. Prof D Khalil
2. Mrs F Kajee

Comment:
Approval will not extend beyond 25 April 2016. An extension should be applied for 6 weeks before this expiry date should data collection and use/analysis of data, information and/or samples for this study continue beyond this date.

The investigator(s) should understand the ethical conditions under which they are authorized to carry out this study and they should be compliant to these conditions. It is required that the investigator(s) complete an **annual progress report** that should be submitted to the HWS-REC in December of that particular year, for the HWS-REC to be kept informed of the progress and of any problems you may have encountered.

Kind Regards



Mr. Navindhra Naidoo
Chairperson – Research Ethics Committee
Faculty of Health and Wellness Sciences

Appendix C: Ethical clearance from the University of Zambia Biomedical Ethical Committee (UNZABREC)

THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753
E-mail: unzarec@unza.zm

Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IORG0000774

5th April, 2016.

Our Ref: 004-07-15.

Mr. Fred C. Ng'uni,
Cape Peninsula University of Technology,
Nursing Department,
Cape Town,
South Africa.

Dear Mr. Ng'uni,

RE: RESUBMITTED RESEARCH PROPOSAL: **"KNOWLEDGE, ATTITUDES AND BELIEFS OF MALE UNIVERSITY OF ZAMBIA STUDENTS TOWARDS PROSTATE CANCER SCREENING" (REF. No. 004-07-15)**

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee on 9th March, 2016. The proposal is approved.

CONDITIONS:

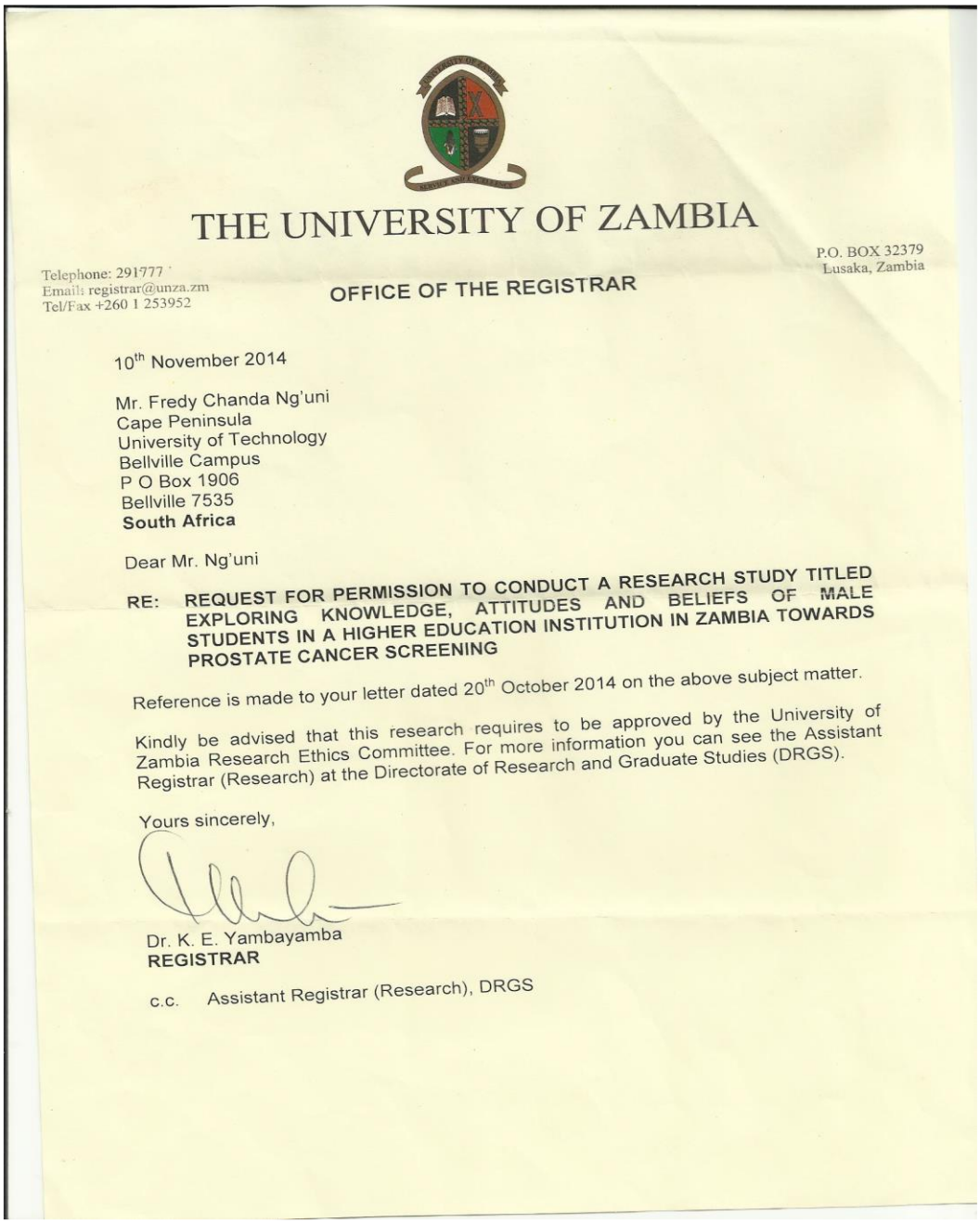
- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported at once to this Committee.
- Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a Progress Report (Progress Report Forms can be obtained from the Secretariat).
- **Ensure that a final copy of the results is submitted to this Committee.**

Yours sincerely,

Dr. S.H Nzala
VICE-CHAIRPERSON

Date of approval: 5th April, 2016. **Date of expiry:** 4th April, 2017.

Appendix D: Letter of permission from UNZA



THE UNIVERSITY OF ZAMBIA

Telephone: 291777
Email: registrar@unza.zm
Tel/Fax +260 1 253952

P.O. BOX 32379
Lusaka, Zambia

OFFICE OF THE REGISTRAR

10th November 2014

Mr. Fredy Chanda Ng'uni
Cape Peninsula
University of Technology
Bellville Campus
P O Box 1906
Bellville 7535
South Africa

Dear Mr. Ng'uni

RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY TITLED EXPLORING KNOWLEDGE, ATTITUDES AND BELIEFS OF MALE STUDENTS IN A HIGHER EDUCATION INSTITUTION IN ZAMBIA TOWARDS PROSTATE CANCER SCREENING

Reference is made to your letter dated 20th October 2014 on the above subject matter.

Kindly be advised that this research requires to be approved by the University of Zambia Research Ethics Committee. For more information you can see the Assistant Registrar (Research) at the Directorate of Research and Graduate Studies (DRGS).

Yours sincerely,

Dr. K. E. Yambayamba
REGISTRAR

c.c. Assistant Registrar (Research), DRGS

Appendix E: Letter from the University of Zambia Clinic

THE UNIVERSITY OF ZAMBIA P.O BOX 32379

Lusaka, Zambia

THE UNIVERSITY OF ZAMBIA CLINIC

10th November 2014.

Mr. Fredy Chanda Ng'uni
Cape Peninsula University of Technology
Bellville Campus
Box 1906
Bellville 7535
South Africa

Dear Mr. Ng'uni

RE: **RESEARCH STUDY ON EXPLORING KNOWLEDGE, ATTITUDES AND BELIEFS OF MALE STUDENTS IN A HIGHER EDUCATION INSTITUTION IN ZAMBIA TOWARDS PROSTATE CANCER SCREENING.**

Reference is made to your letter dated 20th October 2014 on the above subject matter.

The University of Zambia Clinic will be glad to assist you in your project given that you are granted permission by the Registrar of the University of Zambia. Kindly be advised that you write to the Registrar. For more information you can see the assistance Registrar (Research) at the Directorate of Research and Graduate Studies (DRGS).

Yours Sincerely,

Mr. J. Phiri
UNZA CLINIC IN-CHARGE
c.c. Assistant Registrar (Research), DRGS

Appendix F: Research information sheet and informed consent

Bellville Campus,

P.O. Box 1906, Bellville 7535

Website: www.cput.ac.za

Research title: **Knowledge and beliefs of male university students regarding prostate cancer screening in Zambia**

Researcher: Fredy Chanda Ng'uni

I am a postgraduate student at the Cape Peninsula University of Technology, conducting a study as a requirement for my MTech nursing degree. I am inviting you to take part in this study which is aimed at assessing knowledge and beliefs of non-medical male university students regarding prostate cancer screening in Zambia.

Benefits: Taking part in this study will give you the opportunity to share your views on prostate cancer and prostate cancer screening. The study may also enable you to gain knowledge of prostate cancer and prostate cancer screening. The recommendations of this study may be used to devise strategies to promote prostate cancer awareness in Zambia.

Procedure: The study will use questionnaires as a data-collection tool. A questionnaire will take about 10 to 15 minutes of your time to complete. You will be asked a few questions related to the research as explained above. The questionnaire will contain questions related to the research topic. All answers will be appreciated.

Risk/ Discomfort: If you take part in this study there is no physical risk, but some of the questions asked may be sensitive. You have the right to answer or decline to answer those questions.

How you feel. Should you feel that you need counselling afterwards, arrangements will be made for you to see the hospital counselling services?

Time: The researcher will use approximately 10 to 15 minutes.

Cost: The study does not involve any cost to you as a participant.

Ethical considerations: Your participation in the study is voluntary and you can withdraw at any time. You have the right to withdraw from the study at any time or refuse to answer any question and your decision will not affect your relationship with the researcher or the institution. You can choose not to answer any question at any point and it will not have any effect on you as a student.

Right to privacy and confidentiality: Your privacy will be protected at all times if you participate in this study. Everything you write will be kept confidential. In the analysis, I shall ensure that your identity is not revealed in any part of the final document. You are free to withdraw from participating in the study at any time and you may choose not to answer specific questions, if you prefer.

Participant's agreement form:

I have read the information above or it has been explained to me in a language I understand. I consent voluntarily to participate in this study.

Name: .....

Signature: .....

Date: .....

Witness: .....

Signature: .....

Date: .....